

**POSITION OF *SHARĪ'AH* ON CLONING**  
**AN ANALYTICAL AND COMPARATIVE STUDY**  
**IN THE LIGHT OF *SHARĪ'AH* AND LAW**



A dissertation submitted in partial fulfillment of the requirements for the degree of  
Doctor of Philosophy in *Shari'ah* (Islamic Law and Jurisprudence)

**Submitted by:**

Shazia Kiyani

Reg. No. 16-SFL/Ph.DIJ/F10

**Supervised by:**

Dr. Abdullah Rizk Al-Muzaini

Assistant Professor



Faculty of *Shari'ah* & Law  
International Islamic University, Islamabad  
2019

Acc # TH 21693



PhD  
344.04196  
SHP

*Amman*

Human cloning - Law and Legislation

" " - Religious aspects - Islam

Human cloning - Islamic countries

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

## **Dedicated to**

I dedicate this thesis to my elder sister Aasia Kiyani for her unselfish support that enabled me to accomplish this task. She stood by me always and remained a source of encouragement and motivation. The first female Doctorate in my family owes to be dedicated to her truly.

## ACCEPTANCE BY THE VIVA VOCE COMMITTEE

### TITLE OF THESIS:

**“POSITION OF SHARIAH ON CLONING AN ANALYTICAL AND  
COMPARATIVE STUDY IN THE LIGHT OF SHARIAH AND LAW”**

*Submitted by: Shazia Kiyani*

*Reg. No. 16-FSL/PhDIJ/F10*

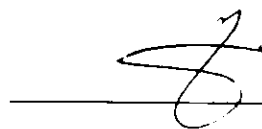
**1. Dr. Abdullah Rizk Almuzaini**

Ex. Assistant Professor Shariah, IIUI /  
Supervisor



**2. Dr. Nasim Razi**

Associate Professor Law, IIUI/  
Internal Examiner



**3. Dr. Muhammad Zubair Abbasi**

Professor,  
LUMS, Lahore/  
External Examiner-I



**4. Prof. Dr. Muhammad Tahir Mansoori**

Ex. VP(HSR)/ Professor Shariah,  
FSL, IIUI/  
External Examiner-II



## **Declaration**

I, Shazia Kiyani, hereby declare that this dissertation is original and has never been presented in any other institution. I, moreover, declare that any secondary information used in this dissertation has been duly acknowledged.

Shazia Kiyani

## Acknowledgements

All Praise be to Allāh S.W.T, the Merciful and the Compassionate who gave me the opportunity to accomplish the degree of PhD. May Allāh S.W.T bestow His peace and blessings upon the best of His creation, his chosen and final messenger, Muḥammad (Peace Be Upon Him), his family, companions and all those who follow the path of guidance to the end of the time.

First of all, I offer my profound gratitude to my thesis supervisor Dr. Abdullah Rizk Al Muzani, who has been guiding me devotedly and made me finish my research efficiently. Now, I would like to extend my gratitude to my honorable teachers, whose guidance and support remained with me from the time of topic selection till the completion of my dissertation. Honorable Dr. Muḥammad Tahir Hakim (Dean Faculty of Sharī'ah and Law), Dr. Muḥammad Tahir Mansoori, Dr. Naseem Razi, Dr. Ismatullah and Dr. Samia Maqbool Niazi deserve my acknowledgments for the guidance, support and encouragement bestowed by them, without their cooperation I could never do this research work in an appropriate way.

I am also thankful to the university in general and the faculty of Sharī'ah and Law in particular for providing me the best assistance and encouraging me to accomplish my task. Mr. Hafiz Atiq ur Rehman (Assistant Director, FSL) deserves my foremost gratitude for his endless cooperation and support and the list goes on to add Dr. Muhammad Akbar Khan, Dr. Hafiz Muhammad Siddique, Mr. Mehboob Usman, Mr. Asif Saleem, Mr. Rashid Hussain and Mr. Usman Ali Sheikh (IRI) to contribute with the maximum they could have had.

I would have never been able to reach this milestone without help and support of some more people; among them are the experts in Biomedical Sciences and those who

provided their assistance for provision of relevant data graciously. Some of those are Dr. Abdul Hameed (IIUI) Dr. Nouraiz Ahmed (ETH Zurich, Basel Switzerland), Dr. Aftab Ahmad (NAYS) and Mr. Saif Ullah Bukhari (Librarian, PITD, Islamabad).

I offer my thanks to my sincere friends who have been supportive always. Ms. Sakina Siddique, Ms. Habibah Bashir, Ms. Quratul Ain Hassan, Ms. Farzana Fazal, Dr. Maimoona Yasmin and Ms. Kaniz Fatima are worth mentioning in this regard.

I am obliged to mention my colleagues at the University of Gujrat who not only motivated me but also helped in formatting of this dissertation. Dr. Rao Qasim Idrees and Dr. Nasir Majeed deserve my humble gratitude for this favor. Mr. Mian Akbar Javed, Mr. M. Anwar Naro, Mr. Naveed Hussain Bajwa, Mr. Yasir Arfat, Mr. Muhammad Yasir Abbas, Ms. Farhat Kausar, Dr. Shamshad Rasool, Dr. Behzad Anwar, Dr. Arshad Munir Laghari and Mr. Yasir Munir Laghari deserve my gratitude for the motivation conferred by them.

I want to express my cordial gratitude to my mentor and confidant Mr. Sohaib Ahmed Hashmi without whom I would never have been able to accomplish this degree.

In the end, I would like to offer my gratitude to my family for supporting me above and beyond my expectations at every stage of life and every level of studies. My family dreamt of my acquiring this prestigious degree first and then remained with me wholeheartedly, devotedly and selflessly that I never gave up on anything while accomplishing this dissertation. My special gratitude to my parents Mr. and Mrs. Gul Zaman Kiyani, my brothers Mr. Arshad Zaman Kiyani, Mr. Tahir Zaman Kiyani and Mr. M. Ali Kiyani, my sisters Ms. Aasia Kiyani, Ms. Sobia Kiyani and Ms. Aamna Kiyani and their spouses and children for being empathetic and exceptionally supportive always.



# **Abstract**

## **Position of Sharī'ah on Cloning**

### **An Analytical and Comparative Study in the Light of Sharī'ah and Law**

This thesis begins with the brief introduction to the term “cloning” as a branch of Biotechnology. The natural ways of cloning in plants, animals and humans (Naturally born twins) are the concepts everyone is familiar with since ages but cloning as a scientific process is not recognized since very long. Even though man has been practicing plant cloning since a time undeterminable, but it is a new concept with regard to animals and human beings. In order to conduct a comparative and analytical research the biological concept of reproduction in plants, animals and humans is discussed in detail. Later, the concept of cloning is evaluated in the light of the “Objectives of Sharī'ah” and Maxims of Islamic law. While discussing the Islamic perspective on the subject, the resolutions of the most prestigious institutions and Fatawā (Legal Rulings) passed by different religious authorities are evaluated. From the Muslim countries Pakistan and Iran have been examined in order to see the practical, legal and theological position of Cloning in these two Islamic countries.

In order to describe the theological side the views of the world's prominent religions including the Christianity, Judaism, Hinduism and Buddhism are described. A brief glance at the moral and ethical stance over the Moral and Ethical concerns on Cloning also takes place under this research. Later, the legal position of cloning is described in the light of worldwide legislation over human cloning including the legislations enacted by the UN, Council of Europe and different scientific and medical organizations. This dissertation ends with findings on the issue and some key recommendations and conclusion.

## Transliteration Table

The following transliteration system has been employed in this research when transliterating names and words from Arabic.

Arabic	Transliteration	Arabic	Transliteration
ا	A	ف	F
ب	B	ق	Q
ت	T	ك	K
ث	t	گ	G
ث	Th	ل	L
ج	J	م	M
چ	Ch	ن	N
ح	h	ه	H
خ	Kh	و	W
د	D	ی	Y
ذ	d	ع is transliterated as elevated inverted comma ( ' )	
ذ	Dh	ض as an Arabic letter is transliterated as (d)	
ر	R	Article ال is transliterated as (al-) whether followed by a moon or a sun letter, however, in construct form it will be transliterated as ('l)	
ر	r	<b>Arabic Short Vowels</b>	
ز	Z	/	A
س	S	/	I
ش	Sh	و	U
ص	s	<b>Arabic Long Vowels</b>	
ط	t	ا	Ā
ظ	z	و	Ū
غ	Gh	ی	I

## **List of Abbreviations**

American Association for the Advancement of Science	AAAS
Artificial Insemination	AI
Agha Khan University	AKU
Avian Leukosis Virus	ALV
American Medical Association	AMA
Assisted Reproductive Technology	ART
American Society for Cell Biology	ASCB
Biotechnology Industry Organization	BIO
Cell Replacement through Nuclear Transfer	CRNT
Deoxyribo Nucleic Acid	DNA
Ethics Review Committees	ERCs
Embryonic Stem	ES
Embryonic Stem Cells	ESC
Federation of American Societies for Experimental Biology	FASEB
Global Forum on Bioethics in Research	GFBR
Genetically Modified	GM
Hospital Ethics Committee	HEC
Human Immunodeficiency Virus	HIV
Intra Cytoplasmic Sperm Injection	ICSI
International Islamic Fiqh Academy	IIFA
Islamic Organization of Medical Sciences	IOMS
Institutional Review Boards	IRBs
InVitro Fertilization	IVF
Lesbian, Gay, Bisexual, and Transgender	LGBT
Large Off spring Syndrome	LOS

National Bioethics Committee	NBC
Organization of the Islamic Conference	OIC
Primordial Germ Cells	PGCs
Pakistan Medical and Dental Council	PMDC
Stem Cell	SC
Somatic Cell Nuclear Replacement	SCNR
Somatic Cell Nuclear Transfer	SCNT
United Nations Educational, Scientific and Cultural Organization	UNESCO
United Nations Organization	UNO
World Health Organization	WHO
World Medical Association	WMA

## **Table of Contents**

	<b>Page</b>
<b>Dedication</b>	<b>iii</b>
<b>Approval Sheet</b>	<b>iv</b>
<b>Declaration</b>	<b>v</b>
<b>Acknowledgments</b>	<b>vi</b>
<b>Abstract</b>	<b>viii</b>
<b>Transliteration Table</b>	<b>ix</b>
<b>List of Abbreviations</b>	<b>x</b>
<b>Table of Contents</b>	<b>xii</b>
 <b>CHAPTER ONE: INTRODUCTION, SIGNIFICANCE AND SCOPE OF THE RESEARCH</b>	
1.1	Introduction 01
1.2	Introduction to the Research Topic 01
1.3	Significance and Scope of the Study 06
1.4	Statement of the Research Problem/s 08
1.5	Objectives of the Research 08
1.6	Research Methodology 09

1.7	Literature Review	09
1.7.1	The Biological side of Cloning and Connected Concepts	10
1.7.2	Reproductive Science and Islam	12
1.7.3	Biomedical Ethics, Cloning and related Concepts in Islamic Republic of Iran and Islam Republic of Pakistan	14
1.7.4	Evaluation of Cloning in the light of Maqāsid Al- Sharī'ah and Al-Qawā'id al-Fiqhiyyāh	16
1.7.5	Cloning in the light of Fiqh and Islamic Concept of Bioethics	20
1.7.6	Human Cloning and International Law	23
1.8	Conclusion	26

## **CHAPTER TWO: INTRODUCTION TO CLONING**

2.1	Introduction	27
2.2	Meaning, Types, Scope and Importance of Biotechnology	27
2.2.1	Technology	28
2.2.2	Biotechnology	29
2.3	Types of Biotechnology	31
2.3.1	Genetic Engineering	31
2.3.2	Cloning	33
2.4	Cloning in Plants (Plants Biotechnology)	35

2.4.1	Cutting	37
2.4.2	Grafting and Budding	38
2.4.2.1	Advantages of Grafting and Budding	39
2.4.3	Layering	40
2.4.4	Micropropagation	42
2.4.4.1	Scientific Reasons to opt Micropropagation	42
2.4.5	Several Important Advantages of Asexual Reproduction	43
2.4.6	Possible Disadvantages of Vegetative Propagation	44
2.5	Animal Cloning	44
2.5.1	Cloning Timeline	46
2.5.2	Transgenic Animals	47
2.5.3	Genetic Modification Techniques	49
i)	Microinjection	50
ii)	Viral Transfection	51
iii)	Embryonic Stem Cell Modification	52
iv)	Sperm Mediated Transfer	52
v)	Localized Gene Transfer	53
2.5.4	Important Issues related to use of Animals with Respect to Cloning and other Genetic Modifications	53
i)	Animal Welfare	53
ii)	Laboratory Animals	55

	iii) Pharming	56
	iv) Agriculture	57
	v) Xenotransplantation	59
	2.5.5 Animal Cloning and Ethical Concerns	60
2.6	Human Cloning	62
	2.6.1 Types and Process of Human Cloning	62
	i) Reproductive Cloning	62
	ii) Therapeutic Cloning	62
	iii) DNA Cloning (Recombinant DNA Technology)	62
	2.6.2 Uses of Therapeutic Cloning	63
	i) Gene Therapy	63
	ii) Therapeutic Products through Human Genetic Material	64
	iii) Genetic Diagnosis and Counseling	65
	2.6.3 Possible Advantages of Human Cloning	67
	2.6.4 Some Future Prospects of Therapeutic Cloning	67
	i) Organ Transplantation	68
	ii) Diseases Cure	69
	iii) Cancer Diagnosis	71
	2.6.5 Possible Disadvantages of Human Cloning	71
2.7	Successful Assisted Reproductive Techniques	74
	2.7.1 The Evolution and Practices of Certain ARTs in Muslim Majority Countries	77



2.7.2	Evaluation of Certain ARTs in the light of Islamic Teachings	79
i)	Artificial Insemination	79
ii)	In-Vitro Fertilization (IVF)	80
iii)	Donor Eggs and Donor Sperms	81
iv)	Surrogacy	83
2.8	Conclusion	86

## **CHAPTER THREE: HUMAN CLONING IN SHARĪ'AH PERSPECTIVE**

3.1	Introduction	87
3.2	Perception of cloning by the Muslim scholars: Initial Response	87
3.2.1	The Conferences organized by the International Islamic and Scientific Institutions	90
3.3	Subsequent and Recent Responses	94
3.3.1	Fatāwā (Formal Legal Opinions) on Cloning	94
i)	Risālat al-Islam, KSA	95
ii)	Dār al-Iftā' al-Misriyah	99
iii)	Dār al-Iftā', Jordan	100
iv)	The European Council for Fatwā and Research	102
v)	Islamic Supreme Council of Canada	105
vi)	Islamic Research Foundation International, Inc	110
vii)	Dār al-Salām , UK	111

viii)	Shī'ah Verdict on Human Cloning	113
ix)	Madrasah Dār-al-'Ulūm, Sabīl-al-Islam, Haiderabad Dakkan, India	121
x)	Idāratul Qur'ān wa- 'Ulūm Islamia, Karachi, Pakistan	122
xi)	Kitāb-al-Fatāwā by Zamzam Publishers	124
xii)	Fatāwā Haqqāniyyah, Dār-al-'Ulūm Haqqāniyyah, Aukora Khatak, Pakistan	125
xiii)	Jami-al-Fatāwā, Idāra Ta'līf Ashrafia, Fawara Chowk, Multan	127
xiv)	Mahnama Hāq, April 2006, Pakistan	127
3.3.2	Juristic opinions of the Prominent Fūqaha over the Subject of Cloning	129
i)	Dr. Wahba Al-Zuhayli	131
ii)	Al-Ashqar	134
iii)	Al-Shaḍhili	135
iv)	Dr. Yusuf al-Qaradawi	138
v)	Hassan Al-Shafi	140
3.4	Policies of Islamic Countries on Cloning	141
3.4.1	Islamic Republic of Iran	141
3.4.1.1	Evolution and Practice of Cloning in Iran	141
3.4.1.2	Difference between Sunnī and Shī'ah Verdicts on Cloning	143

3.4.1.3	Legal Analysis of Reproductive and Therapeutic Cloning in Iran	146
3.4.1.4	Bioethical Activities in the Country	150
3.4.1.4.1	National Codes of Ethics in Biomedical Research	150
3.4.1.4.2	Research and Education	151
3.4.2	Islamic Republic of Pakistan	151
3.4.2.1	Birth of Bioethical Research in Pakistan	152
3.4.2.2	Developments in Research Ethics	154
3.4.2.3	Developments in Clinical Ethics	155
3.4.2.4	Pakistan Medical and Dental Council Code of Ethics	156
3.4.2.5	National Bioethics Committee of Pakistan	157
3.4.2.6	The Council of Islamic Ideology	157
3.4.2.7	The Ethical Review in Pakistan: The Credibility Gap	159
3.4.2.8	Practical Challenges to Ethical Research in Pakistan	159
3.5	Analysis of the Issue of Cloning in the Light of Maqāsid al- Sharī‘ah	161
3.5.1	Maqāsid al-Sharī‘ah: Literal and Technical Meanings	161
3.5.2	The Classical Maqāsid Model: The Circle of the	

	Essentials (Darūrīyyāt)	162
i)	Protection of Al-Dīn	162
ii)	Protection of Life (al-Nafs)	164
iii)	Protection of Dignity or Lineage (al-Nāsl)	165
iv)	Protection of the Intellect or Mind (al-Aql)	169
v)	Protection of Property (al-Māl)	171
3.5.3	Evaluating Human Cloning in the light of Maqāsid Al-Sharī‘ah	172
3.6	Analysis of the Issue of Cloning in the light of Legal Maxims of Islamic law	179
3.6.1	Literal and Technical Meanings of Qawā‘id al-Fiqhiyyāh	180
3.6.2	The Applicability of Islamic Legal Maxims on Cloning	181
3.6.2.1	Al-Umūr bi-Maqāsidihā: “The Matters are according to the Goals behind them”	181
3.6.2.1.1	Subsidiary Qawā‘id which can be Applied over Human Cloning Issue	183
3.6.2.2	Al-Yaqīnu Lā Yazūlu bi al-Shakk: “Certainty is not Removed by Doubt”	184
3.6.2.2.1	Subsidiary Qawā‘id which can be Applied over Human Cloning Issue	186
3.6.2.3	Al-Mashaqqatu Tajlib Al-Taysīr: “Hardship gets Facility”	187

3.6.2.3.1	Subsidiary Qawā'id which can be Applied over Human Cloning Issue	191
3.6.2.4	Al-Ḍararu Yuzāl: "Harm is to be Removed."	193
3.6.2.4.1	Subsidiary Qawā'id which can be Applied over Human Cloning Issue	195
3.6.2.5	Al-'Ādatu Muhakkamatun: "Custom is to be Enforced."	196
3.6.2.5.1	Subsidiary Qawā'id which can be Applied over Human Cloning Issue	198
3.7	Conclusion	200

## **CHAPTER FOUR: A WORLDWIDE PERSPECTIVE ON CLONING WITH REFERENCE TO THE ETHICAL, RELIGIOUS AND LEGAL VALUES**

4.1	Introduction	201
4.2	Islamic Bioethics: Definition and Sources	201
4.3	An Overview of the Worldwide Moral and Ethical Concerns on Cloning	208
4.3.1	The Conventional Medical Ethics	208
4.3.2	Conventional Bioethics and its Principles	210
i)	Autonomy	211
ii)	Non-maleficence	213
iii)	Beneficence	215

	iv)	Justice	217
4.4		Moral and Ethical Concerns on Cloning: The Proponents and Opponents	218
	4.4.1	Human Reproductive Cloning offends God and Nature	219
	4.4.2	Children are “Made” and not Begotten while applying Reproductive Cloning	220
	4.4.3	The Human Clones lack Individuality	221
	4.4.4	The Human Clones destroy Humanity	222
	4.4.5	Human Cloning is Unsafe and produces Children with Birth Defects	224
	i)	The Efficiency of Cloning	225
		a) Dolly and the 277 “Attempts”	225
		b) Current Success Rates	226
		c) Efficiency in the Future	226
	ii)	The Role of Large Off Spring Syndrome (LOS)	227
	iii)	The Role of Reprogramming	227
4.5		Religious Positions on Cloning: Cloning and World’s Major Religions	229
	4.5.1	Christianity	229
	4.5.2	Judaism	232
	4.5.3	Hinduism	236

	4.5.4	Buddhism	238
4.6		Legal position of “Cloning”	241
	4.6.1	The International Organizations	243
	i)	United Nations	243
	a)	Universal Declaration on the Human Genome and Human Rights	243
	b)	Declaration on Human Cloning, 2005	244
	c)	Stance of OIC during the Session	246
	ii)	Council of Europe	246
	4.6.2	Scientific Organizations	247
	i)	American Association for the Advancement of Science	247
	a)	Banning Reproductive Cloning	247
	b)	Support to Stem Cell Research (including Research Cloning)	248
	ii)	American Society for Cell Biology (ASCB)	248
	iii)	Federation of American Societies for Experimental Biology (FASEB)	250
	4.6.3	The Biotechnology Industry	251
	i)	Biotechnology Industry Organization	251
	4.6.4	Medical Societies	252
	i)	World Medical Association	252
	ii)	American Medical Association	252
4.7		The Proponents’ objections over the Anticlone Legislations	253

4.8	Conclusion	255
-----	------------	-----

## **CHAPTER FIVE: FINDINGS, RECOMMENDATIONS AND CONCLUSION**

5.1	Research Findings	256
-----	-------------------	-----

5.2	Scientific Findings and Recommendations	260
-----	---	-----

5.3	Conclusion	264
-----	------------	-----

<b>BIBLIOGRAPHY</b>	<b>266</b>
---------------------	------------



# **CHAPTER ONE**

## **INTRODUCTION, SIGNIFICANCE AND SCOPE OF THE RESEARCH**

### **1.1 Introduction**

The first chapter of this dissertation is focused on the necessary background and importance of the topic chosen. For this sake the introductory portion has been divided into several small parts consisting of the evolution and advancements in the field of human cloning and its breakthrough with a perception of anticipated danger to the world.

Then the significance and scope of the study, statement of the research problem/s, objectives of the research, research methodology and critical analysis of the literature review are demonstrated.

### **1.2 Introduction to the Research Topic**

The man of 21<sup>st</sup> century is well aware of many ethical aspects of the modern biotechnology. Even the recent past has witnessed some important discourses, related to the ethical aspect of the biotechnological advancements for the the termination of non-viable life and abortions for a long time. Since the second half of the 20<sup>th</sup> century relatively fresh issues are emerging e.g the morals and ethics concerning organ transplantation, the use of genetic information, the limits of genetic experimentation, surrogacy and the cloning of human beings etc.<sup>1</sup>

During the last decade of the 20<sup>th</sup> century (1996) the world perceived the idea of cloning to be of as much explosive and volatile potential as the idea of the atomic bomb was in the middle of that century. This time the power was unleashed by the

---

<sup>1</sup> The Council of Islamic Ideology, *Annual Report 2002-2003*, Pakistan, 15.

biologists. Human cloning is primarily divided into two types, therapeutic and reproductive cloning. Therapeutic cloning is more relevant to the research and clinical aspect of cloning whereas the reproductive cloning offers more debate and criticism due to its susceptible nature. In the therapeutic cloning, cloning processes are used to develop tissues or whole organs for transplantation or to develop embryonic stem<sup>2</sup> cells. Reproductive cloning is the use of cloning to grow a living person who shares the DNA of the progenitor.<sup>3</sup> Therapeutic cloning is also known as “Somatic Cell Nuclear Transfer (SCNT)”<sup>4</sup> which gives it a better impression and perception among general public as the term “Cloning” is apparently perceived to be in the meaning and understanding of the concept related to reproductive cloning most of the times. This term has been widely used, but to avoid the negative present connotation of the word cloning, it has been proposed that a better term such as “Cell Replacement through Nuclear Transfer” (CRNT), which is in addition more precise too, should be used.<sup>5</sup>

In plants the asexual reproduction to be called as cloning is quite prevalent and commonly it is known as “Vegetative Reproduction.” Cloning is not so common in animals and it is worth mentioning that until 1934 it was even completely unknown for vertebrates (animals with backbones). Animals have been cloned by the scientists for many years. A tadpole was the first animal to be cloned in 1952. Then a team of

---

<sup>2</sup> For details please see as Kimball Nil, *Glossary of Biotechnology terms*, ed., (USA: CRC Press, 2002), 135 states that “Those cells (in the early embryo’s inner cell mass) from which each of the human body’s 210 different types of tissues arise via differentiation, proliferation, and growth processes.”

<sup>3</sup> Lori P Knowles, “Science policy and the law: Reproductive and therapeutic cloning.” *NYUJ Legis. & Pub. Policy* 4 (2000): 13.

<sup>4</sup> For details please see as Lee, Young Gie Chung, Yumie and Dong Ryul Lee, “An efficient SCNT technology for the establishment of personalized and public human pluripotent stem cell banks.” *BMB reports* 49, no. 4 (2016): 197 states that the success rate of nuclear transfer falls between 05 to 1% (of injected fertilised eggs) consistently showing that at the moment the technique has an inherent inefficiency, although some commercial organisations now claim up to 30%. There are many theories as to the reason for this inefficiency but, at present, these remain speculative. There have also been defects in many cloned animals, with reports of urogenital abnormalities, cardiovascular problems, defective immune systems, obesity and others, many of which are fatal.

<sup>5</sup> Ruben Lisker, “Ethical and Legal Issues in Therapeutic Cloning and the Study of Stem Cells.” *Archives of Medical Research* 34 (2003): 607.

scientists from the University of Michigan found a population of fish in northern Mexico that was entirely female. Since that discovery other species of fish, amphibians and reptiles that reproduce asexually have been found. Thus, animal cloning is neither an unknown phenomenon nor even rare.<sup>6</sup>

The critics argue that the idea of cloning tends to threaten the very idea of what is human, that is why invited outrage and great debate. With the birth of Dolly the sheep, the age of cloning dawned. People showed the instant responses by showing anger, hope, fear, displeasure, surprise and dismay on the subject of cloning. Since that day in 1996, we have struggled with how “the clone age” will and ought to shape our lives, ideologies and social structures. Some of the states have enacted the laws banning all forms of human cloning, whereas others tend to ban the reproductive human cloning only. Cloning has initiated a deeply emotional and powerful debate across the board among different stake holders including scientists, religious scholars and the general public. It arose few crucial questions along with the outrage and criticism, for example; “Has science gone too far?”, “Is what we are doing immoral?”, “Should something be done just because it is scientifically interesting and possible?”, “Are we invading God’s realm?”<sup>7</sup>

On the issue that if human cloning is achieved with as much safety and practicability as other ARTs, should it be allowed or not? Opinions are divided. The proponents argue over the justification of denying the possibility for an infertile couple to have a cloned child of their own. They also argue over the justification of denying altogether any possibility for having a clone of a lost loved one for any other private reason. The opponents do not allow the reproductive cloning in any of the situations mentioned above. They favor a ban over the therapeutic cloning as well as they are of the view

---

<sup>6</sup> Lisker, “Ethical and Legal Issues in Therapeutic Cloning”, 607.

<sup>7</sup> Cass R Sunstein, “Is there a constitutional right to clone?,” *Hastings LJ* 53 (2001): 990.

that this form of cloning may lead to a slippery slope towards the reproductive cloning, the condoning of this process for research purposes may eventually pave a way for the reproductive purposes.<sup>8</sup>

It is so unfortunate to mention that, most of the stake holders are unable to make a distinction between these two major types of human cloning, i-e the Reproductive and Therapeutic cloning. The legal documents on the issue also contain many loopholes which are unable to distinguish between the two types of cloning as well as the framework to deal with the ban over the reproductive cloning.<sup>9</sup>

It may be appropriate to remind again that all knowledge obtained through the evolution, research and development is, in fact an endowment from Allāh S.W.T. Had He not wanted to bestow humans with such knowledge we would never have been successful in attaining knowledge. Allāh S.W.T is so merciful that He wills and makes the attainment of knowledge possible and easy to us, even knowledge in a particular area and field would never been known if Allāh S.W.T did not make it known to us.<sup>10</sup>

All knowledge that is made known to human beings is infact an inference to the fact that it is from Allāh S.W.T who is most knowing, most benevolent and all powerful. This is mentioned unambiguously in the Qur'ān:

وَبِالْأَرْضِ أَيْتٌ لِلْمُؤْمِنِينَ ۖ وَفِي أَنْفُسِكُمْ أَفَلَا تُبْصِرُونَ ﴿٥٠﴾

“On the earth are Signs for those of assured faith. As also in your own selves: will ye not then see?”<sup>11</sup>

---

<sup>8</sup> Steven H Miles and Mary Crowley, *From birth to death and bench to clinic: The Hastings Center bioethics briefing book for journalists, policymakers, and campaigns* (Garrison, NY: The Hastings Center, 2008), 27.

<sup>9</sup> J. B. Gurdon and Alan Colman, “The future of cloning.” *Nature* 402, no. 6763 (1999): 743.

<sup>10</sup> Nasr and Santillana, *Science and civilization in Islam*, 23.

<sup>11</sup> Al-Qur'ān 51:20-21.

The Bio-Century has in fact shown the signs of Allāh S.W.T's might and valor that could be found in our own selves. These signs are of great importance and significantly imperative in nature for the Muslims as they strengthen their faith and belief in Allāh S.W.T. There is need to use this knowledge best way possible and keep the natural order of the world as set forth by Allāh S.W.T, we should be able to brighten our lives with the help of the knowledge bestowed.<sup>12</sup>

While comparing the contemporary basic four principles of bioethics namely autonomy, beneficence, non-maleficence, and justice (which will be discussed in detail in chapter no. four), it can be said that Islamic Ethical principles can not settled in the light of these four principles. These principles must be evaluated and interpreted keeping in view the teachings of Shari'ah as laid down by two primary sources of it i-e the Qur'an and the Sunnah of the Prophet P.B.U.H. The Qur'an and the Sunnah are the chief and basic sources of reference for the laws and principles that guide the Muslims to lead their lives according to the Islamic injunctions. In addition to this "Ijtihad" (derivation and deduction of religious opinion) also needs to be practised for tackling new issues and problems.<sup>13</sup>

The basic aspirations and aims behind the Shari'ah are the preservation and protection of the faith, life, intellect, progeny and property. The injunctions of the Shari'ah are aimed to guide the mankind in order to make them away from harm and destruction, to preserve and protect human dignity and show the way towards success in this world and the hereafter. While the Qur'an and Sunnah do not give specific solutions to social, ethical, biomedical and other issues that have emerged since the Qur'anic Divine Revelation and the teachings and traditions of the Prophet Muḥammad P.B.U.H, yet these two sources provide the general guidelines that could be compared

---

<sup>12</sup> Shahnawaz Al-haq Faruqi, "Nafsiyati Cloning se jismani cloning tak"(Okarra Khatak:7:32), 47-50.

<sup>13</sup> Dan W. Brock, "Cloning Human Beings", *Commissioned Paper* (The Brown University), 06.

and analyzed while providing an Islamic perspective on contemporary issues and problems. The Shari'ah endorses and promotes every scientific knowledge which strengthens the relationship between the man and the creator and every knowledge which works for the welfare of the mankind in every sphere of life.<sup>14</sup>

It is worth mentioning that the reality is much more than the common understanding of cloning. It is ambiguous yet interesting. There are so many issues with respect to the nature, technique and types of cloning which need to be explored more. Most of them are almost untouched yet. This is the reason that if one group of the religious scholars, scientists, ethicists, medical practitioners, policy makers, human rights activists, legislatures, thinkers, economists and sociologists strongly rejects the very idea of human cloning the other favours and propagates it fully with same energy, vision and strength. Again it is interesting to mention that when the proponents declare the human cloning "a threat" to basic human rights, identity and dignity the others claim that cloning safeguards these attributes and provides the mankind with more ease and comfort.<sup>15</sup>

### **1.3 Significance and Scope of the Study**

The topic of cloning is still of adequate importance and there is greater probability for its practicability in near future if not at the moment. Despite the fact that major organizations and majority of the courtiers have prohibited the reproductive cloning, no one can stop the evolution of science and experiments. That day does not seem to be too far when people would plan for their clones as they plan their marriage, occupation and family etc.

This research work is unique in character as this offers a thorough, analytical and comparative study combining the teachings of world's major religions including

---

<sup>14</sup> Beauchamp and Childress, *Principles of biomedical ethics*, 39.

<sup>15</sup> Dan W. Brock, "Cloning Human Beings", *Commissioned Paper* (The Brown University), 06.

Islam, Christianity, Judaism, Hinduism and Buddhism along with the conventional, scientific and biological and moral and ethical views in English language. This will surely contribute to the existing knowledge and material on the subject.

Another distinguished feature of this research is that it provides a critical view of the literature available on the subject by highlighting its strengths and weaknesses. The gaps in the literature are tried to be filled.

This study provides a useful base for the students of biotechnology and related disciplines as well as those who are interested to have an inter-faith dialogue over the subject. Particularly, the ones interested in the Islamic view point on the subject have much more to gain from this study.

It also contains an indication of the most significant international legislations and their key statements on cloning concerning the legal and ethical issues related to all forms of it.

This study would therefore significantly contribute for investigating the Religious, Legal, Moral and Ethical principles directly or indirectly dealing with the issue of cloning particularly human cloning.

This study would also lead towards paving the path for further research in the fields of Biotechnology and Bioethics in the light of Sharī'ah particularly and with the conventional side of these disciplines generally.

This study would also significantly contribute for investigating strengths and weaknesses, pros and cons of cloning especially all kinds of human cloning; by this way it would prove to be a beneficial study for the students of science as well as Islamic law.

## **1.4 Statement of the Research Problem/s**

1. Are all the forms of cloning prohibited and Harām under Islamic Law?
2. What type of legislations and principles are governing the subject of cloning worldwide?
3. Will a ban on human cloning be a threat to reproductive freedom and independence?
4. Can animal and human cloning really be a miracle for curing the sufferings and inadequacies of organic life?
5. Do legal, moral and ethical values permit/prohibit all types of cloning?
6. To what extent the forms and procedures of cloning are compatible or incompatible with the teachings of Islamic Law?

## **1.5 Objectives of the Research**

This research is aimed to:

1. Examine the modes of cloning in the light of Sharī‘ah Rulings in the context of key determinant factors such as the notion of the sanctity of life.
2. Highlight the role of religious views in the public square about cloning.
3. Analyze the possible benefits and harms of all types of cloning including human cloning.
4. Explore that it is extremely important to distinguish between reproductive and non reproductive cloning and it is equally important to distinguish among the various rationales for banning each.
5. Analyze the compatibility/incompatibility of Legal, Moral and Ethical values with teachings of Sharī‘ah on the issue of cloning.
6. Sketch a framework for serious conversation about cloning and taking account of the role of religion in our thinking about this issue.



7. Offer suggestions and improvements for different modes of cloning and the legislations on cloning.

## **1.6 Research Methodology**

The current research is rested upon descriptive methodology, utilizing analytical and comparative techniques to evaluate the data available from various sources. The principles of Maqāsid Al- Sharī'ah and Qawā'id al-Fiqhiyyāh are utilized while interpreting and evaluating the status of cloning in Islam. Cloning is discussed by comparison of Islamic law and values with the international and state level legislations over the subject. Historical case study method is utilized in order to study the birth and evolution of cloning, particularly human cloning. The methods of Istaqrā', Istinbāṭ and Istidlāl are utilized to scrutinize the legal documents on the issue. Cloning is also analyzed according to the legal, moral and ethical values. The conclusions drawn from the scientific researchers are also used in this research work. English translation of the Holy Qur'ān by Abdūllāh Yusuf Ali is adopted, as far as the Holy Sunnah is concerned the translations are chosen after consulting different sources and the most appropriate translations are utilized, same is the case with other Arabic terms used. Khat-e-USmani has been applied while copying Qur'ānic verses in Arabic text and Arabic words used in the research work have been transliterated.

## **1.7 Literature Review**

Unfortunately much data is not available to enlighten the researchers, students and scientists about the Islamic perspective of the subject i-e cloning, alongwith the legal, moral and ethical and scientific perspectives of the issue of cloning . Not even a single writing serves the purpose to justify well from all perspectives of the issue. The most of the data available on the subject covers the biological side of it or the moral and ethical aspects only. Being an innovative area of research, it is hard to find an

authentic data in order to conduct a comparative religious study on the subject. The legislations enacted or enforced are also not fault free and lack the proper guidelines or enforcement. More than five hundred research papers and books have been studied to accomplish this dissertation. But none of them can be denoted to be exhaustive in all respects. Generally the literature review conducted under this research can be categorized into six sets; keeping in view its nature, scope and applicability. A brief literature review is given below along with its critical analysis in order to highlight the characteristics and features of the literature referred, consulted and alluded.

### **1.7.1 The Biological side of Cloning and Connected Concepts**

The book Genetic Engineering: a Reference Handbook by Harry Levine III is one among the contemporary world issues series books. It is a comprehensive book which throws light on the nature and need of the Genetic Engineering in the modern world. Cloning technology and various applications of Bioinformatics, Bioremediation, Gene Mapping, Gene Therapy and many other related terminologies are defined and explained with their present scope. At the second half part of the book the author goes on to address Genetic Engineering related few controversies and their solution, by joining legal, social and religious views as well. In the end the International Impact of Genetic Engineering is discussed with a focus on the developing countries and few recommendations are provided for the development of the Genetic Engineering internationally. Though this book offers a detailed overview of genetic engineering but does not establish a relation between genetic engineering and cloning. Moreover the moral and ethical overview of the issue is not given extensively and the provided information is not easy to understand to a person not much familiar with biological and scientific terms.

Different Techniques of Asexual Reproduction in Plants by Manbir Kaur Khalsa is a journal article that addresses the different techniques of Asexual reproduction in plants. Modes of Vegetative reproduction in plants are discussed and some practical techniques like Layering (with its types), Cutting, Grafting (with its types) and Budding are explained in detail. In the end the author elaborates the advantages and disadvantages of the Vegetative propagation in plants.

Though this article is informative and useful with respect to plant cloning techniques but it is unable to assess the real benefit to the crops and plants due to cloning technique or the harms inflicted because of this technique. Additionally, no inference has been made to the genetically modified plants and crops.

Vegetative Tree Propagation in Agroforestry Training Guidelines and References, Edited by Hannah Jaenicke and Jan Beniest is a comprehensive training guideline on Vegetative Tree Propagation ways and techniques. The authors have not only elaborated different kinds of Vegetative Tree Propagation but they have also given the detailed description of the methods to perform those techniques. A detailed overview of the Vegetative Tree Propagation techniques like Cutting, Grafting and Micropropagation etc is given with applications and advantages of these techniques. This is a training guideline and learning helping material so comprises some repetitions and overlapping as well, moreover it lacks citations and references which makes it difficult to be referred unless not verified from other sources.

Scientific and Medical aspects of Human Reproductive Cloning, Committee on Science, Engineering, and Public Policy, 2002 is a detailed book, combining work of various scientists and their research reports on medical aspects of human reproductive cloning and public policy particularly. Definition and nature of cloning overall as well as a detailed description of the nature of animal cloning, Assisted Reproductive

Technology (ART), In-Vitro Fertilization and human reproductive cloning is given in a remarkable way. The most striking feature of this book is the part where it provides the presumptions, risks, possible advantages and disadvantages connected with the cloning. This Book also gives a focus to the importance and need of public policy on different scientific and medical aspects of human cloning.

But, despite every scientific detailing and explanation this book lacks a debate over therapeutic cloning. There is a major difference between the two types of cloning which this book fails to examine and evaluate, but no recommendations are made on the legislation related to therapeutic cloning or its regulation.

### **1.7.2 Reproductive Science and Islam**

Sexuality and the marriage institution in Islam: An appraisal by Hajiya Bilkisu Yusuf is a detailed article on the concept of marriage and its importance in Islam. This article focuses on the key issues related to the concept of marriage like family life, sexuality, women rights after marriage, family planning and rights of spouses etc. But this article fails to give a detailed elaboration of every subject discussed which does not grasp the researcher's attention fully. Moreover this article lacks contemporary issues faced by Muslim families and their solution. Though it can be used as a good first hand information source but it is not sufficient piece of writing while accomplishing a detailed research on marriage and sexuality in Islam.

Ethics of Assisted Reproductive Medicine: A Comparative study of Western Secular and Islamic Bioethics by Sharmin Islam is a detailed book representing a comparison and contrast of the Western and Islamic models of bioethics. It successfully establishes that ahead of the dominance of the secular quarter and its diverse philosophical bases the Islamic perspective provides a feasible and plain alternative, giving precedence to the spiritual understanding and revelation. IVF,

Surrogacy and the human cloning are some of the important areas discussed under this piece of writing. The author has presented an objective and rational analysis of both the secular Western and Islamic models. The author has defined and elaborated the concept of bioethics in Islam in the light of classic Islamic teachings based upon the primary and secondary sources of Islamic law. The author also attempts to elaborate the concept of medicine in Islam and provides the basic principles of Islam which deal the Islamic law on medicine and other related issues. In the end the author makes a comparative study of western secular and Islamic teachings on different methods of ARTs and highlights the core issues and fundamental differences between the two systems.

But this book too, lacks a detailed discussion on cloning. The difference between the two major types of cloning i-e reproductive and therapeutic is also not discussed. Most of the opinion on cloning is same as other contemporary biomedical issues discussed under this article and the author has given much emphasis to the ethical dimension of the issue. Moreover no clear methodology can be observed to be followed by the futuristic researchers while reading this article.

Human cloning through the eyes of Muslim scholars: The new phenomenon of the Islamic International Religio-Scientific Institutions by Muḥammad Ghaly is a detailed research article which throws a light on the foremost reaction of the Muslim scholars and jurists on the issue of cloning. The author also discusses the concept of Islamic bioethics and its importance and place in Islamic jurisprudence.

The author highlights the functioning and importance of two important international institutions formed and run by Muslims; the Islamic organization of Medical sciences (IOMS) and the international Islamic Fiqh Academy (IIFA).

The author is of the view that these institutions must be given more value and respect for the work done by them in the field of human cloning than the work of individual Muslim experts and scholars in this regard. The author is in great favour of Ijtihad and denotes the work of Muslim jurists as collective Ijtihad. Latter he discusses the social and religious issues concerning cloning particularly the issue of human cloning. The author also introduces the scientist working with these notable international Islamic institutions and highlights the work performed by these eminent scientists and experts in medical field. But despite the elaboration of the performance of IOMS and IIFA this article lacks to specify the actual role played by these institutions for educating and enlightening the Muslim and non Muslim audience on the issue of cloning. This article also fails to give a conclusive verdict of Muslim scholars on the issue. The author does not appreciate the findings of Muslim jurists on the subject but he gives more weightage to the opinions of medical experts and the ethicists on the issue.

### **1.7.3 Biomedical Ethics, Cloning and related Concepts in Islamic Republic of Iran and Islam Republic of Pakistan**

Medical Ethics in the Islamic Republic of Iran by Bagher Larijani, Farzaneh Zahedi and Hossein Malek Afzali is a research article which serves the purpose of introducing concept of medical ethics in Iran and its practiceability. It begins with the brief introduction to the great Iranian physician of golden Muslim era and then the current status of medical ethics in Islamic Republic of Iran is discussed. It emphasizes on the emergence of concept of medical ethics in Iran by highlighting the principles of bioethics in Islam. The ethical values inferred by the Qur'ān are discussed briefly. Later the authors discuss the current scenario of bioethical activities in the country in the sector of education, research and medical practice. The criterion for the standard

human related research is elaborated by the authors in order to give opinion over the concept of bioethics under the Islamic law. A brief introduction to the valuable writings by the Iranian authors on the subject is also given in this research paper. Later the status and need for the legislation on bioethical issues is discussed and suggestions are given in order to promote enactment of effective laws in this regard. In the end the authors give suggestions for the promotion of bioethics in the country. Despite setting forth the true picture of the studies and implementation of bioethics in Iran this article fails to give a comprehensive verdict over any one of the issues discussed by it including human cloning or promotion of bioethics or the legislation on bioethics etc.

Another distinguished research paper Pakistan and Biomedical Ethics: Report from a Muslim Country by Farhat Moazam and Aamir M. Jafarey begins with the historical background of bioethics in Islamic Republic of Pakistan. Then emergence and applicability of biomedical ethics in Pakistan is discussed and the authors relate the concept of biomedical ethics with the conventional principles of ethics. The authors discuss the ethics review committee and their role in promotion of ethical research in Pakistan. The authors give a reference to the fact that how the research on ethical related issues started growing in Pakistan and how the progress and developments in clinical ethics took place. The legislations and rules laid down by the prominent and leading institutions, for example the Pakistan Medical and Dental Council Code of Ethics, are discussed briefly, later on. The establishment and working of the national bioethics committee of Pakistan is discussed with the recent developments in the field of biomedical ethics and research. Despite being a valuable primary document for the introduction of ethical research in Pakistan, this research paper fails to examine the issues and problems faced by the national or regional level institutions in Pakistan on

the subject. This article also lacks the analysis of the functioning of these institutions and does not suggest any recommendation for the improvement of their functioning.

Ethical review in Pakistan: The credibility gap by Aamir Mustafa Jafarey, Saima Pervaiz Iqbal and Mariam Hassan is focused on the status of ethical review of research involving humans and its scope in Islamic Republic of Pakistan. Human participation in research for the purpose of experimentation is unavoidable but this concept is accompanied by many ethical concerns and issues. Such reservations and concerns are the subject of ethical reviews. The authors begin their article with a brief historical background of ethical reviews all over the world and how they were introduced in Pakistan. All key institutions providing training and education to medical students and other scientific research based institutions have ethical review boards throughout Pakistan but their functioning and powers are debatable. Later the authors focus on the reasons behind deficient or inconsistent review process including less or lack of professionalism by the members of institutions, their insufficient training and other procedural and administrative hurdles behind their inappropriate performance. In the end the authors give their recommendations to make the review process meaningful and more effective. But unfortunately this article fails to identify the scope and importance of review process in their true sense. This article also lacks a pertinent mechanism to organise and hold ethical reviews and it is also silent on the promotion of the ethical reviews system in human related research in Pakistan.

#### **1.7.4 Evaluation of Cloning in the light of Maqāsid Al- Sharī'ah and Qawā'id al-Fiqhiyyāh**

Maqāsid Al- Sharī'ah as philosophy of Islamic law: A systems approach by Jasser Auda is a valuable piece of writing which starts with the definition and meaning of Islam and Islamic law (Sharī'ah), later the evolution of the Sharī'ah is discussed in the



second half of the first part of this article. Meaning, purpose and application of Maqāsid al- Sharī‘ah are the main topics discussed under this article. The author emphasizes that the real reason behind rulings of Sharī‘ah can be understood with the help of the Maqāsid al- Sharī‘ah, which provides the wisdom behind all rulings. These Maqāsid are the set of the primary and divine interests and moral concepts which provide the foundation of the Islamic law. This foundation is built with the core principles of human dignity, justice, free will, facilitation, magnanimity and social cooperation etc. The author moves on to explain the Maqāsid by elaborating its division according to the level of necessities. The contribution of different schools of Islamic jurisprudence and Muslim jurists in formation and evolution of the concept of Maqāsid is described in detail. The classic and contemporary theories of Islamic Law are also discussed under this book. This book also presents the modes of application of principles of Islamic law to the contemporary issues faced by Muslim today and their solution. But the issue of cloning is not discussed in detail in the light of Sharī‘ah principles. The difference between the two major types of cloning i.e reproductive and therapeutic is also not discussed. Most of the view on cloning is same as other contemporary biomedical issues discussed under this article.

*Al-Istinsākh’ fi du al-Asuk wa al- Qawāid wa al-Maqāsid al- Sharī‘ah* by Dr. Nooruddin Mukhtar Alkhadmi this book in Arabic language holds a prominent position when it elaborates the meaning of cloning by presenting a historical evolution of the Arabic word “Istinsākh.” Then the author throws light to its biological types. The formation of life with chromosomes and other biological stages are also briefly discussed under this book. Asexual reproduction in the case of Dolly the sheep is discussed later. Some of the benefits of cloning including strengthening of economy, improvement in the health and medication etc are also pointed out along with the

prohibition of human reproductive cloning. But the author gives undue stress to the importance and place of internet for the regulation of cloning and the concept of globalization has also been excessively elaborated in this regard. A number of exceptional sayings of the Prophet Muḥammad P.B.U.H are cited in the book but authentic references to them are missing. Likewise a comparison between cloning and Nikāḥ, Istabdaa and Tahleel etc is also irrelevant to the title and context of the book. Though a valuable debate is presented in order to show the deprivation of genuine parents and children rights in the case of reproduction by cloning but objectives of Sharī'ah are not discussed in full length despite the inference made in the title. The cloning of plants and animals is evaluated in the light of Islamic legal maxims only, giving no importance to human cloning. Moreover, the topic of genetic control discussed under this book has nothing to do much with cloning and its Sharī'ah evaluation. A sequence is also missing while elaborating the Sharī'ah evaluation of human cloning once again with the European council and other international institutions working on it and again switching back to other topics such as genetic engineering, infertility and ARTs etc and touching cloning once again in the end.

Qawā'id al-Fiqhiyyāh (Islamic Legal Maxims): Concept, Functions, History, Classification and application to contemporary Medical Issues by Fawzy Shaban Elgariani is a thesis dissertation submitted for the degree of Doctor of Philosophy in Arab and Islamic Studies, at the University of Exeter, submitted in 2012. This dissertation lays down a detailed study of Islamic legal maxims by elaborating their meaning, history, classification and application to contemporary medical issues. Starting with the meaning of Qawā'id Fiqhiyyah the author goes on to compare them with other types of Qawā'id such as, Qawā'id al-Uṣūliyyah etc. Then the historical development of these Qawā'id from the time of Prophet P.B.U.H to the time of

compilation of Fiqh is discussed under this book. The author emphasizes that basically there are five major legal principles under Islamic law and the rest of the principles are drawn from these basic principles. All principles which are relevant to contemporary medicine are not only discussed under this research but their application and importance is also elaborated in order to set forth the real understanding of Islamic Fiqh over the Islamic legal maxims. Modern techniques like cloning can be evaluated in the light of these legal principles.

Though this study reserves a portion to mention the applicability of Islamic legal maxims on contemporary medical issues but it lacks any discussion on the subject of cloning. The researcher can take help from the classical legal maxims mentioned only, and then he would have to apply them as per their actual meaning and applications.

Another book in Arabic language *Al-Istinsākh' al-bashri bein alsoura al-elmiyah wa al-dawabit al-ikhlaqiyah wa al-Fiqhiyyah* by Dr. Muḥammad Hawari starts its debate over cloning with the types of cells, two of which are explained by the author, the physical cells and sex cells. Then he gives an inference to the reproduction process by explaining the chromosomes division and their number in each of male and female partners. Later the meaning and process of cloning is expressed with scientific procedures and techniques involved in detail. The merits and demerits of animal cloning are also given. The author presents a criticism over cloning from the individual as well as society's points of view. The social aspects related to the concept of cloning and its harms such as giving criminals a chance to evade punishment and escaping the law are mentioned very briefly which do not justify with the reader, hence require further elaboration. Particularly the claim stating that cloning invokes racism needs further elaboration. Likewise some of the types of cloning give a strange

impression and they too require further elaboration for a better understanding. In the end the recommendations of the 9<sup>th</sup> Medical Jurisprudence Symposium which was held in Casablanca in June 1997 and the decision of the Islamic Fiqh Academy Council are referred to describe the prohibition of human reproductive cloning.

### **1.7.5 Cloning in the light of Fiqh and Islamic Concept of Bioethics**

*Al-Istinsākh' Albashri Fi Sharī'ah Wa Qanoon* by Dr. Muḥammad Wasil is a research article which elaborates the concept of cloning in the light of Sharī'ah injunctions briefly. Although it provides valuable information over the rulings of Sharī'ah on cloning but it fails to present a helpful discussion when it elaborates the biological types of cloning after explaining its meaning. For example; cloning of cells and organs, cloning of embryos and cloning for medical purposes and cloning for treatment overlap each other, hence create a great confusion. The legislations enacted in the UK and USA are also referred to support a ban on human cloning. Being highly criticizing and without explaining the rival opinion this document does not provide an impartial research and argumentation.

*Al-Istinsākh' Fi Nazr Al-Islam* by Dr. Abdul Fatah Mahmood Idrees is a distinguished book in Arabic language which provides an updated as well as classic debate over the topic of cloning. The author starts his discussion with the meaning and definition of cloning and he differentiates cloning from the concepts of "invention" and "creation." His arguments are solid and precise when he rejects the notion that cloning tends to discover, create or invent something new which was never made before. He proves that cloning is merely a copying process, which copies from the creation of Allāh S.W.T. Then different types of cloning are elaborated but the

biological information provided under this section seems excessive and vague. The techniques and procedures of plant and animal cloning are discussed with the biological history of both. But the language used by the author makes this portion difficult to understand particularly. Later the benefits of animal cloning are also given along with the benefits of human cloning including its usage for diagnosing and curing diseases and also for organ formation. Later the biological and social merits and demerits of cloning are also described. Some of the Fatawā on different types of cloning are also discussed along with the relevant Qur'ānic verses. Even though it is a well compiled book but it is complicated in style and language which makes it difficult to understand for a general reader and most of the time the reader has to go back even till the beginning, for a sound understanding of the concept elaborated.

Human cloning in Muslim Ethics by Ebrahim Moosa is a short article which begins with the speculation and anticipated fear which emerged right after the birth of Dolly the sheep that the developed Nations might try to have control of the reproduction sector in less developed countries. Later the two large scale conferences organized by the Muslim scientists and medical practitioners held in 1997 are discussed where the significance and scope of these conferences and their organizers have been elaborated. Later the concept of human cloning is compared with the objectives of Islamic law and newly emerged Islamic laws in the field of family sector are discussed in order to throw a light on the issue of human cloning. The views of some eminent Muslims are also discussed but despite portraying a clear picture of Islamic view on the issue the article fails to clarify some important biological and scientific terminologies and concepts which make it ambiguous and difficult to understand moreover the author jumps to one dimension of the issue from another in

such a haste that the reader does not become satisfied with the real intent behind the summary of different concepts discussed by the author.

Human Cloning from the Viewpoint of Fiqh and Ethics by S.M. Mohaghegh Damad is an article from a medical Ethics based Journal. The Muslim author of this article strongly opposes the common thinking that Muslims are against cloning and the reason behind this notion is that they feel it is contrary to the law of nature, respect and dignity of man and challenges the power of Allāh S.W.T. The author also tries to justify his opinion by mentioning few verses from the Qur'ān and gives stress to his opinion that cloning is not against the teachings of the Qur'ān. The researcher provides good research while conducting an analysis of some possible theological reasons banning human cloning. In the end he mentions the relationship between Fiqh and Ethics and gives a few recommendations to judge, understand and implement the science of cloning on the basis of Islamic principle of "Ijtihad."

Unfortunately, despite valuable futuristic suggestions and recommendations this article fails to acknowledge the Muslim jurists who have already done similar research and forwarded suggestions as well. Moreover this article suggests to include cloning under the domain of Islamic medical ethics instead of Fiqh, which needs further elaboration and research to become widely acceptable opinion.

Biomedical Ethics: Philosophical and Islamic Perspectives by Dr. Qaiser Shahzad is a well written book by a Pakistani author which provides an impressive study over Islamic and Philosophical dimensions of "Ethics." The author has defined the Key terms like Biomedical Ethics, Ethics and Contemporary medical terms which need to be evaluated by philosophers, medical experts and theologians. Origin of Ethics, Relationship of Ethics and religion and elaboration of basic Ethical Codes in the West and Sharī'ah are the strengths of this book along with the Islamic viewpoint of

Contemporary issues in Bioethics. But this book is more philosophical in tone which makes it a bit complicated. This book does not cover the Sharī'ah perspective of cloning comprehensively as most of the philosophical details provided are irrelevant to the subject and basic Sharī'ah guidelines are missing.

**Medical Ethics: An Islamic Perspective** by Dr. Muḥammad Iqbal Khan is one of the few books written by the Pakistani authors on the Islamic perspective of Medical ethics. In this detailed and comprehensive book the author starts with the Muslims' contribution in the medical knowledge and their advanced expertise which contribute a lot in the development and expansion of this profession. Then he briefly describes the ethical issues in relevance to the medical education and medicine etc. The role of medical jurisprudence in tackling with the contemporary issues, standards of ethics while conducting research on animals and human related subjects, the code of professional ethics and etiquettes for the Muslim physicians and relationship of biomedical and other industries with medicine are the important areas covered by him further. Although, this is a good attempt to combine the biomedical issues and Islamic perspective of them but this book does not provide with a sufficient enough data when human reproduction issue or cloning is discussed. This book examines cloning with the help of general principles of Islamic jurisprudence without giving adherence to the minute details attached to the issue of human cloning.

### **1.7.6 Human Cloning and International Law**

**Human Clones and International Human Rights** by Kerry Macintosh is a research article in which the author starts his argumentative article with an open criticism over the United Nations Declaration on cloning stating that this Declaration falsely prohibits all forms of cloning including therapeutic cloning which can bring the miracles in the medical field. She points out some more flaws in this declaration then.

The author thinks that human cloning can not be prohibited and should be treated like any other human right. She goes on to say that scientists would carry on their researches on the subject no matter the UN or any other authority bans it. The author favours human cloning strongly and rejects every objection on human cloning by declaring them “False and Baseless.” In the end she declares anti-Cloning laws to be “Discriminatory” and unjustified. This article provides a set of interesting arguments, reading them provides a sense of sensation no matter one rejects human cloning. But being only in favour, sometimes leaves the impression that the author rejects some valuable arguments too when become rivals to his pinion.

*Illegal Beings: Human Clones and the Law* by Kerry Lynn Macintosh is a detailed book which looks at the loss and its intestity bore by the clones due to the derogatory nature of anti-cloning laws. The author strongly favours human cloning and rejects every social, moral and ethical or religious impediment detriment to the process of cloning. The author has been a member of the Law and Technology faculty at Santa Clara University School of Law. She is of the view that the infertile couples and other interested stake holders would definitely opt for the reproductive cloning, provided it happens to be a reality in coming future and that too with minimum heath and other related rsiks. They will never care about the prohibitory legislations and bans imposed on the reproductive cloning then. Contrary to the other available books on cloning which illustrate the advantages and disadvantages of this technology, this book focuses on the pros and cons of the laws against human reproductive cloning. Not only this but the place and rights of clones under the constitutions with their equal protection are also discussed. Although it presents a good debate on favour of cloning but the author (as already in favour) does not give much adherence to the logical and



sensible objections, so this study only gives a positive view over cloning despite a full fledged debate covering both perspectives.

An effort has been endeavoured to fill the gaps found while reviewing the available literature. As most of the authentic and reliable scientific writings are difficult to understand and comprehend for a reader outside the field of natural sciences, so all relevant biological terms have been defined and simplified while elaborating them in order to make them understandable. Likewise due diligence and care is observed while highlighting the Islamic perspective of the issue concerned as no single writing served the purpose in a clear and comprehensible form. An effort has also been placed to bring forward a comprehensive research work establishing the stances of Sharī'ah and law and their individual analysis as well as comparison between them, as such an attempt never took place earlier.

## **1.8 Conclusion**

Since the emergence of cloning as potential emerging issue of biotechnology all stakeholders including the scientists, medical practitioners, bioethicists, law making bodies, religious scholars and common people have been expressing their views and concerns in this regard. Islam gives a great importance to learning and educating for the improvement of human life and standard of living but cloning particularly human cloning is a crucial subject which involves keen perusal and examination before having status of acceptable and approved, no matter therapeutic cloning. The available literature fails to give a detailed description of the issue and there is great room for a comprehensive research on the subject. This research work is aimed to focus on the biological, moral and ethical, legal and Sharī'ah perspectives of the issue in the subsequent chapters.

## **CHAPTER TWO**

### **INTRODUCTION TO CLONING**

#### **2.1 Introduction**

The second chapter of this dissertation is designed to elaborate some biological and scientific terms of biotechnology and to present an overview of the nature and types of cloning. The application of cloning in plants and animals is illustrated before discussing the human cloning. Plants cloning practices like cutting, grafting and budding, layering and micropropagation are elaborated along with their advantages and disadvantages. Likewise the timeline of animal cloning is illustrated in order to present its overview. Later the genetic modification techniques like microinjection, viral transfection, embryonic stem cell modification and sperm mediated transfer are elaborated. After this the possible advantages and disadvantages of animal cloning are discussed. Then human cloning is discussed along with its types. Therapeutic cloning is elaborated along with its future perspectives and possible advantages.

#### **2.2 Meaning, Types, Scope and Importance of “Biotechnology”**

Being a branch of “Biotechnology” the meaning, nature and functioning of “Cloning” would be impossible to grasp without having a brief overview of some related biotechnological terms. Again, Biotechnology the mother discipline for cloning can not be understood without understating the meaning of technology itself.

### 2.2.1 Technology

Technology and its rapid growth is the major source of the development since ages. Everything made to bring felicity has been termed as “Technology” for every era in history.<sup>16</sup>

While considering the scope of technology in 21<sup>st</sup> century its definition can be really comprehensive one such as: “The word technology encompasses essentially three meanings: tools and instruments to enhance human ability to shape nature and solve problems (such as a hammer and nail), knowledge of how to create things or how to solve problems (such as to brew beer or to make an atomic bomb) and culture (our understanding of the world, our value- systems).”<sup>17</sup>

Since the emergence of human civilization, need and use of tools for agriculture, hunting, irrigation and water management, war and defense, trade and navigation etc remained the most important among state or society affairs.<sup>18</sup>

The second component from the definition of technology, “Knowledge” is vast and broad term and provides the basis for the modern ways to resolve the issues by using modern scientific knowledge, based on observation, hypotheses, generalizations and empirical outcomes, studying every field from the basic to social sciences as well as the knowledge in Arts.<sup>19</sup>

The third component, “culture”, is of no less importance as technology has permeated society so much that separation between technology and culture is impossible. The constituents of culture are all of the human activities, including food, transportation, housing, work and even art and entertainment. All of these activities are intensely

---

<sup>16</sup> Phili J. Vergragt, *How technology could contribute to a sustainable world* (Boston: The Tellus Institute, 2006), 02.

<sup>17</sup> Ibid.

<sup>18</sup> Sherwood L. Washburn, “Tools and human evolution.” *Scientific American* 203, no. 3 (1960): 62-75.

<sup>19</sup> John Searle, *Making the social world: The structure of human civilization* (UK: Oxford University Press, 2010), 12.

influenced by the technology. By the process of “cultural appropriation” we “own” products of technology. Then their use is learnt, taught and interpreted in everyday life. It goes without saying that even the most private and intimate emotions of the man are infused by the technology.<sup>20</sup>

### 2.2.2 Biotechnology

The “Glossary of Biotechnology terms” prepared by Kimball Nil elaborates the meaning of the term Biotechnology as:

“The means or way of manipulating life forms (organisms) to provide desirable products for man’s use. For example, beekeeping and cattle breeding could be considered to be biotechnology-related endeavors, it is interaction of biology with human technology.”<sup>21</sup>

The word biotechnology was coined in 1919 by Karl Ereky, in a book entitled “Biotechnologie der Fleisch, Fett und Milcherzeugung im landwirtschaftlichen Grossbetriebe” (Biotechnology of Meat, Fat and Milk Production in an Agricultural Large-Scale Farm).<sup>22</sup>

Biotechnology is considered a modern science since it is not more than 200 years old but as a technology it is very old. One can trace back the roots of biotechnology to pre-historical civilizations, such as Indus valley and Egyptian civilizations, when man learned to carry out agriculture and taming and keeping animals (domestication). The man had learned to practice biotechnology even before knowing about the existence of microorganisms.<sup>23</sup>

<sup>20</sup> Leslie A. White, *The science of culture, a study of man and civilization* (South Carolina: Bibliolife DBA of Bibilio Bazaar II LLC, 2015), 59.

<sup>21</sup> Kimball Nil, *Glossary of Biotechnology terms*, ed., (USA: CRC Press, 2002), 40.

<sup>22</sup> ST Sharfstein, *Biotechnology* (New York: SUNY Polytechnic Institute, 2017), 02.

<sup>23</sup> A.J Nair, *Introduction to Biotechnology and Genetic Engineering*, (New Delhi: Infinity Science Press LLC, 2007), 01.

Agricultural, medical and industrial biotechnologies are the instances of the oldest forms of applied biotechnologies which can be traced back to 9000 BC.<sup>24</sup>

Biotechnology is a blanket concept as it refers to the technical use of organisms or their component parts (proteins, cells, carbohydrates or nucleic acids). Naturally occurring organisms and their parts are utilized under the “Traditional” biotechnology for instance; to make bread, beer, drugs and cheese etc. Whereas the “Modern” biotechnology expands its scope by including genetics-based and other molecular biology methods, for instance; hybridoma technology for the production of monoclonal antibodies etc.<sup>25</sup> But this is not the only division of biotechnology. It is divided into many types and subtypes as per their scope and applicability.<sup>26</sup>

---

<sup>24</sup> Sharfstein, *Biotechnology*, 04.

<sup>25</sup> Werner Arber, *21st century technologies promises and perils of a dynamic future organization* (Organization for Economic Co-Operation and Development, 1998), 78.

<sup>26</sup> For details please see as Peacock, *Global Issues*, 22 states that Biotechnology is a huge topic; it is hard to define its exact boundaries. Some scientists (particularly in Europe) divide the field into red biotechnology and green biotechnology. Red biotechnology relates to medicine whereas green biotechnology relates to food. Some subdivide biotechnology into white and blue as well. White biotechnology, also called industrial biotechnology, utilizes the natural processes such as enzymes and fermentation to create products formerly made with chemicals. Bioplastics made with vegetable oil and starches instead of petroleum are examples of white biotechnology. Blue biotechnology encompasses all aspects of marine biology and genomics (the application of biotechnology through gene mapping, DNA sequencing, and other techniques). Color coding this vast subject is a handy way to break it into more manageable chunks, but these categorizations are mainly cosmetic. Academically, biotechnology falls under many umbrellas. It is generally considered a natural science, and more specifically, a life science. The life sciences include biology, which is the study of living organisms and their environments. Biology encompasses botany, the study of plants, and zoology, the study of animals. Beyond these classifications are numerous overlapping categories including cell biology, microbiology, molecular biology, physiology, ecology, embryology, genetics, population genetics, epigenetics, proteomics and bioinformatics. The list will continue to grow as new fields emerge. Whatever the discipline, if it has to do with altering living organisms for any purpose, it can be considered biotechnology.

## 2.3 Types of Biotechnology

### 2.3.1 Genetic Engineering

A British biologist William Bateson (1861–1926) named the branch of science “genetics”<sup>27</sup> which studies the way traits are inherited. The term gene<sup>28</sup> was chosen by the early geneticists, conveying the meaning of a unit of inheritance consisting one trait, but interestingly it was not known by then that what a gene actually was. The breeding experiments on fruit flies were performed in 1910 by Thomas Hunt Morgan (1866–1945) and his associates at Columbia University that proved that inherited information was carried out on the chromosomes,<sup>29</sup> whose pairs (23 pairs in humans) exist in the nucleus, or central part of cells. These chromosomes are minute “colored bodies.”<sup>30</sup>

The simplest and precise definition of the term can be as follows:

---

<sup>27</sup> For details please see as Glossary of Biotechnology terms,113 states that Genetics is a branch of biology which is directly related to the heredity. Gregor Mendel invented it in the 19th century. It focuses on the manner of study in which genes operate and get transmitted from parents to offspring. It was in 1865 that Mendel not only defined what gene is but how gene can be categorized as dominant or recessive. For instance: if it is the situation that a dominant gene is inherited from only one of the parents (e.g., the father) that trait (e.g., black hair) will remain dominant and the offspring will have that trait (black hair). But if a trait under consideration(e.g., red hair) is recessive, the offspring will not have that trait. It would only be possible to inherit the recessive trait if the “red hair gene” is inherited from both parents. The study of the mechanism of gene action also comes under the study of genetics.

<sup>28</sup> For details please see as Glossary of Biotechnology terms,114 states that Gene is a natural unit of the hereditary material, which is the physical basis for the transmission of the characteristics of living organisms from one generation to another. The basic genetic material is fundamentally the same in all living organisms: it consists of chainlike molecules of nucleic acids deoxyribonucleic acid (DNA) in most organisms and ribonucleic acid (RNA) in certain viruses and is usually associated in a linear arrangement that (in part) constitutes a chromosome.

<sup>29</sup> For details please see as Glossary of Biotechnology terms,70 states that chromosomes are the discrete units of the genome carrying many genes, consisting of (histone) proteins and a very long molecule of DNA which are found in the nucleus of every plant and animal cell.

<sup>30</sup> J. Craig Venter, Mark D. Adams, Eugene W. Myers, Peter W. Li, Richard J. Mural, Granger G. Sutton, Hamilton O. Smith et al., “The sequence of the human genome.” *Science* 291, no. 5507 (2001): 1304.

“The selective and deliberate alteration of genes (genetic material) by man.”<sup>31</sup>

Or it can be defined in other words such as:

“This term has come to have a very broad meaning, including the manipulation and alteration of the genetic material (constitution) of an organism in such a way as to allow it to produce endogenous proteins with properties different from those of the traditional (historic/typical), or to produce entirely different (foreign) proteins altogether. Some other words often applicable to the same process are gene splicing, gene manipulation, or recombinant DNA technology (techniques).”<sup>32</sup>

It is common connotation that genetics and genetic engineering are recent inventions. Strictly speaking it is true. The study of genetics as a field of scientific innovation is not much more than the age of 100 years.<sup>33</sup>

It is not more than 50 years period that the idea of gene with its physical and chemical nature is known to the researchers. Again the potential of the scientists to make a direct change in the gene emerged after the half time of its invention. But it is worth mentioning that the informal study of genetics, and even genetic engineering, is as old as humankind. It has always been noticed by the people that family members with blood relations have similar looks or they tend to look alike with similar hair, complexion or eye color. Parents and children are seen to share sometimes specific traits or ways of behaving, for example acting or singing talent or cold or quick temper etc. It has also been observed that such a qualities pass down from one generation to the next. Observing such similarities can be denoted as seeing the

---

<sup>31</sup> Kimball, *Glossary of Biotechnology terms*, 108.

<sup>32</sup> Ibid, 109.

<sup>33</sup> Harry LeVine, *Genetic engineering: a reference handbook* (California: Abc-Clio Press, 2006), 32.



“genetics in action.” In the same way, the ancient herders and farmers had learnt that by breeding the animals or plants with desirable traits such as the ability to resist diseases or grow quickly, they could have more chances to get an offspring with those same traits. People were also aware of characteristics such as good health and strength even when they chose their own mates. In making decisions about mating and breeding, individuals were acting as unconscious genetic engineers. Scientists began investigating inheritance of traits more systematically in the mid-19th century.<sup>34</sup>

### 2.3.2 Cloning

Cloning is the process by which a genetically identical copy of a certain plant, animal or bacteria is produced by asexual reproduction. The word clone is derived from the Greek words “Klonos” or “Klwn” which mean “branch” or “twig”.<sup>35</sup> Many genetically identical clones are produced in like manner from the vegetables and fruits of desirable qualities and quantities.<sup>36</sup>

The term “clone” was coined by JBS Holdone, an eminent Scottish biologist and used in his speech titled “Biological Possibilities for the Human species of the next Thousand TenYears” in 1963. When a definition for “cloning” is sought out, it is observed that this word has been defined differently by various groups and organizations. A reference can be made to the definition made by the American Medical Association, which defines it as:

“The production of genetically identical organisms.”<sup>37</sup>

---

<sup>34</sup> LeVine, *Genetic engineering: a reference handbook*, 40.

<sup>35</sup> Allen D Verhey, “Cloning: Revisiting an old debate.” *Kennedy Institute of Ethics Journal* 4, no. 3 (1994): 227.

<sup>36</sup> Craig Venter, J., Mark D. Adams, Eugene W. Myers, Peter W. Li, Richard J. Mural, Granger G. Sutton, Hamilton O. Smith et al., “The sequence of the human genome.” *science* 291, no. 5507 (2001): 1348.

<sup>37</sup> [http://www.genomenetwork.org/articles/06\\_03/ama\\_cloning.shtml](http://www.genomenetwork.org/articles/06_03/ama_cloning.shtml): Last Assessed on: 20 July, 2017.

Somatic cell nuclear transfer (SCNT) refers to “the process by which a somatic cell nucleus is transferred into the existing body of a cell from which the nucleus was removed.”<sup>38</sup> It can be said that “Somatic cell nuclear transfer” (SCNT) is the origin of cloning technique. It is done by transferring nucleus of somatic cell into an ovum which has no nucleus at all. The whole process is regulated by optimizing all conditions.<sup>39</sup>

In recent years Nuclear transfer (NT) has emerged as one of the most challenging, interesting and important area in the field of science and technology. The process is carried out by transferring nucleus (from donor) to an a-nucleated ovum. Donor gives a somatic type of cell which has the ability to act as adult or embryonic cell instead of normal reproductive cells which are of germ type. A low potency electric pulse is used to generate fusion of oocyte and somatic cell so that a donor nucleus is introduced, it helps in development of embryo by increasing calcium ions mobility.<sup>40</sup>

So it can be concluded that the genotype of newly formed individual carries the characteristics of donor nuclei. And if we are taking a transgenic donor cell than the newly formed individual will also be a transgenic one. In the same way if donor cells are selected on the basis of certain genetic capabilities than it will really help in formation of clones with desired traits.<sup>41</sup>

A biological overview of the cloning in plants, animals and human beings is given under this chapter.

---

<sup>38</sup> [http://www.genomenetwork.org/articles/06\\_03/ama\\_cloning.shtml](http://www.genomenetwork.org/articles/06_03/ama_cloning.shtml).

<sup>39</sup> Enescu Aurelia et al., “Ethical Considerations on Human Cloning.” *Current Health Sciences Journal*, Vol 37, No. 03, (2011): 148.

<sup>40</sup> Anette Braun, Ann Bruce, Renate Gertz, Cecilia Oram, Jonathan Suk, Joyce Tait, Chris Warkup, and Bruce Whitelaw, “Animal Cloning and genetic modification: a prospective study.” *Institute for Prospective Technological Studies (IPTS)* (2005): 90.

<sup>41</sup> Ibid, 90.

## 2.4 Cloning in Plants (Plants Biotechnology)

Plant biotechnology is a new technology. While some argue that it is simply an extension of conventional plant selection and hybridization techniques. But it is important to mention without any denial that the genetically modified or transgenic crops work for the crop improvement. The application of advanced scientific techniques such as genetic engineering, molecular biology and others have made it conveniently possible for the plant breeders to identify, select and move genes from one plant to another through a more efficient, precise and faster process than conventional plant breeding techniques.<sup>42</sup>

Among the biological natural resources, plants have proved themselves to be the major source of food to human beings. Besides provision of food (crop plants), the plants have also contributed for the welfare of human beings with so many other attributes. They have contributed for a better quality of health, fiber production (for clothing purpose), energy and shelter or space like trees for house construction etc.<sup>43</sup>

Continuity of species completely depends upon reproduction, which is defined as “a biological process in which organisms give birth to their identical offsprings”. The process will continue and when these individuals become adults they will produce their own offsprings and the process goes on. We can say that it is a cycle with three major phases i.e. birth, development and death. We can also produce plants with desired characters by following asexual mode of reproduction in the fields of horticulture and agriculture. Another process called self-pollination also helps in production of such plants. But it can be a cause of reduction in genetic variability.<sup>44</sup>

---

<sup>42</sup> Jo Ann Beckwith, Timothy Hadlock and Heather Suffron, “Public perceptions of plant biotechnology: A focus group study.” *New Genetics and Society* (2003), 22.

<sup>43</sup> Ibid.

<sup>44</sup> Manbir Kaur Khalsa, “Different Techniques of Asexual Reproduction in Plants.” *Imperial Journal of Interdisciplinary Research (IJIR)* Vol.2, Issue-8, College of Pharmacy, Amritsar (2016): 1445.

In plants asexual reproduction is the process which involves single parent giving rise to offspring from a part of the plant other than the seed. In fact such plants have the ability to grow better when compared to those who grow by sexual type of reproduction as they have identical genetic makeup to their parents. Vegetative parts which reproduce have primary or secondary meristems (also known as undifferentiated cells) capable of active cell division and thus can give rise to new plants. It is of two types: 1. Natural vegetative propagation 2. Artificial vegetative propagation. Numerous and different types of roots exhibit vegetative reproduction naturally.<sup>45</sup>

There are two methods of plant propagation:<sup>46</sup>

Sexual propagation (seed) which entails the recombination of genetic material, resulting in progeny that is different from each other and from their parents and Asexual propagation (vegetative) where progeny are genetic copies of the parent plant and share the characteristics of the parent (clones).<sup>47</sup>

Vegetative propagation involves the complete coping of mother's genome. It becomes possible as plants contain meristematic cells that have the ability to give rise to such cells which are very important for the generation of whole new plant.<sup>48</sup>

A piece of plant leaf, root or shoot can grow to form a new plant that contains the exact genetic information of its source plant. The disparity and evolutionary is achieved by the sexual reproduction by seeds, on the contrary the vegetative

---

<sup>45</sup> Khalsa, "Different Techniques of Asexual Reproduction", 02.

<sup>46</sup> For details please see as Joseph D. Scianna, Susan R. Winslow, Mark E. Majerus, Lori M. Gruber, and Sam A. Reid, "Asexual Plant Propagation: Special Techniques and Considerations for Successful High Altitude Revegetation." In *USDA Natural Resources Conservation Workshop*, no. 13(21998): 110 states that Plant propagation is defined as the art and science of multiplication of plants by either sexual or asexual means. Sexual reproduction involves meiotic cell division that ultimately produce progeny (seedlings) with new or differing genotypes relative to their male and female parents.

<sup>47</sup> Roy Beckford, *Plant Propagation Methodologies: Agriculture & Natural Resources Agent* (University of Florida: IFAS Extension), 02.

<sup>48</sup> *Vegetative Tree Propagation in Agroforestry Training Guidelines and References*, eds. Hannah Jaenicke and Jan Beniest (Kenya: International Centre for Research in Agroforestry, Nairobi, 2002), 20.

propagation endeavors at the identical reproduction of plants with desirable features such as superior quality or high tolerance to biotic and/or abiotic stresses or high productivity etc. It is also an easy and convenient mode of continuing or transferring of a favored trait from one generation to the next. This was an old method and used especially for fruit trees even in biblical times. The most commonly used method for vegetative propagation includes stem and root cuttings, budding and grafting as well as a few techniques of layering and micro-propagation.<sup>49</sup>

### 2.4.1 Cutting

Vegetative part of a plant can be used as cutting in order to generate a new plant. This is done by taking a piece of stem and placing it in soil under optimum conditions with respect to nutrients and temperature etc. Soil which is used for this purpose should contain sand, moisture and peat moss. The cutting is transplanted to soil after roots have developed. One of the major benefits of cutting includes the production of plants which are completely identical to their parents. This technique can help to grow many types of plants including rose, sugarcane and coleus etc. Name of its type depends upon the part of plant used; like leaf cutting when leaves are used, root cutting when roots are used and stem cutting when we use stems etc. Few plants have specific names for their cuttings like in sugarcane stem cutting is called cane and in bamboo, it is known as culm cutting. Vegetative propagation can be done most commonly by using stem cuttings. This is a very simple technique which tends to produce a great reproduction with the help of only a limited area and a “single mother” or stock plant. A large number of ornamental plants are propagated this way.<sup>50</sup>

---

<sup>49</sup> Legesse Negash, “Successful vegetative propagation techniques for the threatened African pencil cedar (*Juniperus procera* Hochst. ex Endl.)” *Forest ecology and management* 161, no. 1-3 (2002), 54.

<sup>50</sup> Jaenicke, *Vegetative Tree Propagation*, 70.

Propagation by cuttings is the most widely used method of vegetative or asexual reproduction. For successful reproduction to occur, the severed plant part must develop those parts to make it a complete plant. A new root system must be developed by stem cuttings and root cuttings must develop a new shoot system. Likewise cuttings from leaves must produce both new root as well as the shoot systems. Stem cuttings are those taken from the stems of a plant. For this method of asexual reproduction, a grower inserts a portion of a stem, including a node, into a rooting medium. After several weeks, root formation occurs along the portion of stem in the rooting medium. The use of stem cuttings is a successful method for reproducing many types of ornamental plants, as well as several horticultural crops such as sweet potatoes, grapes, citrus and figs. This method is common for reproducing many ornamental and greenhouse plants.<sup>51</sup>

#### **2.4.2 Grafting and Budding**

Grafting is considered as the oldest method of asexual reproduction. This method had been practiced over two thousand years ago. Grafting in actual is the technique of combining two or more different plants. Ancient Roman, Greek and Chinese literatures also refer to grafting. It is said that an inference to it has been made in the Bible even. It has been estimated that more than one hundred methods of grafting were known and practised by the nineteenth century. The Greeks and Romans started grafting initially on the trees which were economically and culturally valuable such as citrus and olives etc. In later centuries, the European countries greatly practiced grafting of ornamentals, such as roses and of the many other plants imported from foreign countries into Europe. In the tropics, grafting is being practised on a

---

<sup>51</sup> *Sexual and Asexual Reproduction of Plants*, Performance of Technical Skills Related to Plant and Soil Science and Technology (Texas: A&M University, Instructional Materials Service), 06.

comparatively small scale i-e for producing commercially important trees trees only, which include citrus, mango, avocado and rubber etc. On the other hand, it is also used as a promising alternative to domesticate several under-utilized agroforestry tree species. Grafting is a labour intensive technique and it is among those methods of vegetative propagation which requires skilled and experienced people for successful and satisfactory results.<sup>52</sup>

Plant grafting is a procedure in which a small branch of a plant is inserted into the stem of a rooted plant of the same or similar species. Consequently both of the parts of the plants grow as one plant by any one of the biological methods such as fusion, organic union and insertion. The new plant will be a composite of the characteristics of both plants.<sup>53</sup>

On the basis of method of uniting two parts, grafting can be of following types:

(i) Tongue grafting: In this case the stock and scion have almost same diameter. They are given oblique or sloping cuts. A small notch is given to ensure perfect fixing of scion into stock groove. (ii) Wedge grafting: In this case also, the stock and scion have same diameter. But a 'V shaped notch is given the stock while scion is cut like a wedge. (iii) Crown grafting: In this case stock has a larger diameter than scion. Many scions are selected and all of them are grafted on a single stock. (iv) Side grafting: In this case, lateral or side cuts are made in stock. One scion is fitted in each lateral cut of stock.<sup>54</sup>

#### **2.4.2.1 Advantages of Grafting and Budding**

The methods of grafting or budding are considered beneficial for the below mentioned reasons.

---

<sup>52</sup> Vegetative Tree Propagation, Jaenicke, 70.

<sup>53</sup> Ibid.

<sup>54</sup> Khalsa, "Different Techniques of Asexual Reproduction", 03.

- i) For proliferating or multiplying such plants which can not be produced by sexual as well as other types of asexual propagation techniques.
- ii) For acquiring such type of plant that has the qualities of two different plants e.g. having flowers of one type and root system of another type.
- iii) For reducing the time in which a plant gets mature.
- iv) For repairing of damaged plant parts.
- v) For locating diseases caused by viruses.

In fruit trees we mostly use grafting and budding as a major method for vegetative propagation.<sup>55</sup>

### 2.4.3 Layering

The term layering is used for all types of propagation in which “roots are formed while the stem is still attached to the mother plant. Only after the root formation, the layer is detached and planted as a new plant.” Those plants which can not be grown by cutting can be produced by using a technique called layering. Layering beds were in use for many years and very intense hygienic practices are required to restrict the spread of different diseases and pests including viruses and nematodes. This method

---

<sup>55</sup> For details please see as G.N.M. Kumar, *Propagation of Plants by Grafting and Budding* (USA: A pacific Northwest Extension publication), 01 states that the major objective behind the method of grafting or budding is to multiply the plants which are identical (true-to-type) to the parent plant. Eventhough there are other methods of plant propagation which can be considered much simpler and easier than grafting and budding but still grafting and budding are used as the principal methods of propagation in certain plants such as fruit trees.

Grafting and budding are used as methods of choice to 1) propagate plants when relatively simpler methods such as stem cuttings, layering, or seeds are ineffective, climatic or soil conditions are unfavorable, or major modifications to plant architecture are needed; 2) change plant cultivars; and 3) repair damaged plants. For example, cuttings taken from mature fruit trees fail to root well since the ability to develop roots declines with advancing plant age. In addition, most fruit trees are cross-pollinated and therefore progenies seldom maintain the desirable characteristics of the parent plant. These methods can be used to make trees less vigorous and accommodate more plants per unit of land.



can be applied in almost all types of regions including temperate, cold and tropical one.<sup>56</sup>

Layering is the process in which any specific part of a plant is forced to form roots while it remains attached to the parent plant simultaneously. Air layering and ground layering are two common layering techniques. Air layering denotes the technique where the roots are forced to come from a stem, in the air i.e. outside the soil. The grower makes a cut on a part of stem which is above the ground and a moisture containing medium surrounds it. The area of stem with cut generates the root while the intact part of stem will remain attached to the base (which is a parent plant). On the other hand, ground layering is the process to allow extension of a part of a plant into the ground. In this technique the plant is covered with soil in order to make the root come out and a cut is made on the section of stem covered with soil, to make the root formation possible on the stem. Ground layering methods include simple layering, trench layering and mound layering. When the roots are developed on the stem in the area of the cut, the grower removes the rooted stem from the parent plant to form a new plant.<sup>57</sup>

Layering is a simple and uncomplicated method of asexual plant reproduction and it is deemed highly effective for propagating the plants which are difficult to reproduce by other methods. It is also a cost-effective method of plant propagation that makes it possible for the growers to come up with a great turn out in plants reproduction in a relatively short period with a less cost.<sup>58</sup>

---

<sup>56</sup> *Sexual and Asexual Reproduction of Plants*, IMS, 10.

<sup>57</sup> *Ibid*, 11.

<sup>58</sup> *Ibid*.

## **2.4.4 Micropropagation**

During the beginning of twentieth century, when the scientists observed the tendency of the plant cells to reproduce an entire plant in-vitro if the required minerals, hormones, sugars and vitamins etc are provided in adequate proportions and within specific conditions, the technique of micropropagation invented. In-Vitro propagation or micropropagation can be defined as: “The procedures to propagate plants from plant cells, tissues or organs under aseptic conditions in a controlled artificial environment.”<sup>59</sup>

The term “tissue culture”, which covers a wider aspect of culturing plant and animal cells, is also used for this type of propagation. Initially, the technique of tissue culture used to be performed as a pure academic research exercise in order to understand the secrets behind the growth and development of plant cells. But now, this technique is being used to produce large quantities of clean propagules (a vegetative structure that can become detached from a plant and give rise to a new plant, e.g. a bud, sucker, or spore).<sup>60</sup>

The developed countries host most of the commercial nurseries to produce propagules of various trees and crops. It is due to a number of reasons such as: the developing countries lack well-trained personnel, sufficient finances and awareness for the potential of micropropagation.<sup>61</sup>

### **2.4.4.1 Scientific Reasons to opt Micropropagation**

The key reasons to prefer the micropropagation of plants and trees can be:

- i) For multiplying a tree which cannot be multiplied by seed or conventional vegetative methods readily.

---

<sup>59</sup> Vegetative Tree Propagation, Jaenicke, 82.

<sup>60</sup> Ibid.

<sup>61</sup> Ibid.

- ii) For swiftly propagating large quantities of propagules of better-quality trees.
- iii) For cleaning pathogen infected clonal plant material.
- iv) For revivifying older trees through repeated in-Vitro micrografting.
- v) For increasing pathogen-free propagules for the growers.<sup>62</sup>

### **2.4.5 Several Important Advantages of Asexual Reproduction**

Asexual or vegetative reproduction offers growers several important advantages over sexual reproduction: For instance;

- i) Asexual reproduction produces individuals that are genetically identical to the parent plant.
- ii) Advantages of asexual reproduction include an increased rate of maturity and a sturdier adult plant.
- iii) Asexual reproduction can take place by natural or artificial means.
- iv) It is easier, cheap and a speedy method of propagation.
- v) Superior quality fruits or flowers can be produced by this method of propagation.
- vi) Preservation of desirable characteristics is possible.
- vii) By this method, a large number of disease free identical plants can be grown in a very short time.
- viii) The elimination of the dormancy period (which is an essential requisite) for the juvenile stage of plant or seed growth and allows the plants to reproduce and mature quickly.<sup>63</sup>
- ix) Owing to the controlled environmental conditions disease-free stock plants are produced. Even the reproduction of the plants is possible which do not produce the viable seeds or the reproductive parts. Bananas, seedless grapes,

---

<sup>62</sup> Vegetative Tree Propagation, Jaenicke, 82.

<sup>63</sup> Khalsa, Different Techniques of Asexual Reproduction, 05.

sugarcane, navel oranges and certain sterile hybrid grasses are examples of crops that do not produce viable seeds. There is no other option except reproducing such crop species vegetatively. Without any means of vegetative reproduction of these plants they would be lost completely.

- x) Where desired characteristics are wanted, the plant selection for this technique is more reliable.<sup>64</sup>

#### **2.4.6 Possible Disadvantages of Vegetative Propagation**

- i) Most of the times Unwanted characteristics cannot be eliminated from plants.
- ii) When plants are grown repeatedly they may lose vigor.
- iii) The plants may become susceptible to diseases.
- iv) Vegetative parts of a plant such as root, stem leaves, bulbil etc can not be preserved for longer periods as they are easily attacked by the pathogens.<sup>65</sup>

### **2.5 Animal Cloning**

Clone is defined as “genetically identical individual grown from a single donor cell.” Since 1980’s mammals were cloned including sheep and mice etc. In 1996, a sheep called Dolly was cloned by using somatic or non-reproductive cells at Roslin institute in Edinburgh. After that many other mammals including cows, pigs, mice and cats have also been cloned successfully.<sup>66</sup>

Nuclear transfer is involved in cloning. It occurs in such a way that the cell which is to be cloned is inserted into egg without having any nucleus (enucleated). Electric current is used to fuse the recipient cell and donor nucleus; it allows the development

---

<sup>64</sup> *Sexual and Asexual Reproduction of Plants*, IMS, 04.

<sup>65</sup> Khalsa, *Different Techniques of Asexual Reproduction*, 05.

<sup>66</sup> Gina Kolata, *Clone: The road to Dolly and the path ahead*, (London: Penguin Books Ltd, 1997), 18.

of embryos. The organism which is formed as a result is clone of organism from which donor cell was taken.<sup>67</sup>

There are few techniques which have the ability to make transgenesis accurate and cost effective clones, nuclear transfer is one of them. A term called “targeted genetic modification”, describes a phenomenon which can be possible if cells are modified and cultured before transferred to eggs (without nucleus). Another important benefit of this technique is that it has the ability of self-screening i.e. incorrectly integrated cells and those who are not transgenic get rejected.<sup>68</sup>

So we can say that cloning is the most efficient technique that can induce genetic modifications in mammals in a relatively cheap manner. But it is also a fact that there are some very significant problems which are associated with the technique that should be resolved before its implementation on practical levels. For example; not only the abortion rates are quite high among cloned embryos but also those who are born carry severe health defects.<sup>69</sup>

Animal cloning is a process which can be defined in the following words: “Cloning in this context relates to the production of animals through transfer of the genetic material from one donor cell to a recipient unfertilized oocyte that has had its nuclear DNA removed (enucleation). This process is also known as somatic cell nuclear transfer (SCNT). Through the use of several individual cells from a given unique source and an equivalent number of recipient oocytes, several cloned animals can be produced.”<sup>70</sup>

---

<sup>67</sup> Kolata, *Clone: The road to Dolly*, 35.

<sup>68</sup> Jay Rutovitz and Sue Mayer, *Genetically Modified and Cloned Animals: All in a Good Cause?* (UK: GeneWatch UK, 2002), 10.

<sup>69</sup> Jose B Cibelli, Keith H. Campbell, George E. Seidel, Michael D. West, and Robert P. Lanza, “The health profile of cloned animals.” *Nature biotechnology* 20, no. 1 (2002): 13.

<sup>70</sup> Braun, Bruce, Gertz, Oram, Suk, Tait, Warkup and Whitelaw, “Animal Cloning and genetic modification”, 10.

Despite the efforts and expertise put with full sincerity to carry out successful experimentation the ratio of success in animal cloning is extremely low. Dolly was a successful experiment after many failed attempts.<sup>71</sup>

### **2.5.1 Cloning Timeline**

The cloning timeline is briefly and concisely given below:

1950s: In the United States, Robert Briggs and Thomas king clone frogs using nuclei from embryonic cells.

1962: British scientist John Gurdon clones frogs using nuclei from adult intestinal cells.

1984: Steen Willadsen, a Danish researcher, reports cloning a sheep using the nucleus from an embryonic cell.

1996: In Scotland, Ian Wilmut clones Dolly, a sheep made from an udder cell.

1998 A Honolulu group, led by Teruhiko Wakayama, reports the production of a large number of live mice by injecting nuclei taken from adult ovarian cells into egg cells with the nucleus removed. These investigators also report success in recloning the first clones. A Japanese group, led by Yoko Kato, produce eight calves from various cells derived from one adult donor.<sup>72</sup>

2001: Konrad Hochedlinger and Rudolph Jaenisch clone mice from white blood cells. All the cells in the mouse's progeny have the cells' signature genes.

2002: George Daley and Rudolph Jaenisch use nuclear transfer to make an embryonic cell line from a mouse with an immune disorder. By replacing the defective gene with

---

<sup>71</sup> Cibelli, Campbell, Seidel, West, and Lanza, "The health profile of cloned animals", 15.

<sup>72</sup> Robert G McKinnell and Marie A. Di Berardino, "The biology of cloning: history and rationale." *BioScience* 49, no. 11 (1999): 878.

a healthy one, they make blood-forming cells from the embryonic line. When transplanted, the healthy cells partially restore the mouse's faulty immune system.<sup>73</sup>

2003: Death of Dolly.<sup>74</sup>

### 2.5.2 Transgenic Animals

The agriculture researchers invest a great deal of interest in cloning livestock such as pigs, cows, goats, sheep and poultry for a number of purposes including the breeding of "valuable" animals in order to have their copies. Farmers have always been using the best animals for the breeding and other purposes but now they prefer to use genetically best animals to secure the desired genetic characteristics from the parent animals to their offsprings. The genetically required characteristics may include high milk or meat production, fast growth of animals or producing offspring that will have similar qualities. By adopting such method of reproduction, the researchers think that the farmers can extend their reproductive potential and whole herds or flocks of animals can be created with the required and uniform characteristics.<sup>75</sup>

Cloning is also used to produce copies of transgenic animals.<sup>76</sup>

---

<sup>73</sup> G. McKinnell and Di Berardino, "The biology of cloning", 878.

<sup>74</sup> Christopher Thomas Scott and Irving L. Weissman, *From Birth to Death and Bench to Clinic: The Hastings Center Bioethics Briefing Book for Journalists, Policymakers and Campaigns*, ed. Mary Crowley, (Garrison, NY: The Hastings Center, 2008), 27.

<sup>75</sup> D. Camara, Dimitrova Ir, M. Doynova, L. Jachacz, D. Kachakova, M. Kepka, C. B. Ould Isselmou, J. P. Vorniere, Yungarva Tsv, and Agro campus Rennes, "Transgenic and cloned animals: Ethical Problems?." *EU SOCRATES ERASMUS European Community* (2008): 18.

<sup>76</sup> For details please see as Wilfried A. Kues and Heiner Niemann, "The contribution of farm animals to human health." *TRENDS in Biotechnology* 22, no. 6 (2004): 290 states that transgenic animals are those animals who have been engineered with genes from another species in order to have better traits for production. These traits may include: faster growth, Meat or Milk products with more health benefits to humans, disease resistance, to produce pharmaceuticals in the milk, urine, blood, or semen or to produce organs or tissues for transplantation into humans (xenotransplantation). It is suggested that generation and proliferation of transgenic animals has the potential to become the major application of cloning technology, if animal cloning is approved. Cloned animals offer the researchers an opportunity to compare genetically identical animals. This comparison can be of great help to have precise knowledge of certain biological processes in the organisms of animals.

In 1970s, for the first time genetically modified mammal (mice) were produced. Few years later in 1982 genetically modified proteins of mouse were also generated known as “rat growth hormone”, which play a very prominent role in enhancement of body size in mouse. From the year 1970 to 2000 about 575,000 transgenic mice were produced in various laboratories of UK. Other than mice many other animals including rabbits, fish, guinea pigs, sheep, cow and chickens etc were also used to carry out different genetic modifications.<sup>77</sup>

Successful experimentation on them carves a pathway capable to answer many human problems. Scientists are becoming capable of synthesizing variety of drugs for the treatment of diseases and increasing production of single cell proteins to cope with food shortage. Selective breeding helps in the production of species which are beneficial in all means as compare to their ancestors. Genetic modifications help in a more rapid and accurate extension of selective breeding.<sup>78</sup>

Introduction of genetic modifications into mammals (other than mice) is an extremely expensive process. While taking an example of calf we came to know that production of only one transgenic baby calf worthed about \$300,000. So the production of drugs, medicines and proteins is considered as the only major aspect focused by the scientists.<sup>79</sup>

Reproduction mechanism in all birds including chickens is quite different as compared to mammals, so the techniques involved in genetic modification of chickens is extremely unsuitable for the mammals. Ovulation in hens occurs on daily basis and eggs get fertilized in the oviduct by taking no time. In a fully mature egg approximately 60,000 cells are present, so microinjection is considered as very

---

<sup>77</sup> Robert G., A. and Di Berardino, “The biology of cloning: history and rationale” , 880.

<sup>78</sup> Rutovitz and Mayer, *Genetically Modified and Cloned Animals*, 09.

<sup>79</sup> Andrew J. French, Samuel H. Wood, and Alan O. Trounson, “Human Therapeutic Cloning: Healing begins with a single cell.” *Stem Cell Reviews* 2 (2006): 02.



inappropriate to produce transgenic birds. The method successfully helps in production of GM chickens is Retroviral transfection. Culture modification of primordial germ cells, is also a technique which is becoming popular in production of genetically modified chickens.<sup>80</sup>

### **2.5.3 Genetic Modification Techniques**

A number of different methods are used for introduction of genetic modifications including viral transfection, microinjection and manipulation of embryo stem cells. Few sperm mediated techniques are also applied by the scientists. Cloning or nuclear transfer also comes under the heading but they are specifically related with the production of genetically identical animals. Genetic material of each cells is composed of very complex molecules i.e. deoxyribo nucleic acid (DNA). DNA is present in the form of small sequences known as “genes”, which are responsible for coding variety of proteins. Proteins play variety of roles inside the body of organisms, they may be structural or functional as both of the sides are very crucial for maintenance of life.<sup>81</sup>

The process involved in the genetic modification of an organism includes the following major steps:

- a) Selection of gene of interest
- b) Insertion of this gene of interest into the host cell genome (DNA)
- c) Integration of this foreign gene (gene of interest) into the host's genome and its expression.

---

<sup>80</sup> Jon Lyall, Richard M. Irvine, Adrian Sherman, Trevelyan J. McKinley, Alejandro Núñez, Auriol Purdie, Linzy Outtrim et al., “Suppression of avian influenza transmission in genetically modified chickens.” *Science* 331, no. 6014 (2011): 225.

<sup>81</sup> R. Ian Freshney, *Culture of animal cells: a manual of basic technique and specialized applications* (USA:John Wiley & Sons, 2015), 03.

d) Synthesis of desired protein, encoded by that gene of interest.<sup>82</sup>

This is an example of addition of new gene and production of product (like protein), unwanted genes can also be deleted also in the same manner, known as “gene knock out.”<sup>83</sup>

### **i) Microinjection**

Pronuclear injection also known as microinjection is considered as one of the most applicable method involved in the production of genetically modified organisms. In this process foreign DNA is inserted/ injected in the nucleus of single cell embryo with the help of a minute needle. About 200-500 copies of gene construct are injected into each embryo. With the exception of mice the inserted embryo is then cultured in vitro for 24 hours. After completing these 24 hours of incubation it is implanted into a “pseudopregnant surrogate mother.” While in mice this type of pseudopregnancy is attained by mating with sterile males.<sup>84</sup>

This technique is not pretty suitable for poultry as it is very difficult to get access to the fertilized egg especially when it is at single cell stage, this step is very crucial for any genetic modification. So in poultry a process called “viral transfection” plays it role to produce genetically modified organisms.<sup>85</sup>

Introduction of modifications on genetic level in animals (including large farm animals) is not only difficult but also very random and uneconomical. Percentage of successfully transgenic animals indicates that the success rate in Rat is recorded

---

<sup>82</sup> Phill Macnaghten, “Animals in their nature: A case study on public attitudes to animals, genetic modification and nature.” *Sociology* 38, no. 3 (2004): 534.

<sup>83</sup> Macnaghten, “Animals in their nature”, 534.

<sup>84</sup> Jon W. Gordon, George A. Scangos, Diane J. Plotkin, James A. Barbosa and Frank H. Ruddle, “Genetic transformation of mouse embryos by microinjection of purified DNA.” *Proceedings of the National Academy of Sciences* 77, no. 12 (1980): 7382.

<sup>85</sup> Ibid.

highest i.e. 3%, for Mouse 3%, for Goat 1%, for sheep and pig 0.9% and for cattle it is estimated as 0.7%.<sup>86</sup>

## ii) Viral transfection

In this technique, Viruses and Retroviruses are used as “Vectors.” Vectors help in insertion of foreign genetic materials into the host genome as they have the ability to penetrate inside the host DNA. Thousands of retroviruses are in common use in order to get GM organisms. Transgenic mice were first produced in 1976 adapting the same methodology. This technique plays a very important role in poultry due to unsuitability of microinjection.<sup>87</sup>

There are many types of retroviruses which are involved in the transfer of genetic material into different organisms like pigs, sheep and chicken etc. One such virus is “Moloney Leukaemia Virus”, it is able to cause lymphoid leukemia in rats and mice etc.<sup>88</sup>

Two different types of viruses are commonly used, first the normal ones (replication competent) which have the ability to infect more than one cell (repeated infection) and the other type in which defective viruses are used which are able to infect the cell only once. Replication competent viral vectors are dangerous and there are many safety concerns with the use of them because they have the ability to infect variety of broad range of hosts. They even combine with wild type virus and as a result a completely new pathogen can emerge.<sup>89</sup>

---

<sup>86</sup> *Scientific and Medical Aspects of Human Reproductive Cloning*, National Academy of Sciences (US), National Academy of Engineering (US), Institute of Medicine (US) and National Research Council (US) Committee on Science, Engineering, and Public Policy (Washington (DC): National Academies Press (US), 2002), 04.

<sup>87</sup> Tae Kyung Kim and James H. Eberwine, “Mammalian cell transfection: the present and the future.” *Analytical and bioanalytical chemistry* 397, no. 8 (2010): 3175.

<sup>88</sup> Ibid.

<sup>89</sup> Ibid.

But in spite of all the benefits there are some drawbacks also. For example: only a limited amount of DNA can be inserted into the viral genome and replication of viral vectors cannot occur in early embryo cells. So the ratio of offspring which inherit the transgene is very low as compared to the normal reproduction.<sup>90</sup>

### **iii) Embryonic Stem Cell Modification**

It is also an important technique used to carry out genetic modification. So far the scientists have successfully isolated such type of cells from few strains of mice. Blastocysts, very early embryos are used to extract these ES cells. ES cells have the ability to develop into any cell in the organism, under the optimized culture conditions. A lot of important selective modifications can be carried out by using this technique, not only in terms of addition of desired genes but also for the deletion of unwanted genes i.e. “knocked out strategy.”<sup>91</sup>

### **iv) Sperm Mediated Transfer**

One of the very important and effective ways of introduction of foreign DNA into host includes use of genetically modified sperms. Such sperms are used as vectors for the transfer of desired genes. By doing in-Vitro fertilization, modified sperm is allowed to fertilize egg. This technique is successfully used since 1989. Large number of genetically modified mice have been produced by applying it. Another technique called “Intra Cytoplasmic Sperm Injection” is an extension of the above modification process; due to its highly complicated nature it is less applicable on livestock.<sup>92</sup>

---

<sup>90</sup> Clare E. Thomas, Anja Ehrhardt and Mark A. Kay, “Progress and problems with the use of viral vectors for gene therapy.” *Nature Reviews Genetics* 4, no. 5 (2003): 346.

<sup>91</sup> Gordon Keller, “Embryonic stem cell differentiation: emergence of a new era in biology and medicine.” *Genes & development* 19, no. 10 (2005): 1135.

<sup>92</sup> Kevin Smith and Corrado Spadafora, “Sperm-mediated gene transfer: Applications and implications.” *Bioessays* 27, no. 5 (2005): 558.

## **v) Localized Gene Transfer**

Somatic gene therapy or in vivo transfection are the names used for a technology called “Localized gene transfer”, the main objectives of this technology include the introduction of genes into the organisms to generate protein of different kinds. In this method it is not necessary for the introduced gene to be incorporated into germ line and also the expression of transgenic protein is not permanent. A viral vector is used for this purpose but viral vectors are also associated with many safety issues. Particle bombardment of plasmid is also a method used for transfection.<sup>93</sup>

### **2.5.4 Important Issues related to use of Animals with Respect to Cloning and other Genetic Modifications**

#### **i) Animal Welfare**

There are some moral rules or “few moral laws” that have been followed in Europe and UK, according to those the use of animals should be allowed only in a condition when there is no other suitable substitute. This can be explained by a “3 Rs” approach proposed by Russell and Burch in 1959.<sup>94</sup>

It consists of 3 important terms:

- i) Replace (replacement of animals with suitable nonliving substances).
- ii) Reduce (maximum reduction in number of animals used for experimentation).
- iii) Refine (betterment or advancement of experimental procedures to such an extent that reduces the sufferings faced by the animals).<sup>95</sup>

---

<sup>93</sup> Ronald L. Klein, Wen-Lang Lin, Dennis W. Dickson, Jada Lewis, Michael Hutton, Karen Duff, Edwin M. Meyer, and Michael A. King, “Rapid neurofibrillary tangle formation after localized gene transfer of mutated tau.” *The American journal of pathology* 164, no. 1 (2004): 350.

<sup>94</sup> William Russell, Moy Stratton, Rex Leonard Burch, and Charles Westley Hume, “The principles of humane experimental technique.” *Johns Hopkins Center for Alternatives to Animal Testing (CAAT)* (1959): 04.

<sup>95</sup> Ibid.

There are a lot of processes that help in new recombination of chromosomes called “Mutations.” Mutations can be random or directed depending upon the circumstances facing by the organism. Change in the genomic content can also be generated by phenomenon like chromosome deletion, inversion and translocation. Gene damage is another factor which is mainly responsible to cause abnormalities, this can be explained by taking an example of mice in which abnormality in bones like absence or in some cases fusion of radius, ulna, tibia and fibula can take place. While some mutations in chromosome rearrangement can also cause infertility among mice.<sup>96</sup>

Also there are many ghost mutations that are not detectable as they cause death of embryo sometimes or can also produce internal complications like problems in breathing and pain in bones and joints etc. Such genetic modifications cause a lot of preinatal deaths than the normal.<sup>97</sup>

There are many proved damaging effects of transgene expression including sterility and enhanced production rate of growth hormone that will in return cause huge damage of organs like liver, heart and kidneys. Transgenic promoters also have destructive effects in few species like in pigs. Also there are huge chances of cancer infliction in genetically modified organisms.<sup>98</sup>

Data shows a worst side of technology that only 7% goats and 5% cattles can be successfully borne from microinjected embryos as transgenic organisms. In mice the ratio is much higher i.e. 30%. Hence the opponents conclude that genetic

---

<sup>96</sup> I.A. Adzhubei, S. Schmidt, L. Peshkin, V.E. Ramensky, Gerasimova, P. A., Bork, A.S Kondrashov and S.R. Sunyaev, “A method and server for predicting damaging missense mutations.” *Nature methods*, 7(4), (2010), 248.

<sup>97</sup> Russell, Stratton, Burch and Hume, “The principles of humane experimental technique”, 04.

<sup>98</sup> Adzhubei, Schmidt, S., Peshkin, V.E., Gerasimova, Bork, Kondrashov, and Sunyaev, “A method and server for predicting damaging missense mutations.” *Nature methods*, 7(4), (2010): 248.

modifications are great risk for the welfare of animals. High level advancement is required in this concern that allows betterment of procedures and reduces the risk.<sup>99</sup>

## **ii) Laboratory Animals**

There is a huge difference between therapeutic and agricultural animals in all respects, for human the value of both differs greatly and both of them are also treated in different ways. Agricultural animals are provided with maximum possible facilities in farms to minimize their sufferings while this is not the condition suitable for laboratory animals as they are intentionally projected into painful experimentation in order to fulfil the research requirements. Several such experiments like determination of lethal dose for any poison or toxicity rate evaluation for any chemical is carried out by giving intentional harm to the laboratory animals.<sup>100</sup>

Mice and rats are the most common laboratory animals. Thousands of experiments are carried out on them yearly throughout the world. Few others like rabbits and guinea pigs are also good candidates. Sometimes for research purpose mice are used in such a way that an intentional harm is given to them, like their introduction to cancer producing genes or exposure to radiations which are able to cause mutations etc. Breeding of such organisms that have destructive genes or are susceptible to diseases is the practice only done on laboratory organisms.<sup>101</sup>

One of the major benefits that are achieved by experimenting with laboratory animals is the study of different biological processes and reactions inside the body of mammals. So in other way they provide indirect knowledge about the systems or processes of human body as humans are also mammals.<sup>102</sup>

---

<sup>99</sup> Sunyaev, "A method and server for predicting damaging missense mutations", 248.

<sup>100</sup> National Research Council, *Guide for the care and use of laboratory animals* (U.S.A: National Academies Press, 2010), 30.

<sup>101</sup> Ibid.

<sup>102</sup> Ibid, 33.

Transgenic techniques not only make scientists able to study about the functions of genes and their abnormalities but they also provide knowledge about the deletion of any particular gene from the genome of an individual, called “knock out” strategy. So we can say that it is very difficult or nearly impossible to find an appropriate alternate that is able to replace laboratory animals, as they are the only subjects which can successfully provide with the knowledge about human anatomy and physiology.<sup>103</sup>

### iii) Pharming

This phenomenon helps in production of not only medicines and drugs but also involves in synthesis of foreign proteins in milk of animals that are genetically altered (i.e. transgenic). Many important human proteins like insulin are successfully manufactured by using different techniques including bacterial systems and mammalian cell cultures. Due to simplicity of the nature bacterial systems are more efficient and easy to deal with. But it's also a fact that bacterial systems are not able to generate human proteins which are structurally and functionally completely active, like in bacterial systems no post transcriptional modifications (glycosylation etc) occur. So the interest automatically shifts towards the mammalian cell cultures in order to get desired results.<sup>104</sup>

A huge number of proteins are now successfully synthesized by using mammalian cell cultures like erythropoietin, tissue plasminogen activator, human growth hormone as well as many antibodies etc.<sup>105</sup>

Not only animals but also transgenic plants are used for the enhanced production of therapeutic proteins. Vast variety of antibiotics and vaccines are successfully

---

<sup>103</sup> *Guide for the care and use of laboratory animals*, 30.

<sup>104</sup> Loic Faye, Aurelia Boulaflous, Meriem Benchabane, Véronique Gomord, and Dominique Michaud, “Protein modifications in the plant secretory pathway: current status and practical implications in molecular pharming.” *Vaccine* 23, no. 15 (2005): 1774.

<sup>105</sup> *Ibid.*



produced by taking transgenic plants as a substrate. They are very cost effective in this concern as compared to transgenic animals. Despite of all the benefits transgenic plants also pose serious environmental risks. Also there are chances of consumption of such plants by animals and even humans which can be disastrous.<sup>106</sup>

While talking about the safety concerns in humans by using pharmaceutical products produced by transgenic plants and animals there are two major possibilities. First one is transmission of diseases from one specie to another and the second is retarded production of few novel proteins in genetically modified organisms due to their mutations or genetic modifications. So one can conclude that no doubt production of new pharmaceutical products has brought great revolution in the field of medicine but it is also necessary to pass each new invention through critical evaluation process before it gets available for use by the people.<sup>107</sup>

#### **iv) Agriculture**

One of the major objectives behind the production of transgenic animals is synthesis of pharmaceutical products but in many laboratories around the globe transgenic animals like pigs, sheep and cows etc are also used for agricultural purposes. One important modification in this respect is enhancement of disease resistance among them.<sup>108</sup>

Need to produce such transgenic animals that have the ability to increase productivity up to the several folds reflects a suitable solution for food shortage due to increasing population. Milk and meat production can be increased by this at exponential rates.<sup>109</sup>

---

<sup>106</sup> Alexander Kind and Angelika Schnieke, "Animal pharming, two decades on." *Transgenic research* 17, no. 6 (2008): 1030.

<sup>107</sup> Ibid.

<sup>108</sup> Amy L. Way, "Transgenic Animals in Agriculture." *NACTA Journal* 46, no. 3 (2002): 59.

<sup>109</sup> Ibid, 60.

Initially scientists had done several experimentations to synthesize such transgenic animals that have the ability to show high milk and meat ratios. First transgenic pigs encounter with many health issues like liver and kidney damage, stomach ulcers, pneumonia, loss of coordination, degenerative joint disease, damaged vision, loss of libido and diabetes. Few other research groups prove that transgenesis enhance the growth without any detrimental effects. In Japan researchers have produced a group of genetically modified pigs that have a gene of spinach FAD2 inside their bodies, this gene is responsible for extremely fast fat metabolism which helps to produce pigs with high meat and less fat content.<sup>110</sup>

Other than meat production, enhancement in wool production is also carried out successfully by introducing foreign genes of protein cysteine into the bodies of sheep. Such experiments were first reported in Australia and New Zealand. The second way to increase wool production in sheep is by introducing insulin like growth factor.

Another important factor after enhancement of meat and wool is milk production among cattles. This brings great revolution in dairy industry.

Three major benefits in this concern include:

- i) Humanization of milk.
- ii) Increasing the protein content of milk.
- iii) Decreasing lactose content of milk.<sup>111</sup>

---

<sup>110</sup> Stella G. Uzogara, "The impact of genetic modification of human foods in the 21st century: A review." *Biotechnology advances* 18, no. 3 (2000): 180.

<sup>111</sup> *Ibid*, 200.

Development of vaccines and diagnostic tests have also become possible by using transgenic organisms. Increasing resistance to Avian Leukosis Virus (ALV)<sup>112</sup> by using transgenic viruses is an example to it.<sup>113</sup>

Production of transgenic animals for agricultural purposes is still in experimental phase, but scientists are trying to do developments in this concern in order to make it possible to implement them beyond laboratory scale. But up till now there are many health related issues of such modified animals which should be resolved first.<sup>114</sup>

### **v) Xenotransplantation**

It is term which involves the transfer of tissues, organs and cells between species and from animals to humans. This technique provides assistance for minimizing the shortage of human organs for transplantation. But the main hurdle in this respect is that human immune system detects the foreign organ immediately and activates defensive mechanism against it, so advanced genetic modifications are required for animal organs to mimic humans. Most of such experiments are carried out on pigs.<sup>115</sup>

Difference of number between organs donated by people and quantity of people who are in waiting list to get them, is quite high. This phenomenon is described as “organ gap”, scientists conduct different experimentations to reduce this gap or difference.

---

<sup>112</sup> Avian For details please see as Payne, L. N., S. R. Brown, N. Bumstead, K. Howes, Judith A. Frazier, and Margaret E. Thouless. "A novel subgroup of exogenous avian leukosis virus in chickens." *Journal of general virology* 72, no. 4 (1991): 801-807 states that "Avian sarcoma leukosis virus is an endogenous retrovirus that infects and can lead to cancer in chickens; experimentally it can infect other species of birds and mammals."

<sup>113</sup> D. E. Bauman, I. H. Mather, R. J. Wall, and A. L. Lock, "Major advances associated with the biosynthesis of milk." *Journal of dairy science* 89, no. 4 (2006): 1235-1243.

<sup>114</sup> Louis-Marie Houdebine, "Production of pharmaceutical proteins from transgenic animals." *Journal of biotechnology* 34, no. 3 (1994): 269-287.

<sup>115</sup> AbdAllah S. Daar, "Ethics of xenotransplantation: animal issues, consent, and likely transformation of transplant ethics." *World journal of surgery* 21, no. 9 (1997): 975-982.

There are many hurdles in the way of xenotransplantation, one of the main barriers is “organ rejection.”<sup>116</sup>

The reactions involved in the rejection of organs are of three distinct types:

- i) Hyperacute rejection (immediate refusal of foreign organ by the body and in response to this rejection a series of damaging reactions).
- ii) Delayed rejection (role of antibodies and few other cells in response to foreign organ).
- iii) Cell mediated rejection (immune system of the body directly attacks the foreign organ and destroys it)<sup>117</sup>

This could be overcome by variety of means like reducing the efficiency of immune system by giving immunosuppressants to the patients so that the body becomes unable to recognize transplanted organ as foreign. Another way involves the introduction of human protein genes like CD55 and CD59, both of these have the ability to inhibit the complement system.<sup>118</sup>

Pigs are considered as the most appropriate candidates to take as donors, for as their organs are in a size comparable to human organs. Use of pigs nervous tissues for the treatment of Parkinson’s disease and pancreatic islet cells to treat diabetes are also under investigation.<sup>119</sup>

### **2.5.5 Animal Cloning and Ethical Concerns**

Such experimentation on animals that involve their genetic modification is considered highly unacceptable in the light of moral and ethical values. There are different categories of people related to this, according to some of them use of animals in

---

<sup>116</sup> Fritz H. Bach, Hans Winkler, Christiane Ferran, Wayne W. Hancock and Simon C. Robson, “Delayed xenograft rejection.” *Immunology today* 17, no. 8 (1996): 379-382.

<sup>117</sup> Ibid, 382.

<sup>118</sup> Ibid.

<sup>119</sup> D. K. C. Cooper, Y. Ye, L. L. J. Rolf, and N. Zuhdi, “The pig as potential organ donor for man.” In *Xenotransplantation*, Springer, Berlin, Heidelberg (1991): 490.

scientific experimentation is totally unfair while in others point of view humans are the most superior creature and can use any other organism for their own well-being.<sup>120</sup>

According to a moral philosophy called “utilitarianism” it’s important to consider all actions and their consequences in such a manner that maximum people will get massive benefit through it. In this respect genetic modifications are only analyzed by means of their cost and benefits rather than evaluating their moral and ethical aspects. Many things which are unacceptable morally are justified by means of utilitarianism, like the use of dead human bodies for medical or scientific experimentations. The emergence and success of transgenic technology provide new avenues to strengthen the relationship between animals and humans. Now we can easily transform the animals and can also create completely new species to fulfill our requirements and get maximum benefits. Advancement in animal farming also intensifies the relationship between animals and human beings.<sup>121</sup>

The critics (mainly ethicists and religious scholars) argue that the genetic modifications should only be allowed if there is no other way to achieve such goals which are extremely beneficial for mankind, as unnecessary alteration in animals can cause direct interruption in ecosystems by putting false impact on nature’s balance.<sup>122</sup>

---

<sup>120</sup> Marie A. Di Berardino, “Animal cloning: The route to new genomics in agriculture and medicine.” *Differentiation* 68, no. 2-3 (2001): 67-83.

<sup>121</sup> Harry, *Genetic engineering*, 18.

<sup>122</sup> Ibid.

## **2.6 Human Cloning**

### **2.6.1 Types and Process of Human Cloning**

Human cloning can be divided into three basic types according to the techniques applied by them and the scope.<sup>123</sup>

#### **i) Reproductive Cloning**

This is an Asexual reproductory technique. This technique has been used to clone endangered species, agricultural animals and domestic pets and primates recently. So far it has not been practiced over the humans. The scientific and religious communities reject the use or anticipation of application of therapeutic cloning for the pursuit of human reproductive cloning. As far as its legal position is concerned, it can clearly be stated that this type of cloning is decalred as “illegal” in many countries.<sup>124</sup>

#### **ii) Therapeutic Cloning**

Therapeutic cloning refers to the removal of a nucleus, which contains the genetic material, from virtually any cell of the body (a somatic cell) and its transfer by injection into an unfertilized egg from which the nucleus has also been removed. The newly reconstituted entity then starts dividing. After 4-5days inculture, embryonic stem cells can then be removed and used to create many embryonic stem cells inculture. These embryonic stem cell “lines” are genetically identical to the cell from which the DNA was originally removed.<sup>125</sup>

#### **iii) DNA Cloning (Recombinant DNA Technology)**

DNA Cloning can be done by two techniques. Cell- based: Under this type of cloning the DNA fragment is cut off from the chromosomal DNA by using restriction

---

<sup>123</sup> L.R. Sanchez-Sweatman, “Reproductive cloning and human health: an ethical, international, and nursing perspective.” *International Nursing Review* 47, no. 1 (2000): 28.

<sup>124</sup> Finn Bowring, “Therapeutic and reproductive cloning: a critique.” *Social science & medicine* 58, no. 2 (2004): 405.

<sup>125</sup> Ibid, 403.

enzymes and it is attached to a plasmid that has been cut using the same restriction enzymes (this allows for the easy attachment of the foreign gene). Once the gene of interest is joined with its vector (vector is an agent that can carry a DNA fragment into a host cell) it is called a recombination DNA molecule. The type of vector differs in each situation and it can be in the form of bacterial plasmids, viruses, bacteria and artificial chromosomes etc.<sup>126</sup>

**Polymerase Chain Reaction:** The polymerase chain reaction technique is used in research laboratories and doctor's offices. This is widely used because of the ability of DNA-copying enzymes to remain stable at high temperature. In this technique when all cells divide, enzymes called polymerases make a copy of the entire DNA in each chromosome. The first step in this process is to "unzip" the two DNA chains of the double helix. As the two strands separate, DNA polymers make a copy using each strand as a template. The major advantage of this technique is that it is faster than cell based technique and a very small amount of target DNA is used.<sup>127</sup>

It is important to mention that the reproductive cloning and therapeutic cloning are most famous and in debate due to their nature and scope.

### **2.6.2 Uses of Therapeutic Cloning**

Cloning technology has a great potential for usage in therapy, cure and prevention of human diseases. Currently available and futuristic therapeutic uses of this technology can be summarized in the following ways:

#### **i) Gene Therapy**

The technology for introducing new genetic material into mammalian cells has been practised since many years, it is called Gene Therapy. This process is conducted in

---

<sup>126</sup> Sachdev Yadav, "Human Cloning: Perspectives, Ethical Issues and Legal Implications." International Journal Of Pharma And Bio Sciences, Vol. 02, (2011): 02.

<sup>127</sup> Ibid.

order to replace or supplement a deficient gene with a functional (healthy) one for improvement in functioning and performance. Gene therapy can be done by adopting any of the following ways:<sup>128</sup>

**a) Germ-Line Technology:** In this technology a foreign DNA is introduced into the zygote or early embryo anticipating that the new DNA will enter into its next generation. So far this technique is not utilized in humans though, but it has a great potential if used with perfection in humans.<sup>129</sup>

**b) Germ-Line Technology Somatic Cell Gene Therapy:** While applying this technique, healthy genetic material is introduced into the somatic cells. The scientists are trying their best to introduce and practice this technique on humans. The successful attempts can lead to the cure of many human genetic diseases. This technique is applied in vivo and invitro. In this technique, the new DNA is introduced by vectors (viral or non viral) such as liposome's and others. If successfully practised this technique will provide the cure of quite a few potentially incurable diseases and conditions like haemophilia, haemoglobinopathies, cystic fibrosis and several other infections.<sup>130</sup>

## **ii) Therapeutic Products through Human Genetic Material**

DNA recumbent technology is one of the very important and useful techniques used in medical and plant sciences. While applying this technique the genetic material obtained from one cell is/can be introduced to another cell for the production of desired product.<sup>131</sup>

---

<sup>128</sup> J. Dobson, "Gene therapy progress and prospects: magnetic nanoparticle-based gene delivery." *Gene therapy* 13, no. 4 (2006):283.

<sup>129</sup> David Cyranoski, "Cloning comeback." *Nature* 505, no. 7484 (2014): 468.

<sup>130</sup> Luigi Naldini, "Gene therapy returns to centre stage." *Nature* 526, no. 7573 (2015): 351-355.

<sup>131</sup> Zibio Li, and Xian Jun Loh, "Water soluble polyhydroxyalkanoates: future materials for therapeutic applications." *Chemical Society Reviews* 44, no. 10 (2015): 2865-2879.



Therapeutic products like hormones, proteins and vaccines etc are used to prevent or treat human diseases by introducing human genetic material into bacteria, animals or other organisms in order to produce such therapeutic product. This technology has brought remarkable advances over the last two decades. The foremost and leading benefit of this technology is the production of medications such as vaccines, human insulin, clotting factors, growth hormone and other medical substances at the large scale. By the introduction of the desired human genetic material into ova of sheep, cattle or other animals the transgenic animals are produced. Not only this but, in order to combat the human diseases these ova are intended to produce such animals which can produce milk containing the desired medical material in future. This technology is taken as a double-edged sword owing to its equal potential for good or evil use, hence invites a great criticism and opposition on ethical grounds.<sup>132</sup>

The most acceptable uses of this technique are in the form of genetic surgery where genes are replaced by other genes and then implanted in the patient's cells, or when genes are planted in another body to obtain larger amounts of the same gene to be used in the treatment of certain diseases or their prevention.<sup>133</sup>

### **iii) Genetic Diagnosis and Counseling**

In the best of public interest the Genetic diagnosis can be made known to the society but it can not be made compulsory to every one. People may be encouraged to take genetic tests before marriage by making them aware of genetic diseases and their spread. The electronic and print media can play their roles in this respect with collaboration of health care authorities. The health care units should increase the number of specialist physicians to give genetic counseling related to diagnostic and

---

<sup>132</sup> Frances Baum, *The new public health*. No. Ed. 4, (U.S.A.: Oxford University Press, 2016), 12.

<sup>133</sup> Ibid.

treatment of genetic diseases and health related services provided to pregnant women.<sup>134</sup>

The ethicists are of the view that genetic counseling must be regulized within due etical framework. They are of the view that it must not be made a routine randomly without certain code of ethics. The objective behind genetic counseling is to provide accurate knowledge, statistical probabilities and possible predictions to the clients while giving them complete authority alongside over making decision for themselves without interference of the consultants. The health experts or the physicians must not try to influence the clinets decisions one way or another. Genetic counseling must not be made compulsory, nor should it lead to any compulsory measures. For the greater benefit, the genetic counseling services need to be made widely and conveniently available to the prospective married couples and families. Only qualified and specialist personel should be licensed for the purpose of providing genetic counseling.<sup>135</sup>

Mass media must formulate programs for effective sessions on awareness about the genetic counseling. For the general information of the people the medical and health institutions need to regulate policies in this regard.<sup>136</sup>

Although Islam allows intermarriages between blood relatives (cousins) statistical evidence shows that such marriages are closely associated with a higher risk of inborn physical defects, which must be informed to the public so that people especially families with a history of genetic disorders can make a prudent choice and likelihood of transfer of genetic disesases can be reduced.

---

<sup>134</sup> Aubrey Milunsky and Jeff M. Milunsky, *Genetic disorders and the fetus: diagnosis, prevention, and treatment* (USA: John Wiley & Sons, 2015), 45.

<sup>135</sup> Jacqueline Mattick, *Development of a Genetic Counseling Clinical Supervisor Evaluation Tool*, Sarah Lawrence College, 2015.

<sup>136</sup> Ibid.

### **2.6.3 Possible Advantages of Human Cloning**

Cloning technologies are essential tools of modern biology. The possible benefits of this technology can be as follows;

- i) Cloning has lead to important drugs and new therapies, such as human insulin and interferon to fight viral infections.
- ii) Cloning has the potential to make the scientists understand the genetic basis of human development and disease.
- iii) Cloning has the probability of producing a continuing supply of therapeutic stem cells that are genetically harmonized and identical to a patient hence they possess little risk of rejection.
- iv) Cloning can be a blessing for the infertile couples.
- v) Cloning can give a way to polish human genius and intelligence and more intelligent children may be born.
- vi) Cloning can cure hereditary diseases.<sup>137</sup>

### **2.6.4 Some Future Prospects of Therapeutic Cloning**

SCNT holds an enormous potential for clinical applications and research in the context of therapeutic cloning. Its applications may include: the use of SCNT product as a vector for gene delivery, cell replacement therapy in regenerative medicine and the creation of animal models of human diseases. Furthermore, SCNT might, in the future, allow invitro organogenesis and counteract senescence. For patient-specific rescue of a genetic mutation of the loss-of-function type, resulting in lowered or eliminated activity of a particular protein, the therapeutic cloning and gene therapy offer a great potential combinely.<sup>138</sup>

---

<sup>137</sup> John A. Robertson, "Liberty, identity and human cloning." *Tex. L. Rev.* 76 (1997): 1371.

<sup>138</sup> Charlotte Kfoury, "Therapeutic Cloning: Promises and issues." *Mc Gill Journal of Medicine*, Vol.10. (2007): 113.

## **i) Organ Transplantation**

The transplantation of the major and important organs of human body such as liver, heart, kidneys and pancreas etc is an imperative medical and surgical procedure that is necessary to save thousands of lives every year. But there is a great difference between the ratio of the availability of the required organs worldwide and their supply. It is estimated that only in the United States more than 6,000 patients die every year due to non-availability of the required organs. Even though the medical and welfare communities try their best to motivate people for the organ donation yet no significant increase has been observed in the donation ratio since the 1990s.<sup>139</sup>

In order to meet the inadequacy of the required organs, many scientists have suggested the possibility of using organs obtained from the animals for instance; pigs, which have some of the very similar organs like of humans such as kidneys, lungs, hearts and pancreata. Theoretically, pigs have been used as the alternate organ provider and can become a ready source of these organs. Scientists are of the view that if such a plan works, human organ donation could become obsolete. However, the human immune system, designed to seek out and destroy foreign cells, has created a tremendous obstacle to the success of human-to-human (i.e., allogeneic) transplants and has so far rendered pig-to-human (i.e., xenogeneic) transplants a therapy of the distant future. Nevertheless, medical researchers agree that the future of organ transplants lies with xenotransplantation. Conventional allogeneic organ transplants, while only partially successful, are providing valuable information regarding tissue

---

<sup>139</sup> Robert I. Lechler, Megan Sykes, Angus W. Thomson and Laurence A. Turka, "Organ transplantation: How much of the promise has been realized?" *Nature medicine* 11, no. 6 (2005): 605.

rejection and the many things that must be done to ensure a happy union between the transplant and the patient's immune system.<sup>140</sup>

### **Some Valuable Usages of Therapeutic Cloning**

- i) Therapeutic cloning can overcome the shortage of tissue for transplantation. Many countries lack the availability of the organs to be transplanted. Only in the United States of America the availability of the organs needed is 5% approximately with the discrepancy between the number of potential recipients and donor organs increasing by approximately 10-15% each year.<sup>141</sup>
- ii) Even if the organ is planted, serious issues regarding the compatibility of transplanted tissue occur quite often. These complications require immune suppressive therapy which accompanies serious side effects. Cloned tissues if developed successfully would be compatible for every patient and there would be no fear of infectious risks of xenotransplants.<sup>142</sup>
- iii) Therapeutic cloning can bring a revolution by expanding the role of transplantation to the common diseases like stroke and heart attack. In usual practice when a stroke takes place, the scar tissue replaces the dead part of the brain, but therapeutic cloning can offer the stroke new brain tissue.<sup>143</sup>

### **ii) Diseases Cure**

The second reason which makes this research distinguished and important is because it opens up a whole new pathway in medical research. This technique can be used to study in a completely new way any disease in a culture dish. While for a patient of any disease such as diabetes or cancer, cloning of a single skin cell can be utilized to

---

<sup>140</sup> Joseph Panno, *Animal Cloning: The Science of Nuclear Transfer* (New York: Library of Congress Publication Data, 2005), 61.

<sup>141</sup> Katrien Devolder and Julian Savulescu, "The moral imperative to conduct embryonic stem cell and cloning research." *Cambridge Quarterly of Healthcare Ethics* 15, no. 1 (2006): 09.

<sup>142</sup> Ibid.

<sup>143</sup> Ibid.

produce infinite number of cells and tissue from the patient. Later, this tissue can be of great help when experimented upon in order to understand the reason behind the occurrence of any such disease. This technique can be used to test enormous arrays of new drugs which could not have been tested upon the human beings earlier. This technique can help understand and diagnose the genetic contribution to any disease. By using human cells and tissues instead of humans or animals, this technique can significantly reduce the need for human and animal experimentation while testing new drugs.<sup>144</sup>

Its working and functions can be illustrated with this example that, when a skin cell has been taken from a diabetic patient and stem cells are produced and directed to be mature into the tissue afflicted with diabetes, this diabetes tissue can be minutely observed and studied and potential new treatments can be tested upon the effected tissue. This technique ensures the safety and effectiveness of the treatment to be applied, before applying it upon the animals or human beings.<sup>145</sup>

This technique would turn the research easier and feasible about the diseases which can not be understood by examining the patients themselves. This technique allows studying the diseases with rare or exceptional genetic disorders. The usual course in medical sciences does not offer a safe way to take samples of the affected cells from patients, this situation becomes severe in the cases where the genetic diseases that affect the heart or brain are examined.<sup>146</sup>

---

<sup>144</sup> Vanessa J. Hall, Petra Stojkovic and Miodrag Stojkovic, "Using therapeutic cloning to fight human disease: a conundrum or reality?," *Stem cells* 24, no. 7 (2006): 1628-1637.

<sup>145</sup> J. Hall, Stojkovic and Stojkovic, "Using therapeutic cloning to fight human disease", 1630.

<sup>146</sup> Devolder and Julian Savulescu, "The moral imperative to conduct embryonic stem cell and cloning research", 18.

### iii) Cancer Diagnosis

SCNT possesses a vast usefulness with respect to its application in cancer research. It can identify and differentiate between the types of cancer and the reason behind them i-e genetic or an epigenetic defect. The epigenetic modifications of chromatin structure in cancerous cells involve DNA methylation, altered histone methylation as well as phosphorylation and deacetylation which are reversible unlike genetic mutations.<sup>147</sup>

These studies can pave way to clinical applications for cancer diagnosis in humans since nuclear reprogramming signals from the host ooplasm variably reset the epigenetic profile of the nuclear donor DNA. The derivation through SCNT of a healthy patient-specific stem line would show that cancer onset is triggered by epigenetic alterations.<sup>148</sup>

#### 2.6.5 Possible Disadvantages of Human Cloning

Even though the cloning technology is a new technology and its outcomes are not public and commonly known yet. The damages or losses caused by this technique can be categorized under the internal and external heads. The damages or losses caused by the nature of the operation and the process of cloning are called as the internal damages or losses whereas the external damages or losses are expected to come out affecting the clone or cloned society after the cloning operation.<sup>149</sup>

Some of the instances of the internal and external damages may be:

- i) The cloned living organism may encounter genetic problems and complications in long term.<sup>150</sup>

---

<sup>147</sup> Kfoury, "Therapeutic Cloning", 112.

<sup>148</sup> Ibid.

<sup>149</sup> John A. Robertson, "The question of human cloning." *Hastings Center Report* 24, no. 2 (1994): 06.

<sup>150</sup> Ibid.

- ii) The extinction probability of the cloned people is greater than the normal ones in any society and it will increase with their increasing numbers. Science has proved that around one million four hundred thousand nucleotides exist in the body of every human heir and this outstanding variety is the key reason for the survival of human generation. Cloning would increase the probability of the death of the clones by a special virus or a pathogen owing to the decrease in the genetic variety of individuals as it would turn the human beings vulnerable.<sup>151</sup>
- iii) It is not always compulsory that strong and healthy cells will be born with the process of cloning. They may be diseased or defective in any way, in such a case that defect or disease will be carried by the clone.<sup>152</sup>
- iv) Diseases of serious nature such as cancer, biological disorders and premature aging can be more frequent in clones.<sup>153</sup>
- v) Abolition of institution of marriage is an imminent danger of cloning.
- vi) LGBTs would take it as an opportunity to make family, hence people will refrain from decent married life to have kids.
- vii) Loss of Morals and ethics values and devaluation of humanity.
- viii) The natural and traditional belief about the reproduction and God's authority over the miracle of human creation can be destroyed by cloning.
- ix) A cloned workforce or militia can be designed by the rich companies.
- x) Cloning has the potential to create a black market for the scientists, celebrities, athletes and any other other prominent psersonalities.
- xi) Cloned humans might be treated as "second-class citizens."

---

<sup>151</sup> Robertson, "The question of human cloning", 06.

<sup>152</sup> Dr. Abdul Fatah Mahmood Idrees, *Al-Istinsākh' fī Nazr al-Islam* (Qahirah: Jamia al-Azhar), 17.

<sup>153</sup> Robertson, "The question of human cloning", 06.



- xii) Cloning can hurt the stability of the family, psychologically and socially.
- xiii) Cloning can lead to unnecessary birth defects in children.
- xiv) Cloning can offer undue and unfair advantage to the rich ones for their children.
- xv) Cloning can become more dangerous if performed by the unregistered, unlicensed or unregulated medical practitioners or scientists.<sup>154</sup>
- xvi) Cloned children will lose self confidence and integrity hence it will create hardships for them in social interaction and public and private lives.
- xvii) The shortened life-spans, high mortality rates, different kinds of diseases and health risks can easily be associated with cloning.
- xviii) The evolution of mankind and its ability to adapt make a distinctive feature of human life, which can be potentially effected by cloning.<sup>155</sup>
- xix) People would always prefer their own race and color or the one superior to them in their opinion, when they can have a choice. Cloning would surely aggravate the bigoted and racist feelings. This will also discourage the diversity as natural creation is diverse in nature.<sup>156</sup>

(Chapter No. 04 of this dissertation critically evaluates the moral and ethical as well as legal issues connected with the merits and demerits/benefits and damages of human cloning in detail).

---

<sup>154</sup> Robertson, "The question of human cloning", 06.

<sup>155</sup> Seyede Leila Nabavizadeh, Davood Mehrabani, ZabihAllāh Vahedi and Farzad Manafi, "Cloning: A Review on Bioethics, Legal, Jurisprudence and Regenerative Issues in Iran." *World journal of plastic surgery* 5, no. 3 (2016): 213.

<sup>156</sup> Dr. Muḥammad Hawari, *Al-Istinsākh' albashri bein alsoura al-elmiyah wa al-dawabit al-Ikhlaqiyah wa al-Fiqhiyah* (London: Al-Majis al-urbi Lilifta wa al-Bahoos), 24.

## 2.7 Successful Assisted Reproductive Techniques

Until recent past, only medications were used for the treatment of infertility and hormonal deficiency and later on the surgery was also introduced. Even these treatments were not non-controversial from ethical or religious points of view, at the time of their commencement or initiation frankly speaking. However, the recent dawn of assisted reproductive technologies (ARTs) have changed the whole scenario radically. It can be said that these procedures transferred the process of reproduction and procreation to the labs from a personal and private relation between a husband and wife.<sup>157</sup>

It does not stop here even and sometimes a third or fourth party is involved in this process. These assisted procreative procedures are a subject of hot discussion all over world as they are generally believed to challenge basic religious, ethical and moral norms.<sup>158</sup>

Several major advances in reproductive medicine have been made during the last quarter of the 20th century. The birth of the first human baby resulting from In-Vitro<sup>159</sup> fertilization (IVF) in 1978 has been one of the most controversial, celebrated and widely publicised medical landmarks in the field of ARTs. Since then, IVF has become a common and known thing and is widely trusted and accepted treatment for infertility from many procedures of the ARTs.<sup>160</sup>

It is estimated that since 1978, approximately one million babies have been born with the help of assisted reproductive technologies (ARTs) worldwide. According to

---

<sup>157</sup> Norhayati Haji Ahmad, "Assisted reproduction-Islamic views on the science of procreation." *Eubios journal of Asian and international bioethics: EJAIB* 13, no. 2 (2003): 59.

<sup>158</sup> Hossam E. Fadel, "The Islamic viewpoint on new assisted reproductive technologies." *Fordham Urb. LJ* 30 (2002): 147.

<sup>159</sup> For details please see as Kimball Nil, *Glossary of Biotechnology terms*, ed., (USA: CRC Press, 2002), 141 states that "In-vitro means in an unnatural position (e.g., outside the body, in the test tube)." In-vitro is a Latin word which means "in glass." It is opposite to In-Vivo.

<sup>160</sup> Kiarash Aramesh, "Iran's experience with surrogate motherhood: an Islamic view and ethical concerns." *Journal of medical ethics* 35, no. 5 (2009): 320.

another assessment the ARTs make five percent of all births in some of the European countries. The ARTs are playing a noteworthy rule in the lives of subfertile and infertile couples all around the world. On the other hand, they create a vast restlessness to those couples who have no means to access them or those who are discontented because of the ineffective and unsuccessful attempts of the ARTs.<sup>161</sup>

It is generally estimated that infertility affects approximately 80 million people around the globe. It is estimated that in general, the primary or secondary level infertility is experienced by one in ten couples, but infertility rate varies amongst countries from less than 5% to more than 30%. It is unfortunate that most of the couples who suffer from infertility live in developing countries where infertility services in general, and ARTs in particular, are not available. The economies of developing countries are trying to cope up with other issues of public health attention yet like Malaria, infection with the human immunodeficiency virus (HIV), morbidity and mortality etc. In many developing countries, infertility is caused due to the genital tract infection which includes sexually transmitted infections and other such defects.<sup>162</sup>

Consequently, the use of ARTs to manage infertility is disputed due to many reasons like; the cause of the problem, the attitude of people towards overpopulation and the availability of limited and inadequate health resources. It is worth mentioning that even in developed countries, where infertility patients stand a better chance of receiving appropriate infertility treatment, recourse to ARTs is not appropriate in number. The high cost of ART procedures and restricted national policies regarding

---

<sup>161</sup> Sarah Franklin and Helena Ragoné, eds. *Reproducing reproduction: Kinship, power, and technological innovation* (USA: University of Pennsylvania Press, 1998), 06.

<sup>162</sup> Sumera Ali, Raafay Sophie, Ayesha M. Imām, Faisal I. Khan, Syed F. Ali, Annum Shaikh, and Syed Faridul-Hasnain, "Knowledge, perceptions and myths regarding infertility among selected adult population in Pakistan: a cross-sectional study." *BMC Public Health* 11, no. 1 (2011): 760.

use, options, accessibility and reimbursement leave many infertile people without the option of going for the ARTs.<sup>163</sup>

Even though infertility may not be considered a preference in public health domain in many countries, yet it is a key issue in the lives of the individuals who suffer from such painful thing. It is not only a cause of social and psychological misery for both men and women but it can place great pressure on the relationship between the spouses.<sup>164</sup>

It is a dilemma that in most of the societies womanhood is defined through motherhood, while it is unjustifiable to set the status, position and role of the women in society solely by their reproductive capacity. In such a case, the personal suffering of the infertile woman is already worst and vulnerable which can easily lead to unstable marriages, domestic violence, stigmatization and even social isolation. The agitated and desperate wish of infertile people to have their own child is common to all such people from every corner of the world no matter the social pressure on the issue varies from country to country. Many infertility consumer groups consider the use of ARTs to be a “human right” based on the following note from the UN Declaration of Human Rights:

“Men and women of full age, without any limitation due to race, nationality or religion, have the right to marry and to found a family.”<sup>165</sup>

With the progress and advancements of the ARTs the ethical, legal, social and political arguments also arose which surround nearly all aspects of ARTs. It is notable

---

<sup>163</sup> Gamal I Serour, “Bioethics in artificial reproduction in the Muslim world.” *Bioethics* 7, no. 2-3 (1993): 207.

<sup>164</sup> Christine Dunkel-Schetter and Marci Lobel, “Psychological reactions to infertility.” *In Infertility*, Springer, Boston, MA (1991): 32.

<sup>165</sup> UN Declaration of Human Rights 1948, Article 16.1.

that only a few other areas in medicine have acquired that much attraction in legal, ethical and social domains as ARTs.<sup>166</sup>

### **2.7.1 The Evolution and Practices of Certain ARTs in Muslim Majority Countries**

The new millennium has experienced a rapid growth and expansion in the ARTs throughout the world. Muslim majority countries are no exception to it. Turkey, Egypt, Iran and Lebanon hold most prominent position in this regard and can be considered a center or a hub for the provision and practice of alternative reproductive techniques. Even though Turkey had its first baby born with the help of IVF in 1989 but the social insurance institutions Act of 2005 and increase in number of ART techniques paved way later for the popularity and increase in the use of ARTs in the country.<sup>167</sup>

Turkey has become “the World’s 7<sup>th</sup> biggest IVF Market” in rank. It has a rapid growing ART industry after the USA, UK, Spain, France and Israel. It is estimated that more than at least 110 clinics working in ART are operational throughout Turkey. These clinics are playing a great role in changing social taboos related to the infertility and its treatment.<sup>168</sup>

After Saudi Arabia and Jordan, Egypt became the third Middle Eastern country to introduce ARTs in 1986. Particullary in the field of IVF Egypt has developed a prosperous sector with more than 50 IVF clinics. These clinics are providing services

---

<sup>166</sup> Effy Vayena, Patrick J. Rowe and P. David Griffin, “Current practices and controversies in assisted reproduction: Report of a meeting on medical, ethical and social aspects of assisted reproduction, held at WHO Headquarters in Geneva, Switzerland” (2002): 24.

<sup>167</sup> Zeynep B Gurtin, “Practitioners as Interface Agents between the Local and the Global: Te Localization of IVF in Turkey.” *Facts Views & Visions in ObGyn, Monograph* (2012): 28.

<sup>168</sup> C Inhorn and Zeynep B. Gurtin, “Infertility and resource considerations.” *Facts Views & Visions in ObGyn, Monograph* (2012): 28.

to the infertile population in Egypt which is estimated to be around 15% of all married population.<sup>169</sup>

It is imperative to mention that the most important clinic dealing with the ART's is located in Egypt's most prestigious and the oldest institute of religious learning i-e Al-Azhar University, under the patronage of the Al-Azhar international Islamic Center for population Studies and research. Professor Gamal i. Serour established this clinic, who was the director of Al-Azhar's Islamic Center then. This clinic provides financial support for the IVF techniques to a large number of the poor couples with an aim to help Egypt's unprivileged infertiles. The clinic is also aimed to provide generous support and assistance to developing Muslim countries with the consultation, expertise and possible financial and technical support.<sup>170</sup>

Turkey and Egypt are the real examples of progressive use of ARTs in the Muslim world. Some other Muslim majority states like the United Arab Emirates and Lebanon in the Western Asia, alongwith several other Middle Eastern countries, including Iran are following the suit by providing state subsidized ARTs at the least possible level. It is observed that both Iran and Lebanon have become the "reproductive tourists" for the Sunnī majority neighboring countries. The infertile couples from the Sunnī majority countries quietly enter into these countries by crossing the international borders in pursuit of possible ARTs available. For those Muslim couples who do not mind using even the third-party assisted reproduction techniques such as sperm or egg donation, egg donation is somehow considered to be more acceptable than sperm donation. But both of these techniques are commonly known as the "last resorts" even

---

<sup>169</sup> C Inhorn and Marcia C, "Global infertility and the globalization of new reproductive technologies: illustrations from Egypt." *Social science & medicine* 56, no. 9 (2003): 1837.

<sup>170</sup> Ragaa T. Mansour, Ahmed M. Abou-Setta and Omnia Kamal, "Assisted reproductive technology in Egypt, 2003–2004: Results generated from the Egyptian IVF registry." *Middle East Fertility Society Journal* (2011): 1–6.

among the moderate and liberal infertile Muslims. The third-party reproductive assistance is condemned and criticized by the enormous part of the Sunnī Muslim Jurists and some Shī‘ah Muslim jurists so these are chosen only under dire need where all other options fail or are impracticable.<sup>171</sup>

This is the high time for the other Islamic countries to facilitate their citizens with the provision of permissible ARTs in order to help them achieve their reproductive rights in the manners allowed by the Sharī‘ah.<sup>172</sup>

## **2.7.2 Evaluation of Certain ARTs in the light of Islamic Teachings**

### **i) Artificial Insemination**

Artificial insemination has been practised for the cure of infertile couples since about 200 years.<sup>173</sup>

It is reported that in 1785 a Scottish surgeon from London, John Hunter, advised a man with hypospadias to collect his semen and inject it into his wife’s vagina. This is recorded as the first successful case of artificial insemination for human beings. Later, with the improvement of the methods of freezing and preserving the sperms this technique evolved and got into the presently available shape.<sup>174</sup>

Artificial insemination is an assisted conception technique which is used to reduce and cut infertility among couples. Insemination performed artificially or manual

---

<sup>171</sup> Mansour, Abou-Setta and Kamal, “Assisted reproductive technology in Egypt”, 03.

<sup>172</sup> C. Inhorn and Zeynep B. Gurtin, “Infertility and resource considerations”, 29.

<sup>173</sup> For details please see as Willem Ombelet and Johan Van Robays, “History of human artificial insemination.” *F, V & V in ObGyn* (2010):01 states that the first attempts to artificially inseminate a woman were done by Henry IV (1425–1474), King of Castile, nicknamed *the Impotent*. In 1455, he married Princess Juana, sister of Afonso V of Portugal. After six years of marriage she gave birth to a daughter, Joanna. Many contemporary historians and chroniclers assumed Henry was impotent. The possibility of artificial insemination was launched. Later on it was claimed that the princess was not the daughter of the king.

<sup>174</sup> Nallella Kiran P., Rakesh K. Sharma, Shyam SR Allamaneni, Nabil Aziz, and Ashok Agarwal, “Cryopreservation of human spermatozoa: comparison of two cryopreservation methods and three cryoprotectants.” *Fertility and sterility* 82, no. 4 (2004): 915.

sperm injection with homologous or donor semen is these days an extremely renowned and celebrated treatment option. This method is opted for the infertile or subfertile females around the world. The rationale behind the utilization of manual sperm injection is to enhance the gamete thickness at the point of fertilization.<sup>175</sup>

According to Muslim scholars Artificial insemination can only be permitted if only husband's sperm is used to inject to produce new life and that must be done during the continuation of the marriage. It can be also be inferred that husband's frozen sperms can not be used after the divorce between the couple, or after the husband's death.<sup>176</sup>

## **ii) In-Vitro Fertilization (IVF)**

Step toe and Edwards introduced the technique of in-Vitro fertilization (IVF) in 1978. In-Vitro Fertilization (IVF) has emerged as an eminent treatment for many types of infertility. The most notable objective of IVF technique is to allow a patient the opportunity to become pregnant using her own eggs or donor eggs and sperm from her partner or from a donor. IVF offers a voluntary procedure<sup>177</sup> intended to result when other treatments are not appropriate or they have failed in the patient's pregnancy.<sup>178</sup>

---

<sup>175</sup> Ombelet and Johan, "History of human artificial insemination", 915.

<sup>176</sup> Gamal I. Serour, M. El Ghar and R. T. Mansour, "Infertility: a health problem in the Muslim world" *Population Sciences* 10 (1991): 41-58.

<sup>177</sup> For details please see as Kathleen Hoeger, "In Vitro Fertilization Process, Risk, and Consent." Department of Obstetrics and Gynecology Strong Fertility Center, (2008):80 states that An IVF cycle typically includes the following steps or procedures like, medications to grow multiple eggs, retrieval of eggs from the ovary or ovaries, insemination of eggs with sperm, culture of any resulting fertilized eggs (embryos), placement (transfer) of one or more embryo(s) into the uterus and supporting the uterine lining with hormones to permit and sustain pregnancy.

<sup>178</sup> Ibid, 80.



IVF includes recovering or suctioning the eggs from the ovary, treating them (fertilizing) in the laboratory and transferring the embryos back into the uterus after a few days.<sup>179</sup>

The Muslim jurists allow the use of IVFs if in any such process third party is not involved by any means. In the case of frozen fertilized ova too it is permissible provided that in subsequent cycles too they are used for the same couple only and that too during the continuation of their marriage. The fate of the unused eggs has not yet been determined in Sharī'ah, there is need to formulate the guidelines to use them keeping in view the essential requisites for their permissibility including the consent of the couple and moral and ethical principles governing the code of conduct of the researchers under the teachings of Sharī'ah.<sup>180</sup>

### **iii) Donor Eggs and Donor Sperms**

The IVF technique using the donor eggs or sperms is growing swiftly. Let's take the example of the USA where it has turned out to be the most imperative option for fertility patients gradually. Egg donation is offered by 93 % of US clinics approximately where IVF is offered.<sup>181</sup>

Egg donors may be fully or partially known and identified to their recipients or they can be anonymous. Some donors do not mind to let the healthcare institutions show their identity. This type of treatment is called as "collaborative" or reproduction with the help of a "third-party."<sup>182</sup>

---

<sup>179</sup> Lars Noah, "Assisted reproductive technologies and the pitfalls of unregulated biomedical innovation." *Fla. L. Rev.* 55 (2003): 603.

<sup>180</sup> Marcia C., and Zeynep B. Gurtin, "Infertility and resource considerations." *Facts Views & Visions in ObGyn, Monograph* (2012): 28.

<sup>181</sup> Rene Almeling, "Why do you want to be a donor?": gender and the production of altruism in egg and sperm donation." *New Genetics and Society* 25, no. 2 (2006): 143.

<sup>182</sup> Margaret E Swain, "Oocyte donation: legal aspects." In *Third-Party Reproduction*, Springer, New York, NY (2014): 35.

The first reported case of a child birth from “egg donation” was seen in February 1984. That involved actual transfer of an embryo conceived by the donor woman<sup>183</sup> after insemination with the sperm of the intended father.<sup>184</sup>

In egg/sperm donor/recipient agreements, the usual understanding is that the donor’s eggs/sperms are to be used by one particular recipient. Any change in the basic agreement must be informed to the donor so that he/she becomes familiar about the recipient’s identity and it should be made clear that he/she does not raise any objection to grant the recipient with the egg/sperm.<sup>185</sup>

According to the majority of Sunnī jurists no such act is permitted under Sharī’ah which involves the intervention of a third party between the spouses. They are of the view that any such interaction with that egg/sperm donor is totally Harām or prohibited. They also provide some logical justifications to their claim. They are of the opinion that such an act would be similar to adultery because it too tends to create confusion in the lineage. Disastrous results may accompany unclear lineage, such as marrying one’s own sister or any other relative in the prohibited degrees.<sup>186</sup>

But some Shi’ah jurists permit it in the case of dire need and suggest taking it as a last option only. If a Muslim couple still opts for this procedure then the “husband” would be considered the legal father of the child even though he is not his biological father,

---

<sup>183</sup> For details please see as Kim L. Armour, “An overview of surrogacy around the world.” *Nursing for women’s health* 16, no. 3 (2012): 234 states that An egg donor is a woman who contributes her genetic material, usually for reproductive purposes, to another. A donor does not intend to be a parent of any resultant child and waives any rights she may have to the eggs upon the donation. The term “donor” is a very specific legal term: a woman who provides eggs for her own reproductive purposes and who intends to parent the resultant child should never be referred to as a donor.

<sup>184</sup> Swain, “Oocyte donation”, 39.

<sup>185</sup> Ibid.

<sup>186</sup> Inhorn and Marcia C, “Making Muslim babies: IVF and gamete donation in Sunnī versus Shi’a Islam.” *Culture, medicine and psychiatry* 30, no. 4 (2006): 427.

likewise in the case where a donated egg is used, the status of legal mother would be enjoyed by the birth giving mother, even though she is not the biological mother.<sup>187</sup>

#### iv) Surrogacy

Surrogacy denotes the process in which a female carries a baby for a couple<sup>188</sup> where the female is unable to conceive and giving birth to their child otherwise.

That disability is due to physical or medical reason.<sup>189</sup>

There are two types of surrogacy. The Traditional surrogacy and Gestational surrogacy, each type of surrogacy differs from other on the basis of techniques involved and functions of the parties. In traditional surrogacy, the surrogate mother carries her own egg (ovum)<sup>190</sup> fertilised by sperm from an intended father.<sup>191</sup> As a result, the surrogate child is genetically affiliated with the surrogate mother and the intended father. But, contrary to this, in the gestational form of surrogacy both the ovum and the sperm are donated by the intended parents. The surrogate only carries in her womb the donated ovum and the sperm and gives birth to the child. Genetically the child is not affiliated to the surrogate “mother” but donors of the ovum and the sperm. In this case the child has no relation with the surrogate mother.<sup>192</sup>

---

<sup>187</sup> Hossam E Fadel, “Developments in stem cell research and therapeutic cloning: Islamic ethical positions, a review.” *Bioethics* 26, no. 3 (2012): 130.

<sup>188</sup> Intended parent/commissioning parent are the individuals who intend to become the legal parents of the child born of a surrogacy arrangement. They may or may not contribute DNA and be biologically linked to the expectant child. For details See: Armour, Kim L. “An overview of surrogacy around the world.” *Nursing for women's health* 16, no. 3 (2012): 231.

<sup>189</sup> Celia Burrell and Leroy C. Edozien, “Surrogacy in modern obstetric practice”, In *Seminars in Fetal and Neonatal Medicine*, Elsevier vol. 19, no. 5,(2014): 273.

<sup>190</sup> For details please see as Armour, “An overview of surrogacy around the world”, 235 states that biologic mother/genetic donor is a woman who contributes her egg to reproduce the resulting child.

<sup>191</sup> For details please see as Armour, “An overview of surrogacy around the world”, 236 states that biologic father/genetic donor is a man who contributes his sperm to reproduce the resulting child.

<sup>192</sup> Tawfique Al-Mubarak, “Surrogacy and Islam: Between Permissibility and Prohibition.” *Islam and Civilisational Renewal (ICR)* 5, no. 2 (2014): 02.

Surrogacy is prohibited under Islamic law when any third party enters into its process. The Arabic word used for the mother is “Wālidah”, or the “one who gives birth.” Following verse of the Qur’ān throws light on the subject in these words:

الَّذِينَ يَظْهَرُونَ مِنْكُمْ قِيْنَ تَسَابِهِمْ مَا هُنَّ أُمَّهَاتُهُمْ إِنْ أُمَّهَاتُهُمْ إِلَّا الْآلُ وَلَدْنَهُمْ وَأَنَّهُمْ لَيَقُولُونَ مَنكَرَاتٍ فِي الْقَوْلِ وَزُورًا  
وَلِإِنَّ اللَّهَ لَعَفُوفٌ غَفُورٌ ۝

“If any men among you divorce their wives by *ḡihār* (calling them mothers), they cannot be their mothers, None can be their mothers except those who gave them birth and in fact they use words (both) iniquitous and false: but truly Allāh is one that blots out (sins), and forgives (again and again).”<sup>193</sup>

According to the jurists who oppose all type of surrogacy this verse limits the definition of motherhood to the female who gives birth to a child only. They base their opinion on the notion that “mothers are those who give birth to the child.”<sup>194</sup>

But majority of the jurists are of the view that, the form of surrogacy where a biological mother’s egg has been used along with the biological father’s sperm in order to reproduce a child is not prohibited under Sharī’ah. They support their view by interpreting the same verse of the Qur’ān in the light of its hidden and logical meanings. They are of the opinion that a child belongs to both the ovary and the biological link with the mother then how it is possible that the surrogate mother will snatch the status of a social mother where Islam gives an immense importance to the marriage and lineage, even the wet or foster mother is also graded with the status of mother. Following verse of the Qur’ān reaffirms this notion in the words:

<sup>193</sup> Al-Qur’ān 58:02.

<sup>194</sup> Sherifa Zuhur, “Of milk-mothers and sacred bonds: Islam, patriarchy, and new reproductive technologies.” *Creighton L. Rev.* 25 (1991): 1725.

وَهُوَ الَّذِي خَلَقَ مِنَ الْمَاءِ بَشَرًا فَجَعَلَهُ نَسَبًا وَصِهْرًا ۚ وَكَانَ رَبُّكَ قَدِيرًا ۝

“It is He Who has created man from water: then has He established relationships of lineage and marriage: for thy Lord has power (over all things).”<sup>195</sup>

On the issue of comparing the surrogacy with a prohibited heinous act like Zinā’, the jurists are of the opinion that this act can not be compared to Zinā’ as the conditions of Zinā’ are not fulfilled here. They support their arguments by elaborating the requisites which make an act capable of denoting as “Zinā’”, including meeting of the private parts, penetration of the male private part into the private part of the female and witnessing such an act by four male witnesses. But it is clear that in the case of the surrogate mother; at least the first two conditions are completely missing. Thus, it is not Zinā’ as the insertion of sperm into the womb through medical procedures does not amount to the act of Zinā’. Therefore it is unjustified to implement the social and legal consequences of Zinā’ on surrogacy.<sup>196</sup>

---

<sup>195</sup> Al-Qur’ān 25:54.

<sup>196</sup> Samia Maqbool Niazi, “Islamic Law and the Surrogate Mother.” *Islamabad Law Review* 1, no. 1 (2014): 25.

## **2.8 Conclusion**

Plant cloning is not a new technique. It is worldwide accepted and practiced since ages. Innovations are taking place in plant cloning technique too. Gene modification in animals is practiced for many purposes, including the increase in milk and meat of animals. Likewise human cloning has two main techniques or types, therapeutic and reproductive cloning. The reproductive cloning serves the reproductive purpose for the infertiles or the ones who can not have their own offspring by using other ARTs. Whereas the perspectives and grounds for the therapeutic cloning are vast hence serve many fold purposes. If this technique is achieved with perfection it will help to cure many severe diseases like cancer and it will also enable the medical practitioners to develop the human organs in replacement to the damaged ones or lost. This technique has got much potential and can bring miracles in the world of medical science.

Islam rejects any form of adoption which tends to change the lineage or identity and having one's own offspring is considered a blessing. But the contemporary artificial reproductive techniques or ARTs such as Artificial Insemination, In-VitroFertilization (IVF), Donor Eggs and Donor Sperms and Surrogacy can not be declared "permitted" without observation of essential Sharī'ah requisites, such as the application of such techniques between the spouses only, during their marriage and without intervention of any third party etc.

## **CHAPTER THREE**

### **HUMAN CLONING IN SHARĪ‘AH PERSPECTIVE**

#### **3.1 Introduction**

Chapter three deals with the evaluation and examination of cloning in the light of Sharī‘ah rulings. This chapter begins with the initial responses of the Muslim jurists on the issue of cloning after the birth of Dolly the sheep. Then subsequent are recent responses are also illustrated in order to explore the opinion of Muslim jurists over the issue of cloning. Fatāwā issued by the renowned institutions and notable Muslim jurists are presented in order to facilitate the reader to have an acquaintance with contemporary Muslim jurists views on the issue. Besides presenting the opinions of Sunnī and Shī‘ah jurists a detailed perception of the jurisprudential and practical overview of cloning in Islamic republic of Iran is illustrated. Then scope and application of bioethics in Islamic republic of Pakistan is discussed along with its future prospective. In the later half of the chapter the concept of cloning is evaluated in the light of teachings of Maqāsid al-Sharī‘ah (Objectives of Islamic Law) and the Legal Maxims of Islamic law in order to ascertain its permissibility or prohibition.

#### **3.2 Perception of Cloning by the Muslim Scholars: Initial Response**

It is not that Muslim scholars and scientists remained unaware of the technique of cloning and its future prospects. Since the emergence of cloning with fame in 1996 Muslim scholars and scientist have been trying their best to make other Muslims understand the position of cloning in Sharī‘ah.

The Arabic word used for cloning is “Istinsākh” which is an old classic word actually but now it is widely used to denote the biotechnological term cloning.<sup>197</sup>

Al-Istinsākh’ has been derived from the Arabic word “Al-Naskh” which means copying. It can be understood as a book is formed by copying the text from another book.<sup>198</sup>

In the following verse the word “Nastansekho” has been used in the meaning of copying or recording of deeds by Allāh S.W.T:

هَذَا كِتَابُنَا يُتْلَقُ عَلَيْكُمْ بِالْحَقِّ ۖ إِنَّا كُنَّا نَسْتَنْسِخُ مَا كُنْتُمْ تَعْمَلُونَ ۝

“This Our Record speaks about you with truth: For We were wont to put on Record all that ye did.”<sup>199</sup>

The process of cloning can be defined as: “When an organism is a perfectly identical copy in terms of Genetic properties, physiological, and morphological characteristics of another organism, it is a clone.”<sup>200</sup>

Cloning does not create anything which was never there before. It just copies or reproduces something from an already existing thing.<sup>201</sup>

There is a lot of difference between Istinsākh’ (cloning), “Khalaq” (Creation) and Ibdaa’ (Invention). Creation is something which did not originate from anything else.

---

<sup>197</sup> Dr. Nooruddin Mukhtar Alkhadmi, *Al-Istinsākh’ fi du al-Asuk wa al- Qawā’id wa al-Maqāsid al-Sharī’ah* (Riyadh: Dar Ul Zahim Lilnashr wa Touzee, 2001), 16.

<sup>198</sup> Dr. Mahmood Idrees, *Al-Istinsākh’ fi Nazr al-Islam*, 04.

<sup>199</sup> Al-Qur’ān 45:29.

<sup>200</sup> Dr. Mahmood Idrees, *Al-Istinsākh’ fi Nazr al-Islam*, 04.

<sup>201</sup> Dr. Alkhadmi, *Al-Istinsākh’ fi du al-Asuk wa al- Qawā’id wa al-Maqāsid al-Sharī’ah*, 45.



Only Allāh S.W.T can create things, as He has created the whole universe and everything existing into it including the human beings.<sup>202</sup>

Forming something from the beginning is Khalaq and the one forming it is the Creator or the manufacturer of that thing. No one can create anything except Allāh S.W.T<sup>203</sup>

Following are two of the many verses of the Qur'ān giving a reference to the creation of everything by Allāh S.W.T.

الْحَمْدُ لِلَّهِ الَّذِي خَلَقَ السَّمَوَاتِ وَالْأَرْضَ وَجَعَلَ الظُّلُمَاتِ وَالنُّورَ

“Praise be Allāh, Who created the heavens and the earth, and made the darkness and the light.”<sup>204</sup>

بِيَدِهِ السَّمَوَاتِ وَالْأَرْضُ وَإِذَا قَضَىٰ أَمْرًا فَإِنَّمَا يَقُولُ لَهُ كُنْ فَيَكُونُ ۝

“To Him is due the primal origin of the heavens and the earth: When He decreeth a matter, He saith to it: Be! and it is.”<sup>205</sup>

Likewise making, enacting or forming something in such a way that like that thing nothing was created before at any point of time is Ibdāa (Invention). Cloning does not come under this subject too as it is not invention of anything new, rather it is reproduction of something already existed in the world.<sup>206</sup>

<sup>202</sup> Dr. Mahmood Idrees, *Al-Istinsākh' fi Nazr al-Islam*, 04-05.

<sup>203</sup> Ibid, 05.

<sup>204</sup> Al-Qur'ān 06:01.

<sup>205</sup> Al-Qur'ān 02:117.

<sup>206</sup> Dr. Mahmood Idrees, *Al-Istinsākh' fi Nazr al-Islam*, 05.

Dr. Nooruddin Mukhtar Alkhadmi explains that birth of Adam (A.S) Eve (A.S) and Jesus (A.S) are not the examples to defend cloning but those were born out of Allāh's will. These are the miracles and not the act of science or innovation.<sup>207</sup>

Ghaly, in his article; "Human Cloning through the Eyes of Muslim Scholars", goes on to say that:

"Does the cloning mean creating, so that can be defined as challenging the belief that God is the only Creator? Practically, cloning does not mean as creating like the God's do, but it is only how the scientist make a good use of the knowledge and implemented the process using the help of the technology. Conversely, human cloning is contrary to the normal course of human reproduction as known since the dawn of humanity."<sup>208</sup>

Muhammad Ghaly rejects the idea that cloning offers anything beyond Allāh S.W.T's authority to create. He opines that cloning is merely a scientific technique designed to produce differently from the normal course of human reproduction but it can never be practicable without the will of Allāh S.W.T, hence does not oppose Allāh's will.<sup>209</sup>

### **3.2.1 The Conferences Organized by the International Islamic and Scientific Institutions**

The most important and notable response of Muslim religious and scientific experts over the issue of cloning was set forth by the two large scale conferences over the subject in 1997. These two conferences i-e Islamic Fiqh Council Conference and the Muslim World League's Islamic Jurisprudence Council Conference were organized

---

<sup>207</sup> Dr. Alkhadmi, *Al-Istinsākh' fi du al-Asuk wa al- Qawā'id wa al-Maqāsid al-Sharī'ah*, 86-87.

<sup>208</sup> Mohammed Ghaly, "Human cloning through the eyes of Muslim scholars: The new phenomenon of the Islamic international religious/scientific institutions." *Zygon*, vol.45, no.1. (2010): 23.

<sup>209</sup> Ibid.

by two significant Islamic international religious scientific institutions: the Islamic Organization of Medical Sciences (IOMS) and the International Islamic Fiqh Academy (IIFA). Both institutions embrace a large number of imminent religious scholars and renowned scientists who contributed in the deliberations at the conferences.<sup>210</sup>

The first conference was held in Casablanca, Morocco (14-17 June 1997) and the second conference was held in Jeddah, Saudi Arabia (27 June-03 July 1997). The Casablanca conference was attended by 83 participants, who held a detailed discussion on the issue of cloning not only from the Sharī'ah perspective but also from the biomedical, psychological, social, philosophical and legal perspectives.<sup>211</sup>

The Jeddah conference was attended by 24 participants, who analyzed the issue of cloning from Sharī'ah as well as scientific viewpoints.<sup>212</sup>

The Casablanca conference produced a landmark five-point declaration, whose recommendations included the prevention of human cloning and the prohibition of all situations in which a third person invades a marital relationship.<sup>213</sup>

In both conferences<sup>214</sup> the result of the discussion regarding the technology of cloning is stated in the following words:

“Cloning does not bring into question any matter of Islamic belief.

Allāh S.W.T is the Creator of the universe but He has established the system of cause-and-effect in this world. Just as a person sowing a plant seed is not the creator of the plant, so the cloning technician is

---

<sup>210</sup> Ebrahim Moosa, “Human cloning in Muslim ethics.” *Voices Across Boundaries* 2003 (2003): 23.

<sup>211</sup> Dr. Hamid Naseem Rafiabadi, *World Religions and Islam: A Critical Study* (New Delhi: Sarup & Sons, 2003), 76.

<sup>212</sup> Ibid.

<sup>213</sup> Moosa, “HumanCloninginMuslimEthics”, 25.

<sup>214</sup> Muḥammad Abdur Rab and M. Haytham Khayat, “Human cloning: Eastern Mediterranean region perspective.” (*EMHJ*) *Eastern Mediterranean Health Journal* (2006): 02, see also: *Islamic Fiqh Council Conference on cloning*, organized in Casablanca (Morocco) and Jeddah (Saudi Arabia), 1997.

not the creator of the resulting organ or animal; Islam would not oppose the use of cloning to produce healthy body parts or organs needed to heal sick individuals. Cloning specific human parts such as heart and kidneys, for the purpose of treatment is permitted, recommended; It is false to say that cloning is an attempt to intervene in the Divine Creation. Researchers have not invented new laws, but have rather discovered new ways of relating to the development of organisms, just as they discovered the process for in-Vitro fertilization and organ transplantation. People must emerge from the dark ages now, to which science is an anathema.”<sup>215</sup>

The discussion in these two conferences was focused on the issue of cloning from the perspectives of Sharī‘ah as well as science. The findings highlighted that Islam never opposes the development of science, moreover if the purpose is on the benefits of humanity i-e for curing disease and to heal sick individuals, it is even mandatory to have such scientific knowledge. However, with regard to the technology of cloning it can be said that the only type of this technology allowed by Islam is the therapeutic cloning, not the human reproductive cloning. There is a huge divergence between the reproductive and therapeutic cloning. One of the differences between them is related to their purpose, the intended purpose behind the reproductive cloning is the development of the embryo in order to acquire a full human being. Whereas, therapeutic cloning works for the resultant embryo (it’s stem cell would then be

---

<sup>215</sup> *Islamic Fiqh Council Conference on cloning*, organized in Casablanca (Morocco) and Jeddah (Saudi Arabia), 1997.

extracted and encouraged) for the purpose of growing it into a complete human organ, a piece of human tissue or to replace the damage organ in the human body.<sup>216</sup>

If a patient is the donor of the cell himself then the cloned tissue or organ made by his own cell and transplanted later into his body will not be subject to rejection. Its adaptibility for the body will be higher because it has the same DNA as cell of the donor, which is a distinguished feature of therapeutic cloning.<sup>217</sup>

Since then, various medical associations and international and national organizations of the Muslim scholars in Europe, Asia, Africa and North America have been discussing the Casablanca Declaration and endorse it partially or fully. The ethics committee of the Organization of the Islamic Conference (OIC) formed an Islamic Law Academy in order to provide nonbinding ethical guidelines for the people of the OIC's 55 member states. This committee held a detailed research over the work of the Casablanca Declaration on the subject of cloning and made an analysis which brought it in conformity with the findings of the declaration in letter and spirit.<sup>218</sup>

Muslims have diverse cultures and social lives all over world. In order to satisfy the cultural diversity of Muslim Ummah the OIC Ethics Committee comprises of intellectual diversity by including learned Muslim jurists and clerics from contemporary Muslim communities. Alongwith the experts in Islamic jurisprudence and Shari'ah, this committee consists of the most distinguished Muslim experts in medicine and science. In 1998, with collaboration of IOMS and the World Health

---

<sup>216</sup> Aida I. Al-Aqeel, "Human cloning, stem cell research. An Islamic perspective." *Saudi medical journal* 30, no. 12 (2009): 1510.

<sup>217</sup> Fadel, "Islamic ethical positions", 135.

<sup>218</sup> *Informal listing of selected international codes, declarations, guidelines, etc. on medical ethics*, World Health Organization and Council for International Organizations of Medical Sciences (1998).

Organization this committee organized another conference in Kuwait at which genetics, genetic engineering and the Human Genome were discussed.<sup>219</sup>

### 3.3 Subsequent and Recent Responses

Later, with the passage of time, international, national and local bodies also issued some “Fatāwā” (legal verdict) on the issue of human cloning.

#### 3.3.1 Fatāwā (Formal Legal Opinions) on Cloning

Fatwā (singular to Fatāwā) is derived from the Arabic root word “Fatiya”, which denotes “to be youthful”, “to furnish with information” and “to expound.”<sup>220</sup> As a legal term it evolves originally from two citations in the Qur’ān:

وَسْتَظْفِرُونَكَ فِي الْيَسَاءِ

“They ask thy instruction concerning the women say”<sup>221</sup> (Yastaftūnak).

And at another place:

يَسْتَفْتُونَكَ قُلِ اللَّهُ يُفْتِيكُمْ فِي الْكَلَالَةِ

“They ask thee for a legal decision. Say: Allāh directs (thus) about

those who leave no descendants or ascendants as heirs” (Yuftīkum).<sup>222</sup>

Fatwā can be defined as; “a formal legal opinion given by an expert in Islamic Law.”

An expert in Islamic Law is known as a “Muftī”, an inquirer (i.e. one who seeks the legal opinion of a Muftī) is known as a “Mustaftī”, and the act of issuing Fatwā is known as “Iftā.” Muftīs are usually consulted by members of the Muslim community to have their legal opinions on any of the daily life issue faced by them such as their personal law matters, issues in profession and economics, science and technology

<sup>219</sup> Moosa, “Human Cloning in Muslim Ethics”, 24.

<sup>220</sup> Muḥammad Khalid Masud, Joseph A. Kechichian, Brinkley Messick, Ahmad S. Dallal, and Jocelyn Hendrickson, “The Concept of Fatwā.” *The Oxford Encyclopedia of the Islamic World* (1960): 34.

<sup>221</sup> Al-Qur’ān 04:127.

<sup>222</sup> Al-Qur’ān 04:176.

related inquiries, issues of politics and human rights and even developments in bioethical matters pertaining to the lives of muslims, like: abortion and family planning, human cloning, euthanasia, different types of vaccinations and organ transplantation etc. An important thing to be mentioned is that the Fatwā or the verdict given by a particular Muftī is not binding on all Muslims, therefore even the person who had requested for a Fatwā to a particular Muftī still has the option to ask anyother Muftī after receiving the verdict of the previous Muftī, on a given issue, this way he may have a second opinion. Fatwā of one Muftī belonging to a particular sect may vary from Fatwā passed by another Muftī of a different sect in a particular situation.<sup>223</sup>

The most prominent Fatāwā are presented under this portion in order to highlight the position of cloning from this aspect.

#### **i) Risālat al-Islam, KSA**

This institution is considered as a leading global media company in communicating the message of Islam all over the world and strengthening bridges of cultural interaction between Muslims and non Muslims. It is doing at most effort to build up a comprehensive encyclopedia of contemporary issues faced by Muslims and make their availability and access to all Muslims and non Muslims around the globe. Moreover it welcomes to answer the questions and issues raised by the inquiring Muslims in order to know the Sharī'ah verdicts on certain issues.<sup>224</sup>

The Fatwā of this prestigious institution begins with biological definition of the cloning where the nucleus of one cell is used to replace the nucleus of another cell.

---

<sup>223</sup> Masud, Joseph, Brinkley, Ahmad and Hendrickson, "The Concept of Fatwā", 38.

<sup>224</sup> Fatwā: Mouqaf al-Ilm Wa al-Shara Min Istinsākh' al-Bashr, Risālatul-Islam, KSA, 12-08-2009. Available at: <http://Fiqh.Islammessage.com/NewsDetails.aspx?id=1629>, Last Accessed on October 10, 2016.

Later, a reference to the verdict of the anthropologist Donald Bruce is given where he states that: "The cloning gives science a bad name and stands against the true norms of law, legality, ethics and medical ethics". According to his opinion the attempts for the human cloning are the true examples of the "height of irresponsibility." He is of the opinion that even human desire to have children has some limits and the propositions that how and what kind of technology humans can choose to achieve this desire have also some limits. Then an inference is given to the general global understanding that human cloning is unethical and undesirable.<sup>225</sup>

Then views of a Muslim scholar Dr. Omār Hamdī are expressed stating that reproduction through cloning is a controversial form of reproduction which is clearly a flagrant crime against humanity. This type of Reproduction is a radical manipulation of the kinship ties, which are the basis of human reproduction. Human cloning spoils the basic links of the human personality and relations of parenthood and blood.<sup>226</sup>

Then the conclusion of the research conducted by the team led by scientist Jerry Yang is given, describing that in 09 out of 10 cloned cows hereditary defects were found, especially on the X chromosome; one of the chromosomes which determines the sex of the newborn fetus as the female has one chromosome X, while the man has chromosome XY chromosomes. Risks of cloning are not limited and may include the existence of abnormalities in some cloned animals and reinforcing the chances of death of a cloned child in his infancy if he does not have a disability.<sup>227</sup>

Then a reference has been made to Islamic Fiqh Academy. In order to derive and explore Shari'ah ruling on cloning, the Islamic Fiqh Academy held its 10<sup>th</sup> session in Jeddah, Kingdom of Saudi Arabia in the month of Safar 1418 AH, corresponding to

---

<sup>225</sup> Fatwā: Mouqaf al-Ilm Wa al-Shara Min Istinsākh' al-Bashr, KSA.

<sup>226</sup> Ibid.

<sup>227</sup> Ibid.



28 June 1997 and issued Resolution No. 94 (2/10) on Human Cloning, the important points of the Resolution are following:

First: Human cloning is prohibited in its own way or in any other way that leads to human reproduction.

Second: In the case of violation of the prohibition mentioned above the legal and social consequences must be determined.

Third: There is also a prohibition of all cases in which a third party enters into the marital relationship, even if it is with a compassionate donation in the form of an egg or sperm, an animal or a cell for cloning.

Fourth: It is permissible to apply the techniques of cloning in the fields of germs and other microorganisms, animals and plants keeping in view the limits of the Sharī'ah, in order to achieve benefits and avoid evils.

Fifth: An appeal to the Islamic countries is made, to issue the laws and regulations necessary to close the doors directly and indirectly to local or foreign bodies and research institutions and foreign experts to prevent the Islamic countries from taking in the field of human cloning experiments and encouraging promotion.

Sixth: Joint follow-up by the Islamic Jurisprudence Academy and the Islamic Organization for Medical Sciences is recommended for the subject of cloning, its scientific developments, the seizure of its terms, the holding of symposia and the necessary meetings to clarify the legal provisions related to it.<sup>228</sup>

Seventh: Call for the formation of specialized committees comprising experts and scholars of Sharī'ah is proposed in order to develop ethical controls in the field of bioscience research for adoption in Islamic countries.

---

<sup>228</sup> Fatwā: Mouqaf al-Ilm Wa al-Shara Min Istinsākh' al-Bashr, KSA.

Eighth: Call for the establishment and support of scientific institutes and institutions conducting research in the field of biological sciences, is also made.

Ninth: An emphasis has been given to focus on dealing with scientific developments with an Islamic perspective and inviting the media to adopt a belief in dealing with these issues and avoid employing them in contradiction to Islam to sensitize the public opinion and to confirm before taking any position.<sup>229</sup>

Further, a reference has been made to Dr. Mohamed Sayed Tāntawī, Sheikh of Al-Azhar, who stressed that cloning of humans is Harām, either in animals or in plants. He gives the logic that it is prohibited for humans as it is a change in the creation of Allāh S.W.T and a mess of the human nature. He is of the opinion that Allāh S.W.T has made a man His vicegerent on the earth hence it is not appropriate to depend upon the scientists and doctors for tampering or change in the basic genetic construction.

Dr. Nasr Farid Wasel, the former Muftī of Egypt, described cloning as part of the scientific scandals that are rejected because cloning means extracting many images from one origin. It also lacks the controls of the family, like of the sons and the brothers. It also threatens the rights and duties of society and opens the door to forgery and impersonation of others. He further opines that even the use of cloning to treat the problem of infertility is forbidden because infertility is a blessing from Allāh S.W.T and says in His holy and divine book (and makes whoever He wants).<sup>230</sup>

In the end, this Fatwa states the opinion of Dr Zaghlool al-Nijār who considers the reproduction through cloning contrary to nature, because in such kind of reproduction the basic instinct of mating of the spouses is missing. As everybody knows that the genetic traits are found on chromosomes which exist in pairs and at the time of mating, half chromosomes come from the man and the other half come from the

---

<sup>229</sup> Fatwā: Mouqaf al-Ilm Wa al-Shara Min Istinsākh' al-Bashr, KSA.

<sup>230</sup> Ibid.

woman to complete the number of chromosomes. While in the case of reproductive cloning such exercise is not performed as in the case of Dolly the sheep. Hence it leads to the lack of diversity.<sup>231</sup>

## **ii) Dār al-Iftā'al-Misriyah**

Since its formation in 1895, the Egyptian house is considered as one of the most prestigious institutions for Fatāwā and Islamic Legal Research in Egypt. This institution is counted among the pillars of the religious foundations in Egypt. This authority provides neutral and authentic Fatāwā on the issues set forth to it, this feature makes it worthy of respect and honor among Muslim states beyond Egypt too.<sup>232</sup>

The Fatwā on the cloning begins with the scientific information that cloning is done with respect to plants, animals and human beings and later discusses the use of cloning for the purpose of organ or tissue transplants. Cloning in plants is their A-sexual reproduction. Such reproduction in plants is permissible when required in order to improve plant breeds or to save the endangered species. Animal cloning is also permissible, provided that it is free from tampering with a genuine interest, such as improving breeds or legitimate scientific research and that it does not result in harm or pain to the animal itself without legitimate justification.<sup>233</sup>

This Fatwā further illustrates that as far as the human reproductive cloning is concerned it is totally prohibited, and the Islamic Research Academy and other jurisprudential assemblies such as the Islamic Fiqh Academy and the Fiqh Complex in Makkāh have also issued resolutions prohibiting it. Allāh S.W.T has honored mankind

---

<sup>231</sup> Fatwā: Mouqaf al-Ilm Wa al-Shara Min Istinsākh' al-Bashr, KSA.

<sup>232</sup> Fatwā: Hukam al-Istinsākh', Dārul-Iftā-Al-Misriyah, Egypt 20-09-2015.

Available at: <http://daralifta.org.eg/AR/ViewResearch.aspx?ID=247>, Last Accessed on October 12, 2016.

<sup>233</sup> Ibid.

and this creation of Him is not subject to tempering and unnecessary experimentation, which may lead to distortion or distorted forms of human beings, with the consequent disturbance in matters of marriage, inheritance, descent and other rights and duties.

In the end this Fatwā addresses the issue of permissibility or non permissibility of the organ cloning by stating that it is the “Partial” cloning. It is permissible in the case of vital organ tissues, such as in the case of angina the cloned tissue cells are inserted into the infected heart muscle to grow and replace damaged ones, they perform their functions and restore life to the diseased heart. Likewise cloning of complete organs is also permissible such as the heart, liver and kidney etc, as long as it does not cause harm to anyone or attacks his sanctity.<sup>234</sup>

### **iii) Dār al-Iftā’, Jordan**

The Fatwā Department of the Hashemite Kingdom of Jordan was founded in 1921. The duties assigned to this Fatwā department include; supervision and organization of Fatwā affairs in the Kingdom, issuing fatawas on general and specific matters, preparation of the required research papers on important matters and emerging issues, cooperating with scholars of Islamic law in the Kingdom and outside of it regarding Fatwā affairs and offering opinions and advice in matters presented to it by the state agencies.<sup>235</sup>

Fatwā number 439 of 2010, issued by this institution begins with indicating two important objectives of Sharī‘ah. One is the protection of Progeny and the second one is protection of the people and their interests by the state. The jurists have based their opinion on these two grounds while performing Ījtehād over the issue of cloning.<sup>236</sup>

---

<sup>234</sup> Fatwā: Hukam al-Istinsākh’, Dārūl-Īftā’-Al-Misriyah, Egypt.

<sup>235</sup> Fatwā: Hukam al-Istinsākh’, Dār al-Īftā’ Jordan, Fatwā #439, 05-01-2010.

Available at: <http://aliftaa.jo/QuestionPrint.aspx?QuestionId=439>, Last accessed on October 14, 2016.

<sup>236</sup> Ibid.

Then this Fatwā further explains the nature of the human cloning and evaluates it. One type of cloning is termed as the “cellular cloning” where the egg is fertilized by a cell of the non-spermous body (It means that the body fertilizing the egg is not from the original parents of the child intended to be born). The logic behind the prohibition of this type of cloning is clear as it is detriment to the genealogies. Then this Fatwā terms the second type of human cloning as the “embryonic cloning”, where the egg fertilized by the water of the husband is placed into the womb of his wife, this method also needs to be used cautiously and can be conducted between the spouses only. Another factor must be kept in mind while allowing for this method; that it should only be allowed when wife has no other means of carrying and bearing the pregnancy. As far as the cloning in plants and animals is concerned, every method used to enhance the productivity and quality of plants and animals and also which is used in plants and animals for the betterment of the human, is allowed and permissible under the Shari‘ah.<sup>237</sup>

This detailed Fatwā also sets forth the criterion for the permissibility or non permissibility of any method of cloning, which is the attainment of benefit and repelling of harm. Moreover only the religious scholars can determine the standard of benefit and harm and not the pharmaceutical companies which see the benefit from the business point of view only. This Fatwā ends with the drawbacks of the cloning by elaborating few principles like, prohibition of fertilization other than between the spouses themselves, the outrage among different classes of society where cloning and such methods can only be adopted and afforded by the rich ones, there is also an apprehension that the people of third world countries might be used and abused by the rich countries if human cloning is allowed, animals should also be used with due care

---

<sup>237</sup> Fatwā: Hukam al-Istinsākh’, Dār al-Ifṭā’, Jordan.

and where necessary only when experimentation is required, no undue harm can be given to them, there is also another important issue that the legal status between a clone and his parents is disputed among many scholars and lastly, no one knows that the day will come when humans will regret over the emergence of this technique as the nuclear technology is regretted now, hence it requires more care and diligence on part of human beings.<sup>238</sup>

#### **iv) The European Council for Fatwā and Research**

The European Council for Fatwā and Research is a private foundation headed by renowned Muslim jurist and scholar Dr. Yusūf al-Qarādawī. Its principal office is situated at Dublin since its formation in 1997. It was formed on the recommendation of the Federation of Islamic Organizations in Europe. This organization is aimed to serve, facilitate and educate the Muslim world particularly the Muslims living in the western world to lead their lives according to the Sharī'ah injunctions.<sup>239</sup>

One of the objectives carried out by this institution is to gather highly eligible Muslim scholars for issuance of collective Fatāwā related to the matters of concern and need of Muslims, particularly in Europe.<sup>240</sup>

The ruling of this prestigious institution on cloning begins with adoption of ruling of prohibition of human reproductive cloning by the International Islamic Fiqh Academy stating that Allāh S.W.T has honored man by elevating his rank and nominating him His vicegerent on earth. Then man has been blessed with every kind of sanctions and good things which can improve his standard of life including utilization of the scientific knowledge etc. But attainment and usage of the scientific knowledge is not without limits. Every knowledge must pass the test of being beneficial and fruitful for

---

<sup>238</sup> Fatwā: Hukam al-Istinsākh', Dār al-Iftā', Jordan.

<sup>239</sup> Fatwā: Ruling on cloning: The European Council for Fatwā and Research.

Available at: <https://www.e-cfr.org/احكام/الاستنساخ/>, Last Accessed on January 10, 2018.

<sup>240</sup> Ibid.

the mankind before it is adopted, embraced and transferred. The knowledge which does not fulfill this criterion is highly rejected under Sharī‘ah.<sup>241</sup>

Later the process of reproduction is briefly elaborated where the chromosomes from a male and a female contribute to the birth of a new human being jointly and this biological process is then compared with the cloning procedure where identical copy of an individual is made without following the sexual process carried out by the spouses after a lawful marriage. After giving an overview of some of the types of the cloning the Fatwā goes on to say that cloning does not tend to create something new as this power belongs to Allāh S.W.T only.<sup>242</sup>

Based on the conclusions drawn by the Islamic Fiqh Academy the council reaffirmed the following points.

- i) Human reproductive cloning is not permissible under the injunctions of Sharī‘ah.
- ii) If someone infringes the first provision he must face the penal consequences accordingly.
- iii) Every such act is prohibited where a third party contributes to the reproductive process either it be with a sperm, egg or uterus.
- iv) Every genetic engineering and reproductive technique used for the plants, animals, microbes and microorganisms must be regulated according to Sharī‘ah injunctions.
- v) Islamic countries must enact strict legislation in order to control and prohibit practice of human reproductive cloning by the local or foreign individuals and companies or institution within their territory.

---

<sup>241</sup> Fatwā: Ruling on cloning: The European Council for Fatwā and Research.

<sup>242</sup> Ibid.

- vi) Islamic Fiqh Academy and Islamic organization for Medical sciences must follow-up for the implementation of above said recommendations and they must conduct seminars and discussions to observe every legal aspect of these recommendations.
- vii) Sharī'ah committees must work all over Islamic countries to observe ethical controls in the fields of medical and biological research.<sup>243</sup>
- viii) There is a need to establish Islamic institutions to carry out research for the permissible modes of cloning so that Muslims would not depend over the researches of the others.
- ix) There is a need to enlighten the media and general public on the sensitivity of Sharī'ah injunctions on the subject and their implementation with full spirit.<sup>244</sup>

After endorsement of the recommendations of the Islamic Fiqh Academy the council further concludes the ruling on cloning with the following conclusions.

- i) The council observes that for the purpose of medical treatment and formation of organs, cloning can be allowed by using stem cells. This permission is granted for the sake of attainment of healthy organs to replace the defective ones but embryos of 40 days of age or more can never be used for this procedure.
- ii) The council has also stipulated that even animal cloning can not be allowed unless it is assured that it is intended for a legitimate and beneficial purpose and it does not bring unnecessary harm to the animal or a change in its creation.
- iii) The council also appreciates the legislations enacted by the non-Islamic states which impose a ban over reproductive human cloning.

---

<sup>243</sup> Fatwā: Ruling on cloning: The European Council for Fatwā and Research.

<sup>244</sup> Ibid.



- iv) The council also recommends that the possible modes of cloning facilitating the spouses to have their own offspring must be evaluated in the light of Sharī'ah injunctions so that they can be promoted as it is already said that third party's intervention or assistance renders that act prohibited.
- v) The council also recommends to offer deep study and research in human cloning sector involving the lineage, marriage and inheritance related issues of clones.
- vi) The council affirms to fully cooperate with the legal authorities to encourage and formulate a strict ethical control and check over scientific and medical research on cloning.
- vii) In the end the council urges to recommend the international institutions to enforce a ban over human reproductive cloning being detriment to the rules of nature and will of the creator, Allāh S.W.T.<sup>245</sup>

#### **v) Islamic Supreme Council of Canada**

The Islamic Supreme Council of Canada is a Muslim organization based in Calgary, Alberta Canada. Sūfī Imām Syed Soharwardy established it in 2000. This council was formed with objectives of nurturing the understanding of Islam for the Canadians, enlightening the society with good virtues of Islam, strengthening the relations of Canadian Muslims with Muslim majority countries and organizing Canadian Muslims. Other than this, the council has some other endeavors like: propagation of the teaching and observance of Islam, supporting the mosques in their management and administration, proselytizing Islam and establishing and operating Islamic schools.<sup>246</sup>

---

<sup>245</sup> Fatwā: Ruling on cloning: The European Council for Fatwā and Research.

<sup>246</sup> Fatwā: Cloning: Islamic Perspective. Islamic Supreme Council of Canada (ISCC).

The Fatwā of this institution starts with expressing the reactions and sentiments of the people regarding cloning. These reactions have been stated as “tremendous” as they combine interest and anxiety expressed by the people. It is also expressed that people of many faiths are offended by the concept of cloning. Muslims have also some reservations about the recent developments in genetic engineering. One group of the people demands to ban cloning altogether because it interferes with the creation process. Other rejects it on the ground that it destroys life (i-e embryo) and recommends a ban over it. Some are of the view that it should be banned because it will direct for the immoral and unethical practices. On the other hand, one group of people favors cloning and declares it good because it can provide cure for many birth defects, which could be diagnosed during the pregnancy time. Likewise some favor it for the reason that it can provide cure to many chronicle diseases. Later the reality of creation of human beings and universe is elaborated by giving instances from the Qur’ān, like:

أَوَلَمْ يَرَوْا كَيْفَ يُبْدِئُ اللَّهُ الْخَلْقَ ثُمَّ يُعِيدُهُ إِنَّ ذَلِكَ عَلَى اللَّهِ يَسِيرٌ ۝

“See they not how Allāh originates creation, then repeats it: truly that is easy for Allāh.”<sup>247</sup>

قُلْ يَتُوبُ إِلَى الْأَرْضِ فَانظُرُوا كَيْفَ يَخْلُقُ ثُمَّ يَرْجِعُ الْأَفْجَارَ إِنَّ اللَّهَ عَلَى كُلِّ شَيْءٍ قَدِيرٌ ۝

“Say: Travel through the earth and see how Allāh did originate creation; so will Allāh produce a later creation: for Allāh has power over all things.”<sup>248</sup>

---

Available at: [http://www.Islamicsupremecouncil.com/cloning-Islamic\\_perspective/](http://www.Islamicsupremecouncil.com/cloning-Islamic_perspective/) Last accessed on January 01, 2017.

<sup>247</sup> Al-Qur’ān 29:19.

<sup>248</sup> Al-Qur’ān 29:20.

This Fatwā criticizes the erroneous opinion that the technologists and scientists have the ability for creating, producing or inventing things. The technologists and scientists can only have the capacity and ability to explore, expand or develop things from the already created compounds or elements by Allāh S.W.T. The real creator and inventor is Allāh S.W.T while His creation is further discovered, explored or investigated by the scientists. Everything developed, invented, discovered or created by human is already in the knowledge of Allāh S.W.T. The knowledge of all things originates from Allāh S.W.T. It is only Allāh S.W.T who decides the ways through which He will let the humans know the secrets of His creation by letting them discover it. For this purpose he bestows the humans with the understandings of His creations.<sup>249</sup>

Allāh S.W.T does not need any physical or material element to originate something. Whenever He plans to create anything He orders it, “TO BE” and it comes into existence. The shape, ingredients, characteristics and dimensions of every created thing are part of Allāh S.W.T’s order. Unlike the scientists Allāh S.W.T does not need to learn from His experiences. Scientists use Allāh S.W.T’s given material, explore its capabilities, discover its secrets and manipulate its ingredients through experiments in order to develop something new for the people. The researchers and scientists have no authority and capability to “originate” the creation at any point of time. It can easily be understood from the situations where the scientists can grow human skin, they can develop synthetic materials or they may grow human organs, but nothing can be done by them unless they get the original material from Allāh S.W.T’s creation. The required material is taken from the elements such as the earth, plants, animals, birds, water, humans and space etc. Even if by some means all the brainpower and intelligence of all scientists of all times could be joint and combined together, yet that

---

<sup>249</sup> Fatwā: Cloning: Islamic Perspective. Islamic Supreme Council of Canada (ISCC).

joint cluster of intelligence will never allow them to make a wing of a mosquito even, on their own.<sup>250</sup>

A reference to the verse of the Qur'ān is given in this context:

أَمْ يَدْعُوا الْخَلْقَ مُصَدِّقِينَ أَمْ يَدْعُونَ الْكُفْرَ مِنَ الْغَيْبِ أَمْ يَدْعُونَ الْكُفْرَ مِنَ الْغَيْبِ أَمْ يَدْعُونَ الْكُفْرَ مِنَ الْغَيْبِ ۖ قُلْ هَاتُوا بُرْهَانَكُمْ إِنْ كُنْتُمْ صَادِقِينَ ۝

“Or, Who originates creation, then repeats it, and who gives you sustenance from heaven and earth? (Can there be another) god besides Allāh. Say, Bring forth your argument, if ye are telling the truth!”<sup>251</sup>

اللَّهُ يَبْدَأُ الْخَلْقَ ثُمَّ يُعِيدُهُ ثُمَّ إِلَيْهِ تُرْجَعُونَ ۝

“It is Allāh Who begins (the process of) creation; then repeats it; then shall ye be brought back to Him.”<sup>252</sup>

Creation is the characteristic which belongs to Allāh S.W.T only and the repetition of the process of creation is nothing new but an experience in the fields of science and technology. This repetition would go on continually and people will keep on learning more and more. Nothing is definite and permanent except the Allāh S.W.T. As the following verses depict:

الْخَلْقُ السَّمَوَاتِ وَالْأَرْضِ أَكْبَرُ مِنْ خَلْقِ النَّاسِ ۚ كُنْ أَكْثَرُ النَّاسِ لَا يَعْلَمُونَ ۝

“Assuredly the creation of the heavens and the earth is a greater (matter) than the creation of men: Yet most men understand not.”<sup>253</sup>

وَلَقَدْ خَلَقْنَا قَوْمَكَ مِنْ سَلْوَاقٍ ۖ وَمَا كُنَّا مِنَ الْخَلْقِ غَافِلِينَ ۝

<sup>250</sup> Fatwā: Cloning: Islamic Perspective. Islamic Supreme Council of Canada (ISCC).

<sup>251</sup> Al-Qur'ān 27:64.

<sup>252</sup> Al-Qur'ān 30:11.

<sup>253</sup> Al-Qur'ān 40:57.

“And We have made, above you, seven tracts; and We are never unmindful of (our) Creation.”<sup>254</sup>

وَأَتَمَّرَ أَهْدَىٰ خَلْقًا أَمْرَ السَّمَاءِ بِذِيهَا ۝

“What! Are ye the more difficult to create or the heaven (above)?

((Allāh)) hath constructed it:”<sup>255</sup>

الْحَمْدُ لِلَّهِ فَاطِرِ السَّمَوَاتِ وَالْأَرْضِ جَاعِلِ الْمَلَكِ رُسُلًا لَّوَّىٰ أَحْوَجَ مِنْكَ وَلَوْ أَنَّهُمْ فِي الْخَلْقِ مَا يَشَاءُ ۝

إِنَّ اللَّهَ عَلَىٰ كُلِّ شَيْءٍ قَدِيرٌ ۝

“Praise be to Allāh, Who created (out of nothing) the heavens and the earth, Who made the angels, messengers with wings, - two, or three, or four (pairs): He adds to Creation as He pleases: for Allāh has power over all things.”<sup>256</sup>

وَاللَّهُ خَلَقَ كُلَّ دَابَّةٍ مِنْ مَّاءٍ فَمِنْهُمْ مَنْ يَمْشِي عَلَىٰ بَطْنِهِ ۚ وَمِنْهُمْ مَنْ يَمْشِي عَلَىٰ رِجْلَيْنِ ۚ وَمِنْهُمْ مَنْ يَمْشِي عَلَىٰ أَرْبَعٍ ۚ

يَخْلُقُ اللَّهُ مَا يَشَاءُ ۚ إِنَّ اللَّهَ عَلَىٰ كُلِّ شَيْءٍ قَدِيرٌ ۝

“And Allāh has created every animal from water: of them there are some that creep on their bellies; some that walk on two legs; and some that walk on four. Allāh creates what He wills for verily Allāh has power over all things.”<sup>257</sup>

أُولَٰئِكَ الَّذِينَ كَفَرُوا ۚ إِنَّ السَّمَوَاتِ وَالْأَرْضَ كَانَتَا تَائِفَتَيْنِ ۚ وَجَعَلْنَا مِنَ الْمَاءِ كُلَّ شَيْءٍ حَيٍّ ۚ أَفَلَا يُؤْمِنُونَ ۝

<sup>254</sup> Al-Qur’ān 23:17.

<sup>255</sup> Al-Qur’ān 79:27.

<sup>256</sup> Al-Qur’ān 35:01.

<sup>257</sup> Al-Qur’ān 24:45.

“Do not the Unbelievers see that the heavens and the earth were joined together (as one unit of creation), before we clove them asunder? We made from water every living thing. Will they not then believe?”<sup>258</sup>

الَّذِي أَحْسَنَ كُلَّ شَيْءٍ خَلَقَهُ وَبَدَأَ خَلْقَ الْإِنْسَانِ مِنْ طِينٍ ۝

“He Who has made everything which He has created most good: He began the creation of man with (nothing more than) clay.”<sup>259</sup>

This Fatwā goes on to explain further that Allāh S.W.T has fashioned the man with all excellence and perfection. A child passes through many stages of formation during 09 months in his mother’s womb. Then Allāh S.W.T bestows him with many blessings like of sight and vision, of intelligence and power and his fate is determined by Allāh S.W.T. Then after his birth Allāh S.W.T is well aware of everything in his mind and heart as the Qur’ān says:

هُوَ اللَّهُ الَّذِي لَا إِلَهَ إِلَّا هُوَ عِلْمُ الْغَيْبِ وَالْفَهَادِ ۚ هُوَ الرَّحْمَنُ الرَّحِيمُ ۝

“Allāh is He, than Whom there is no other god;- Who knows (all things) both secret and open; He, Most Gracious, Most Merciful.”<sup>260</sup>

Therefore, man does not create but only replicates and manipulates. This process can be allowed in Islam as long as it is done to benefit Allāh S.W.T’s creatures.<sup>261</sup>

#### vi) Islamic Research Foundation International, Inc

The Islamic Research Foundation provides verdict on key issues like the Qur’ān, Ḥadīth, family and children, health, Hījāb, Islam and science, social issues and personal growth etc.<sup>262</sup>

<sup>258</sup> Al-Qur’ān 21:30.

<sup>259</sup> Al-Qur’ān 32:07.

<sup>260</sup> Al-Qur’ān 59:22.

<sup>261</sup> Fatwā: Cloning: Islamic Perspective. Islamic Supreme Council of Canada (ISCC).

<sup>262</sup> Fatwā: The Qur’ān and Cloning: Islamic Research Foundation International, Inc.

While addressing the issue of cloning the foundation starts its verdict with the basic theological questions concerning cloning which try to clarify the position of cloning by raising the fundamental questions like the definition of person, the relationship of body and spirit and the composition of tissues and genes to form a person etc. This Fatwā rejects human reproductive cloning as it is against the genetic variability and considers the human reproductive cloning as a threat to the individuality due to identical replication.<sup>263</sup>

Then cloning is criticized for turning the human body as merchandise and declaring blood, sperm ovum and other reproductive organs as “commodities”. This verdict ends with the elaboration of the concept of “ownership” or “right” over one’s body in the light of Sharī‘ah and concludes that Allāh S.W.T has bestowed the humans with bodies as “Trust” and they can never be treated with free will of humans without any boundaries. Human body is Allāh S.W.T’s property and not the scientific laboratory. The body of a human can never become a subject to scientific experiments for fruitless and unproductive acts like cloning. Cloning can rightly be said as rebellious act and act against the will of Allāh S.W.T according to this verdict.<sup>264</sup>

#### **vii) Dār al-Salām, UK**

This Fatwā was first published by the Majjālāh al-Majmā Al-Fiqh Al-Islamīyyah in form of an answer on the issue of cloning by Sheīkh Salih Al-Munajjid and later by the Dārussalam Publishers. This publishing company is the oldest and most

---

Available at: [http://www.irfi.org/articles/articles\\_351\\_400/koran\\_and\\_cloning.htm](http://www.irfi.org/articles/articles_351_400/koran_and_cloning.htm), Last accessed on January 02, 2017.

<sup>263</sup> Fatwā: The Qur’ān and Cloning: Islamic Research Foundation International, Inc.

<sup>264</sup> Ibid.

distinguished company of the United Kingdom which enjoys high repute for publishing authentic Islamic books in the light of the Qur'ān and the Sahih Ḥadīths.<sup>265</sup>

This Fatwā begins with the respect and honour enjoyed by human beings in the eyes of Sharī'ah and describes that Allāh S.W.T has blessed the sons of Adam with respect and dignity and made them vicegerents of Allāh S.W.T on earth. Teachings of Sharī'ah preserve and protect the rights of man and bless him with everything which is in accordance with the "Fitrāh" or the natural state of anything. Then objectives of Sharī'ah (Maqāsid Al- Sharī'ah) tend to protect the religion, life, intellect, progeny and wealth. The Sharī'ah protects Muslims from every change or cause which pollutes the very nature of their relationship with each other or with Allāh S.W.T. Then a reference to a Ḥadīth Qūdsī is provided, (in which Allāh S.W.T says):

"I have created all My slaves as Hāneefs (pure monotheists), but the Shayāteen (devils) come to them and try to divert them from their religion and they commanded them to alter My creation."<sup>266</sup>

The verdict goes on to state that Islam neither places any limitations on the freedom of scientific research, nor places any obstacles in its way, hence science is considered as a mean to understand the laws of Allāh S.W.T. But it must be noted that Islam encourages accomplishment of beneficial and fruitful knowledge only.<sup>267</sup>

Islam doesn't permit wastage of time or energy on the things which can never be of good to the society. So it is not permissible to put something into practice simply for the reason that it can be implemented, rather it has to be beneficial and purposeful in order to serve the interests of individuals and society. Moreover it must have the

---

<sup>265</sup> Fatwā: Ruling on cloning of human cloning: Dār al-Salām, UK. Available at: [http://www.darussalaam.co.uk/Ruling\\_on\\_Cloning\\_of\\_Human\\_Beings\\_371\\_Islamic\\_Fatwā\\_detail](http://www.darussalaam.co.uk/Ruling_on_Cloning_of_Human_Beings_371_Islamic_Fatwā_detail). Last accessed on January 20, 2017.

<sup>266</sup> Tafsir al-Qurtubi, 5/389.

<sup>267</sup> Fatwā: Ruling on cloning of human: Dār al-Salām, UK.



ability and capability to protect them from harm when it is intended to be implemented and it must not go against the splendid purpose for which Allāh S.W.T has created man. Man himself should no way become the subject of scientific research and experimentation, neither he should interrupt and disturb the unique identity by which he has been blessed. Any change in the distinct characteristics of man which leads towards the disruption of the social structure or termination of the foundations of kinship and lineage or abolition of the family system ordained by Allāh S.W.T is totally forbidden.<sup>268</sup>

This Fatwā further concludes with the definition and nature of cloning. This evaluation comes to the conclusion that it is obvious that cloning and similar procedures do not represent the act of creation and the new creation can not be said to be an exact copy of its base or the original. The egg of the mother from which the nucleus was removed still contains some bits and pieces of the nucleus in the material attached, these tinny elements have an obvious and noticeable effect to alter the characteristics of the cells.<sup>269</sup>

### **viii) Shī'ah Verdict on Human Cloning**

According to a Shī'ah Muslim religious scholar Ayatollah As-Sayyed Muḥammad Saeed Al-Hakim of Iraq there is no absolute and clear ruling over the prohibition of cloning. He is of the view that no clear injunction of Sharī'ah rejects human cloning explicitly. He gives the reasoning that as there is no evidence within the Sharī'ah which makes it obligatory for a man to observe and keep the normal course of reproduction always, so it is not necessary to reproduce a child within a family circle only. He further elaborates that as the creation of the first human being on earth Adam A.S and later the birth of Prophet Jesus A.S did not follow the usual

---

<sup>268</sup> Fatwā: Ruling on cloning of human: Dār al-Salām, UK.

<sup>269</sup> Ibid.

courses of reproduction so we can assume that the claim that human creation must follow the usual course and also be within family's dimension does not have a support.<sup>270</sup>

He denounces the notion that the criminals will run away to escape justice by making clones of them. He thinks that this is no justification to prohibit cloning. In order to support his claim he gives another justification from Islamic criminal law that a tool can not be declared as prohibited to purchase or use in anticipation of its being used in criminal or unlawful acts. Same is the case with cloning which can not be declared prohibited in anticipation of being misused by the evil minds. He further adds that the criminals or evil minded people might take undue advantage of the cosmetic surgery even, with greater magnitude than cloning, but would it be justified to ban or prohibit the cosmetic surgery?<sup>271</sup>

He goes on to support his views by moral and ethical justifications as well. For example he is of the view that every innovation and advancement in the science and technology is fine and advantageous if the society is civilized and understands the basic values and gives proper regard to the fellow members. Same is the case with cloning, which is not bad unless it is used improperly.<sup>272</sup>

Likewise he adds that while a man is allowed to have sexual intercourse with his pregnant wife, despite the dangers and risks attached still it is not prohibitory to have sexual intercourse during pregnancy. Similarly the waste of human embryos for cloning can not be treated as a much serious issue. He is of the opinion that cloning can be prohibited if it includes Harām or prohibitory acts such as touching of

---

<sup>270</sup> Shī'ah verdict: Jurisprudence of human cloning. Available at: <http://www.ayatollahalansari.org/english/wp-content/uploads/2015/06/Human-Cloning-by-Ayatollah-Muhammad-Hussein-Al-Ansari.pdf>. Last accessed on January 05, 2017.

<sup>271</sup> Ibid.

<sup>272</sup> Ibid.

unauthorized ones or their looking at the prohibited private parts etc. But he further opines that if an individual/clone has been created with the help of reproductive cloning he does not possess a father. He supports his view by stating that biologically a father is the person who contributes with his sperm for the reproductive purpose. Similarly if a female's cell has been used for the reproductive cloning again the situation demands for the non-existence of a father-offspring relation as the female donor can not be termed as the father of the clone.<sup>273</sup>

He compares this situation with a famous narration that Eve A.S was created from Adam's rib by Allāh S.W.T, but no one has ever claimed that Eve A.S is Adam A.S's daughter. It can be summarized that the fatherhood is determined by the fact who contributed with his sperm in the process of reproduction not who intended to create someone out of his any body part like a cell.<sup>274</sup>

The relationship to the mother is also conditional upon the use of that particular females's egg in the reproduction process. But again it is important to observe that her complete egg has not been used to create an egg but only its nucleus gets removed in cloning procedure so it is complicated to consider the egg-donor as the mother of the clone too yet this relationship is hard to ignore as well, and can not be declined wholly.<sup>275</sup>

He extends his arguments over the issue of relationships of clones with the sperm or egg donors by denying every possibility that a clone can be considered as a brother to the donor. He supports his arguments with the logic that it is not being carriers of the similar genes which make two individuals brothers but the brotherhood is determined by the sharing of same parents or a parent. Again while considering the

---

<sup>273</sup> Shī'ah verdict: Jurisprudence of human cloning.

<sup>274</sup> Ibid.

<sup>275</sup> Ibid.

religious views it is obvious that the concept of brotherhood is a social and cultural norm from an Islamic society and embraces all Muslims in itself.<sup>276</sup>

On the issue of the religious status of a clone child he compares a clone with a prisoner child as he follows and accepts all conditions put by the jailer upon his parent. The clone child will be considered following the religion of his guardian as long as he does not attain majority. After attaining majority/puberty he will be considered major and can follow whatever religion he wants. He also opines that even if the clone turns to be a non-believer on attaining majority he can not be considered as apostas or Murtad (converts out of Islam) as according to Ayatollah as-Sayyed Muḥammad Saeed al-Hakim the cell-donor is not considered as the father of the clone and it can be said that no parental relation exists between them.<sup>277</sup>

Likewise Ayatollah al Hakim extends this cannnotation to the clone's relationship to a tribe on the basis of his cell-donor's relation to any specific tribe such as Hashemite etc. He bases this principle on the logic that it is only the parental link which establishes any relationship to a tribe, when there is no father-son relationship, no lineage or connection is developed between the clone and cell-donor, in such a situation a clone can not be attributed towards his cell-donor's tribe. According to Ayatollah al-Hakim the cell-donor is only a guardian or the care-taker to a clone.<sup>278</sup>

Ayatollahal Hakim extends the cloudy position of the clone by setting out that the doubtful status of the clone with the egg-donor extends and applies over all female relatives as well. He thinks that there is no evidence to prove or disprove such relations. Ayatollahal Hakim suggests to observe the precautions

---

<sup>276</sup> Shī'ah verdict: Jurisprudence of human cloning.

<sup>277</sup> Ibid.

<sup>278</sup> Ibid.

and prohibitions in this regard and advises to be strict while applying the principles of establishment of blood and prohibited relations. He excludes clone and cell-donor from every possible relationship tie that he thinks that there is no marriage restriction between the clone and the cell-donor as he is not considered his/her father, same is the case with other relations such as his son, brother and father. But he gives the second opinion where he declares the marriage of a man to the creation made of his own parts, legal and legitimate on the basis of principles of logic. Being on safer side, he suggests to refrain from any matrimonial relationship between the clone and his cell-donor, his son, brother or father. The precaution must be adopted in order to avoid any prohibitory relationship among the offsprings. He opines further that cloning of human body parts is allowed and permissible even if those are private organs. It is also permissible to look at the cloned body parts in the laboratory.<sup>279</sup>

But in the end he warns of the use of this discovery or any other medical or scientific invention which may harm society or humanity. He advises to be careful while applying scientific advancements in daily lives that they must not interfere with the natural order of the universe and its decorum. So no action of humans must go against the will of Allāh S.W.T's commands or in defiance of His commands by any means.<sup>280</sup>

An eminent Iraqi scholar Āyatullāh Sheikh Muḥammad Hussaīn Al-Ānsārī was born in 1952. He is a renowned jurist of the Twelver Shī'ah Islam from Iraq and Australia.<sup>281</sup>

He gives a verdict over the legality and permissibility of human cloning. He goes on to say that:

---

<sup>279</sup> Shī'ah verdict: Jurisprudence of human cloning.

<sup>280</sup> Ibid.

<sup>281</sup> Ghaly, "Human cloning: The new phenomenon", 10.

verse in order to establish that any change in the Allāh S.W.T.'s creation is a change in the "fitrah" infact:

فَأَقِمْ وَجْهَكَ لِلدِّينِ حَنِيفًا فِطْرَةَ اللَّهِ الَّتِي فَطَرَ النَّاسَ عَلَيْهَا لَا تَبْدِيلَ لِخَلْقِ اللَّهِ ذَلِكَ الدِّينُ الْقَيِّمُ وَلَكِنَّ أَكْثَرَ  
النَّاسِ لَا يَعْلَمُونَ ۝

"So set thou thy face steadily and truly to the Faith: (establish) Allāh's handiwork according to the pattern on which He has made mankind: no change (let there be) in the work (wrought) by Allāh. That is the standard Religion: but most among mankind understand not."<sup>287</sup>

Ayatullah Al-Ansari mentions the following verse from the Holy Qur'ān in order to proceed:

إِنْ يَدْعُونَ مِنْ دُونِ الْإِلَهِ إِنَّمَا هُمْ إِلاَّ هُتَاتٌ مَرِيدَاتٌ لَعَنَهُ اللَّهُ وَكَأَلَّا يُعْتَدَنَّ مِنْ عِبَادِكَ نَاصِيًا مَفْرُوضًا ۝  
وَلَا يَنْفَعُهُمْ ذُنُوبُهُمْ لَأَنْفُسِهِمْ فِي هَذِهِ أُولَئِكَ قُلُوبُهُمْ مُغْشًى بِالشَّيْطَانِ وَلَئِنْ يَدْعُونَ  
دُونَ اللَّهِ فَقَدْ خَسِرُوا أَنْفُسَهُمْ يَدْعُهُمْ كُتُبُهُمْ ۝ وَمَا يَدْعُهُمُ الشَّيْطَانُ إِلَّا غُرُورًا ۝ أُولَئِكَ مَا لَهُمْ جَهَنَّمُ وَلَا يُعَدُّونَ  
عَنْهَا فَيُخْصَا ۝

"The Pagans, leaving Him, call but upon female deities: They call but upon Satan the persistent rebel! Allāh did curse him, but he said: I will take of Thy servants a portion marked off; I will mislead them, and I will create in them false desires; I will order them to slit the ears of cattle, and to deface the fair nature created by Allāh. Whoever, forsaking Allāh, takes Satan for a friend, hath of a surety suffered a loss that is manifest. Satan makes them promises, and creates in them

<sup>287</sup> Al-Qur'ān 30:30.

false desires; but Satan's promises are nothing but deception. They, his dupes, will have their dwelling in Hell, and from it they will find no way of escape."<sup>288</sup>

He interprets this verse with the meaning that all acts which alter Allāh S.W.T's creation are untrue dreams and acts of Satan.<sup>289</sup>

### **ix) Madrasah Dār-al-'Ulūm, Sabīl-al-Islam Haiderabad**

#### **Dakkan, India**

In the subcontinent, the Madrasahs had been a great support to spread the teachings of Islam throughout the centuries and their services are not ignorable. Such an important and prestigious position is enjoyed by Dār-al-'Ulūm Sabīl-al-Islam, Hyderabad in India which was founded by Maulana Muḥammad Rizwan Al-Qasmi in 1973.<sup>290</sup>

The Fatwā of this prestigious institution begins with a brief introduction to the meaning and history of cloning. It is explored in the light of facts that how after 276 failed attempts a sheep The Dolly was finally cloned. Giving an overview of the brief history towards human cloning with understanding of cloning as "copying" the Fatwā goes on to throw a light on the Islamic concept of reproduction. Later a very logical and convincing debate over the concept of reproduction is elaborated by stating that cloning is not any intervention in Allāh's will and it is never meant to reproduce someone without Allāh S.W.T's will. Allāh S.W.T created Jesus without father and has the supreme power over creation, then making a baby by the process of cloning from a cell of one male or one female only is not an intervention in Allāh S.W.T's will and creation.<sup>291</sup>

---

<sup>288</sup> Al-Qur'ān 04:117-121.

<sup>289</sup> Al-Ansari, *Human Cloning: An Islamic Study*, 16.

<sup>290</sup> Fatwā: Cloning Islami Nuqta-e-Nazr, Jadeed Fiqhi Masail, Madrasah Dār-al-'Ulūm, Sabīl-al-Islam (Zamzam Publisher: haiderabad Dakkan, India), 107-111.

<sup>291</sup> Ibid.

The Fatwā further elaborates that yet cloning has many social, biological and moral impacts like; the lineage of the cloned baby is disputed, his social acceptance and position can also be not assured, he or she may suffer a lot of biological defects and also the other related moral issues such as fear of promoting unhealthy and unlawful sexual relations with the uprising practice of cloning.<sup>292</sup>

This Fatwā clearly favours the gene cloning where effected gene is replaced with a healthy gene in order to avoid certain diseases which can not be cured normally and a reference to a Ḥadīth of the Prophet P.B.U.H is made where it is mentioned that no disease is sent without a traetement. Prophet Muḥammad P.B.U.H said:

“There is no disease that Allāh has sent down except that He also has sent down its treatment.”<sup>293</sup>

So cloning has a great potential where it is used to benefit the socity and not to create chaos in society.<sup>294</sup>

#### **x) Idāratul Qur’ān wa-‘Ulūm Islamia, Karachi, Pakistan**

Basically this is a research based verdict, describing an analytical overview of the therapeutic cloning. This valuable Fatwā begins with the therapeutic/ medical uses of cloning. A Muslim Doctor Shahid Athar from the United States of America explains that cloning technology can not be applied to bring any change in the natural characteristic of any animal even. Like, their genetic characterictics can not be mixed with any other species or animal but the animals can be cloned in such a way to cure different diseses with their help. For example the vaccines, proteins and harmonies and medicine strong enough to fight against any particular disease can be put in the

---

<sup>292</sup> Fatwā: Cloning Islami Nuqta-e-Nazr, Madrasah Dār-al-‘Ulūm, Sabīl-al-Islam.

<sup>293</sup> Al-Bukhari, *Sahih Al-Bukhari*, vol 07, Ḥadīth No. 5678.

<sup>294</sup> Fatwā: Cloning Islami Nuqta-e-Nazr, India.



milk of the animals and this can fulfill the diet deficiency from the humans who will use that milk.<sup>295</sup>

The writer goes on to explain the applicability of the principle of “LA DARAR” in the situation where the desired genetic materials are mixed with the cells of the clone in order to get a disease free subject/person/individual. But there are two conditions which must be complied in order to make it permissible under Shari‘ah; the first condition is that the conditions for the compliance of principle of “LA DARAR” must be fulfilled, secondly the desired results must be about the treatment or eradication of the diseases and not for the sake of choosing the hair or eye color or height or complexion or any such attribute. The genetic material used for the purpose of cloning must be taken from the real parents and not any other person. The author gives a great emphasis to the diagnostic of hereditary diseases before and after conception and their treatment by cloning and is of the opinion that the use of cloning in such a way would be proved to be a blessing for mankind.<sup>296</sup>

Then the Mufti goes on to set forth few points from the recommendations proposed by the Medical society of Jordan in relation to the scientific research and cloning issues. He is of the opinion that the scientific research is permissible over the egg or sperm in order to discover the hereditary and other possible diseases before hand and also to remove any hurdles in the way of safe pregnancy and cure. The ethical committees must supervise such research and some of the members of those committees must be Muslims.<sup>297</sup>

With regard to the IVF birth, the experts can reject the egg with hereditary diseases and it is not mandatory to put that egg in the womb of the mother. Moreover if treatment

---

<sup>295</sup> Fatwā: Salmati Hayatiyati Technology Me Hunay Wali Taraqiyaan, Idāratul Qur‘ān Wa-uloom Islamia, Karachi, Pakistan.

<sup>296</sup> Ibid.

<sup>297</sup> Ibid.

and cure is possible it will be applied to that egg. It is permissible to replace the defective genes with the healthy one, but it is not permissible to add anything new by choice which is a change in the pattern of nature, for example, the height, complexion and eye color etc. It is also permissible to diagnose the gender of the Janīn in order to examine and cure any specific disease related to a particular gender. The diagnostic of the gender in order to select a gender by choice, like of male or female is strictly prohibited. All Muslim jurists are unanimous over this point.<sup>298</sup>

This verdict further concludes that a committee consisting of Muslim researchers and practitioners must supervise all cases of above mentioned stances in order to check their authenticity as per Shari'ah rulings. Both parents must show their unconditional consent before performing any of the above mentioned ways.<sup>299</sup>

#### **xi) Kitāb-al-Fatāwā by Zamzam Publishers, Pakistan**

This short Fatwā answers the question on human cloning in a sentimental and impressive tone. The verdict is given by Allama Saif Ullah Rehmani. He says that if cloning is the reproduction without the sexual act between the spouses even then it is not beyond the powers of Almighty Allāh S.W.T, examples of birth of Adam (A.S) and Jesus (A.S) can be quoted in this regard. Cloning is neither an intervention in the powers of Almighty Allāh S.W.T nor anything impossible but it should be rejected on the grounds that it is needless where man and woman can easily run the system of reproduction, moreover it is unfair to deprive the cloned child from the love of his parents.<sup>300</sup>

---

<sup>298</sup> Fatwā: Salmati Hayatiyati Technology Me Hunay Wali Taraqiyaan, Pakistan.

<sup>299</sup> Ibid.

<sup>300</sup> Fatwā: Cloning Se Touleed, Kitāb-al-Fatāwā by Zāmzām Publishers, Pakistan 217-218.

## **xii) Fatāwā Haqqāniyyah, Dār-al-‘Ulūm Haqqāniyyah, Aukora**

### **Khatak, Pakistan**

This Fatwā begins with the definitions and brief introduction of the word cloning. The Muftīs start their opinion by elaborating the fact that the team of the scientists led by Dr. Ian Wilmut did not discover or invent something new while introducing the technique of cloning. These scientists have used cells in order to reproduce new cells and it clearly means that these cells are the creation of Allāh S.W.T and nothing new has been invented by the scientists.<sup>301</sup>

The Muftīs go on to say that such scientific techniques do nothing but endorse the Islamic concept of birth after death where all human beings will be reborn and there is no doubt in it that Allāh S.W.T has complete authority and supreme command over our second life too just as He blessed us with life for the first time.<sup>302</sup>

Even though these scientific techniques endorse Islamic beliefs but still human reproductive cloning can not be allowed due to the reasons given below:

- i) The human reproductive cloning might affect the weak minds adversely and people may give undue credit to the science and technology thinking that the scientist can reproduce human beings themselves.
- ii) Human reproductive cloning is a change, interruption and disruption in the creation of Allāh S.W.T. Islam condemns any such interruption strongly and declares it as an act of Satan.
- iii) This procedure is totally contrary to the prevalent system of reproduction since the time of Adam and Eve. It is totally against the nature.

---

<sup>301</sup> Fatwā: Jadid Scienci Tehqeeq: Insani Cloning Ki Shari Hasiyat, Fatāwā Haqqāniyyah, Dār-al-‘Ulūm Haqqāniyyah, Aukorā Khatak, Pakistan, 323-329.

<sup>302</sup> Ibid.

- iv) The clone will be deprived of parental love since his birth hence would have got inferiority complex leading towards infidelity.
- v) If a third party is also involved in it, that would create mistrust and later differences between the parents/parent and the third party would arise.
- vi) It would be hard, even impossible to prove the lineage of the clone. The situation would turn harder when an other (third party) is involved.
- vii) Identical clones would be helpful for the criminals and they would become tools in their hands.
- viii) Allāh S.W.T bestows some with sons, some with daughters and some with none of them, but when people are given a gender selection, it is feared that they will prefer only male cloned child.<sup>303</sup>
- ix) Islam gives a huge value to Nikāḥ and encourages it, no matter the couple is blessed with the kids in future or not. Having a child is neither obligatory nor mandatory, so it is better to leave it on ones's fate in case he is issueless after marriage. Cloning will encourage people to have children even without conducting a valid marriage.
- x) In case a "to be clone" is intended to be placed in a female's womb that would involve seeing and touching her by the men who are prohibited from it actually. Her body would be exposed to them, which is Harām.

Then instances from the verdicts of different Muslim and non-Muslim personalities of knowledge are quoted which favour a total prohibition of cloning.<sup>304</sup>

---

<sup>303</sup> Fatwā: Jadid Scienci Tehqeeq, Pakistan.

<sup>304</sup> Ibid.

**xiii) Jami-al-Fatāwā, Idāra Ta'līf Ashrafia, Fawara Chowk,**

**Multan**

This Fatwā clearly rejects human cloning stating that it would abolish the most important institution in a society i-e family and consequently the lineage. There would be immorality everywhere and no place for the chastity will be left for the pious ones if human cloning takes place. Variety and uniqueness are the main characteristics of mankind which will be abolished by cloning. The identical ones would give harm to their look alike when they commit a crime, or run from the prosecution in case already committed a crime.<sup>305</sup>

**xiv) Mahnma Hāq, April 2006, Pakistan**

The Fatwā published by the monthly Journal Mahnma Hāq begins with the literal meaning of cloning by explaining the incident of the birth of Dolly the sheep. Later the procedure to perform the plants and human cloning is illustrated. It is stated that even though the scientists can not claim that they can create a new thing, at their own by this process but still moral, ethical and religious reservations declare it unwanted and unnecessary.<sup>306</sup>

A reference to the opinion of great scientist Ibn Khaldoon is made where he had opined once that if egg and sperm are jointly held together at a place outside mother's womb under same temperature and conditions baby may be born, later this theory gave birth to the idea of "Test tube baby." It has mentioned that cloning is practically hard and offers lesser possibility of a successful application over human beings, yet, even if successfully done would be a great danger to all religions, morality and ethical

---

<sup>305</sup> Fatwā: Jami-al-Fatāwā, Idāra Taleef Ashrafia, Fawara Chowk, Multan, 344-345.

<sup>306</sup> Fatwā: Cloning Ki Shari Hasiyat, Mahnma Hāq, April 2006, Pakistan, 01-06.

norms. It will encourage serious issues of inheritance, lineage and status of mental and physical health.<sup>307</sup>

This verdicts clearly rejects cloning, the main concerns amid this decision are:

- i) The process of human birth following this process will be defective and unreliable.
- ii) The concepts of marriage and family will be shaken totally, leaving behind the issues of lineage, inheritance and blood relations.
- iii) The baby born through this process will be lonely as he will not be able to have the parental love and care, he will be an easy prey to the psychological and mental health problems.
- iv) The relation between the cloned child and from whom he has been cloned is still of great divergence between the Muslim scholars, some say that they are brothers for each other, others declare them father and son. Same is the case with the mother of the cloned.
- v) Most notorious and cruel people can take another birth when they are reborn by applying this technique, it will bring destruction and terror to the society.
- vi) The continuity of a bad person in the form of his second birth would never let the world be retaliated towards his bad deeds.
- vii) The legal status of the cloned person is also cloudy and arguable.
- viii) Cloning is contrary to the honor and respect of the human beings.
- ix) Cloning is against the principles of nature and nothing which is against the nature can hold a favourite position in a society.<sup>308</sup>

---

<sup>307</sup> Fatwā: Cloning Ki Shari Hasiyat, Mahnma Hāq, April 2006, Pakistan, 01-06.

<sup>308</sup> Ibid.

In the end this Fatwā presents the similar verdict from two other places in order to support its arguments and appeals for a permanent ban over human cloning.<sup>309</sup>

### **3.3.2 Juristic opinions of the Prominent Fūqaha over the Subject of Cloning**

Contrary to its position in western and secular worlds, bioethics is branch of Islamic law (Sharī'ah) and ethics and not an independent field of study within the Islamic tradition. While tracing the sources it becomes evident that under Sharī'ah the main sources or authorities to this discipline are the teachings of the Muslim jurists and scholars in this regard.<sup>310</sup>

Owing to the fact that the enormous number of the modern Muslim religious scholars are neither skilled in the Western languages in which the up-to-date scientific studies are presented nor in the biomedical sciences, during the decade of 1980s the Muslim religious scholars began to learn about the discipline of bioethics. In order to understand the complex nature of bioethics they took assistance from the biomedical scientists and experts and enhanced the specialized knowledge of modern sciences. Three major international institutions comprising of experts in Islamic jurisprudence, sciences and biosciences have been actively playing their role for such collaboration. The first and most influential institution is known as the Islamic Organization of Medical Sciences (IOMS), which was established in 1984 in Kuwait. The main objective of the formation of this institution is to conduct studies over the bioethical issues from an Islamic perspective exclusively. IOMS coordinates with two other prestigious religious institutions that pay occasional but not exclusive attention to bioethics. Makkah based Islamic Fiqh Academy (IFA), established in 1977, affiliated with the Muslim World League and the Jeddah based International Islamic Fiqh

---

<sup>309</sup> Fatwā: Cloning Ki Shari Hasiyat, Mahnma Hāq, April 2006, Pakistan, 01-06.

<sup>310</sup> Ghaly, "Human cloning: The new phenomenon", 29.

Academy (IIFA), established in 1981, affiliated with the Organization of Islamic Conference are the other two international institutions working on the religious and bioethical studies of the bioethical issues in Muslim world. These institutions embrace all Muslims, belonging to any nationality, society, country or tradition.<sup>311</sup>

Muslim scholars belonging to major sects (Sunnī and Shī'ah) and different countries perform their duties as experts in these institutions. This is the reason that the religious-ethical verdicts issued by these institutions usually hold extensive acceptance and approval from the Muslims from grossroot to the international levels.<sup>312</sup>

These institutions are practicing a unique and distinctive type of collective Ijtehad. The distinctive feature of that ijtehad is that for passing any verdict on any issue the religious scholars waive their complete authority by sharing it with the scientists and experts in bioethical fields. For this purpose they consult the scientists and experts first and get to know the information provided by them. After making a minute perusal to their findings the religious scholars consult the Qur'ān and Sunnah for further guidance and issue the final verdict this way.<sup>313</sup>

As most of the scientific advancements raising the ethical questions are developed in the west, Muslim scholars try to get maximum information from the books written by the western scholars and then they try to base their analogy by keeping in mind the scientific information as well. Muslim scientists strive hard to come up with not only a scientific point of view but also the ethical dimension on the issue. Muslim scholars are equally interested in the scientific side of the issue along with its religious and

---

<sup>311</sup> Ghaly, "Human cloning: The new phenomenon", 29.

<sup>312</sup> Ghiath Alahmad, Muhammad Al-Jumah and Kris Dierickx, "Review of national research ethics regulations and guidelines in Middle Eastern Arab countries." *BMC medical ethics* 13, no. 1 (2012): 34.

<sup>313</sup> Ibid.



ethical perspectives. This is the reason that Islamic bioethical perspectives are a combination of scientific information, Western bioethical studies and sources of Islamic law.<sup>314</sup>

The concept of this modern collective Ijtihad validates the opinions of Muslim scholars by authenticating their opinions as they are not based merely on their own knowledge without giving any adherence to the scientific information. Another unique feature of the collective ijtihad is that it combines the diversity and unification.<sup>315</sup>

The diversity is not only the expression of different opinions always but sometimes even contradicting opinions are expressed, particularly in the conference papers presented by the religious scholars. During the conferences exhaustive discussions take place among the scientists and religious scholars in order to formulate an amalgamated viewpoint of the participants.<sup>316</sup>

#### **i) Dr. Wahba al-Zuhayli**

The leading Syrian jurist Dr. Wāhba al-Zuhayli holds a prominent position on the issue of cloning among the jurists of modern times. He opines that cloning is not a defiant or tantamount act against the will of Allāh S.W.T. Cloning can not be measured as the wilful distortion against the natural creation, contrary to the views of some other contemporary Muslim scholars. He is of the view that cloning is merely a restoration or repetition of Allāh S.W.T's creation. Human beings do not interfere in Allāh S.W.T's sovereign work of creation when they try to attempt cloning but, they use only their knowledge of reproduction and recreate once again what has already been created by the soul creator Allāh S.W.T. Islam values and prizes the knowledge

---

<sup>314</sup> Arif Hossain, "Consequential approach of Islamic bioethics." *Bangladesh Journal of Bioethics* 3, no. 1 (2012): 19.

<sup>315</sup> Hossain, "Consequential approach of Islamic bioethics", 19.

<sup>316</sup> Ghaly, "Human cloning: The new phenomenon", 29.

of science and gives it a distinguished status but with the condition that it must contribute to human happiness and it must be beneficial for the humans in order to become acceptable and valuable.<sup>317</sup>

According to Dr. Zuhayli the disturbing attribute related to cloning is that cloning disorders the balance and equilibrium carried out by the nature only. Balance and harmony are the two important ingredients in a very finely tuned ecosystem in which everything exists in nature and give benefit to human beings. Cloning disturbs and disrupts such balance and harmony.<sup>318</sup>

He is of the opinion that a few perplexed and puzzled claims made by the scientists are directly responsible for increasing anxieties related to cloning. For example, their claim that identical and possibly similar in potential human beings can be created by them, who will be identical in form and image just as they have created such plants and animals. Dr. Zuhayli, declares the scientists claim that it will be possible to reproduce human beings with no need for a womb, even more dangerous because thereby they evade the process of natural reproduction.<sup>319</sup>

He expresses another distress that cloning or its pursuit is something “frivolous” which needs not to be done. For example the scientists’ obsession to create indistinguishable and identical human beings is just wastage of time, money and energy as they are unable to present any rationale to such an act. Dr. Zuhayli’s does not only declare cloning as dangerous but also opposite to the very spirit of every possible dimension of human life in our knowledge.<sup>320</sup>

---

<sup>317</sup> Moosa, “Human Cloning in Muslim Ethics”, 25.

<sup>318</sup> Mohd Safian and Yasmin Hanani, “Islam and Biotechnology: With Special Reference to Genetically Modified Foods.” The Metanexus Institute, *Science and Religion: Global Perspectives* (2005): 05.

<sup>319</sup> Moosa, “Human Cloning in Muslim Ethics”, 25.

<sup>320</sup> Sayed Sikandar Shah Haneef, “Islamic Jurisprudence on Reproductive Technology: A Methodological Appraisal.” In *Proceedings of the International Conference on Science, Technology and Social Sciences (ICSTSS)* Springer, Singapore, (2012): 389.

Shaykh Abdullah Mani criticizes cloning even more strongly on this issue. He states that cloning is nothing but “frivolity on the part of those who have no moral character and no goals, save to collaborate and support Satan, in order to realize his [Satan’s] goal and promise to distort the creation of God.” The concept of bionic humans and other sensationalist pronouncements and predictions made by some scientists only accelerate the panic among the more devout Muslims. Such predictions undermine and diminish the possible productive potential and far reaching therapeutic benefits that cloning and biogenetic technology may offer.<sup>321</sup>

On the issue if cloning is “tampering with God’s creation.” He opines that cloning is only tampering with the things and nothing else. He refers to the Qur’ānic verse:

وَمِنْ آيَاتِهِ خَلْقَ السَّمُوتِ وَالْأَرْضِ وَاخْتِلَافَ أَلْسِنَتِكُمْ وَالْوَالِدَاتُ لِأَبْنَائِنَ الْعَالَمِينَ

“And among His Signs is the creation of the heavens and the earth, and the variations in your languages and your colours: verily in that are Signs for those who know.”<sup>322</sup>

Al-Zuhayli thinks that beauty of the life is accomplished by the “Diversity.” The beauty and ugliness, tall and short and white and black give diversity to the life which is endangered by the cloning. The identical copies of human beings would be a danger for humanity itself. He gave a reference to two Qur’ānic verses stating about the tactics of Satan to deceive human beings and creation of human beings with Allāh S.W.T.’s hands:

وَلَا يَسْتَكْبِرُونَ عَنْ عِبَادَتِهِمْ فَلْيَعْبُدُوهُ حَقَّ عِبَادَتِهِ وَنَحْنُ الْعَالَمِينَ

دُونِ اللَّهِ فَقَدْ خَسِرَ خُسْرًا مُبِينًا

<sup>321</sup> Haneef, Sayed, “Islamic Jurisprudence on Reproductive Technology”, 03.

<sup>322</sup> Al-Qur’ān 30:22.

“I will mislead them, and I will create in them false desires; I will order them to slit the ears of cattle, and to deface the (fair) nature created by Allāh. Whoever, forsaking Allāh, takes satan for a friend, hath of a surety suffered a loss that is manifest.”<sup>323</sup>

فَأَقْوَصُ وَجْهَكَ لِلدِّينِ حَنِيفًا فِطْرَةَ اللَّهِ الَّتِي فَطَرَ النَّاسَ عَلَيْهَا لَا تَبْدِيلَ لِخَلْقِ اللَّهِ ذَلِكَ الدِّينُ الْقَيُّمُ وَلَكِنَّ أَكْثَرَ

النَّاسِ لَا يَعْلَمُونَ

“So set thou thy face steadily and truly to the Faith: (establish) Allāh’s handiwork according to the pattern on which He has made mankind: no change (let there be) in the work (wrought) by Allāh. That is the standard Religion: but most among mankind understand not.”<sup>324</sup>

The majority of the Muslim scholars prohibit any such act like cloning, which provides any temptation to change Allāh S.W.T’s creation and therefore turns such acts strictly forbidden in Islam.<sup>325</sup>

## ii) Al-Ashqar

Al-Ashqar is an imminent religious scholar from Jordan. He is specialized in Islamic jurisprudence and has worked as an expert for the extension of the Encyclopedia of Islamic Jurisprudence. He opines that: “as long as cloning does not produce a hen with six legs or two heads or a cow with three eyes, cloning does not fall under the forbidden alteration of Allāh S.W.T’s creation.” But describing the negative sides of the cloning he argues that it is nearly impracticable to set up the degree of the relationship between a clone and the couple or the donor, let alone the relation with the other relatives. This issue causes great hardship for defining, maintaining and

<sup>323</sup> Al-Qur’ān 04:119.

<sup>324</sup> Al-Qur’ān 30:30.

<sup>325</sup> Ghaly, "Human cloning: The new phenomenon", 30.

establishing the degrees of relationship for other issues such as inheritance, marriage and divorce issues and rights and obligations of the spouses.<sup>326</sup>

Al-Ashqar further opines that, cloning is similar to the technique of in-Vitro fertilization (IVF) which is already approved by the Muslim scholars so it can be considered permissible in this sense. He compares the possible twin test-tube babies produced by the IVF with the artificial twinning and argues that both are similar procedures except that the twin test-tube babies might conceive in one pregnancy while the artificial twinning may be applied in one or more than one pregnancies. Consequently, Al-Ashqar is of the opinion that artificial twinning is permissible under the Shari'ah, if only the same prerequisites are fulfilled as in the case of IVF. Those conditions include the requisite of a married couple, their intension to perform such an act during the continuation of their marriage, the consent of both spouses and the last condition is that it should be made clear that the spare embryos will be destroyed in the case of death of any of the spouses or their separation.<sup>327</sup>

### iii) Al-Shaḍhili

Al-Shaḍhili holds the view that Islam does not encourage attainment of knowledge for the sake of harming oneself or others and the Qur'ān and Sunnah are evident of this notion. Al-Shaḍhili gives the elaboration of an important concept under the Shari'ah which is the concept of "Taskhir" and explains further that this concept has been elaborated in eighteen verses of the Holy Qur'ān. In these verses the application of the meaning of the word "Taskhīr" is very vast and includes the context that heavens and the earth and everything contained by them have been subjugated by Allāh S.W.T to be in the service of humans, as a blessing and gift from Allāh S.W.T.

---

<sup>326</sup> Farrokh B. Sekaleshfar, "A critique of Islamic arguments on human cloning." *Zygon*® 45, no. 1 (2010): 37-46.

<sup>327</sup> Ghaly, "Human cloning: The new phenomenon", 31.

Humans have been entrusted to get benefit of this gift, provided that such a use does not involve infringement of the divine prescriptions. There is no harm in performing this technology in plants and animals as it is clear that the cloning technology in plants and animals would benefit humans. He goes on to say that most of the Muslim jurists prohibit the traditional (reproductive) cloning and consider it as forbidden in Islam. Hence it can not be performed without consequential damage to humans. Allāh S.W.T is the sole creator and many verses give inference to this fact including those describing different stages of a baby in the womb of his mother. Al-Shādhilī quotes this verse:

فَلْيَنْظُرِ الْإِنْسَانُ مِمَّ خُلِقَ خُلِقَ مِنْ مَّاءٍ دَافِقٍ فَيَخْرُجُ مِنْ بَيْنِ الصُّلْبِ وَالتَّرَائِبِ ۗ

“Now let man but think from what he is created! He is created from a drop emitted Proceeding from between the backbone and the ribs.”<sup>328</sup>

in support of the account that all human beings come into existence with a combination of both creatures i-e the man and the woman. Thus, the reproduction is dependant upon the biological collaboration of the spouses as well as a bond in the form of a legally valid marriage.<sup>329</sup>

Al-Shadhili, is of the view that such a bond and collaboration between the spouses is missing in the case of reproduction from the cloning. The process of reproductive cloning is completed with the transfer of the nucleus of an adult cell consisting of 46 chromosomes to another egg whose nucleus has already been removed, or it can be inferred that whose genetic material has already been removed. He thinks that in such

---

<sup>328</sup> Al-Qur’ān 86:05-07

<sup>329</sup> Ebrahim El. Moosa, "Genetically modified foods and Muslim ethics", State University of New York, (2009): 08.

a case the concept of motherhood does not establish as the egg has no role in the process of reproductive cloning.<sup>330</sup>

On the issue of taking reproductive cloning as a mean to cure infertility Al-Shadhili is of the view that infertility must be treated as an individual issue and not as a global one. He sets forth the logic to back his argument that the global population is excessively growing to the level of over population, hence infertility can never be taken as a global problem. There is no point of dealing such an individual issue like the infertility at the cost of the greater (public) interest. A well established and famous principle of Sharī'ah quotes that the public interest prevails over the private interest. By choosing the option of reproductive cloning a married couple might be capable of having an offspring but this act will give a great damage to the society at large by ingringing the rights of the society. Moreover, even in such a case the couple would not be able to have a child with their desired characteristics as cloning technique has not been established to be well trimed and perfect technology so far. Later he tends to differentiate between the artificial twinning and IVF process in this regard. He explains further the basic differenance between two procedures and states that the test-tube twins are two independent children. Each of whom has been developed by a seprate egg independent of the other and fertilized by an independent sperm. This reason makes each of them enjoy unique characteristics with an independent identity. On the other hand in the process of artificial twinning, identical copies are made out of only one embryo.<sup>331</sup>

This attribute makes all copies share only one identical genetic trait. He further discusses the legal problems related to the identical twinning where it would be hard to differentiate between the identical individuals in such a case and a great deal of

---

<sup>330</sup> Ghaly, "Human cloning: The new phenomenon", 20.

<sup>331</sup> Ibid.

hardship would be borne while distributing the rights and responsibilities among them. Al-Shadhili further warns of the other harmful uses and dangers related to this technique. He discusses the possibility of using the leftover frozen cloned embryos for the replacement of a dead child or the acquisition of a tissue or an organ desired to be implanted in already living child.<sup>332</sup>

He strongly admires and favours the therapeutic cloning and suggests that instead of cloning whole body if scientists can manage to clone specific tissues or organs that will bring a great felicity and ease to the human beings. Seeking knowledge to practice such a technique is not only allowed under the Sharī'ah but that is even encouraged to be performed in his opinion.<sup>333</sup>

#### **iv) Dr. Yusuf al-Qaradawi**

According to Dr. Yusuf Al-Qaradawi, who is the head of the Union of the Muslim Scholars, animal cloning is permissible but on two conditions, first of those is that it is in the real interest of human beings and not just the interests of few people. The second condition is that no more harm should be anticipated from this interest. Harming the plants and animals is a sinful act and these creatures must not be damaged without purpose. Islamic rules are absolute rules and they prohibit the entry of cloning in the world of humans because of its following disadvantages.<sup>334</sup>

First: Allāh S.W.T created this universe on the basis of diversification and reproduction by cloning is contrary to diversity because such a creation is in fact a duplication of the original which entails many evils in human and social life. For example there would be a massive destruction and disturbance for a man if there is another identical copy of his wife. Life will be confused and corrupted if the

---

<sup>332</sup> Ghaly, "Human cloning: The new phenomenon", 31.

<sup>333</sup> Ibid, 26.

<sup>334</sup> Thomas Eich, "Muslim voices on cloning." *ISIM Newsletter* 12 (2003): 02.



phenomenon of diversity and different colors that Allāh S.W.T created people in are hampered.

Second: What is the relationship between the cloned person and the person from whom he has been cloned? Is he the same person as a duplicate of him or a father or a twin brother to him?<sup>335</sup>

Third: Cloning is contrary to an important pattern of natural creation which is the creation in pairs. The following verse of the Qur'ān gives an inference to it in the words:

وَمِنْ كُلِّ شَيْءٍ خَلَقْنَا زَوْجَيْنِ لَعَلَّكُمْ تَذَكَّرُونَ

“And of every thing We have created pairs: That ye may receive instruction.”<sup>336</sup>

On the other hand, the reproduction by cloning is dependent upon the availability of only one gender.

Fourth: Allāh S.W.T created Eve A.S to accompany Adam A.S in Paradise in order to make them live an intimate and cherish the life. Later He created their offsprings and made them proceed with their lives. The offsprings also need the affectionate relation of their parents. Such a circle of intimacy and care can never be attained by the reproduction through cloning.<sup>337</sup>

Al- Qaradawi further opines that cloning for reproducing a complete human body is not allowed under the Shari‘ah injunctions, but if it is aimed to reproduce human body parts such as kidneys and heart etc for the medical purposes it is not only permitted but it is highly recommended by Allāh S.W.T.<sup>338</sup>

---

<sup>335</sup> Eich, “Muslim voices on cloning”, 04.

<sup>336</sup> Al-Qur’ān 51:49.

<sup>337</sup> Sekaleshfar, “A critique of Islamic arguments”, 40.

<sup>338</sup> Ibid.

Allāh S.W.T will order rebirth of the human beings on the Day of Judgment, which is called “Resurrection.” The technology of cloning even endorses that very idea. Hence it is easy for Allāh S.W.T to recreate all human beings as this verse also depicts that:

وَهُوَ الَّذِي يَخْلُقُ ثُمَّ يُعِيدُهُ وَهُوَ أَهْوَنُ عَلَيْهِ ۚ وَلَهُ الْمَثَلُ الْأَعْلَىٰ فِي السَّمَوَاتِ وَالْأَرْضِ ۚ وَهُوَ الْعَزِيزُ الْحَكِيمُ ۝

“It is He Who begins (the process of) creation; then repeats it; and for Him it is most easy. To Him belongs the loftiest similitude (we can think of) in the heavens and the earth: for He is Exalted in Might, full of wisdom.”<sup>339</sup>

#### v) Hassan Al-Shāfi‘ī

Hasan al-Shāfi‘ī is of the opinion that the Arabic parallel of creation “Khalq” can be defined linguistically and theologically. There can be two linguistic connotations for this word. The first one may be: “measuring or determining the proportion of something and then acting accordingly” whereas the second meaning can be: “giving a form or shape to a substance already created by Allāh S.W.T”. Al-Shāfi‘ī describes that creation in either meaning can only be attributed to Allāh S.W.T. While in the theological context, the creation can be defined as: “bringing something into existence from the state of non-existence without any external help.” Another theological interpretation can be: “breathing life and soul into creatures.” Both of these two theological implications give an inference to the fact that creation of everything belongs exclusively to Allāh S.W.T.<sup>340</sup>

Al-Shāfi‘ī further states that keeping in view both types of meanings one can easily infer that cloning of Dolly, can not be categorized under either of the meanings of creation. The humans are superior to the other creatures of the Allāh S.W.T as

<sup>339</sup> Al-Qur’ān 30:27.

<sup>340</sup> Mohammed Ali Al-Bar and Hassan Chamsi-Pasha, “Contemporary bioethics.” Islamic Perspective (2015): 01.

humans have been selected as vicegerent to Allāh S.W.T. They are entrusted with the charge of the earth in order to use its resources and populate the earth and take care of it. This priority given to the humans elevates their grades in such a way that majority of the Muslim theologians consider the honor given to the humans more elevated than the angels even.<sup>341</sup>

### **3.4 Policies of Islamic Countries on Cloning**

Islamic countries like Jordan, Kingdom of Saudi Arabia, Iran and Pakistan are promoting higher education and training in the fields of biomedical and science. These countries are striving hard to equip themselves with modern knowledge. Below the overall situation of the Islamic Republic of Iran and Islamic Republic of Pakistan in the fields of biomedicine, bioethics and particularly on the subject of cloning is described.

#### **3.4.1 Islamic Republic of Iran**

##### **3.4.1.1 Evolution and Practice of Cloning in Iran**

The Islamic Republic of Iran is a Middle Eastern country with a population of 67 million, most of it belongs to Shī‘ah sect.<sup>342</sup>

The eminent and most distinguished Iranian Muslim scholars have been emphasizing over the knowledge and practice of ethics. For instance: Razi (865–925 AD) is considered to be the foremost Iranian physician to describe the basic principles of medical ethics. Ali ibn Abbas Ahvazi (930–994 AD), known as Haly Abbas to the Europeans, authored a book on medicine entitled “Kamil al-tana’at al-tebbiyah” (The

---

<sup>341</sup> Ghaly, “Human cloning: The new phenomenon”, 34.

<sup>342</sup> Kaveh Shadpour, "Primary health care networks in the Islamic Republic of Iran." (*EMHJ*) *Eastern Mediterranean Health Journal*, 6 (4), (2000): 822.

complete medical art). Ibn Sina (Avicenna) (981–1037) also demonstrated the extensive guidelines about the teaching and practice of ethics for physicians.<sup>343</sup>

As far as the cloning technology is concerned, it has been remarkably developed in Iran, but sadly, Iran yet lacks the required legal framework to protect and support such developments. It is argued that this deficiency can become a hindrance to protect the intellectual property rights of scientists and researchers, and would also lead to the abuse of scientific researches in order to obtain unlawful and unauthorized benefits. Therefore there is a need to form an appropriate legal-ethical system and a standard comprehensive law. There is a need to make some serious attempts in order to prevent such consequences.<sup>344</sup>

Law and ethics go side by side and are the primary and fundamental concepts in any field at the Islamic Republic of Iran and according to the 4<sup>th</sup> principle of constitution of Islamic Republic of Iran all laws “should be” in the framework of Islamic regulations. If this principle is applied over the issue of human cloning in Iran it is noteworthy that no specific law has been enacted with relevance to human cloning in the country, the attributed judicial decree or ethics must be followed in this regard.<sup>345</sup>

“Bonyana” was the first cloned calf in Iran. Then cloned sheep “Royana” was born by applying cloning and genetic engineering techniques and later the cloned goat “Hanna” was born. “Tamina” was the second cloned calf in Iran and it was cloned from the cell origin similar to Bonyana, the first cloned calf. This calf was born with the weight of 70 kg after the pregnancy period of 280 days but it died after a few

---

<sup>343</sup> Bagher Larijani, Farzaneh Zahedi and Hossein Malek Afzali, “Medical ethics in the Islamic Republic of Iran.” *Eastern Mediterranean Health Journal*, Vol. 11, (2005), 04.

<sup>344</sup> Larijani, Zahedi and Afzali, “Medical ethics in the Islamic Republic of Iran”, 04.

<sup>345</sup> Nabavizadeh, Mehrabani, Vahedi and Manafi, “Cloning: Issues in Iran”, 40.

hours due to an acute brucellosis, while it had also shown some symptoms of anatomic disorders at birth.<sup>346</sup>

It is crucial to have a Jurisprudential Analysis of Reproductive and Therapeutic Cloning in the light of Shī'ah jurisprudence as Iran consists most of the Shī'ah population.

### **3.4.1.2 Difference between Sunnī and Shī'ah Verdicts on Cloning**

The Shī'ah and Sunnī jurists differ clearly on the rationale of allowing or disallowing the human cloning. If both of these two sects are compared on the issue it can be noted that the Sunnī jurist criticize cloning on the grounds such as playing God or interfering in God's will, destroying the peace and tranquility of earth, corrupting the pattern and traditions of society, disturbing the diversity principle and damaging the beliefs of weak minds and hearts. Then Sunnī jurists express their views and verdicts by issuing Fatāwā or passing the resolutions and declarations. Shī'ah jurists criticize the Sunnī jurists on the point that the Sunnī clergy or the religious intellects block the ways for the common individuals to think and ponder upon the matter by giving the obviously authoritative statements declaring the subject totally prohibited.<sup>347</sup>

Unfortunately this trend closes every mean of criticism and discussion by the followers. Likewise some of the Sunnī jurists conditionally permit it in some cases such as treatment of infertility and that too with the prior surety that the technology is guaranteed to be safe.<sup>348</sup>

Some other objections raised by the Suuni jurists over the subject of cloning are criticized by the Shī'ah jurists such as declaring the process of cloning a detrimental

---

<sup>346</sup> Nabavizadeh, Mehrabani, Vahedi and Manafi, "Cloning: Issues in Iran", 40.

<sup>347</sup> SM Mohaghegh Damad, "Human Cloning from the Viewpoint of Fiqh and Ethics." *Iranian Journal of Medical Law* 1, no. 1 (2012): 11.

<sup>348</sup> Ibid.

change in the natural process of reproduction as set by Allāh S.W.T, denoting cloning as an act of evil and forbidden and declaring cloning as temptation of devil which is always aimed to commit prostitution, corruption and commission of prohibited acts.<sup>349</sup> Generally, the views of Shī'ah scholars on human cloning can be classified into following four categories:

- a) **The total sanction for human cloning:** One group of the jurists and scholars allows cloning on the basis of the principle of permissibility and non-availability or lack of the specific legislations and clear evidence on the prohibition of cloning. For example, Āyatūllāh Sīstānī, Āyatūllāh Fazel Lankārānī and Āyatūllāh Moosāvī Ardabīlī do not consider human cloning to be problematic if it is limited to the reconstruction of the tissue damages.<sup>350</sup>
- b) **Limited permission on human cloning:** Another group of Shī'ah jurists permits human cloning but only to be performed at the limited level. They give the logic behind the limited permission that if it is allowed at large scale, it will cause troubles and problems for the society at large. Everyone should not be allowed to perform it. A jurist Professor Hassan Javāheri is of the view that : "There is no problem on cloning happening in nature, but it is not legal to be undertaken at large scale."<sup>351</sup>
- c) **Secondary sanctity of human cloning:** Some of the Shī'ah Jurists are of the view that even though primarily human cloning is not prohibited but it can be declared as included in secondary prohibition. The reason for this is its vary

---

<sup>349</sup> Moosavi SKH and Panahizadeh M., *An Approach to Ethical Fundamental and Interpretation, of Human Cloning and Its Relationship with Jurisprudence*. 2nd Congress on Review of Islamic Regulations in Medicine, 2013, 348-390.

<sup>350</sup> Damad, "Human Cloning from the Viewpoint of Fiqh and Ethics", 11.

<sup>351</sup> Kiarash Aramesh and Soroush Dabbagh, "An Islamic view to stem cell research and cloning: Iran's experience." *The American Journal of Bioethics* 7, no. 2 (2007): 62.

status, that when it is performed in the laboratories it may lead to inevitable corruption such as interference in the natural system.<sup>352</sup>

Āyatullāhs Seyed Kazem Haery, Seyed Sadegh Shirāzī, Sheikh Javad Tabrizi, Nāser Makārem Shirāzī and Yoosef Sānei support this statement. Āyatullāh Makārem Shirāzī another Shī'ah jurist is of the opinion that cloning is not forbidden itself but it should be discouraged because practicing it might create other problems and issues. Āyatullāh Yoosef Sānei holds a strict view among the Shī'ah jurists and opines that the clone children can not be considered as the same as the ones born out of a valid wedlock, through a natural process of reproduction. If the same status is assigned to them and they are legalized it would be completely against the injunctions of Sharī'ah. Even the Islamic jurisprudence rejects it if it involves elements of social, moral and ethical and legal corruption.<sup>353</sup>

He proposes serious actions to be done against the practitioners and the attempters who try to perform or propagate this technique. He thinks that the executive and legislative authorities must handle this issue with iron hands. But he allows cloning in dire need, in particular cases of real necessity and where it is beneficial for human health. He favors cloning of organs (Therapeutic cloning) and cloning for the purpose of scientific advancements and benefit to the society.

**d) Ultimate prohibition of human cloning:** The holders of this opinion prohibit human cloning and declare it ultimately unlawful and illegitimate.<sup>354</sup>

They support their opinion with some objections like interference in Allāh S.W.T's creation and will and also because of the principle of non-possession of body by the human. Despite the four categories and disagreements, most of the Shī'ah jurists too

---

<sup>352</sup> Nabavizadeh, Mehrabani, Vahedi and Manafi, "Cloning: Issues in Iran", 42.

<sup>353</sup> Damad, "Human Cloning from the Viewpoint of Fiqh and Ethics", 09.

<sup>354</sup> Ibid.

disallow the human cloning. It can be concluded that although according to the principle of presumption of innocence, some jurists allow human cloning and they reject any illogical argument against its permissibility yet a large number of the Iranian jurists regard it as permissible at the primary and natural levels whereas they attribute a secondary prohibition to it.<sup>355</sup>

While considering the harms attached to human cloning such as abuse, corruptions and threat to human dignity and “the principle of no harm”, they emphasized on a stoppage and ban over its practice until all objectionable aspects are clarified and benefit of this process outweighs the risks and reservations attached.<sup>356</sup>

### **3.4.1.3 Legal Analysis of Reproductive and Therapeutic Cloning in Iran**

As cloning technique has not been tested after emergence and is not in practice yet, like any other country there is no codified law dealing with it in Iran as well. The Iranian scholars and scientists are of the view that as there are many ethical and legal issues concerning human cloning which must be addressed in some codified law as this technology can be exercised by the scientists in near future. The legal issues emerged due to human cloning may be related to the difficulties caused due to the physical similarity between the clone and the genetic donor. For example, if the clone and his genetic donor have same finger prints and physical features etc there is possibility that the genetic owner might commit a crime himself but in order to evade the legal action he may attribute that crime to his clone, or vice versa. In such a case the rights and duties of both the individuals will be infringed and mixed up along with the rights of the complainant. Some scholars are of the view that the cloned human being will not be having a father (because it is not from the male sperm) or a mother

---

<sup>355</sup> Nabavizadeh, Vahedi and Manafi, “Cloning: Issues in Iran”, 43.

<sup>356</sup> Ibid.



(because it is not by composition of gamete) or a brother or a sister or any other relative. He might be grown in the uterus which is not of his own mother but of surrogate mother. In brief, he is an individual with no relativity.<sup>357</sup>

Another important question needed to be addressed with a codified legislation might be that if a virgin woman has a child by cloning of her sexual cell, would her pregnancy be considered as legitimate or not? What will be the relation of that clone child to that woman? Would that clone be her daughter or sister? How the share of the clone will be determined in the inheritance of genetic donor? What can be the possible rules of retribution and compensation in case a clone is killed by someone? Who can be a legal guardian and care taker of the clone? Should every type of research on cloning be banned? If yes then many of the scientists would move to the other countries where they can find some flexible laws on the subject of cloning and a great brain drain would occur.<sup>358</sup>

Most of the Iranian people are of the view that as there is no likelihood of the scientists or the individuals to attempt the reproductive cloning at this stage, so this is the right time to enact a standard legislation on the human cloning. There is need to address the issue at the first instance instead of ignoring it altogether as researches in the field of cloning have been started, and instead of reverting, banning or ignoring them, there is need to treat them and regulate them appropriately.<sup>359</sup>

The status of human embryo in any legal system is the parameter to determine the prospects of therapeutic cloning. Most of the countries do not allow abortions and consider it a criminal act hence punishable under penal sanctions of different countries. In such a legislation abortions are allowed exceptionally only in the serious

---

<sup>357</sup> Fadel, "Developments in stem cell research and therapeutic cloning", 130.

<sup>358</sup> Ibid.

<sup>359</sup> Ibid.

situations such as when the embryo is a result of rape, when the mother's life is in danger or when the fetus is malformed or is accompanied with a serious disease. The critics are of the view that in the case of therapeutic cloning the destruction of embryo takes place but it can not be categorized under the above mentioned exceptions. They are of the view that destruction of embryos in this case is not allowed as their existence does not endanger other's life, hence they are destroyed only to improve others health. In the countries where the embryo does not possess equal status as of other living humans abortions are not banned hence the therapeutic cloning does not face much opposition in such states.<sup>360</sup>

The Iranian jurists are of the view that there is need to enact new laws in order to deal with new therapeutic methods such as cloning, to clarify the criminal liabilities of physicians and laws dealing with different absurd situations related to genetic experiments. These laws must be set by keeping in mind the criminal nature of these acts and their consequences. Like many other countries the laws in Iran have not been updated and modified along with developments and progresses in different fields of science including medical sciences. No law has been enacted on the issue of cloning in Iran yet. The only available regulations in the country are the documents drawn by the research institutes working on different issues in medical sciences. This is the reason that such documents lack legal standards and sanctions. Those can be called as ethics doctrine merely. The law dealing with the method of donating embryos to infertile couples approved in 2003 can be taken as the only law addressing new challenges in medical sciences.<sup>361</sup>

---

<sup>360</sup> Larijani, Zahedi, and Afzali. "Medical ethics in the Islamic Republic of Iran", 10.

<sup>361</sup> Mansooreh Saniei and Raymond De Vries, "Embryonic stem cell research in Iran: status and ethics." *Indian J Med Ethics* 5, no. 4 (2008): 181.

The Iranian jurists analyze that the lack of legal enactments make it impossible to prosecute the individual or individuals engage in human cloning procedure. They are of the view that the jurists find it difficult to compare the act of cloning with any other criminal act according to the required ingredients in an act to be called as a crime, described under the constitution of Islamic Republic of Iran. They are of the view that according to the principle of constitutional law "legality of offenses and penalties", an act can not be considered as a crime without a legal element hence no punishment can be enforced against any such act.<sup>362</sup>

On the other hand some jurists are of the view that according to the article 167 of the constitution of Islamic Republic of Iran every judge is bound to endeavor to find the ruling on every case before him, from the law. In case he is unable to find a ruling from the law of the land he must decide the matter according to the sources of Islamic law and a verdict or Fatwā should be issued accordingly. The judge can not make a refusal to handle such an issue, nor can he ignore the issue in the pretexts of conflict of laws, silence, deficiency or brevity. In the absence of the enactment on the cloning the judges can issue verdicts and meanwhile the legislators must tend to make laws on the issue.<sup>363</sup>

Some jurists are of the view that the reason behind non-enactment of any legislation on cloning in Iran is the diversity of opinion among the scholars on the issues related to the science and technology. It is observed that Muslim jurists pass quite often conflicting Fatawās (verdicts) on the same issue, which create ambiguity among the minds of Muslims and legislators are not an exception to this.<sup>364</sup>

---

<sup>362</sup> Saniei and Vries, "Embryonic stem cell research in Iran", 182.

<sup>363</sup> Al-Aqeel, "Human cloning, stem cell research: An Islamic perspective", 1510.

<sup>364</sup> Ibid, 1509.

Some of the Iranian jurists are of the view that there is need to enact laws on the issue of cloning before its emergence. They provide logic to this observation that if a law does not come into being at the right time and the time gap lengthens between the phenomena responsible and relevant provisions of law it causes irreparable consequences, damage and loss to the society. The jurists propose that the legislature must address the crucial questions including, the possible legal acts against them who practice human cloning, the possible legal actions against the operators and users of this technology and the possible legal and social sanctions in this regard.<sup>365</sup>

There is need to formulate some sound and practical policies related to public awareness and education about the possible pros and cons, risks attached and possible advantages and disadvantages of reproductive as well as therapeutic cloning. Iranian jurists conclude the issue of legislation on the cloning by forwarding the suggestion that instead of imposing a complete ban on this technology there is need to regulate it. This regulation can take place by guiding and controlling the cloning technology.<sup>366</sup>

#### **3.4.1.4 Bioethical Activities in the Country**

During the current decade, great efforts are being exerted in medical ethics education, research and legislation in the Islamic Republic of Iran.<sup>367</sup>

##### **3.4.1.4.1 National Codes of Ethics in Biomedical Research**

In 2000, a guideline comprising 26 National Codes of Ethics for biomedical researchers was prepared by Ministry of Health and Medical Education, Iran. These codes are in accordance with the international declarations such as the Council for International Organizations of Medical Sciences guidelines and the Helsinki

---

<sup>365</sup> Al-Aqeel, "Human cloning, stem cell research: An Islamic perspective", 1510.

<sup>366</sup> Nabavizadeh, Mehrabani, Vahedi and Manafi, "Cloning: Issues in Iran", 45.

<sup>367</sup> Farzaneh Zahedi and Bagher Larijani, "National bioethical legislation and guidelines for biomedical research in the Islamic Republic of Iran." *Bulletin of the World Health Organization* 86, no. 8 (2008): 630.

Declaration and have been customized according to the code of religious laws in Shī'ah Islam and specific cultural issues of the Iranian population.<sup>368</sup>

#### **3.4.1.4.2 Research and Education**

Recent developments in medical ethics in the field of research started with the establishment of a medical ethics research centre, since when other activities at national and local levels have been gradually carried out.

Some of the steps taken recently are:

- i) Establishment of a medical ethics research centre.
- ii) Establishment of the National Committee for Medical Research.
- iii) Establishment of the Regional committees for ethics in medical research.<sup>369</sup>

The Future of Research on biotechnology and all types of permissible cloning looks bright in the Islamic Republic of Iran as this country is striving for every effort to promote the knowledge of modern biotechnology.

#### **3.4.2 Islamic Republic of Pakistan**

The Islamic Republic of Pakistan has a population of more than 145 million people, about 95% of whom are Muslims (approximately 20% Shī'ah and the rest Sunnī). Pakistan has a diverse and complex culture with many ethnic groups and socio-economic stratum. Mostly, the inhabitants are religious minded and family centered, where family extends beyond the concept of "nuclear family" and people pool their resources together. It is common to have three generations residing under one roof, sometimes. Most of the people live within close proximity to each other. Like many other developing countries, Pakistan is developing in medical, technological and surgical fields such as major joint replacements. Not only this but Pakistan has seen a

---

<sup>368</sup> Zahedi and Larijani, "National bioethical legislation and guidelines", 631.

<sup>369</sup> Bagher Larijani, Hossein Malek Afzali, Farzaneh Zahedi and Elaheh Motevaseli, "Strengthening medical ethics by strategic planning in the Islamic Republic of Iran." *Developing World Bioethics* 6, no. 2 (2006): 109.

great rise in high-tech and tertiary-level medicine related to reproductive technology, advanced cardiology, cardiac surgery and organ transplantation.<sup>370</sup>

Although healthcare is provided free of charge in public (government-run) hospitals, but these hospitals are overcrowded, messy, understaffed and disorganized in general. People often complaint of receiving substandard care from these institution where minimum to no care at all is the usual standard care provided. Abundance of private healthcare institutions has been witnessed in the past decade throughout Pakistan. These private hospitals and clinics work on the principle of fee-for-service system. But usually these institutions charge high amount of fees in lieu of the healthcare facilities provided which makes them unaffordable for most of the population due to poverty and sometimes their being at the areas beyond the reach of the majority of population.<sup>371</sup>

#### **3.4.2.1 Birth of Bioethical Research in Pakistan**

Initially the modern biomedical ethics was introduced in Pakistan by the members of the medical community. Most of those members were those who were educated or trained in the Western institutions, they introduced the concept of biomedical ethics in Pakistan then. The foremost formal move in this direction was taken by the first private university to be established in Karachi Pakistan, the Agha Khan University (AKU) in 1984. Biomedical ethics as a course was introduced at the AKU in the curriculum of medical students and later it became part of the course of the university's school of Nursing.<sup>372</sup>

In the beginning, the curriculum consisted primarily of a focus on the “four principles” of bioethics, but gradually the clinical faculty incorporated the cases and

---

<sup>370</sup> Farhat Moazam and Aamir M. Jafarey, “Pakistan and Biomedical Ethics: Report from a Muslim Country.” *Cambridge Quarterly of Healthcare Ethics* (2005): 251.

<sup>371</sup> Moazam and M. Jafarey, “Pakistan: Report from a Muslim Country”, 251.

<sup>372</sup> Ibid, 250.

practical issues encountered at the AKU teaching hospital during the clinical practice. AKU is also pioneer for introducing workshops and courses focusing on various aspects of bioethics and “local” ethical dilemmas in Pakistan in 1997. AKU made the above mentioned aspects mandatory elements of postgraduate clinical training for residents in all AKU programs, for the first time in the history of Pakistan.<sup>373</sup>

Ethics Review Committees (ERCs) are relatively new phenomena in Pakistan. A few private healthcare institutions are taking initiatives to establish such committees. Even though at the time of obtaining research funding from local sources approval by ERC or Institutional Review Boards is still not mandatory but the medical community is gradually convinced over the importance of such reviews. These reviews are crucial to attract and participate in collaborative research projects with different international organizations such as the World Health Organization (WHO). Not only this but the states like United States and United Kingdom make it a prerequisite for any publications in the international indexed journals.<sup>374</sup>

Clinical Ethics Committees or Standing Hospital are still a rarity in Pakistan. To date, again, the AKU Hospital is the only institution with a formal ethics consultation service, which is one of the functions of its Hospital Ethics Committee (HEC), initiated in 2000. In the late 1990s, the Pakistan Journal of Medical Ethics, a non-indexed journal, began publication with the objective of promoting medical ethics. Unfortunately, inadequate organizational structure and insufficient financial support could not strive for the publication of more than 06 sporadic issues since then.<sup>375</sup>

---

<sup>373</sup> Moazam and M. Jafarey, “Pakistan: Report from a Muslim Country”, 251.

<sup>374</sup> Robyna Irshad Khan, “Informed consent and some of its problems in Pakistan.” *Journal of the Pakistan Medical Association* 58, no. 2 (2008): 82.

<sup>375</sup> Moazam and M. Jafarey, “Pakistan: Report from a Muslim Country”, 252.

### **3.4.2.2 Developments in Research Ethics**

Over the past few years interest in biomedical ethics has been increasing in Pakistan. The increase in the number of conferences and workshops related to bioethics is the proof of such accelerated interest. These workshops and conferences are being organized by both the public and private sectors. Like any other country of the world, there has been a great demand for research-ethics related programs in Pakistan as well. The reason behind this trend is that most of the international funding agencies and many prestigious peer-reviewed scientific journals require ethical review of research manuscripts and protocols as prerequisite for the acceptance. These workshops and conferences do not provide the researchers with valuable experience only but also increase their chances for obtaining foreign and local funding as well as chance of publication in reputed journals.<sup>376</sup>

In addition, the collaborative research between the developing countries and industrialized nations is increasing incredibly and now a days it is not difficult to acquire international funding related to the research in ethics. There are many international organizations which aim at intensification of research ethics in developing countries. One of such important institutions is the Global Forum on Bioethics in Research (GFBR), which is performing tremendous collaborative efforts to increase the research in ethics in the developing countries. Bioethics can be termed as one of the most important contemporary issue in ethical research since the world has come up with the phenomenon of “globalization.” of contemporary. This idea has benefited many experts from the developing states like Pakistan to train their chosen inhabitants with the highly developed ethical research from world’s prestigious institutions. Many Pakistani physicians have taken the opportunity to pursue

---

<sup>376</sup> Moazam and M. Jafarey, “Pakistan: Report from a Muslim Country”, 252.



fellowships and master's degree programs in different countries such as Canada, Australia and the United States through funding from internationally funding institutions, working to enhance enhancing research ethics capacity in developing world scientists.<sup>377</sup>

### **3.4.2.3 Developments in Clinical Ethics**

The developments and advances in medical science and biotechnology are on rise hence it is a great subject of interest of the medical experts, healthcare professionals and the researchers in Pakistan. These experts have an immense interest in ethical medical practice and its evaluation in the light of the changing face of medicine. Different medical organizations, medical colleges and universities are organizing informative sessions on clinical ethical dilemmas frequently. This is not an easy job while keeping in view the cultural and religious values and socio-economic realities of Pakistan. Many institutions of healthcare held such sessions on regular basis. Some of these institutions are: The Pakistan Society of Urological Surgeons, Dow Medical College, the Āghā Khan University, the National Research Institute of Fertility Control, Liaquat National Hospital and Postgraduate Institute, the Sindh Institute of Urology and Transplantation and the National Skin Center.<sup>378</sup>

Most recent issues in medical ethics are discussed in the light of religion and ethics such as: Abortions, treatment of infants with end-stage renal disease, the economic and ethical issues related to the kidney donation, Muslim jurists views concerning brain death, xenotransplantation, organ transplantation, surrogacy and cloning etc. It is noteworthy that the opinions of contemporary Muslim jurists and sources of

---

<sup>377</sup> Moazam and M. Jafarey, "Pakistan: Report from a Muslim Country", 252.

<sup>378</sup> Ibid.

traditional Muslim ethics are also explored alongside the secular feature of bioethics including four bioethical principles.<sup>379</sup>

#### **3.4.2.4 Pakistan Medical and Dental Council Code of Ethics**

The PMDC is the government regulatory body that registers all graduates from medical and dental colleges in Pakistan. In 2002, it published a revised and extensive code of Ethics for all practitioners and included a recommendation that education in bioethics be made part of the curricula. This code is a combination of moral values drawn from the Islamic teachings and philosophically grounded elements of contemporary bioethics.<sup>380</sup>

The four famous principles of contemporary bioethics (autonomy, beneficence, nonmaleficence and justice) are stated in the code as being “fundamental elements” of the relationship between the patient and physician. Nevertheless, the point is also made that “if secular Western bioethics can be described as rights-based, with a strong emphasis on individual rights, Islamic bioethics is based on duties and obligations” of the physician. While discussing appropriate care of patients, the Code advises that the practitioner must “adhere to veracity (truth telling) as judged in the patient’s interest.” Practitioners are also reminded that “Islamic bioethics is intimately linked to the broad ethical teachings of the Holy Qur’ān and the tradition of the Prophet Muḥammad P.B.U.H,” and that unlike “secular” oaths the “Oath of the Muslim Doctor” invokes “the name of Allāh S.W.T.”<sup>381</sup>

---

<sup>379</sup> Moazam and M. Jafarey, “Pakistan: Report from a Muslim Country”, 253.

<sup>380</sup> Lubna A. Baig, D. Akram and Syeda Kauser Ali, “Development of the community-oriented medical education curriculum of Pakistan: A case report on the national initiative on curriculum development.” *Education for Health-Abingdon-Carfax Publishing Limited*- 19, no. 2 (2006): 223.

<sup>381</sup> Ibid.

### **3.4.2.5 National Bioethics Committee of Pakistan**

In January 2004 the government of Pakistan approved the constitution of a National Bioethics Committee (NBC), in pursuance of the recognition of the importance of bioethics. According to its constitution the committee is to be chaired by the Director General Health in the Ministry of Health and the Pakistan Medical Research Council acts as its secretariat. In the memo circulated by the government, the NBC is stated as functioning as “an advisory body dealing with all aspects of bioethics in the health sector in the country.” It is expected to “promote and facilitate ethical health services delivery and health research” and to supervise the work of two sub-committees i-e the Research Ethics Committee and the Medical Ethics Committee.<sup>382</sup>

### **3.4.2.6 The Council of Islamic Ideology**

Council of Islamic Ideology is a constitutional body of the Islamic Republic of Pakistan. This institution is responsible for forwarding the legal advice on Islamic issues to the government. The body was founded in 1962 under the government of Ayub Khan.<sup>383</sup>

The main objectives for the formation of this council include:

- i) Recommending laws conforming to the Qur’ān and Sunnah to the Parliament and Provincial Assemblies.
- ii) Advising the Parliament, Government of Pakistan, President of Pakistan, or Governor on any question referred to the Council as to whether a proposed law is or is not repugnant to the Injunctions of Islam.

---

<sup>382</sup> Moazam and M. Jafarey, “Pakistan: Report from a Muslim Country”, 254.

<sup>383</sup> S. Jamal Malik, “Legitimizing Islamization: The Case of the Council of Islamic Ideology in Pakistan.” (1989): 253-265.

iii) Making recommendations to bring current laws into conformity with Islamic injunctions.

iv) Compiling guidance for the Parliament and Provincial Assemblies.<sup>384</sup>

The issue of Cloning is discussed in detail under the annual Report of 2002-2003 of the Council of Islamic Ideology, Pakistan. The ministry of health and ministry of religious affairs requested for a comprehensive verdict of the council. In Feb-march 2002 owing to the International convention on Repudiation of reproductive human cloning it sent letters to the imminent Muslim jurists. They not only discussed the possible biological types of the human cloning but also the religious, economic, social, moral and ethical aspects of the issue. The first session of the Adhoc committee on an international convention against the reproductive cloning of human beings was held in New York from 25 February to 01 March 2002.

The verdict given by the Ulma council of KSA affixes a detailed note of the Muslim World League Makkāh KSA, office of the secretary General with Urdu translation in the form of Annexure to the Council's report of 2002.<sup>385</sup>

The Council gives a clear statement on the issue of human reproductive cloning by declaring it prohibited but it suggests to take a hold before passing any official statement on the issue of therapeutic cloning. The council suggests that the issue of therapeutic cloning must be evaluated by considering the opinions of Muslim jurists alongwith the opinions of scientists and medical practitioners and Muslim countries must take appropriate measures in this regard.<sup>386</sup>

The Council does not seem to be ready to deal with the issue of human cloning for now. So there is a great need to hold discussions by evaluating the scientific and

---

<sup>384</sup> Malik, "Legitimizing Islamization", 260.

<sup>385</sup> *Annual Report of the Council of Islamic Ideology, Pakistan (2002-2003)*.

<sup>386</sup> Ibid.

jurisprudential findings on the issue in order to elucidate the position of Islamic law on it.

#### **3.4.2.7 The Ethical Review in Pakistan: The Credibility Gap**

The issue of ethical concerns is not new, it is jointly associated with every new experimentation in the field of medical advancements. But it is important to mention that it is been since last 70 years only that the ethical concerns related to the biomedical issues are not the matter personal integrity only. This evolution has turned the ethics in this field as a matter of concern for the public at large or humanity, philosophically speaking. The concept of ethical review of research involving human subjects by a neutral party originated primarily in the USA. In 1974, with the passage of the National Research Act in America, the National Commission for the Protection of Human Subjects of Biomedical and Behavioural Research was established and led to the 1979 Belmont Report. This document still provides basic guidance for such research in the USA. On the international front, the Declaration of Helsinki by the World Medical Association in 1964 and the Council of International Organizations of Medical Scientists (CIOMS) guidelines in 1982 are two prominent documents on the subject. Each has undergone subsequent revisions and updates.<sup>387</sup>

#### **3.4.2.8 Practical Challenges to Ethical Research in Pakistan**

The notion of compulsory ethical review of research concerning human participants is steadily emerging and taking a significant importance in Pakistani institutions. Unfortunately, the process faces several challenges which are detriment to its integrity. The members of Institutional Review Boards (IRBs), from institutions

---

<sup>387</sup> Aamir Mustafa Jafarey, Saima Pervaiz Iqbal and Mariam Hassan, "Ethical review in Pakistan: the credibility gap." *JPMMA. The Journal of the Pakistan Medical Association* 62, no. 12 (2012): 1354.

across the country put forward their reservations and recommendations for the improvement and planning of the process.<sup>388</sup>

One of the challenges is the lack of accreditation or formal registration for IRBs, which has badly affected the efficiency and functioning of such Boards. Another dilemma is this that even though a numbers of people have attained formal education in bioethics and accomplished their degrees yet a majority of members remains without any prescribed training for the job expected from them to be performed in ethical review process. Furthermore, the conflict of interest issues within board leadership, external pressures to influence deliberations and inconsistent application of review requirements contribute in undermining the authenticity and reliability of the process. One of the most considerable threats to the uninfluenced and independent performance of such boards arises from institutional leadership itself. In the opinions of IRB members, the review process needs to be consistent, uniform, and trustworthy, only in this case it can achieve the trust and respect of the researchers. The IRBs need to be given the independent space to make impartial decisions. If these observations are not tackled sincerely these committees would have no other rank then merely rubber stamping committees.<sup>389</sup>

The soil of Pakistan like many other developing countries has been very acquiescent to biomedical advances. Every biomedical invention whether it is about the techniques of cloning or the reproductive technology or any other technique like surrogacy or organ transplantation have been of great interest and centre of discussion on moral and religious grounds, in Pakistan. This has encouraged the healthcare professionals to look into the issues related to bioethics from different prospectus. It is worth mentioning that in Pakistan Pakistanis, Muslim medical practitioners and

---

<sup>388</sup> Jafarey, Iqbal and Hassan, "Ethical review in Pakistan", 1350.

<sup>389</sup> Ibid.

laypersons think alike. They believe that bioethics can never be applied with famous four principles of ethics or the philosophical principles of ethics alone. In a Muslim majority country like Pakistan bioethics widens its scope and applicability by including the religious and cultural norms of the ethics along with its generally applicable principles.<sup>390</sup>

### **3.5 Analysis of the Issue of Cloning in the light of Maqāsid al-Sharī‘ah**

#### **3.5.1 Maqāsid al-Sharī‘ah: Literal and Technical Meanings**

The term “Maqsid” (plural: Maqāsid) refers to a goal, purpose, principle, objective, an intent or end of something. Keeping in view these meanings it can be inferred that Maqāsid of the Islamic law are the purposes/ objectives /intents/ends or the principles enforced by them in order to secure the rights of Muslims individually and collectively.<sup>391</sup>

Many Muslim jurists have used this term to denote “people’s interests” or “Masālīh” and find it symbolic to the well being and welfare of the people. It is worth mentioning that one of the earliest contributors to al-Maqāsid theory, Abḍul-Mālīk al-Juwaynī (d.478 AH/ 1185CE), who greatly contributed to shape this theory in the form we have today, also used al-Maqāsid and the public interests (masālīh ‘āamāh) interchangeably.<sup>392</sup>

Another jurist Abū Hamīd Al-Ghazālī (d.505 AH/1111 CE) categorized the classification of Maqāsid under the umbrella of “unrestricted interests” or “al-maṣālīh

<sup>390</sup> Moazam and M. Jafarey, “Pakistan: Report from a Muslim Country”, 255.

<sup>391</sup> Muḥammad al-Tahir Ibn Ashur, *Ibn Ashur Treatise on Maqāsid Al-Sharī‘ah*, trans. Mohamed El-Tahir El-Mesawi, vol. 1st (London-Washington: International Institute of Islamic Thought (IIIT), 2006), 02.

<sup>392</sup> Abḍul-Mālīk al-Juwaynī, *Ghiath Al-Umam Fi Iltiyath Al-Zulam*, ed. Abdul-Azim al-Deeb (Qatar: Wazarat al-Shuun al-Dīniyah, 1400 H), 253.

al-mūrsalāh.”<sup>393</sup> Fakhrūddīn Al-Rāzī (d.1209) and Al- Āmidī (d.1234) followed Al-Ghazālī in his terminology.<sup>394</sup> Najmuḍḍīn Al- Tūfī (d.1316) defined maslahāh as, “what fulfils the purpose of the Legislator.”<sup>395</sup> Al-Qarāfī (d.1868) linked maslahāh and Maqāsid by a “fundamental rule” that stated:

“A purpose (Maqāsid) is not valid unless it leads to the fulfillment of some good (maslahāh) or the avoidance of some mischief (mafsadah).”<sup>396</sup>

Therefore, a maqsid, purpose, objective, principle, intent, goal, end, or principle in the Islamic law is actually the “interest of humanity.”

### 3.5.2 The Classical Maqāsid Model: The Circle of the Essentials

#### (Ḍarūrīyyāt):

These are the five basic essentials and necessities for human existence which have been derived from the Sharī‘ah. It is mandatory that these five necessities are preserved and protected because if not human life would be poor, harsh, miserable and brutal here as well as in the life hereafter.

#### i) Protection of Al-Dīn

Al-Dīn is the most important value that must be protected by the Muslims. It is obligatory upon every Muslim to protect his al-Dīn all times. The protection of al-Dīn at the individual level is achieved through the observance of the different kinds of Ibadah, such as performing the five prayers, fasting, paying of Zakah and performing the Hajj. Executing all these rituals will increase the Iman of a person and will

<sup>393</sup> Abū Ḥāmid Muḥammad ibn Muḥammad al-Ghazali, *Al-Mustasfa min ilm al-usul* (Beirut: Dar-Ul-Fiker), 37.

<sup>394</sup> Abu Bakr al-Mālikī Ibn al-Arabi, *Al-Mahsoul Fi Usul Al-Fiqh*, ed. Hussain Ali Alyadri and Saeed Foda, 1 ed (Amman: Dār al-Bayariq, 1999), 222.

<sup>395</sup> Najmuḍḍīn Al-Tuḍfī, *al-Tayinfi Syarhal-Arbain (al-Tayinin Explaining al-Nawawis forty Ḥadīths* (Beirut: Muassasah al-Risalah, 1989), 239.

<sup>396</sup> Shihabuddin Al-Qarafi, *Al-Dhakheerah* (Beirut: Dār al-Arab, 1994) vol. 5, 478.



therefore be a shield that protects the person from committing sins or becoming an apostate and indulging in actions that will obliterate his Din. As an example, the Qur'ān has pointed out that performing prayers will save a person from evil in the words:

أَتْلُ مَا أُوحِيَ إِلَيَّ مِنَ الْكِتَابِ وَأَقِمِ الصَّلَاةَ إِنَّ الصَّلَاةَ تَنْهَى عَنِ الْفَحْشَاءِ وَالْمُنْكَرِ وَلَذِكْرُ اللَّهِ أَكْبَرُ وَاللَّهُ يَعْلَمُ مَا تَصْنَعُونَ ﴿٣٩٧﴾

“Recite what is sent of the Book by inspiration to thee, and establish regular Prayer: for Prayer restrains from shameful and unjust deeds; and remembrance of Allāh is the greatest (thing in life) without doubt. And Allāh knows the (deeds) that ye do.”<sup>397</sup>

The extent of the protection of al-Dīn from a wider scope includes the defence of the Islamic faith, against the enemies of Islam. It is important to be mentioned that this purpose can be achieved by so many modes including the verbal methods such as speeches and other practical and feasible method including writing etc. Even waging a war with the enemies of Islam, should not be prevented if the situation demands. The individual and collective responsibility to protect al-Din falls under the category of prevention of evils as the Prophet P.B.U.H mentions in a Ḥadīth:

“Whoever witnesses any evil (munkar), he has to change it by his hand (using of force), if he is unable (has no power) to do so, then he has to change (the evil) by his tongue (speaking), if he is unable to do so, then he has to hate the evil in his heart and that is the lesser degree of faith.”<sup>398</sup>

<sup>397</sup> Al-Qur'ān 29:45.

<sup>398</sup> Muslim, *Sahih Al-Muslim*, vol 01, Ḥadīth No. 34.

The reason behind this is that, if the Din is not protected, it will certainly show the way to evil and preventing it is definitely required in this situation. Consequently, Allāh S.W.T. has enacted the law of Jihad and commanded Muslims to defend their faith:

وَقَاتِلُوا فِي سَبِيلِ اللَّهِ الَّذِينَ يَفْقَهُونَكُمْ وَلَا تَعْدُوا ۚ إِنَّ اللَّهَ لَا يُحِبُّ الْمُعْتَدِينَ ۝

“Fight in the cause of Allāh those who fight you, but do not transgress limits; for Allāh loveth not transgressors.”<sup>399</sup>

At another place in words like:

وَقَاتِلُوا الْمُشْرِكِينَ كَمَا يَفْقَهُونَكُمْ كَافَّةً ۚ وَاعْلَمُوا أَنَّ اللَّهَ مَعَ الْمُتَّقِينَ ۝

“And fight the Pagans all together as they fight you all together. But know that Allāh is with those who restrain themselves.”<sup>400</sup>

## ii) Protection of Life (al-Nafs)

Life is essential and valuable to everyone. There is no difference between the life of the Muslim and non-Muslim, leader and the subordinates and rich or the poor. Everyone’s life is sacred and equally important. Protection of all lives is obligatory to each and every individual and as well as society. The Qur’ān emphasizes this point when it says:

وَلَا تَقْتُلُوا النَّفْسَ الَّتِي حَرَّمَ اللَّهُ إِلَّا بِالْحَقِّ ۚ وَمَنْ قُتِلَ مَظْلُومًا فَقَدْ جَعَلْنَا لَوْلِيهِ سُلْطَانًا فَلَا يَسْرِفُ فِي الْقَتْلِ ۚ إِنَّهُ كَانَ

منصوراً ۝

“Nor take life which Allāh has made sacred except for just cause. And if anyone is slain wrongfully, we have given his heir authority (to

<sup>399</sup> Al-Qur’ān 02:190.

<sup>400</sup> Al-Qur’ān 09:36.

demand qisas or to forgive): but let him nor exceed bounds in the matter of taking life; for he is helped (by the Law).”<sup>401</sup>

To protect the life, the Sharī‘ah has enacted a severe punishment for those who kill innocent human beings in the form of death penalty, as the Qur’ān states:

يَا أَيُّهَا الَّذِينَ آمَنُوا أَمَّا كُمْ الْقِيَاسُ فِي الْقَتْلِ ۖ الْحُرُّ بِالْحُرِّ وَالْعَبْدُ بِالْعَبْدِ وَالْأُنثَىٰ بِالْأُنثَىٰ ۖ فَمَنْ عَفَا لَهُ مِنْ أَخِيهِ  
فَقَدْ عَفَا عَنْهَا ۚ وَإِنَّ إِلَىٰ رَبِّكَ رُجُوعٌ ۖ وَكَفَّيْتُ قَتْلَكَ بِكَفِّهِمْ مِنْ رِبِّكَمْ وَرَحْمَةٍ ۖ فَمَنْ أَعْدَىٰ بَعْدَ ذَلِكَ فَلَهُ عَذَابُ الْيَمِّ ۝

“O ye who believe! the law of equality is prescribed to you in cases of murder: the free for the free, the slave for the slave, the woman for the woman. But if any remission is made by the brother of the slain, then grant any reasonable demand, and compensate him with handsome gratitude, this is a concession and a Mercy from your Lord. After this whoever exceeds the limits shall be in grave penalty.”<sup>402</sup>

Even though the punishment of the murderer is taking his life and stopping him from living any more but this punishment leads to save many other lives as it tends to deter others from committing such a crime. The Qur’ān highlights this concept in the words:

وَلَكُمْ فِي الْقِيَاسِ حَيَوةٌ يَا أُولِي الْأَلْبَابِ لَعَلَّكُمْ تَتَّقُونَ ۝

“In the Law of Equality there is (saving of) Life to you, o ye men of understanding; that ye may restrain yourselves.”<sup>403</sup>

### iii) Protection of Dignity or Lineage (al-Nāsl)

One of the indispensable fundamentals in the life of a man is his dignity. Islam is quite seriously and incredibly concerned about the dignity of a person and

<sup>401</sup> Al-Qur’ān 17:33.

<sup>402</sup> Al-Qur’ān 02:178.

<sup>403</sup> Al-Qur’ān 02:179.

emphasizes over the importance of protection of man's dignity. Protection of dignity includes many rights related to the concept of man's dignity and self esteem, for example: respectful and responsible attitude from the society, protecting individual rights to privacy, the right of being protected from accusations and disclosure of secrets unjustifiably and protection from others misbehavior.<sup>404</sup>

Sharī'ah presents numerous guiding principles to protect the dignity of human beings. It prohibits its followers from accusing others of mischief such as committing adultery or other immoral behaviours.<sup>405</sup>

The general principle which can be applied while analyzing and adjudicating over any accusation is in the form of the maxim that says:

“Evidence is for the person who claims (accuse) the oath for the person who denies (the accusation).”<sup>406</sup>

This principle provides the guidelines that any such allegation must be substantiated by proofs; otherwise, a punishment will be imposed for the false accusation. Deducing from the following verse such an irresponsible behaviour which is termed as al-Qazf in Islamic law is highly reprehensible with a punishment of 80 lashes, as the Qur'ān states:

وَالَّذِينَ يَرْمُونَ الْمُحْصَنَاتِ ثُمَّ لَا يَأْتِيَنَّهُنَّ بَيِّنَاتٌ مِّمَّا زَعَمْنَ فَحُكِّمْنَ عَلَيْهِنَّ الْحُكْمُ وَالْعَذَابُ وَاللَّهُ يَهْدِي الْقَوْمَ الْكَافِرِينَ

الغريقون

<sup>404</sup> Hajiya Bilkisu Yusuf, “Sexuality and the marriage institution in Islam: An appraisal.” *Afr. Regional Sexuality Res. Center* (2005): 15.

<sup>405</sup> Siti Nurani Mohamed Nor, “Human genetic technologies and Islamic bioethics.” In *GenEthics and religion*, Karger Publishers (2010): 132.

<sup>406</sup> MS Mohd Ab Malek, M. J. Jeniway, M. Sulaiman, and S. Mohd Harun, “In the Purview of an Oath from the Jurisprudential Method of Islamic Law of Evidence.” In *Islamic perspectives relating to business, arts, culture and communication*, Springer, Singapore (2015): 463-474.

“And those who launch a charge against chaste women, and produce not four witnesses (to support their allegations),- flog them with eighty stripes; and reject their evidence ever after: for such men are wicked transgressors.”<sup>407</sup>

The Qur’ān states at another place:

إِنَّ الَّذِينَ يَرْمُونَ الْمُحْصَنَاتِ الْفَاضِلَاتِ الْمُؤْمِنَاتِ لَأُولَئِي الدُّنْيَا وَالْآخِرَةِ وَلَهُمْ عَذَابٌ عَظِيمٌ

“Those who slander chaste women, indiscreet but believing, are cursed in this life and in the Hereafter: for them is a grievous Penalty.”<sup>408</sup>

Islam also regulates the relationships between men and women in order to protect their dignity. For this very reason free mixing between the two sexes is disallowed hence the relationship between them is regulated with certain rules and guidelines. Some of the rules include avoidance of any meeting with an unfamiliar person (non-mahram) and avasion from unnecessary interaction between the two sexes. Islam has most skillfully regulated this relationship by promoting the institution of marriage. As the Prophet P.B.U.H has said in a Ḥadīth:

“O Youth! Those of you who have the means to get married shall do it, as it is better to protect your eyes and your desire, as for those who are unable to do so, he shall fast as it is a protection for you.”<sup>409</sup>

Any act which may lead to the manipulation and exploitation of women is also strictly prohibited in Islam. The prohibition of adultery in Islam is another

---

<sup>407</sup> Al-Qur’ān 24:04.

<sup>408</sup> Al-Qur’ān 24:23.

<sup>409</sup> Al-Bukhari, *Sahih Al-Bukhari*, vol 6, Ḥadīth No. 4778.

manifestation of the protection of dignity. The immoral practice of adultery will lead to the spread of different evils and setbacks in the society.<sup>410</sup>

The following verse of the Qur'ān describes the punishment for adulterers:

الرَّانِيَةُ وَالرَّانِي فَاجْلِدُوا كُلَّ وَاحِدٍ مِّنْهُمَا مِائَةً جَلْدَةٍ وَلَا تَأْخُذْ كُفْرُهُمَا رَأْفَةً فِي دِينِ اللَّهِ إِنَّ كُتُمَ تَوَمِنُونَ بِاللَّهِ وَالْيَوْمِ

الْآخِرِ وَلَكِنَّ هَذِهِ عَذَابُهُمَا طَائِفَةٌ مِّنَ الْمُؤْمِنِينَ ﴿٤١١﴾

“The woman and the man guilty of adultery or fornication, flog each of them with a hundred stripes: Let not compassion move you in their case, in a matter prescribed by Allāh, if ye believe in Allāh and the Last Day: and let a party of the Believers witness their punishment.”<sup>411</sup>

The above mentioned punishment is for an unmarried person who commits adultery, as for the married person the punishment is stoning to death as mentioned by a Ḥadīth:

Abdūllāh Ibn Masud reported Prophet Muḥammad P.B.U.H as saying:

“It is not permissible to take the life of a Muslim who bears testimony (to the fact that there is no god but Allāh, and I am the Messenger of Allāh, but in one of the three cases: the married adulterer, a life for life and the deserter of his Din (Islam), abandoning the community.”<sup>412</sup>

Islam gives a huge emphasis over the sanctity of a clear lineage and this is the reason it delivers plain and comprehensible guidelines for the safeguard of progeny. This principle has led to the acceptability or rejection of many ARTs (as discussed in chapter no. 01)

<sup>410</sup> Fatima Mernissi, *Women and Islam: An historical and theological inquiry* (Columbia: South Asia Books, 1991), 12.

<sup>411</sup> Al-Qur'ān 24:02.

<sup>412</sup> Al-Bukhari, *Sahih Al-Bukhari*, vol 08, Ḥadīth No. 6378.

#### **iv) Protection of the Intellect or Mind (al-Aql)**

Al-Aql or the intellect is a great gift from Allāh S.W.T. to the human beings. Being a unique attribute it differentiate man from animals. Allāh S.W.T. has ordered that everyone should protect this precious gift by utilising the mental capabilities for the benefit of all. The intellect must not be used to promote any evil or anything destructive in nature. Islam has given the freedom of expression to its followers and also teaches them to remain patient and give respect to the views and opinions of others as well. Even at the times of discontent and arguments one must not degrade others by using abusive language. One must refrain himself from being prejudice. Instead of imposing our own patterns of thought and standards on others the best view points should be deduced which can better serve the interests of Muslims and Islam.<sup>413</sup>

The Prophet P.B.U.H is the best example in allowing his companions to express their views and would always accept the best view. In one instance, during the battle of Badr, the Prophet P.B.U.H suggested that the Muslim army should camp at a particular place.<sup>414</sup>

Khabbab bin Al-Mundhir, called upon the Prophet P.B.U.H to inquire:

“O Prophet of Allāh (P.B.U.H), is this place which Allāh has ordered you to occupy, so that we cannot leave the place, or is it a matter of opinion and military tactics?” “No,” replied the Prophet P.B.U.H “it is only a matter of opinion and military tactics.” Khabbab then said, “O Prophet of Allāh, it is not the place we should occupy.” He suggested another place nearer to the water (wells of Badr), which

---

<sup>413</sup> Ibn Kathir, *Qasasul Anbiya (Beirut: Dar Al Kotob Al Ilmiyah 2013)*, 402.

<sup>414</sup> Ibid.

was more suitable for engaging the enemy. The Prophet P.B.U.H agreed and ordered his men to move there immediately.<sup>415</sup>

This is the ultimate manifestation of freedom of expression that was practiced by the Prophet P.B.U.H which should be taken and practiced by current Muslim leaders all over the world. The Prophet P.B.U.H also encouraged Muslims to practice Ijtihaad (independent reasoning) in resolving various issues that arose in the Muslims. The Prophet P.B.U.H is reported to have said in a Ḥadīth narrated by Amer bin al-Aas:

“If a ruler makes an Ijtihaad and he is precise in it, he will be rewarded with two rewards, if, however, he makes a mistake, he will be rewarded with one reward.”<sup>416</sup>

The fact that the Prophet P.B.U.H promised rewards even for those who made mistakes unintentionally indicates that Islam encourages its followers to strive in giving their views and opinions. The fact is that a person must always strive to reach the best opinion by referring to all available sources including the Qur’ān and Sunnah. Protection of the mind also requires safeguarding it against anything that can affect the functions of the brain. This includes the consumption of liquor or similar substances that will upset the functions of the brain. The Qur’ān forbids liquor because its use makes a man unconscious for a certain time hence he loses the ability to perform his religious and other duties as well as safeguard of his own dignity and decorum, the Qur’ān forbids its use when it says:

يَا أَيُّهَا الَّذِينَ آمَنُوا إِنَّمَا الْخَمْرُ وَالْمَيْمُونُ وَالْأَنصَابُ وَالْأَزْلَامُ رَجَسٌ مِّمَّنْ عَمِلَ الْفَنَاءِ فَاجْتَنِبُوا لَعَلَّكُمْ تَفْلَحُونَ ﴿٩٠﴾

<sup>415</sup> Ibn Kathir, *Qasasul Anbiya*, 402.

<sup>416</sup> Al-Bukhari, *Sahih Al-Bukhari*, vol 09, Ḥadīth No. 6919



“O ye who believe! Intoxicants and gambling, (dedication of) stones, and (divination by) arrows, are an abomination, of Satan's handwork: eschew such (abomination), that ye may prosper.”<sup>417</sup>

#### v) Protection of Property (al-Māl)

Acquiring property is a basic human need. Everyone has a right to have his/her own property and consequential benefits attached to it must also be own by him without any unjustified hinderances including his/her right to have all the necessary protection and security for his/her property. Islam has ordered that no one should transgress and acquire the property of others without legitimate reasons and proper agreement in this regard. The Qur'ān also signifies this point in the words:

وَلَا تَأْكُلُوا أَمْوَالَكُمْ بَيْنَكُمْ بِالطَّالِثِ وَتَذَلُّوا بِهَا إِلَى التَّكَاثُرِ لَعَلَّكُمْ تَقَامُونَ أَمْوَالِ النَّاسِ بِالْإِثْمِ وَأَنْتُمْ تَعْلَمُونَ

“And do not eat up your property among yourselves for vanities, nor use it as bait for the judges, with intent that ye may eat up wrongfully and knowingly a little of (other) people's property.”<sup>418</sup>

The ones who acquire the properties of others unlawfully have been warned of the severe punishment on the Day of Judgment in the Qur'ān. For example the following verses state such a warning in words:

إِنَّ الَّذِينَ يَأْكُلُونَ أَمْوَالَ الْيَتَامَى ظُلْمًا إِنَّمَا يَأْكُلُونَ فِي بُطُونِهِمْ نَارًا وَسَيَصْلُونَ سَعِيرًا

“Those who unjustly eat up the property of orphans, eat up a Fire into their own bodies: They will soon be enduring a Blazing Fire!”<sup>419</sup>

And:

وَأَخْذِهِمُ الرِّبَا وَقَدْ نُهُوا عَنْهُ وَأَكْلِهِمْ أَمْوَالِ النَّاسِ بِالطَّالِثِ وَأَعْتَدْنَا لِلْكَافِرِينَ مِنْهُمْ عَذَابًا أَلِيمًا

<sup>417</sup> Al-Qur'ān 05:90.

<sup>418</sup> Al-Qur'ān 02:188.

<sup>419</sup> Al-Qur'ān 04:10.

“That they took usury, though they were forbidden; and that they devoured men’s substance wrongfully, we have prepared for those among them who reject faith a grievous punishment.”<sup>420</sup>

The illegal possession of the others property may be acquired in a number of ways such as: taking usury (Riba), breaking the trust in property related matters, cheating in transactions, stealing the property of others and its misappropriation etc. The Sharī‘ah prohibits all these ways and ordains severe punishments for the transgressors including chopping off the hand of a thief.<sup>421</sup>

This punishment has been mentioned in the Qur’ān in the words:

وَالسَّارِقُ وَالسَّارِقَةُ فَاقْطَعُوا أَيْدِيَهُمَا جَزَاءً بِمَا كَسَبَا لَا تَأْخُذُ بِهِمْ جُؤَارُهُمْ ۚ وَاللَّهُ عَزِيزٌ حَكِيمٌ

“As to the thief, Male or female, cut off his or her hands: a punishment by way of example, from Allāh, for their crime: and Allāh is exalted in power.”<sup>422</sup>

### 3.5.3 Evaluating Human Cloning in the Light of Maqāsid Al-Sharī‘ah

The evolution of al-Maqāsid theories shows that how the “preservation of progeny” evolved into “care for the family” and proposals for a civil “Islamic social system”, how the “preservation of intellect” evolved into “propagation of scientific thinking”, “travelling for the pursuit of knowledge”, “suppressing the herd mentality”, and even “avoiding brain drain”, and how the “preservation of honor” evolved into “preservation of human dignity” and “protection of human rights”. It is believed that even Maqāsid-based approach to the issue of human rights could support the

<sup>420</sup> Al-Qur’ān 04:161.

<sup>421</sup> Muḥammad Adil Khan Afridi, “Maqāsid al-Sharī‘ah and preservation of basic rights: under the theme: Islam and its perspectives on global & local contemporary challenges.” *Journal of education and social sciences*, vol. 4, June (2016): 280.

<sup>422</sup> Al-Qur’ān 05:38.

Universal Islamic Declaration of Human Rights and the view that Islam could add “new positive dimensions to human rights”. Likewise, the “preservation of religion” tends to evolve to “freedom of belief” in contemporary expressions and the “preservation of wealth” was shown to have evolved to “economic development” and “diminishing the difference between economic levels.”<sup>423</sup>

It is an undisputed opinion of the Muslim jurists that Maqāsid al-Sharī'ah methodology can be utilized as a practical tool for resolving bioethical issues and adjudicating upon such matters including the issue of human cloning. This can be done by using the five objectives of Maqāsid al-Sharī'ah (i.e. faith, life, intellect, progeny and property) as focal points of decision-making. These five objectives are in essence the foundations in the deliberation of bioethical issues. This is a form of a value-based mechanism that allows for the resolution of conflicting interests. Whenever any one of the five objectives of Maqāsid al-Sharī'ah comes at risk, the biotechnological application being deliberated upon would deem unethical and should not be considered permissible consequently. For the Muslims, since the Sharī'ah is the complete code of life, these five objectives can complement the conventional bioethical principles (i.e. Autonomy, beneficence, non-maleficence and justice) proposed by Beauchamp and Childress.<sup>424</sup>

It is important that biotechnological applications or the research products be in line with the teachings of Islam, and must not go against any ruling set forth in the primary sources of Islam as well as the ijtihad. Islam gives and recognizes a great social right in the form of marriage between a man and a woman. The institution of marriage is further responsible for the process of reproduction. From the perspective of Islam, a

---

<sup>423</sup> Jasser Auda, *Maqāsid Al-Sharī'ah As Philosophy Of Islamic Law: A Systems Approach* (London: The international institute of Islamic thought, 2008), 100.

<sup>424</sup> Musa Mohd Nordin, “Human genetic and reproductive technologies: an international medico-legal-religious impasse.” *Bangladesh Journal of Medical Science* Vol.10 No.1 (2011): 01-10.

technology such as human reproductive cloning, which does not involve the fertilization of the ovum by a sperm, is regarded as going against the Fitrāh set by Allāh S.W.T.<sup>425</sup>

Thus, this technology is ethically unacceptable for Muslims as it brings harm to the religion. It is also harmful to the society as it discourages the establishment of the institution of marriage between a man and woman and encourages the unnatural unions as of LGBTs, every illicit and extra marital relation is strongly prohibited for the believers and same sex marriages or sexual relations too fall under the same category. Allāh S.W.T is the sole creator of the universe and every human soul is bestowed from Him. He has the full authority over our progeny and lineage.<sup>426</sup>

The second objective of the Maqāsid al-Sharī'ah is the protection of life. It is crucial that advancements made in biotechnology do not bring any risk to human life. Instead, advancements in biotechnology should enhance the quality of life. If there is evidence that applications of biotechnology cause destruction to human life, then based on the Maqāsid al-Sharī'ah framework, such applications are forbidden.<sup>427</sup>

The destruction or killing of the chromosomes in the process of cloning is totally prohibited under the Sharī'ah.

The third objective of the Maqāsid al-Sharī'ah is the protection of the intellect. It is important that any biotechnological application which does not cause any form of harm or risk to the human intellect is allowed to be practiced and opted. As long as these applications can bring about benefits to the intellect, they would be permitted. On the other hand, if the biotechnological applications threaten the sanctity of the

---

<sup>425</sup> Nordin, "Human genetic and reproductive technologies", 02.

<sup>426</sup> Ibid, 03.

<sup>427</sup> Latifah Amin, Siti Fairuz Sujak, Siti Nur Shazwanie Ramlee, Abdul Latif Samian, Mohamad Sabrie Haron and Mohamad Nasran Mohamad, "Educating the Ummah by introducing Islamic bioethics in genetics and modern biotechnology." *Procedia-Social and Behavioral Sciences* 15 (2011): 3399.

intellect, they are deemed unethical and therefore, are not permissible using the Maqāsid al-Sharī'ah framework. In the case of cloning for the reproductive purpose there is fear of weak minds firming their beliefs stronger for the science rather than Allāh S.W.T. Changing in his creation is prohibitory while giving no regard to ones' fate and trust in Allāh S.W.T's will.<sup>428</sup>

It is Allāh S.W.T's will which decides to bestow people with their offsprings in the form of males or females or keeps them barren. The following verse from the Qur'ān can be mentioned in order to favour this view:

لَوْزَجُّهُمْ ذَكَرًا وَانْثَاً وَمَجْعَلٌ مِّنْ شَاءِ عَظِيمٍ إِنَّهُ عَلِيمٌ بِذُنُوبِهِمْ

“Or He bestows both males and females, and He leaves barren whom

He will: for He is full of Knowledge and Power.”<sup>429</sup>

The fourth objective under the Maqāsid al-Sharī'ah framework is the protection of the progeny. All applications of biotechnology should ensure that the progeny is not at any risk. This means that any biotechnological application which does not jeopardize the progeny would be allowed. Biotechnological applications which endanger the progeny are prohibited under the Maqāsid al-Sharī'ah framework. From the perspective of Islam, a technology such as human reproductive cloning, which does not involve the fertilization of the ovum by a sperm, is regarded as going against the Fitrāh set by Allāh S.W.T. Therefore, this technology is ethically unacceptable for Muslims as it goes against the teaching of Islam, and consequently brings harm to the religion.<sup>430</sup>

---

<sup>428</sup> Muḥammad Hashim Kamali, “Actualisation (Tafil) of the Higher Purposes (Maqāsid) of Sharī'ah.” *Islam and Civilisational Renewal (ICR)* 8, no. 3 (2017): 300.

<sup>429</sup> Al-Qur'ān 42:50.

<sup>430</sup> Al-Aqeel, “Human cloning, stem cell research: An Islamic perspective”, 1510.

Family is the smallest social unit in a society. Children and parents make a strong bond by performing some duties for each other. Likewise they enjoy certain rights while living jointly. These rights and duties co-exist. For example a child in a Muslim family has the right of lineage from his father and other such rights even before his birth. Then his parents are responsible to look after him till he is adult and that is the time when the duty shifts and he is made responsible to look after his parents. As the following verses of the Qur'ān denote:

وَاعْبُدُوا اللَّهَ وَلَا تُشْرِكُوا بِهِ شَيْئًا وَبِالْوَالِدَيْنِ إِحْسَانًا

“Serve Allāh , and join not any partners with Him; and do good- to parents.”<sup>431</sup>

وَوَصَّيْنَا الْإِنْسَانَ بِالْوَالِدَيْنِ إِحْسَانًا ۖ حَمَلَتْهُ أُمُّهُ كُرْهًا وَوَضَعَتْهُ كُرْهًا ۖ

“We have enjoined on man kindness to his parents: In pain did his mother bear him, and in pain did she give him birth.”<sup>432</sup>

Mother is the woman who bears a child, gives birth to it and then brings him up. In the case of reproductive cloning who shall be called as a “Mother”? This will surely create a doubt and chaos in the family structure.<sup>433</sup>

On the other hand if a woman wants to clone her son/daughter alone where shall the child get his father from? Who would be his father then? Again it would create a greater disorder in the family life.<sup>434</sup>

<sup>431</sup> Al-Qur'ān 04:36.

<sup>432</sup> Al-Qur'ān 46:15.

<sup>433</sup> Dr. Alkhadmi, *Al-Istinsākh' fī du al-Asuk wa al- Qawā'id wa al-Maqāsid al-Sharī'ah*, 100.

<sup>434</sup> Ibid.

Islam gives more value to the parents by extending their right to their children's property. As the following verse mentions:

وَلِأَبَوَيْهِ لِكُلِّ وَاحِدٍ مِّنْهُمَا السُّدُسُ مِمَّا تَرَكَ إِن كَانَ لَهُ وَلَدٌ

“For parents, a sixth share of the inheritance to each, if the deceased left children.”<sup>435</sup>

There is another confusion when reproduction is done with the help of cloning that, Muslim jurists are unable to determine the real relationship between a clone and the donor, in case the cell has been taken from a male. Would they be brothers or father and son? This perplexity would surely injure the spirit of rights and responsibilities among family members; hence it is divergent to the objectives of Sharī‘ah.<sup>436</sup>

One of the reasons for getting married is the intension to have one's own offspring and raise him. But if human reproductive cloning is allowed it will encourage same sex marriages and that would surely boost the number of LGBTs in society. Hence it will injure the spirit of objectives of Sharī‘ah.<sup>437</sup>

The reproductive cloning clearly opposes this purpose of Sharī‘ah and violates the very idea of reproduction under family system. Islam believes in clear lineage and for the purpose of clarity the institution of marriage has been introduced. Marriage is the legalized and socially and morally acceptable institution to run a reproductive cycle. In the case of cloning the men, women, guys and lesbians would reproduce their offspring without

---

<sup>435</sup> Al-Qur’ān 04:11.

<sup>436</sup> Dr. Alkhadmi, *Al-Istinsākh’ fi du al-Asuk wa al- Qawā'id wa al-Maqāsid al- Sharī'ah*, 108.

<sup>437</sup> Ibid.

forming the basic institution or system of marriage for reproduction. This will also create serious problems of lineage and its purity.<sup>438</sup>

The final objective under the framework of the Maqāsid al-Sharī'ah is the protection of property. Biotechnological applications, processes and products which encourage the waste of money are prohibited. In the case of cloning a huge sum of amount would be needed in order to produce a successful clone which is a total wastage of money hence invites prohibition under the objectives of Sharī'ah. This money could be used on more constructive and positive objectives instead. Cloning is against this objective of Sharī'ah as well as this process involves sale and purchase of embryos or eggs which paves way to use them for illegal researches, operations and support exploitation and black market practices.<sup>439</sup>

Freezing and preserving eggs or embryos for further use by the individuals, buyers or researchers must be strongly discouraged. Such prohibition must be accompanied by strict sanctions and penalties in order to secure human dignity bestowed by Allāh S.W.T.<sup>440</sup>

When all the five objectives under the Maqāsid al-Sharī'ah framework are considered in making bioethical decisions, it is believed that Maqāsid al-Sharī'ah do not endorse the concept of human reproductive cloning.<sup>441</sup>

But as far as the therapeutic cloning is concerned, there is need to evaluate its process in the light of biotechnology and Fiqh in order to reach at a consensus, but the

---

<sup>438</sup> Dr. Alkhadmi, *Al-Istinsākh' fi du al-Asuk wa al- Qawā'id wa al-Maqāsid al- Sharī'ah*, 112.

<sup>439</sup> Nooraslinda Abdul Aris, Rafidah Mohd Azli and Rohana Othman, "MaqāsidShari'ah in Islamic finance: assessment on ideologies of Muslim philosophers and economists." In *Proceeding of the Islamic Economics System Conference*, vol. 5, (2013): 427.

<sup>440</sup> Dr. Muḥammad Wasil, "Al-Istinsākh' albashri fi Sharī'ah wa Qanoon." *Majjalāh Jamia Damishq*, almajaled alsamin ashri (2002) Jamia Damishq: 43.

<sup>441</sup> Shaikh Mohd Saifuddeen, Noor Naemah Abdul Rahman, Noor Munirah Isa and Azizan Baharuddin, "Maqāsidal-sharī'ah as a Complementary Framework to Conventional Bioethics." *Science and engineering ethics* 20, no. 2 (2014): 320.



practicability of its procedure and the benefits adjoined make it acceptable or at least good enough to be opted in the eyes of most of the Muslim jurists. It was recommended in the Ninth Medical Jurisprudence Symposium held in Casablanca in 1997 that Muslims must not be in a rush to formulate and announce a ruling on Shari'ah unless they evaluate all types of it scientifically and in the light of Shari'ah injunctions.<sup>442</sup>

### **3.6 Analysis of the Issue of Cloning in the Light of Legal Maxims of Islamic law**

The construction of Islamic legal thought is incomplete without the significant role played by Al- Qawā'id al-Fiqhiyyah.<sup>443</sup>

They not only help Fiqh in provision of proper solutions for novel issues continuously but also enable and facilitate it to survive actively. They appear in the form of settled principles, which makes them attractive, useful and appealing for the jurists while they confront new issues and challenges. As a result, Qawā'id are considered one of the most functional tools for the jurists use when practicing Ijtihad i-e using the sources of Islamic law (Shari'ah) to extract the legal rulings.<sup>444</sup>

Qawā'id are thought to be applied to all chapters of Fiqh without any limitation or specification. There are five major Qawā'id under this category known as Al-Qawā'id Al-Khams Al-Kubrā (the five major / universal maxims). It is thought that the whole of Islamic jurisprudence is based on these Qawā'id. They have taken hold

---

<sup>442</sup> Dr. Hawari, *Al-Istinsākh' albashri bein alsoura al-elmiyah wa al-dawabit al-Ikhlaqiyah wa al-Fiqhiyah*, 32.

<sup>443</sup> For details please see as Ebrahim, "Vaccination and Islamic Medical Jurisprudence",<sup>54</sup> states that Legal Maxims in Islamic law as: Legal maxims are theoretical abstracts, usually in the form of short statements, that are expressive, often in a few words, of the goals and objectives of the Shari'ah. The actual wordings of the maxims are occasionally taken from the Holy Qur'an or Hadith, but are more often the work of leading jurists. It needs to be noted that some of the maxims are basically a reiteration of some of the broad principles that are found either in the Holy Qur'an or Hadith compilations.

<sup>444</sup> Nyazee, *Legal Maxims in Islamic law*, 06.

of the spirit of the Islamic law as a whole and the rest of the Qawā'id are merely an elaboration or expansion of them. These Qawā'id are following:

- i) Al-Umūr bi-Maqāṣidihā. "The matters are according to the goals behind them".
- ii) Al-Yaqīnu Lā Yazūlu bi al-Shakk: "Certainty is not removed by doubt."
- iii) Al-Mashaqqatu Tajlib Al-Taysīr: "Hardship gets facility."
- iv) Al-Ḍararu Yuzāl: "Harm is to be removed."
- v) Al-Ādatu Muhakkamatun: "Custom is to be enforced."<sup>445</sup>

Due to the expediency and level-headedness provided Qawā'id al-Fiqhiyyah play a crucial role in determining legal rulings for new issues. As far as the medical issues or the issue of cloning specifically are concerned, there are no particular Qawā'id to encompass them particularly and exclusively. Such issues can be dealt under the ambit of various Qawā'id, which are most relevant to them with respect to their general legal rulings. Even so, it can be said confidently that medical issues have a great scope and strong presence within the realm of the five universal Qawā'id and many of their subsidiary Qawā'id.<sup>446</sup>

### 3.6.1 Literal and Technical Meanings of Qawā'id al-Fiqhiyyah

Qawā'id is the plural form of the Arabic word "Qā'idah", which has many literal meanings in Arabic, like; stability, foundation and firmness. The word Qawā'id (in plural form) has been mentioned three times in the Qur'ān at three different places; two of which are used to denote "foundations", whereas the third refers to "women who are past child-bearing age". On the other hand the singular form (Qā'idah) has not been mentioned anywhere in the Qur'ān. As a term, the word Qā'idah is

---

<sup>445</sup> Al-Imam Jalaluddin Abdurehman Al-Suyuti, *Al-Ashbah Wa-Nazair* (Beirut: Dārūl-Kutb-al-'ilmīyyāh, 1993), 35.

<sup>446</sup> Ibid, 10.

synonymous with the terms like principle, base, maxim etc, and is used in various contexts, which may be legal, Political, Religious and philosophical.<sup>447</sup>

Theoretically, the jurists did not provide a definition for the term Qā'idah from its Fiqhi perspective, up to the Eighth Hijri century. Before that the jurist kept following and endorsing the definitions provided by specialized authors who conveyed the general meaning of the term. This was the sense in which the term had been used for the rules of many disciplines. Al- Jurjānī in his famous book "Al- Ta'rīfāt" defines the term qidah as:

"A comprehensive principle or law that is applicable to all of its particulars."<sup>448</sup>

Tāj al-Dīn ibn al-Subkī is considered as the first jurist who provided a definition for the term. He elaborates the term in the following words:

"A comprehensively valid rule which applies to many particulars, so that their legal determinations can be comprehended from it."<sup>449</sup>

### **3.6.2 The Applicability of Islamic legal Maxims on Cloning**

#### **3.6.2.1 Al-Umūr bi-Maqāsidihā: "The Matters are according to the Goals behind them."**

This Qā'idah is based upon the concept and importance of "Nīyyāh" or intent. The intent possesses a fundamental place in all matters related to the religion whether be of worship or dealings with human. The performance of all acts and duties is influenced by it. Intent is a component of almost every legal action, be it prayer, purification, fasting, divorce or sales, etc. Both moral and legal roles are played by

---

<sup>447</sup> Fawzy Shaban Elgariani, "Al- Qawā'id al-Fiqhiyyah (Legal Maxims in Islamic law): Concept, Functions, History, Classifications and Application to Contemporary Medical Issues." *The University of Exeter* (2012): 40.

<sup>448</sup> Al-Sharif Al-Jurjānī, *Al- Taārīfāt* (Beirut: Dār al-Kutub Al-'ilmīyyāh, 1983), 171.

<sup>449</sup> Tāj al-Dīn ibn al-Subkī, *al-Ashbah wal-Nazair* (Beirut: Dār al-Kutub al-'ilmīyyāh, 1991), 12.

Nīyyāh. While performing an act, the inner motive of an actor categorizes his action as accepted or rejected by Allāh S.W.T. Both consequences endure different rewards. In the case of worship most rewards are related to the life hereafter. On the other hand, the legal role is related to the presence or absence of consciousness, knowledge and awareness of the individual while performing an act.<sup>450</sup>

All actions need to be performed with due care and responsiveness while intending clearly for them otherwise those acts will not be considered performed duly or accurately. Intent is also vital to differentiate the valid contracts from invalid ones and vice versa. The punishment of many crimes is conditional upon the presence of intent behind them, as intent specifies the magnitude of the crimes. The crux of this maxim is that all the actions either physical or verbal must be judged according to the intentions of the doer. The underlying intention behind an action or transaction determines the effect to be given to such action or transaction.<sup>451</sup>

Many traditions of the Prophet Muḥammad P.B.U.H give inference towards origin of this Qā'idah. One of the famous traditions is mentioned below in the form of Ḥadīth below:

“Deeds (their correctness and rewards) depend upon intentions, and every person gets but what he has intended. So, whoever emigrated for Allāh and His Messenger, his emigration is for Allāh and His Messenger, and whoever emigrated for worldly benefits or for a woman to marry, his emigration is for what he emigrated for.”<sup>452</sup>

Many jurists consider this Ḥadīth among the traditions upon which the whole spectrum of Islamic knowledge depends and flourishes. Keeping in view the meaning

---

<sup>450</sup> Elgariani, “Al- Qawā'id al-Fiqhiyyah ”, 50.

<sup>451</sup> Ibid.

<sup>452</sup> Al-Bukhari, *Sahih Al-Bukhari*, vol 01, Ḥadīth No. 01.

of this Qā'idah we can extend its application to human cloning that if scientists and their clients tend to allow cloning in the pretext of striving for new knowledge and gaining maximum benefit for the people but giving no adherence to the requisites and basic fundamentals of Islamic teachings their pursuit can not be endorsed. Moreover therapeutic cloning when performed for the constructive purposes such as treatment of the diseases or organ formation can be allowed as it serves the beneficial purposes.<sup>453</sup>

### **3.6.2.1.1 Subsidiary Qawā'id which can be Applied over Human Cloning Issue.**

A great number of subsidiary Qawā'id are derived from this Qā'idah. They tend to widen its scope and application. Moreover these subsidiary Qawā'id throw a light on the hidden sides of this Qā'idah. But here, only two of them are mentioned in order to evaluate the permissibility or non permissibility of the human cloning. First their general meanings are explained briefly then the evaluation is conducted.

i) **"No Afterlife Rewards (for the deeds) without examining the Intention behind them."** This Qā'idah indicates that deeds must be done with sincerity in order to gain reward in hereafter otherwise they will be ineffective and futile. This Qā'idah is more relevant to the religious and spiritual aspect of intention hence applicable to all chapters of jurisprudence.<sup>454</sup>

ii) **"In Contracts, effect is given to Intention and Meaning and not Words and Forms."**

This Qā'idah emphasizes over the rejection of the deceptive expressions. Meaning thereby, contracts are not binding unless verified by the intention. The most common

---

<sup>453</sup> I. Sharfuddin, "Toward an Islamic administrative theory." *The American Journal of Islamic Social Science* 4, no. 2 (1987): 239.

<sup>454</sup> Elgariani, "Al- Qawā'id al-Fiqhiyyah ", 150.

example of this Qā'idah is the indirect statements in Talaq (divorce) and their authenticity for the acceptance or rejection.<sup>455</sup>

The above mentioned subsidiary maxims can also be used to elaborate the philosophical and jurisprudential nature of human cloning by clarifying the legal status of the act in this world and hereafter. This act can not be given a clean chit without dire need (in the case of therapeutic cloning) and reasons to serve the infertile couples etc must be examined rationally too. Any deception or dishonesty by the medical practitioners or the clients may deprive them of the reward in hereafter even in the cases where apparently the cloning is rightly and justifiably performed either it be therapeutic cloning.

### **3.6.2.2 Al-Yaqīnu Lā Yazūlu bi al-Shakk: “Certainty is not Removed by Doubt.”**

“Al-Yaqīn” or certainty is one of the essentials in Islamic beliefs and law. The Qur’ān has given emphasis to the importance of yaqīn at many places. Yaqīn is an obligatory requirement of belief hence highly stipulated. Yaqīn is the basic ingredient for the shahadah, which is the testimony that there is no god except Allāh S.W.T and that Muḥammad P.B.U.H is the last messenger of Allāh S.W.T.<sup>456</sup> One has to certify it with true intention and will in order to become a muslim and the one who doubts is considered munafiq (hypocrite). The Qur’ān expresses it in these words:

إِنَّمَا الْمُؤْمِنُونَ الَّذِينَ آمَنُوا بِاللَّهِ وَرَسُولِهِ لَمْ يَأْتُواوَ جَهْدُوا بِأَنفُسِهِمْ فِي سَبِيلِ اللَّهِ أُولَٰئِكَ هُمُ

الصَّادِقُونَ ﴿١٠٠﴾

<sup>455</sup> Elgariani, “Al- Qawā'id al-Fiqhiyyah”, 150.

<sup>456</sup> Al-Suyūṭī, *Al-Ashbah wa-Nazair*, 123.

“Only those are Believers who have believed in Allāh and His Messenger, and have never since doubted, but have striven with their belongings and their persons in the Cause of Allāh: Such are the sincere ones.”<sup>457</sup>

A saying of the Prophet Muḥammad P.B.U.H narrated in Saḥīḥ Muslim also indicates that:

“The servant meeting Allāh having testified that there is no deity worthy of worship except Allāh and that I am the Messenger of Allāh, not doubting them shall enter the Jannah (paradise).”<sup>458</sup>

Many instances from the Qur’ān clearly elaborate that it discourages Muslims to adopt any idea if it is not proved by reason or sound evidence. Muslims are encouraged to hold their beliefs on certainty and truth. The Qur’ān says:

وَلَا تَقْفُ مَا لَيْسَ لَكَ بِهِ عِلْمٌ إِنَّ السَّمْعَ وَالْبَصَرَ وَالْفُؤَادَ كُلُّ أُولَٰئِكَ كَانَ عَنْهُ مَسْئُولًا ۖ

“And pursue not that of which thou hast no knowledge; for every act of hearing, or of seeing or of (feeling in) the heart will be enquired into (on the Day of Reckoning).”<sup>459</sup>

It also says:

وَمَا يَتَّبِعُ أَكْثَرُهُمْ إِلَّا ظَنًّا إِنَّ الظَّنَّ لَا يَنفَعِي مِنَ الْحَقِّ شَيْئًا إِنَّ اللَّهَ عَلِيمٌ بِمَا يَفْعَلُونَ ۖ

“But most of them follow nothing but fancy: truly fancy can be of no avail against truth. Verily Allāh is well aware of all that they do.”<sup>460</sup>

Al-Nawawī expresses the concept of this Qā‘idah in these words:

<sup>457</sup> Al-Qur’ān 49:15.

<sup>458</sup> Al-Bukhari, *Saḥīḥ Al-Bukhari*, vol 01, Ḥadīth No. 14.

<sup>459</sup> Al-Qur’ān 17:36.

<sup>460</sup> Al-Qur’ān 10:36.

“Things are legally assumed to remain as they are unless and until it is established with certainty that they are otherwise; and that extraneous doubts are of no consequence.”<sup>461</sup>

The teachings of Islam over the issue of Janeen, sperm and egg donation and surrogacy are clear hence leave no doubt while applying the rulings over such issues. Islam clearly prohibits the intervention of any third party in reproductive process generally. Likewise the status of unborn child is also clear and destroying the janeen for the purpose of completing the process of cloning attracts no approval.

#### **3.6.2.2.1 Subsidiary Qawā'id which can be Applied over Human Cloning Issue**

##### **i) “The Basic Rule is that a thing shall remain as it was Originally.”**

The same rule is also expressed in words such as: “Things shall be considered as they were.” This subsidiary Qā'idah proves the continued validity of the status quo until a change is occurred and known.<sup>462</sup>

This can be elaborated in the words that whatever is being established with a particular time shall remain intact as it was until the contrary is proven. For instance, a missing person will not be presumed to be dead unless proven contrary with the help of clear evidence because he had acquired the status of “alive” before his disappearance, which must be maintained. Mere claim of his death without any proof will not validate the consequences related to dead persons i-e allowing his wife to remarry, distributing his wealth among the legal heirs etc, etc. The reason behind such strict rule is that certainty can not to be overruled by doubt.<sup>463</sup>

---

<sup>461</sup> Yahya ibn Sharaf al-Nawawi, *Sharah Sahih Muslim* (Dammam: Dār ibn Al-Jouzi) 4:49.

<sup>462</sup> Elgariani, “Al- Qawā'id al-Fiqhiyyah”, 70.

<sup>463</sup> Ibid.



The above mentioned subsidiary maxim states that in the case of confusion over the permissibility or non permissibility of the most crucial aspects of human cloning like reproductive cloning one must presume that it is prohibited as there is no clear proof over its permissibility. The original method of reproduction i-e sexual reproduction must be promoted in this case and institution of marriage and family should also be endorsed for such purpose.<sup>464</sup>

### **3.6.2.3 Al-Mashaqqatu Tajlib al-Taysir: “Hardship gets Facility.”**

Shari‘ah is distinguished in character for numerous characteristics. The flexible feature of it makes it distinctive and ensures guarantee of validity, stability and continuity for all ages and courses. The principle of “Raf al-Haraj” or removal of hardship is among these distinguished features of Shari‘ah, this concept is also vital to the general concept of maslahāh in Shari‘ah. Like any other legislative system, Islamic law also comprises of obligations or duties. But it goes without saying that no excessively hard obligation has been imposed under Shari‘ah and there is no such unusual strictness or difficulty upon the believers.<sup>465</sup>

An unbiased examination of the injunctions of Islamic law reveals the simplicity and facilitation hidden in them. It has been expressed quite a number of times in the Qur’ān that Allāh intends to make things easy for human beings and never intends to impose any hardship on them. The Qur’ān and Sunnah of the Prophet Muḥammad P.B.U.H are evident of the historic fact that Islam removed the burdens which previous nations were enduring and abolished the troublesome obligations. One of the

---

<sup>464</sup> Elgariani, “Al- Qawā’id al-Fiqhiyyah”, 70.

<sup>465</sup> Muḥammad Hashim Kamali, “Legal maxims and other genres of literature in Islamic jurisprudence.” *Arab Law Quarterly* 20, no. 1 (2006): 80.

examples is that Islam prohibits taking ones own life, as killing oneself was the compulsion in order to repent from a sin as set by the Torah. The Qur'ān describes:

وَإِذْ قَالَ مُوسَىٰ لِقَوْمِهِ يُقَوْمِ إِنَّمَا فُتِنْتُمْ أَنفُسَكُم بِمَا كُنتُمْ آلَافِكُمْ فَاقْتُلُوا أَنفُسَكُمْ ذَٰلِكُمْ خَيْرٌ لَّكُمْ

عِنْدَ بَارِكِكُمْ فَنَابَ عَلَيْهِمْ إِنَّهُ هُوَ التَّوَّابُ الرَّحِيمُ ۝

“And remember Moses said to his people: O my people! Ye have indeed wronged yourselves by your worship of the calf: So turn (in repentance) to your Maker, and slay yourselves (the wrong-doers); that will be better for you in the sight of your Maker. Then He turned towards you (in forgiveness): For He is oft- Returning, Most Merciful.”<sup>466</sup>

A famous Ḥadīth of Holy prophet Muḥammad P.B.U.H states:

“I have been given five things which were not given to anyone else before me.... 1. Allāh made me victorious by awe (by His frightening my enemies) for a distance of one month's journey. 2. The earth has been made for me (and for my followers) a place for praying and a thing to perform Tayāmmūm, therefore anyone of my followers can pray wherever the time of a prayer is due. 3. The booty has been made Halāl (lawful) for me yet it was not lawful for anyone else before me. 4. I have been given the right of intercession (on the Day of Resurrection). 5. Every Prophet used to be sent to his nation only but I have been sent to all mankind.”<sup>467</sup>

<sup>466</sup> Al-Qur'ān 02:54.

<sup>467</sup> Al-Bukhari, *Sahih Al-Bukhari*, vol 01, Ḥadīth No. 331.

The principle of “Raf āl -Haraj” or removal of hardship has another interpretation as well. According to which if it is difficult to act upon any specific injunction of law then an individual can use its alternatives instead. This distinguished feature has made this Qā‘idah as being the source of all “Rukhsas” or concessions granted to the people in the situation of dire need and when they are unable to act upon the actual rule or injunction. For illustration, it is allowed for a traveler to make his prayer short or combine his prayers when he is travelling. Likewise he is also allowed to break his fast, as travelling causes difficulty and hardship. Likewise disable and sick people can adopt the methods feasible and practiceable for them when they are to offer prayers. An other concession, Tayāmmūm, is granted in the case when one does not find water to do ablution, otherwise he will suffer and miss his prayers. Following verses from the Qur’ān support the above mentioned instances:

يُرِيدُ اللَّهُ أَنْ يُخَفِّفَ عَنْكُمْ وَخُلِقَ الْإِنْسَانُ ضَعِيفًا ۝

“Allāh doth wish to lighten your (difficulties): For man was created Weak (in flesh).”<sup>468</sup>

يُرِيدُ اللَّهُ بِكُمْ الْيُسْرَ وَلَا يُرِيدُ بِكُمْ الْعُسْرَ

“Allāh intends every facility for you; He does not want to put to difficulties.”<sup>469</sup>

وَإِنْ كُنْتُمْ مَرْضَىٰ أَوْ عَلَىٰ سَفَرٍ أَوْ جَاءَ أَحَدٌ مِنْكُم مِّنَ الْغَائِطِ أَوْ لَبَسَ مِنْتُمْ نِسَاءً فَلَمْ تُجِدُوا مَاءً فَتَيَمَّمُوا صَعِدًا طَيِّبًا فامسحوا

بِوُجُوهِكُمْ وَأَيْدِيكُمْ مِنْهُ مَا يُرِيدُ اللَّهُ لِيَجْعَلَ عَلَيْكُمْ مِنْ حَرَجٍ وَلَكِنْ يُرِيدُ لِيُطَهِّرَكُمْ وَلِيُتِمَّ نِعْمَتَهُ عَلَيْكُمْ لَعَلَّكُمْ

تَفَكَّرُونَ ۝

<sup>468</sup> Al-Qur’ān 04:28.

<sup>469</sup> Al-Qur’ān 02:185.

“But if ye are ill, or on a journey, or one of you cometh from offices of nature, or ye have been in contact with women, and ye find no water, then take for yourselves clean sand or earth, and rub therewith your faces and hands, Allāh doth not wish to place you in a difficulty, but to make you clean, and to complete his favour to you, that ye may be grateful.”<sup>470</sup>

The Prophet Muḥammad (P.B.U.H) has also endorsed it by saying:

“God did not send me to be harsh, or cause harm, but He has sent me to teach and make things easy.”<sup>471</sup>

Hazrat Aishah R.A, the wife of Prophet P.B.U.H also reported that:

“Whenever he, the Prophet, has a choice between two matters, he would choose the easiest, unless it is (a) sinful (act).”<sup>472</sup>

This is a unique maxim. It is the most special rule and the maxim of great value when Muslim jurists give their opinion to allow therapeutic cloning. Therapeutic cloning can be allowed to form/make new organs when a person is in dire need of them and they can not be obtained by other means, still there would be issues of their adaptability or rejection by the body in case they are taken in donation from others. Therapeutic cloning can resolve such major problems and abolish the greatest difficulties incurred by the humanity. Therefore this maxim can provide a base to allow therapeutic cloning.

---

<sup>470</sup> Al-Qur’ān 05:06.

<sup>471</sup> Al-Bukhari, *Sahih Al-Bukhari*, vol 04, Ḥadīth No. 3506.

<sup>472</sup> Al-Bukhari, *Sahih Al-Bukhari*, vol 01, Ḥadīth No. 101.

### 3.6.2.3.1 Subsidiary Qawā'id which can be Applied over

#### Human Cloning Issue

Many legal principles are derived from this Qā'idah, especially those, which relate to the concepts of "Darurah" or necessity and "Hajah" or need. The following subsidiary Qawā'id can be related to the issue of cloning.

##### i) "Necessity makes the unlawful Lawful".

The below mentioned Qur'ānic verse is the source of this Qā'idah as this Qā'idah is true interpretation of the following verse:

فَمَنِ اضْطُرَّ غَيْرَ بَاغٍ وَلَا عَادٍ فَلَا إِثْمَ عَلَيْهِ إِنَّ اللَّهَ غَفُورٌ رَحِيمٌ

"But if one is forced by necessity, without willful disobedience, nor transgressing due limits, then is he guiltless. For, Allāh is Oft-forgiving and Most Merciful."<sup>473</sup>

Thus, this Qā'idah deals with the emergency situations or where the normal rules of the law can not be applied or a greater amount of difficulty would occur if applied. This is the reason that the Sharī'ah allows to eat the meat of a prohibited or dead animal in case of danger of being dead from the hunger. These concessions can only be availed in the situations of unavoidable inconvenience or severe disaster or crisis. But this Qā'idah too puts some conditions to be met first in order to be able to claim for the relaxation. These conditions include: A dire necessity and that too should be continuous and present, the suffer must not have found any other lawful substitue or incapable to find, if the concession is chosen to be availed it must not bring hazard or risk equal to or greater than the risk or danger averted, the concession can not be used

---

<sup>473</sup> Al-Qur'ān 02:173.

without limiting it to the necessity only, which means that the relaxation can not be used when the necessity, obstacle or danger come to an end.<sup>474</sup>

**ii) Necessity is measured in accordance with its True proportions.**

This subsidiary maxim puts a limit on the use of concession at the time of grave need. It can be explained with the help of an example that if someone is unable to find water and uses wine to remove a blockage in his throat, then he must not exceed the minimum amount which can bring him relief. In the same way, when a man is prohibited to see a woman's covered body parts other than his wife, a male physician is allowed to see her body parts for their treatment but this concession is restricted to the affected part of the body of that female patient only.<sup>475</sup>

**iii) Necessity does not invalidate the Rights of another.**

While enjoying the concession one must not infringe others' rights unduly and he must compensate others for the use of anything in their possession, like the food, water or anything used in dire need of starvation etc.

These subsidiary maxims are of great importance while allowing new innovations and applications related to human body like cloning. Cloning for the medical purposes becomes lawful at the time of need and can be applied. But this permissibility must not extend to the non-prohibited acts like reproductive cloning which do not claim for a dire need and instant permission. Likewise, mixing of a stranger in lineage (third party) and any other Harām means can not be declared permissible while applying the principle of necessity. Likewise, a ban over the reproductive cloning is allowed when it is perceived that there will be chaos and disorder in society if it is allowed. The constitutional and legal ban over the reproductive cloning is not derogatory while

---

<sup>474</sup> Muḥammad Hashim Kamali, "Qawā'id Al-Fiqh: The legal maxims of Islamic law." The Association of Muslim Lawyers (2008): 02.

<sup>475</sup> Kamali, "Qawā'id Al-Fiqh", 34.

keeping in mind such maxims as it limitizes the use of cloning by excluding its unnecessary practices.<sup>476</sup>

### **3.6.2.4 Al-Ḍararu Yuzāl: “Harm is to be Removed.”**

Elimination of harm is another basic and guiding principle of Sharī‘ah. A renowned jurist Izzuddin ibn Abd al-Salam is of the opinion that the purpose of the law is to “attract the benefit/interest” and “eliminate harm.” Al-Shatibi also states that:

“The basic purpose of the religious ordinances is to secure the welfare and public interest of human beings (maslahāh) and to protect them against harm (mafsadāh)”<sup>477</sup>

This modus operandi has always been considered as the standard and criterion for formulating legal rulings for the emerging issues and noval incidents. The Islamic legal discourse gives much attention to harm as it is one of the major factors behind the political, social and economic instability.<sup>478</sup>

In order to serve this purpose, during the course of history, the jurists have developed the theory of “Raf al-Darār” or eliminating harm. This theory has been derived from the multiple pieces of evidence from the Qur’ān and the Sunnah of the Prophet Muḥammad P.B.U.H. The ultimate aim of these evidences is to prohibit causing harm to oneself or to others in order to promote the facility. Among the principles of theory of Raf al-Darār, this Qā‘idah holds an eminent position. Raf al-Darār includes stopping the harm from occurrence and if it occurs it must be eliminated and curbed by every mean possible. Darār is defined as:

“A detriment caused to the interests of oneself or of others.”<sup>479</sup>

---

<sup>476</sup> Kamali, “Qawā‘id Al-Fiqh”, 34.

<sup>477</sup> Abbu Ishaq Al-Shātībī, *Al-Muwāfaqāt fī Al-asool al- Sharī‘ah* (Tunisia: Dawlat Al-Tunisia), 29

<sup>478</sup> Nyazee, *Legal Maxims in Islamic law*, 65.

<sup>479</sup> Ibid, 35.





“When ye divorce women, and they fulfil the term of their (Iddat), either take them back on equitable terms or set them free on equitable terms; but do not take them back to injure them, (or) to take undue advantage; if any one does that; He wrongs his own soul.”<sup>483</sup>

This maxim has been of great help while allowing the medical treatments and many more medical and scientific innovations. This Maxims is also of great importance while allowing the therapeutic cloning by most of the Muslim jurists and they are of the view that if therapeutic cloning is also declared prohibited there will be harm or great loss to the humanity, which must not be.

#### **3.6.2.4.1 Subsidiary Qawā'id which can be Applied over Human Cloning Issue**

The application of this Qā'idah gives birth to many subsidiary Qawā'id and widens its scope and application. Few of the instances are following:

##### **i) A harm may not be eliminated by its equivalent.**

Protecting the lives of others is of equal legal status as protecting one's own life, so it is not allowed to kill someone in anticipation of his killing someone else if he is not killed. Prior killing or killing in anticipation of being killed does not provide a legal excuse.<sup>484</sup>

##### **ii) A Lesser Ḍarar is to be tolerated in order to eliminate a Greater one.**

This Qā'idah means that if a man is encountered with two hardships and he has no other option to escape except choosing one of them. He must choose the lighter or lesser of the two harms.

---

<sup>483</sup> Al-Qur'ān 02:231.

<sup>484</sup> Elgarani, "Al- Qawā'id al-Fiqhiyyah", 150.

For example: if a pregnant woman dies and her offspring is yet alive and can be saved, in such a situation it is allowed to open the abdomen of that pregnant woman in order to save her baby.<sup>485</sup>

**iii) A Private injury is tolerated in order to prevent a Public injury.**

This is an important Qā'idah with respect to public rights and respect for the community or society a person is living in. According to this Qā'idah if a conflict arises between the private interests of an individual or rights of the whole community, the public rights must prevail over the private ones. For instance, though traders get more profit if goods are sold on the higher rates but fixing the prices protects the rights of the community as a whole. But this permissibility is not absolute and without limitations. The harm must not be eliminated by a greater harm and in the situation where a man is confused between choosing for the benefit and repelling the harm he must repel the harm first. Again in the case of conflict between two evils or harms the lesser one should be opted. There is no need to adopt the greater evil in pursuit of having lesser evil. Moreover in the case where an individual can get a benefit but at the cost of harming or damaging the public interest he must refrain from doing so. Therefore it can be analyzed and inferred that even though the reproductive cloning can benefit an individual but it is harmful for the public at large so must be ignored.<sup>486</sup>

**3.6.2.5 Al-'Ādatu Muhakkamatun: "Custom is to be Enforced."<sup>487</sup>**

Customs are one of the primary sources of law in every legal system either secular or religious. History is evident of the significant role played by the customs in the development of legal systems all over the world.

---

<sup>485</sup> Elgariani, "Al- Qawā'id al-Fiqhiyyah", 150.

<sup>486</sup> Ibid.

<sup>487</sup> Al-Suyūṭī, *Al-Ashbah wa-Nazair*, 209.

Sharī'ah is no exception in this regard. Islamic law too recognizes the formal status enjoyed by customs and their recognition as a legal principle and a valid basis of judicial decisions. For this reason, if it is feasible and appropriate, a judge is authorized to base his ruling on customary norms, where he is unable to find out a text from the Qur'ān or the Sunnah. It is important to mention that a significant number of rulings determined on the basis of ijtihad have actually been formulated according to the prevailing customs. In addition to it many jurists are of the view that having the knowledge of the prevailing customs at different origins is a fundamental requirement to be possessed by the jurists who want to carry out Ijtihād or issue Fatāwā. It is mandatory qualification for them. Although customs are not considered as the formal source of Islamic law yet they are of great subsidiary and supplementary value, operating side by side with the formal sources and principles of Sharī'ah.<sup>488</sup>

In Arabic language two terms “urf” and “adah” normally denote custom. The jurists differ on the issue that either both of these terms are synonymous or have different implications. Some scholars are of the view that urf is a collective practice of a large number of people, whereas adah is for a repeated practice of an individual or of a group.<sup>489</sup>

Consequently, adah can be defined as: “a recurring matter without a rational association”, or “recurring practices which are acceptable to people of sound nature.”<sup>490</sup> The definition of Urf, can be as:

---

<sup>488</sup> Luqman Zakariyah, “Custom and Society in Islamic Criminal Law: A Critical Appraisal of the Maxim al-‘Ādah Muḥakkamah (Custom is Authoritative) and its Sisters in Islamic Legal Procedures.” *Arab Law Quarterly* 26, no. 1 (2012): 78.

<sup>489</sup> Zakariyah, “A Critical Appraisal of the Maxim al-‘Ādah Muḥakkamah”, 76.

<sup>490</sup> Ibn-Nujjam, *Al-Ashbahah*, 10.

“The verbal or non verbal habitual practices of the majority of people within a community.”<sup>491</sup>

The customary practices and trends of a Muslim society also give no room to the human reproductive cloning and the institutions of family and marriages are still respected by holding a prominent position in society so this custom must be followed accordingly, which does not allow reproduction by any other means.

### **3.6.2.5.1 Subsidiary Qawā'id which can be Applied over Human Cloning Issue**

Some of the important subsidiary Qawā'id derived from this Qā'idah are listed below. They are also included in “Majāllāt al-Aḥkām al-Adliyyāh.”

- i) “Public usage is conclusive and action must be taken in accordance to.”
- ii) “A thing that is regarded impossible customary is considered impossible in fact.”
- iii) “The original (real) meaning is to be abandoned in favour of that established by custom.”
- iv) “A matter recognized by custom is regarded as if stipulated by agreement.”
- v) “A matter established by custom is like a matter established by a legal text.”<sup>492</sup>

These subsidiary maxims also highlight the importance of public usage of customary practices. Human reproductive cloning is rejected by the customary practices and usages thus stands rejected. When it is rejected by the custom it will be considered rejected by the agreement or the legal authorities and legal documents. A disapproval

---

<sup>491</sup> Mustafa Ahmad Al-Zarqa, *Al-Madkhal Al-Fiqh Al-Aam* (Damascus: Dar al-Fikr, 2006), 20.

<sup>492</sup> Al-Zarqa, *Sharah Al-Qawā'id*, 223-241.

by the custom will be considered as a disapproval by a legal text. Human reproductive cloning can not be considered legal and permissible in the absence of a legal prohibition over it where customary practices already disapprove it.

There are many other Qawā'id which are important with respect to their application over the issue of human cloning and marvelous results can be achieved if a comprehensive research is done over such maxims.

For example, "All affairs must be judged on the basis of their consequences", "Utility, welfare of the greatest number", "The initial rule (or presumption) for all things is "permissibility,"<sup>493</sup> "The initial presumption is that a thing continues to exist in its original state", "Injury is never ancient (beyond memory)", "The initial presumption is that there is no liability", "The initial presumption is that new attributes have not occurred", "Hardship invokes ease", "Under duress the rules are relaxed", "Necessity is limited by its extent", "When an obstacle preventing a prohibition is removed the prohibition is revised", "An injury can not be removed by causing similar injury", "A private injury is borne to ward off a public injury", "Major injury is removed by a minor injury", "In case of conflict between the bearing of two injuries the lighter injury is borne of the lesser", "The easier of two actions is to be chosen", "A change in rules with the passage of time is not to be denied", "Repelling an injury is preferred over the securing of a benefit" and "Injury is to be repelled to the extent possible."<sup>494</sup>

---

<sup>493</sup> For details please see as Nyazee, *Legal Maxims in Islamic law*, 115 states that Al-Dabbusi upholds: The initial rule (or presumption) for all things is "permissibility", Unless an evidence indicates prohibition.

<sup>494</sup> Ibid, 305.

### 3.7 Conclusion

Muslim jurists have never been unaware of the advancements in science and technology; same is the case with human cloning. They have been discussing this issue since its emergence and urged the need to understand the issue from the Sharī'ah as well as scientific and biological dimensions. The most learned Muslim scholars of the time give a profound adherence to the rules of Sharī'ah and understand this issue accordingly. Most of the Muslim jurists denounce reproductive human cloning on the basis of being unnecessary and undesirable. As far as the therapeutic cloning is concerned, most of them allow it in the case of dire need and necessity, for example to develop new organs for replacement of damaged or lost organs. Iran and Pakistan both countries have a bright future with respect to research and innovation and ethical review as well. But Iran, being a Shī'ah majority state differs from Pakistan with respect to jurisprudential views on the subject. The objectives of Sharī'ah theory can be applied over the subject of cloning but the five purposes preserved by this theory reject human reproductive cloning. The evaluation of cloning in the light of Islamic legal maxims too does not support cloning except its therapeutic form and that too in the case of dire need only. The objective of Sharī'ah and Islamic legal maxim provide a good methodology to understand and evaluate the issue of cloning and other contemporary medical issues.

# **CHAPTER FOUR**

## **A WORLDWIDE PERSPECTIVE ON CLONING WITH REFERENCE TO THE ETHICAL, RELIGIOUS AND LEGAL VALUES**

### **4.1 Introduction**

Chapter four of this dissertation is aimed to analyze the area under discussion in the light of moral and ethical, religious and legal perspectives. For this reason the most famous four principles in biomedical ethics are discussed first. Then Moral and Ethical concerns on Cloning are discussed with the arguments of the proponents and opponents in this regard. For this purpose five major objections and their opposite opinions are explained in detail.

Religious positions on cloning are described by exploring world's major religions like Christianity, Judaism, Hinduism and Buddhism. In order to explore the legal position of cloning the key legislations enacted by the international organizations like the UNO and others are analyzed. Then a study of the scientific and medical organizations is conducted in order to grasp with their stance on cloning.

### **4.2 Islamic Bioethics: Definition and Sources**

Islamic ethics can be translated as “Akhlāq” (plural of Khulūq) which means nature, character or quality and disposition. The word akhlāq has a very close relationship with the word Khāliq (the Creator) and makhlūq (the creature). Therefore, akhlāq possess a well established relationship between Khāliq (the Creator) and makhlūq (the creature) and between makhlūq (the creature) and makhlūq (the creature) themselves.

The term khūlūq appears in the Qur'ānic verse:

وَأَنْتَ لَعَلَىٰ خُلُقٍ عَظِيمٍ ۝

“And thou (Muḥammad) on an exalted standard of character.”<sup>495</sup>

Here the word Khūlūq (akhlāq) or character has been referred as the state of the soul that determines human actions. It is neither the soul nor the action.<sup>496</sup>

It goes without saying that such character is exemplary for the other Muslims and can be achieved through intension, practice and then consistency. The words character and action are quite different from one another as character is the inner and hidden state of the soul, while action is its external or outer expression.<sup>497</sup>

Islamic ethics declares everything ethically acceptable when it is morally good and discourages everything by declaring unethical which is morally bad.<sup>498</sup>

Meanwhile, the two primary sources of Islamic ethics are the Qur'ān and Sunnah of the Prophet Muḥammad P.B.U.H. Al-Qur'ān is the most important and vital source bestowed by Allāh S.W.T for the guidance of human beings and regulates their conduct alongwith the Sunnah of the Prophet Muḥammad P.B.U.H, who is the role model to be followed and idealized by the muslims. Both the Qur'ān and the Sunnah of the Prophet Muḥammad P.B.U.H are called the primary and scriptural sources of morals and ethics.<sup>499</sup>

A great number of the Qur'ānic directives consist of the fundamental and essential issues of ethics. The Qur'ān provides clear rules to resolve ethics related questions when it addresses the nature of moral and religious rights and wrongs, the need and

---

<sup>495</sup> Al-Qur'ān 68:04.

<sup>496</sup> Abdurezak Abdulahi Hashi, "Islamic ethics: An outline of its principles and scope." *Revelation and Science* 1, no. 3 (2011): 122.

<sup>497</sup> Ibid.

<sup>498</sup> Khalid Latif, "The place of morality in Islam and its relation to worship." *Islam Religion*, (2008): 01.

<sup>499</sup> Ibid.



practice of justice, nature and extent of power, individual and collective freedom and moral and religious responsibilities. For example: The Qur'ān uses the terms such as: “al-khayr” (goodness), “al-birr” (righteousness), “al-iqsāt” (equity), “al-adl” (justice), “al-haqq” (truth and right), “al-ma'rūf” (known and approved) and “al-taqwā” (piety) when it addresses the believers about the virtuous acts or things.<sup>500</sup>

Some of the verses from the Qur'ān setting the basic ethical standard for Muslim are given below:

لَيْسَ الْبِرَّ أَنْ تُوَلُّوا وُجُوهَكُمْ قِبَلَ الْمَشْرِقِ وَالْمَغْرِبِ وَلَكِنَّ الْبِرَّ مَنْ آمَنَ بِاللَّهِ وَالْيَوْمِ الْآخِرِ وَالْمَلَائِكَةِ وَالْكِتَابِ  
وَالنَّبِيِّينَ ۖ وَآتَى الْمَالَ عَلَى حُبِّهِ ذَوِي الْقُرْبَىٰ وَالْيَتَامَىٰ وَالْمَسْكِينِ وَالنَّسَبَ وَالسَّبِيلَ ۖ وَالسَّائِلِينَ وَفِي الرِّقَابِ ۖ وَأَقَامَ  
الصَّلَاةَ وَآتَى الزَّكَاةَ ۖ وَالْمُوفُونَ بِعَهْدِهِمْ إِذَا عَاهَدُوا ۖ وَالصَّابِرِينَ فِي الْبَأْسَاءِ وَالْفُرْءَاءِ وَحِينَ النَّاسِ ۚ أُولَٰئِكَ  
الَّذِينَ صَدَقُوا ۚ وَأُولَٰئِكَ هُمُ الْمُتَّقُونَ ۝

“It is not righteousness that ye turn your faces Towards east or West; but it is righteousness to believe in Allāh and the Last Day, and the Angels, and the Book, and the Messengers; to spend of your substance, out of love for Him, for your kin, for orphans, for the needy, for the wayfarer, for those who ask, and for the ransom of slaves; to be steadfast in prayer, and practice regular charity; to fulfil the contracts which ye have made; and to be firm and patient, in pain (or suffering) and adversity, and throughout all periods of panic. Such are the people of truth, the Allāh.fearing.”<sup>501</sup>

<sup>500</sup> Adibah Binti Abdul Rahim, “Understanding Islamic ethics and its significance on the character building.” *International Journal of Social Science and Humanity* 3, no. 6 (2013), 508.

<sup>501</sup> Al-Qur'ān 02:177.

“And Allāh loves those who are firm and steadfast.”<sup>502</sup>

يَوْمَ لَا يَنْتَعِمُ مَالٌ وَلَا بَنُونَ ۝ إِلَّا مَنْ أَتَى اللَّهَ بِقَلْبٍ سَلِيمٍ ۝

“The Day whereon neither wealth nor sons will avail. But only he (will prosper) that brings to Allāh a sound heart.”<sup>503</sup>

إِنَّ أَكْرَمَكُمْ عِنْدَ اللَّهِ أَتْقَاكُمْ ۝ إِنَّ اللَّهَ عَلِيمٌ خَبِيرٌ ۝

“Verily the most honoured of you in the sight of Allāh is (he who is) the most righteous of you. And Allāh has full knowledge and is well acquainted (with all things).”<sup>504</sup>

وَسَارِعُوا إِلَى مَغْفِرَةٍ مِنْ رَبِّكُمْ وَجَنَّةٍ عَرْضُهَا السَّمَوَاتُ وَالْأَرْضُ ۝ أُعِدَّتْ لِلْمُتَّقِينَ ۝

“Be quick in the race for forgiveness from your Lord, and for a Garden whose width is that (of the whole) of the heavens and of the earth, prepared for the righteous.”<sup>505</sup>

كُنْتُمْ خَيْرَ أُمَّةٍ أُخْرِجَتْ لِلنَّاسِ تَأْمُرُونَ بِالْعُرْوَةِ الْوُثْقَىٰ وَتَنْهَوْنَ عَنِ الْمُنْكَرِ ۝ وَتُؤْمِنُونَ بِاللَّهِ ۝ وَلَوْ آمَنَ أَهْلُ الْكِتَابِ

لَكَانَ خَيْرًا لَهُمْ ۝ مِنْهُمْ الْمُؤْمِنُونَ وَالَّذِينَ هُمْ الْقَائِمُونَ ۝

“Ye are the best of peoples, evolved for mankind, enjoining what is right, forbidding what is wrong, and believing in Allāh. If only the People of the Book had faith, it were best for them: among them are some who have faith, but most of them are perverted transgressors.”<sup>506</sup>

<sup>502</sup> Al-Qur’ān 03:146.

<sup>503</sup> Al-Qur’ān 26:88-89.

<sup>504</sup> Al-Qur’ān 49:13.

<sup>505</sup> Al-Qur’ān 03:133.

<sup>506</sup> Al-Qur’ān 03:110.

وَمَنْ أَحْسَنُ دِينًا مِمَّنْ أَسْلَمَ وَجْهَهُ لِلَّهِ وَهُوَ مُحْسِنٌ وَاتَّبَعَ مِلَّةَ إِبْرَاهِيمَ حَنِيفًا ۚ وَاتَّخَذَ اللَّهُ إِبْرَاهِيمَ خَلِيلًا ۝

“Who can be better in religion than one who submits his whole self to Allāh, does good, and follows the way of Abraham the true in Faith? For Allāh did take Abraham for a friend.”<sup>507</sup>

وَمَنْ أَحْسَنُ قَوْلًا مِمَّنْ دَعَا إِلَى اللَّهِ وَعَمِلَ صَالِحًا وَقَالَ إِنِّي مِنَ الْمُسْلِمِينَ ۝

“Who is better in speech than one who calls (men) to Allāh, works righteousness, and says, I am of those who bow in Islam?”<sup>508</sup>

Humility and piety are the most fundamental characteristics of Islamic ethics. The moderates and most humble ones are liked by Allāh S.W.T. as the bellow mentioned verse denotes:

وَلَا تُصَوِّرْ خَدَّكَ لِلنَّاسِ وَلَا تَمْشِ فِي الْأَرْضِ مَرَحًا ۚ إِنَّ اللَّهَ لَا يُحِبُّ كُلَّ مُخْتَالٍ فَخُورٍ ۝ وَالْقِيْدُ فِي مَقْبُوكٍ

وَاعْضُضْ مِنْ صَوْتِكَ ۚ إِنَّ أَكْثَرَ الْأَصْوَاتِ لَصَوْتُ الْحَمِيرِ ۝

“And swell not thy cheek (for pride) at men, nor walk in insolence through the earth; for Allāh loveth not any arrogant boaster. And be moderate in thy pace, and lower thy voice; for the harshest of sounds without doubt is the braying of the ass.”<sup>509</sup>

يَا أَيُّهَا الَّذِينَ آمَنُوا اتَّقُوا اللَّهَ وَكُونُوا قَوَّامِينَ لِلَّهِ لَعَلَّكُمْ تَصْلِحُونَ ۝ أَعْمَالُكُمْ وَأَعْمَالُكُمْ تَغْفِرُ لَكُمْ ذُنُوبَكُمْ ۚ وَمَنْ يُطِيعِ اللَّهَ

وَرَسُولَهُ فَذَلِكَ قَوْلَ الرَّسُولِ ۝

<sup>507</sup> Al-Qur’ān 04:125.

<sup>508</sup> Al-Qur’ān 41:33.

<sup>509</sup> Al-Qur’ān 31:18-19.

“O ye who believe! Fear Allāh, and (always) say a word directed to the Right. That He may make your conduct whole and sound and forgive you your sins: He that obeys Allāh and His Messenger (PBUH) has already attained the highest achievement.”<sup>510</sup>

وَلَا تُفْسِدُوا فِي الْأَرْضِ بَعْدَ إِصْلَاحِهَا وَادْعُوا إِلَى خَيْرٍ وَطَمَعًا ۚ إِنَّ رَحْمَةَ اللَّهِ قَرِيبٌ مِّنَ الْمُحْسِنِينَ

“Do no mischief on the earth, after it hath been set in order, but call on Him with fear and longing (in your hearts): for the Mercy of Allāh is (always) near to those who do good.”<sup>511</sup>

In addition to it, Islamic jurisprudence could also be an important source for Islamic ethics. Some normative questions and Sharī‘ah rules related to the obligations are also discussed under Islamic jurisprudence. Besides, Muslim jurists like al-Ghazālī (in al-Mūstasfā), Ibn ‘Abd al-Salām (in Qawā‘id al-Ahkām fī Maṣālih al-Anām) and Abu Ishaq al-Shatibi (in al-Muwāfaqāt) have discussed about the important theory of “objective of Sharī‘ah”. Al-Shatibi, for instance, stated that “The rules of the Sharī‘ah have been designed to produce goods (maṣālīḥ) and remove evil (mafasid) and these are certainly their ends and objects. And the maṣālīḥ are those which promote the preservation and fulfillment of human life and the realization of all that the human nature, animal and rational demands, till one is happy in every aspect.”<sup>512</sup>

Islam awards much importance and significance to the ethics. The development of the society as well as individuals is correlated with ethical principles. Several Qur’ānic

<sup>510</sup> Al-Qur’ān 33:70-71.

<sup>511</sup> Al-Qur’ān 07:56.

<sup>512</sup> Sharmin Islam, *Ethics of Assisted Reproductive Medicine: A Comparative Study of Western and Islamic Bioethics* (USA: Herndon International Institute of Islamic Thought (IIIT) 2017, 11.

verses and Ḥadīths give an inference to the significance of ethics. The Qur’ān mentions:

إِنَّا أَنْزَلْنَا التَّوْرَةَ فِيهَا هُدًى وَنُورٌ يَحْكُمُ بِهَا النَّبِيُّونَ الَّذِينَ أَسْلَمُوا إِلَيْهِمْ هَادُواوَالرَّبُّونَ وَالْأَحْبَارُ بِمَا اسْتُخْفِظُوا مِنْ  
كِتَابِ اللَّهِ وَكَانُوا عَلَيْهِ شُهَدَاءَ فَلَا تَخْشَوُا النَّاسَ وَاخْشَوْنِي وَلَا تَتَّبِعُوا الْبَاقِيَ تَمَتَّا قَلِيلًا وَمَنْ لَمْ يَحْكَمْ بِمَا أَنْزَلَ اللَّهُ  
قَالَ لَيْسَ بِكَ هُمْ الْكَافِرُونَ ۝

“It was We who revealed the law (to Moses): therein was guidance and light. By its standard have been judged the Jews, by the prophets who bowed (as in Islam) to Allāh’s will, by the rabbis and the doctors of law: for to them was entrusted the protection of Allāh’s book, and they were witnesses thereto: therefore fear not men, but fear me, and sell not my signs for a miserable price. If any do fail to judge by (the light of) what Allāh hath revealed, they are (no better than) Unbelievers.”<sup>513</sup>

At another place the Qur’ān presents criteria for good morals in the words:

قُلْ إِنَّمَا حَرَّمَ رَبِّي الْفَوَاحِشَ مَا ظَهَرَ مِنْهَا وَالْأَلْمَ وَالنَّهْيَ بِغَيْرِ الْحَقِّ وَأَنْ تُفْرِكُوا بِاللَّهِ مَا لَمْ يُنَزِّلْ بِهِ سُلْطَانًا وَأَنْ  
تَقُولُوا عَلَى اللَّهِ مَا لَا تَعْلَمُونَ ۝

“Say: the things that my Lord hath indeed forbidden are: shameful deeds, whether open or secret; sins and trespasses against truth or reason; assigning of partners to Allāh, for which He hath given no authority; and saying things about Allāh of which ye have no knowledge.”<sup>514</sup>

<sup>513</sup> Al-Qur’ān 05:44.

<sup>514</sup> Al-Qur’ān 07:33.

In the modern era the scope of Islamic Medical Jurisprudence (al-Fiqh al-Ṭibbī al-Islāmī) extends the application of Sharīʿah to the findings and verdicts which the fuqahā (Muslim jurists) deliberate upon biotechnological manipulations as well. These biotechnological advancements directly impact upon the lives of Muslims, hence they tend to inquire about the Sharīʿah rulings on such issues. Sharīʿah rulings declare the actions by a rule (ḥukm) as Required or Obligatory (Wajib or Fard), Recommended (Mandūb), Permitted (Mubāḥ), discouraged or abominable (Makrūh) or forbidden or prohibited (Ḥarām).<sup>515</sup>

### **4.3 An Overview of the Worldwide Moral and Ethical Concerns on Cloning**

#### **4.3.1 The Conventional Medical Ethics**

As a discipline Bio Medical Ethics was introduced formally in 1978, with a main objective to evaluate the ethical issues regarding research in biomedical sciences. For this purpose, in the beginning four basic principles; non-maleficence, beneficence, autonomy and justice were applied. Gradually, the ethical issues concerning cloning, sex selection, gene therapy, patients, respect for patients/persons, privacy of genetic information, informed consent and eugenics etc related issues were included under the domain of Bio Medical Ethics.<sup>516</sup>

Medical ethics<sup>517</sup> is primarily a field of applied ethics, it is the study of judgments and moral and ethical values applicable to the medicine. As everyone knows that

---

<sup>515</sup> Abul Fadl Mohsin Ebrahim, "Vaccination in the Context of Al-Maqāsid Al-Sharīʿah (Objectives Of Divine Law) and Islamic Medical Jurisprudence." *Arabian Journal Of Business and Management Review (Oman Chapter)* Vol. 3, 10 (2014): 44.

<sup>516</sup> Dr. Muḥammad Iqbal Khan, *Medical Ethics: An Islamic Perspective* (Islamabad: Institute of Policy Studies, 2015), 20.

<sup>517</sup> For details please see as Khan, *Medical Ethics*, 45 states that values in Medical Ethics: Six of the values that commonly apply to medical ethics discussions are:

- i. Autonomy: The patient has the right to refuse or choose their treatment.
- ii. Beneficence: A practitioner should act in the best interest of the patient.

“Ethics is the understanding of moral values”; Medical ethics means a set of moral principles, which have been designed to direct the members of the medical profession for the conduct and discharge of their responsibilities in the practice of medicine. These ethical guidelines also determine their relationship with other members of this profession and patients. It can also be said that medical ethics is a formal code of conduct for the members of the medical profession in order to make them render the best possible service to the humanity and to maintain the honor and dignity of the medical profession. Many medical schools offer well thought-out and inclusive programs for teaching medical ethics to their students all over the world.

The history of medical ethics can be traced back to the Code of Hammurabi (about 2200 BC). Then the “Hippocratic Oath” formulated and declared by the Greek physician “Hippocrates” in the 4th Century BC became the nucleus of all medical ethics. It enjoyed and retained the same power, influence and enforceability in medical ethics until the modern modifications in medical ethics took place in the 20<sup>th</sup> century. As “Lasagna” wrote the modified version of it eventually it became known as the “Oath of Lasagna.”<sup>518</sup>

- 
- iii. Non-maleficence: "first, do no harm".
  - iv. Justice: Concerns the distribution of scarce health resources, and the decision of who gets what treatment (fairness and equality).
  - v. Dignity: The patient (and the person treating the patient) have the right to dignity.
  - vi. Truthfulness and honesty - the concept of informed consent has increased in importance since the historical events of the Doctors' Trial of the Nuremberg trials and Tuskegee Syphilis Study.

When moral values are in conflict, the result may be an ethical dilemma or crisis. WHO described ethical dilemma as a dilemma between different values which are seen as important or beneficial, but which in particular cases and circumstances are in conflict with each other. In such cases a physician has to choose which value is more important or the physician may refer to add values and to consider contexts to be able to make a decision.

<sup>518</sup> Talukder MHK et al., “Basic ideas on medical ethics.” *Bangladesh Journal of Medical Sciences*, Vol. 09, No. 03, (2010): 24.

Later in 1948 the Declaration of Geneva was adopted by the Second World Medical Assembly which is considered as the modern equivalent of the Hippocratic Oath. This document was further ammended in 1968 and 1983.<sup>519</sup>

### **4.3.2 Conventional Bioethics and its Principles**

V. P Rotter introduced bioethics as inter-disciplinary ethics in 1970. Historically, bioethics, as we have it today, took shape in the 1960s when certain Christian theologians became interested in ethical problems related to novel treatment methods and medical technologies. These theologians were gradually joined by individuals from other disciplines such as philosophy, social and natural sciences and medical practice and in due course bioethics emerged as a truly interdisciplinary field of applied ethics. In spite of countless debates on theoretical level, the discipline continued to develop on mainly Western lines, with concepts like informed consent and autonomy at its centre. It seems, however, that with the dawn of twenty-first century, bioethics has learnt to be more pluralistic and welcoming to nonwestern traditions than before. The number of writings on cross-cultural bioethics is growing.<sup>520</sup>

Bioethics is a composite term derived from the Greek words “bios”, meaning life, and “ethike”, meaning ethics. Therefore, it can be defined as:

“The systematic study of human conduct in the area of life sciences and health care, in so far as this conduct is examined in the light of moral values and principles.”<sup>521</sup>

The social issues such as issues related to public health and the ethics of population control etc are dealt under the concept of bioethics. It does not stop here and extends

---

<sup>519</sup> MHK et al., “Basic ideas on medical ethics”, 24.

<sup>520</sup> Qaiser Shahzad, *Biomedical Ethics: Philosophical and Islamic Perspectives* (Islamabad: Islamic Research Institute, 2009), 40.

<sup>521</sup> Ibid, 33.



beyond human life and health by dealing with the plant life issues and environment and experimentation related to plants and animals. A bioethicist examines the moral validity of data. The data is interpreted and analyzed in the light of ethical principles and theories. As an interdisciplinary discipline, it is more familiarly related to life sciences because it deals directly with the moral and ethical issues related to natural and life sciences.<sup>522</sup>

The four principles approach is so imperative. Essentially on the grounds that it can help us to stay away from two polar perils, moral “relativism” and moral “dominion.”<sup>523</sup>

Then again the prima facie nature of the these four principles, alongside the ethically lawful differences in their elucidation, the preference and priorities among them under specific situations and in adjudication about their proper scope of functioning and application, as well as for the principles of self respect, dignity and honor of the individuals, including their moral thoughts for themselves allow the four principles to function flexibly in order to avoid the polar ethical and moral hitch of moral imperialism.<sup>524</sup>

### **i) Autonomy**

The literal meaning of Autonomy is “self rule”, additionally purposeful and conscious self rule is considered a unique characteristic for all moral standards of all times. It is believed that if people have autonomy, they are capable of making their own decisions on the basis of deliberation, in result of such deliberations new things to do can be intended sometimes and sometimes people can perform new things in

---

<sup>522</sup> Raanan Gillon, “Medical ethics: Four principles plus attention to scope.” *BMJ: British Medical Journal* 309, no. 6948 (1994): 184.

<sup>523</sup> Paul Baines, “Medical ethics for children: applying the four principles to paediatrics.” *Journal of medical ethics* 34, no. 3 (2008): 141.

<sup>524</sup> Gillon, “Medical ethics”, 185.

order to implement the decisions. It can be inferred as the autonomy of action, of will or intention and autonomy of thought. Respect for autonomy is directly related to the moral obligation to respect the autonomy of others or all those potentially affected and concerned.<sup>525</sup>

In medical services the autonomy has many applications and implications. For example, requisite of having consent and permission of the people when a certain medical treatment is going to be performed on them, which will surely protect the autonomy of the people. Another important implication for respecting people's autonomy is Medical confidentiality. Generally, people are not under an obligation to keep others' secrets, but medical practitioners are under an implicit or explicit promise to their clients and patients to keep every information which has been received and confided to them confidential. If there is no promise of confidentiality, there is far less likelihood of patients to reveal their highly sensitive and private information, required to be known by the healthcare practitioners for their optimal care. It can be asserted that maintenance of confidentiality is not only a method of showing respect to the patient's autonomy but it also amplifies the likelihood of being able to help him in the appropriate direction.<sup>526</sup>

Another requisite for the respect for autonomy is that the moral agents should not deceive each other. Abstainment from deceit is implicit part of the agreement between two individuals. Either one of them is a doctor or patient. The regularity and punctuality is also a kind of respect for autonomy. A medical practitioner must be on time for his appointments. The consented and agreed appointments are kinds of

---

<sup>525</sup> Gillon, "Medical ethics", 185.

<sup>526</sup> Ibid.

mutual promise, which if not fulfilled would amount to a breach of promise and trust.<sup>527</sup>

Another requisite to put into effect the respect for autonomy, is to turn the patient/client communicate well to his medical practitioner. This act requires a careful listening by the medical practitioner which does not include listening with ears only but feeling the pain and ailment of the client and the patient must be capable of talking about his ailment or suffering whereas the medical practitioner facilitates to make him speak with not only his words but with his kind gestures. Some times the patients do not want to talk about their disease expansively or they want to avoid the history of their disease, in such a situation only a good communication can make them reveal the necessary information which can not be gathered otherwise.<sup>528</sup>

## ii) Non-maleficence

Health care practitioners are under an obligation to not do any harm to their patients. The most celebrated maxim used as a principle under health care ethics is a Latin maxim “Primum Non Nocere” which means “Above all, do no harm”. The first modern description of health care ethics was formulated by a British physician Thomas Percival.<sup>529</sup>

Thomas Percival opines that the principle of non-maleficence is the foremost and primary principle to set and fix the physician’s obligations and accomplishments. He is of the opinion that this principle supersedes even the principle of respect for the patient’s autonomy. He further elaborates that:

“To a patient ... who makes inquires which, if faithfully answered, might prove fatal to him, it would be a gross and unfeeling wrong to

---

<sup>527</sup> D. F. Tsai, “Ancient Chinese medical ethics and the four principles of biomedical ethics.” *Journal of medical ethics* 25, no. 4 (1999): 315.

<sup>528</sup> Shahzad, *Biomedical Ethics*, 58.

<sup>529</sup> Elizabeth Missing Sewell, *Margaret Percival*. Vol. 1 (D. Appleton & Company, 1847), 45.

reveal the truth. His right to it is suspended, and even annihilated; because ... it would be deeply injurious to himself, to his family, and to the public. And he has the strangest claim, from the trust reposed in his physician, as well as from the common principles of humanity, to be guarded against whatever would be detrimental to him.”<sup>530</sup>

The basic and common rules of morality such as; not making someone disabled, not killing anyone, not depriving someone of pleasure, not causing pain to anyone, not cheating or breaking promises are the prerequisites for providing a safeguard from causing of harm. Most of the prohibitions found across the literature of biomedical ethics are based on the principle that causing harm negligently or intentionally is a primary moral wrong.<sup>531</sup>

Paul S. Appelbaum has raised some important questions on the issue of non-maleficence and physician ethics concerning testimony in criminal and civil litigation contexts. In the context of a trial, he elaborates the idea with an example that when more severe punishment is awarded to a person than it would have been originally, because of the absence of the necessary information to be delivered, such act amounts to maleficence. Appelbaum declares such a common problem as one of the non-maleficence and quotes the questions such as:

“If physicians are committed to doing good and avoiding harm, how can they participate in legal proceedings from which harm may result? If, on the other hand, physicians in court abandon medicines traditional ethical principles, how do they justify that deviation? And if the obligations to do good and avoid harm no longer govern physicians in

---

<sup>530</sup> Gillon, “Medical ethics”, 190.

<sup>531</sup> Sidney Bloch and Peter Reddaway, *Soviet Psychiatric Abuse: The Shadow Over World Psychiatry* (London: Victor Gollancz Limited, 1984), 110.

the legal setting, what alternative principles come into play? Are physicians in general bound by the principles of beneficence and non-maleficence?"<sup>532</sup>

### iii) Beneficence

A medical practitioner does not pledge to never do a harm when he follows the principle of "do no harm" but he only intends that he would do his utmost effort in order to establish a positive balance between avoiding the harm and promoting the good or necessary. The researches in the public health activities are evident that the risk of harm is always present in medical practice but that possibility must be weighed against every probable benefit for the subjects, general public and patients. In reference to this context it can be easily observed that the significance of beneficence as a principle extends beyond the scope of non-maleficence.<sup>533</sup>

The genral meaning of the term "Beneficence" in English language is "any act of kindness or mercy" or "charity", "love" and "humanity". All acts intended or designed to benefit other human beings are the acts of beneficence in a general meaning. In other words it can be inferred that beneficence is any moral obligation which intends to act for the benefit of others. The welfare of patient is the most important requisite in medical health practice. For this reason the beneficence has long been considered as a foremost and basic value in health care related ethics.<sup>534</sup>

The principle of beneficence extends its application for removing and preventing possible harms in order to help others in attainment of their essential, legitimate and

---

<sup>532</sup> Reginald A., C. Clift, Dean Buckner, Frederick R. Appelbaum, Scott I. Bearman, Finn B. Petersen, Lloyd D. Fisher, Claudio Anasetti, Patrick Beatty, W. I. Bensinger, and Kristine Doney, "Allogeneic marrow transplantation in patients with acute myeloid leukemia in first remission: a randomized trial of two irradiation regimens." *Blood* 76, no. 9 (1990): 1868.

<sup>533</sup> Stephen Garrard Post, *Encyclopedia of Bioethics, 5 Volume Set* (U.S.A: Gale, 2004), 10.

<sup>534</sup> Edmund D. Pellegrino, "Patient and physician autonomy: conflicting rights and obligations in the physician-patient relationship." *J. Contemp. Health L. & Pol'y* 10 (1994): 47.

justifiable interests. The notions such as “maximizing possible benefits and minimizing possible harms” and “balance benefits against risks” are also included under the sphere of this principle. Many duties in public health, nursing, medicines and research are expressed in terms of positive obligations, for example; “To go to the assistance of those in need of treatment or in danger of injury” etc. Injury, disease, sufferings, pain, distress and disability due to disease or injury are the instances of harm to be prevented, either by removal or by minimizing. As far as the benefits are considered they cover a wide scope by including the personal benefits acquired by the patient because of the help received as well as the benefits attained by the whole society.<sup>535</sup>

Some researches give more weightage to the ethics of abolishing or minimizing harm over the ethics of providing benefit. The proponents of this view give the example where it is always considered unjustifiable to kill a dying patient in order to have his organs to be used to save two other patients, even though in such a case the benefit would be maximized.<sup>536</sup>

Sometimes both the principles of beneficence and non-maleficence come into conflict that is the reason they have been made two distinctive and separate principles. Again the weights of the two principles can vary, but it is not necessary that one of them must always out weight the other.<sup>537</sup>

The ethical history of beneficence sets forth many inferences proving that sometimes beneficence demands extreme generosity and severe sacrifice in moral life. Donating bone marrow to a stranger or giving a kidney or liver for transplantation are the acts

---

<sup>535</sup> T. L. Beauchamp, “The four principles’ approach to health care ethics.” *Principles of health care ethics* (2007): 04.

<sup>536</sup> Beauchamp, *Principles of health care ethic*, 04.

<sup>537</sup> Gillon, “Medical ethics”, 196.

of generosity and great sacrifice. Some moral philosophers argue that such beneficent actions are a moral ideal and virtuous but not obligations.<sup>538</sup>

#### iv) Justice

The fourth ethical principle is justice. Justice is most commonly considered as synonymous with the word “fairness” and can be defined as “the moral obligation to act on the basis of fair adjudication between competing claims.”<sup>539</sup>

Generally, in health related ethics the applications of justice are subdivided into three categories: respect for morally acceptable laws (legal justice), fair distribution of scarce resources (distributive justice) and respect for people’s rights (rights based justice).<sup>540</sup>

Equality is the core element of justice and is located at the heart of justice, but keeping in view the Aristotle’s viewpoint it can be assumed that; “Justice is more than mere equality. Thus people can be treated unjustly, even if they are treated equally and they can be treated justly even if they are not treated equally.” While evaluating his opinion, the extracted conclusion is that it is important to “treat equals equally” (what health economists are increasingly calling horizontal equity) and to “treat unequals unequally” in proportion to the morally relevant inequalities (vertical equity). The morally relevant criteria for declaring and treating people as equals and unequals have always been a topic of great discussion among scholars of different ages. The debate is continuing even in the 21<sup>st</sup> century. The moral, philosophical, religious and political contexts are most importantly considered while proceeding with the debate over the concept of relevance of equality with justice. In the course of

---

<sup>538</sup> W. R. Miller, "Motivational interviewing in service to health promotion." *American Journal of Health Promotion* 18, no. 3 (2004): A1-A10.

<sup>539</sup> Hassan Chamsi Pasha and Mohammed Ali Albar, "Western and Islamic bioethics: How close is the gap?." *Avicenna journal of medicine* 3, no. 1 (2013): 08.

<sup>540</sup> Tom L. Beauchamp and James F. Childress, *Principles of biomedical ethics* (USA: Oxford University Press, 2001), 30.

such standards and patterns the healthcare practitioners need to move and proceed cautiously as there can be no concrete justification for imposing one's own professional or personal standards about the meaning of justice, on others.<sup>541</sup>

This principle gives birth to many ethical standards and moral concerns such as: providing sufficient health care to meet the needs of all who need it, providing equal access to healthcare to everyone, allowing healthcare workers to give priority to the needs of "their" patients, allowing people as much choice as possible in selecting their healthcare options, respecting the autonomy of the people who provide those resources and thus limiting the cost to taxpayers and subscribers to health insurance schemes and maximizing the benefit produced by the available resources. All these criteria of a just allocation of healthcare resources can be morally justified but all of them can not meet simultaneously.<sup>542</sup>

#### **4.4 Moral and Ethical Concerns on Cloning: The Proponents and Opponents**

There are two groups of people on Moral and Ethical sides of cloning; the proponents and opponents of cloning. Beside other reasons to defend cloning, the proponents present some biological benefits of cloning too. They are of the view that actually these are those sides of cloning which give answers to many objections raised against cloning. The opponents present five major objections against cloning all over the world. These are:

- i) Human reproductive cloning offends God and nature.<sup>543</sup>

---

<sup>541</sup> Tom L Beauchamp, "Methods and principles in biomedical ethics." *Journal of Medical ethics* 29, no. 5 (2003): 271.

<sup>542</sup> Robert M. Veatch, *A theory of medical ethics* (USA: Basic book Publishers, 1981), 11.

<sup>543</sup> National Bioethics Advisory Commission. "Cloning human beings: report and recommendations of the National Bioethics Advisory Commission." (1997): 44-45.



- ii) Children are “made” and not begotten while applying reproductive cloning.<sup>544</sup>
- iii) The human clones lack individuality.<sup>545</sup>
- iv) The human clones destroy humanity.<sup>546</sup>
- v) Human cloning is unsafe and produces children with birth defects.<sup>547</sup>

Human cloning invites a great deal of criticism and appreciation on moral, ethical, biological and legal grounds. While discussing the moral and ethical sides of the cloning, it is criticized by the above mentioned five major objections worldwide. The opinions of both the proponents and the opponents are described here in order to throw a light to the moral and ethical position of human cloning all over the world. The critical evaluation of the five major ethical and moral objections is given as under:

#### **4.4.1 Human Reproductive Cloning offends God and Nature**

The first objection has been under a hot discussion since the emergence of cloning. It is the most commonly raised and asserted argument over the issue of cloning.

“Playing God” and other such terms denoting the fury and discontent of God over cloning have been used by all sections of the society all over the world.<sup>548</sup>

An important statement by the California Advisory Committee on human cloning is quoted here, stating: “Reproduction according to this argument is solely God’s domain. When we take it upon ourselves to create humans through reproductive cloning, we are infringing on the devine domain, Playing God, as it were. On this view finite and fallible beings should not make decisions properly limited to the

---

<sup>544</sup> Margaret Jane Radin, “Market-inalienability.” *Harvard law review* (1987): 1900.

<sup>545</sup> Patrick D Hopkins, “How popular media represent cloning as an ethical problem.” *Hastings Center Report* 28, no. 2 (1998): 06.

<sup>546</sup> George J. Annas, “Human cloning: a choice or an echo.” *U. Dayton L. Rev.* 23 (1997): 247.

<sup>547</sup> Kerry Lynn Macintosh, *Illegal beings: human clones and the law* (UK: Cambridge University Press, 2005), 20.

<sup>548</sup> Ted Peters, *Playing God?: Genetic Determinism and Human Freedom* (UK: Routledge, 2014), 10.

infinite and infallible. Many religious accounts give humans the responsibility for being caretakers of the rest of the creation. The cloning of human beings oversteps the limits of this responsibility and runs counter to the responsibility itself.” The committee goes on to add that cloning is not only against the will of God but it is also an unnatural act hence offends the nature.<sup>549</sup>

The Proponents are of the view that not everyone believes in God, as apparently there is no scientific proof to the existence of God. Moreover they argue that this objection has got such a shape due to the unjustifiable way adopted by the media to broadcast this issue. This is not the real side of the picture. They argue that cloning is wrongly declared as “an act of hubris”. Even the ones who reject the existence of God also criticize cloning because they think that it is against the nature and the science must not interfere with the principles of nature. They argue against the notion that what is “natural” is good and acceptable and what is “unnatural” is bad and unacceptable. Again they add that most of the people who condemn the cloning have calmly accepted the IVF technologies without thinking that they can also be termed as intervention in the nature.<sup>550</sup>

#### **4.4.2 Children are “Made” and not Begotten while applying**

##### **Reproductive Cloning**

The critics of cloning argue that cloning violates human dignity and labels the children as “products” and “commodities”. They think that human cloning procedure consists of a major element of manufacturing while comparing it to the assisted reproductive technologies. They say that cloning controls the characteristics and

---

<sup>549</sup> “Certainly cloning could be considered “unnatural” as it relies on human intervention in a natural process. It clearly runs counter to a normally functioning natural environment, at least for mammals. It does not provide for the random combination of genetic material from eggs and sperm that is the essence of sexual reproduction. In addition it could theoretically render males reproductively obsolete.”

<sup>550</sup> Macintosh, *Illegal beings*, 56

produces children with desired instincts which is against the human dignity. Such things aspire the notions of being a copy or identical twin of the father.<sup>551</sup>

The proponents are of the view that there is no evidence that use of money in reproductive facilities and services has ever turned the children as “products” to their parents. It can also be never presumed that the clones would be deprived of love and affection of their parents. This objection is childish and baseless in the view of the proponents. They think that had it been possible that the clones will be deprived of natural love due to the fact that they have been born with the help of cloning technique, same would have been the case with the children born with the help of IVF technologies.<sup>552</sup>

#### **4.4.3 The Human Clones lack Individuality.**

The third major objection on cloning is that a human clone is same or just like the person from whom the cell has been taken, or it is a copy of the person who gave the nuclear DNA for the cloning process. Hence the clone lacks individuality. He is no person at his own and he is only a replica or copy of the original.<sup>553</sup>

The proponents are of the view that even the identical twins are different from each other. The two persons who conceived at the same moment, gestated in same womb and after birth were raised together by the same parents in the same environment have distinct characters and personalities than how the clones can be same as their parents?<sup>554</sup>

---

<sup>551</sup> Debora L. Spar, “The baby business: How money, science, and politics drive the commerce of conception.” *Bioethics Research library of the Kennedy institute of Ethics* (2006): 01.

<sup>552</sup> S.M. Mohaghegh Damad, “Human Cloning from the Viewpoint of Fiqh and Ethics.” *Iranian Journal of Medical Law* 1, no. 1 (2012): 11.

<sup>553</sup> Mona S. Amer, “Breaking the Mold: Human Embryo Cloning and Its Implications for a Right to Individuality.” *UCLA L. Rev.* 43 (1995): 1659.

<sup>554</sup> David Elliott, “Uniqueness, individuality, and human cloning.” *Journal of Applied Philosophy* 15, no. 3 (1998): 217.

They argue that cloning does not offer a life which can be repeated or played again and again with the matching results, contrary to be depicted in fiction and the movies made on cloning.<sup>555</sup>

It is obvious and understood that from gestation to death every human person faces different physical, psychological and environmental phases which are unique for every individual. Everyone works with his own genes to generate a unique individual. There is no reason that a clone would lack individuality in any way. They argue that the human clones are wrongly presumed to destroy the identification of humans and they are unjustifiably called as identity thieves and destroyers.<sup>556</sup>

#### **4.4.4 The Human Clones destroy Humanity**

The fourth important objection on cloning is that human clones could destroy the human species. This objection is accompanied by some serious and alarming fears like, instead of naturally born individuals the human clones might overpopulate the planet earth, if it happened they would conquer over all the natural resources and it will pave for some serious issues like pollution and environmental issues. They also argue that hence the human clones would lack the individuality and diversity the human species would be more prone to different disease and they will become an easy prey to any infection spreaded in the atmosphere. Another fear raised by the opponents is that clone would set a trend for the “designer babies” which would be dangerous and definitely would leave a great impact over economy and social class structure.<sup>557</sup>

---

<sup>555</sup> Bonnie Steinbock, “The NBAC Report on Cloning Human Beings: What It Did and Did Not Do.” *Jurimetrics* 38, no. 1 (1997): 39.

<sup>556</sup> Damad, “Human Cloning from the Viewpoint of Fiqh and Ethics.” 05.

<sup>557</sup> John Harris, “Goodbye Dolly? “The ethics of human cloning.” *Journal of Medical Ethics* 23, no. 6 (1997): 353.

The proponents are of the view that the objection that the cloning might overpopulate the world is totally unrealistic. It will cost a huge sum of money to produce a human through cloning so how an average man would afford to produce a new Einstein even? or Hitler? Even if it would have been possible to reproduce a human with the same old characteristics no average man would have tried it randomly except in the case of his own loved ones. The genetic diversity can never be affected by cloning as millions of humans are born every single day through sexual reproduction and if cloning is chosen by any couple otherwise infertile or a guy, lesbian or carrier of heritable disease that would not amount more than a drop in sea. Rather the cloning would increase and encourage the genetic diversity as it would enable the ones to have their offspring who would not have got them otherwise.<sup>558</sup>

The “designer babies” and “super babies” are not foreseeable to be produced as the scientists have already established that there is a limit to the genetic modifications and there is no possible way to control utterly the insertion, the function and heritability of the new genetic information. Likewise, so far there is no confirmed way to control or stop a gene in a specific manner in order to make it grow or stop it from adopting a specific pattern. Had the scientists ever achieved this excellence this could bring more ease to the humanity by helping them eliminate the hereditary diseases and paving way to produce more brilliant and brave children.<sup>559</sup>

---

<sup>558</sup> Gregory E. Pence, *Who's afraid of human cloning?* (UK: Rowman & Littlefield Publishers, 1998), 10.

<sup>559</sup> Macintosh, *Illegal beings*, 45.

#### **4.4.5 Human Cloning is Unsafe and produces Children with Birth Defects**

The last objection focuses on both i-e the nature and characteristics of human clones and the technology of human reproductive cloning itself. This “safety objection” holds that reproductive cloning is unsafe for all the parties concerned and produces children’s with birth defects.<sup>560</sup>

The critics are of the view that safety can not be taken as the sole or main concern for the regulators or legislators as they had been discussing and pointing out other objections to justify a complete ban on reproductive cloning, quiteoften. Likewise many advisory committees and institutions have also devoted a huge amount of time to analyze the other important objections concerning cloning. It is worth mentioning that there are many medical devices, unperfected treatments and drugs which are regulated but are not prohibited, on the ground that these are typically promising. Medical licensing is one of the best ways to restrain careless, non-professional and unqualified practitioners from applying new and inovative treatments to the patients abruptly and too hurriedly. Critics argue that in the case of human cloning too the state legislators should have adopted a moderate approach keeping in view the essence of technology and its impacts but declaring it a criminal act altogether is unjustifiable and inappropriate.<sup>561</sup>

For instance, owing to consider human cloning unsafe the California state banned reproductive cloning for a limited period of 05 years in 1997 but, the California advisory committee on human cloning later advised the legislatures to declare a clear and permanent ban on human reproductive cloning, in 2002. The reasoning behind

---

<sup>560</sup> Lee M. Silver, “Cloning, ethics, and religion.” *Cambridge Quarterly of Healthcare Ethics* 7, no. 2 (1998): 168.

<sup>561</sup> Nicole Hahn Rafter, *Creating born criminals* (USA: University of Illinois Press, 1997), 50.

adoption of such a decision was taking cloning as most injurious and dangerous with respect to safety perspective as it involves unethical experimentation upon the children to be born yet.<sup>562</sup>

### **i) The Efficiency of Cloning**

The first safety argument is that cloning is an inefficient and dangerous technology. According to this argument, animal experiments show that many newborns, embryos, eggs, fetuses and mothers die to generate a handful of live clones. Hence the reasoning by analogy invites the criticism that human reproductive cloning is inefficient and dangerous to all stakeholders concerned. No doubt mammalian cloning is a new science, it has not been perfected yet and success rates are low at present. Opponents have however painted a picture that is darker and more disturbing than the reality and the quality of data presented by them is not reliable as they present only one sided opinion and that too is erroneous and misleading quite often.<sup>563</sup>

#### **a) Dolly and the 277 "Attempts"**

Because the Dolly experiment is often cited as proof of just how inefficient and dangerous cloning can be, according to the basic data on that experiment, in 1996 Dr. Ian Wilmut and his associates at the Roslin Institute injected the nuclei of the cell taken from a 6 year old sheep into 277 unfertilized eggs. The experiment produced 29 embryos that were inserted into 13 ewes. One ewe became pregnant and gave birth to a healthy lamb (Dolly).<sup>564</sup>

Unfortunately reporters and the law makers often misstate the fact of this adult-cell experiment describing the 277 eggs and 277 attempts, involving miscarriages, deformities and deaths. In fact there were no miscarriages, no deformed lambs and no

---

<sup>562</sup> Macintosh, *Illegal beings*, 100.

<sup>563</sup> Ibid.

<sup>564</sup> Ian Wilmut, Angelika E. Schnieke, Jim McWhir, A. J&amp; Kind and Keith HS Campbell, "Viable offspring derived from fetal and adult mammalian cells." *Nature* 385, no. 6619 (1997): 810.

deaths resulting from the transfer of adult cell nuclei in the Dolly experiment. There could be many possible reasons for this confusion, like if a person views cloning as a spit in the face of God, a rape of a nature or a Frankenstein horror than she or he plausibly expects disastrous results like miscarriages and death etc.<sup>565</sup>

#### **b) Current Success Rates**

Too often, reporters and lawmakers rely on Dolly experiment as if it were the only one. Cloning is a science and science constantly changes. Recent publications more accurately state the current success rates for animal cloning.<sup>566</sup>

In November 2001, scientist at Advanced Cell Technology, summarized their work with cows cloned from fetal cells. In this work the scientists transferred a total of 496 blastocysts into 247 surrogate cows. Of these 110 become pregnant, but 80 had miscarriages. 30 fetuses developed into term, but 6 calves died shortly after birth. The remaining 24 cloned calves grew into a vigorous and healthy adulthood. In terms of the percentage of healthy births to embryos transferred this represented a success rate of about 5 percent or the failure rate of 95 percent, most failures involve embryos that were transferred but did not implant in the womb.<sup>567</sup>

#### **c) Efficiency in the Future**

Low success rates in animal cloning raised many questions. As cloning involves number of steps, so a minute error at one step may cause the failure of whole procedure. Cloning however is a new science that will continue to go forward so long as experimentation is allowed to continue.<sup>568</sup>

---

<sup>565</sup> Macintosh, *Illegal beings*, 48.

<sup>566</sup> Robert P. Lanza, Jose B. Cibelli, David Faber, Raymond W. Sweeney, Boyd Henderson, Wendy Nevala, Michael D. West, and Peter J. Wettstein, "Cloned cattle can be healthy and normal." *Science* 294, no. 5548 (2001), 1893.

<sup>567</sup> National academies scientific and medical aspects of human cloning, 2002.

<sup>568</sup> Jose B. Cibelli, Keith H. Campbell, George E. Seidel, Michael D. West, and Robert P. Lanza, "The health profile of cloned animals." *Nature biotechnology* 20, no. 1 (2002): 13.



Cloning technology is yet at the development stage and any undue objection to it or unjustifiable assessment of its efficiency might become outdated after a short period of time. Before declaring cloning inefficient and enacting laws favoring a ban over it, this fact must be weighed.<sup>569</sup>

## **ii) The Role of Large Off Spring Syndrome (LOS)**

LOS has also been observed in animals conceived through cloning.

Although the precise cause of failures in animal cloning remains unknown, some animal researchers believe that many of those failures can be attributed to the general laboratory conditions and practices as opposed to the factors particularly related to cloning.<sup>570</sup>

Animal researchers have known for years that cows and sheep conceived through standard IVF procedure too suffer from large off spring syndrome (LOS) sometimes. Fetuses and newborns affected by LOS can grow to an abnormally large size, jeopardizing their own health and the health of the mothers who carry and give birth to them. LOS can also include fluid accumulation associated with maternal and fetal distress, abnormal placentas and cardiovascular abnormalities. The LOS leads to changes in normal gene expression patterns.<sup>571</sup>

## **iii) The Role of Reprogramming**

Not every problem found in the cloned animals is associated with LOS. There is another possible explanation for both low success rates and birth defects that has proven to be very popular with the media and policymakers. Some scientists have speculated that some cloning attempts fail as the result of lost or damaged imprints, where comes the role of reprogramming. This can be understood with the example

---

<sup>569</sup> Macintosh, *Illegal beings*, 133.

<sup>570</sup> Lorraine E. Young, Kevin D. Sinclair, and Ian Wilmut, "Large offspring syndrome in cattle and sheep." *Reviews of reproduction* 3, no. 3 (1998): 155.

<sup>571</sup> Macintosh, *Illegal beings*, 203.

that if a skin cell is selected as a source of nuclear DNA, the original parental imprints must be intact so that they can guide embryonic and fetal development. But some adult cells lose their imprints during the course of cellular division over the life time of the donor animal.<sup>572</sup>

Even if the imprints are intact another challenge remains there. That can be elaborated as to function properly as skin, the cell only needed certain genes to be expressed. Now without damaging the imprints, the egg must “reprogram” the DNA in the cell so that all of the genes necessary for proper embryonic and fetal development are expressed. Many scientists and policymakers speculate that reprogramming is the basic challenge involved in cloning and adult mammal. According to this hypothesis, although such reprogramming is not impossible, it is extremely difficult to achieve and thus is likely to produce many failures.<sup>573</sup>

While talking again about Dolly, from the time her birth was announced, some critics speculated that she was older than her chronological age. Telomeres are repetitive DNA sequence that protect chromosome tips. As an animal gets older, its telomeres tends to get shorter. Scientists believe that this happens because telomeres wear down over the course of repeated cell divisions. At some point, the telomeres shrinks to nothing and the cell dies.<sup>574</sup>

Dolly was cloned from nuclear DNA taken from a 6 year old donor sheep. If Dolly inherited the sheep’s shortened telomeres, her lifespan could be shorten, too. She might look like a lamb but the DNA level, she would be having, is equivalent to 6 year old sheep. In 1999, the worst of these fears was seemingly confirmed. Dr. Wilmut and his associates published a letter in Nature magazine stating that they had

---

<sup>572</sup> Macintosh, *Illegal beings*, 300.

<sup>573</sup> Ibid.

<sup>574</sup> Gina Kolata, *Clone: The road to Dolly and the path ahead* (London: Penguin Books Ltd, 1997), 240.

measured Dolly's telomeres and found them to be about 20 percent shorter than those of other sheep's of her age. They predicted that it may be due to the fact that she had been cloned from a 6 year old sheep.<sup>575</sup>

## **4.5 Religious Positions on Cloning: Cloning and World's Major Religions**

### **4.5.1 Christianity**

According to Roman Catholicism and Evangelical Christianity the soul enters the body at the time of conception and every fertilized ovum is infact a human being or person possessing all human rights. Accordingly the cloned zygotes that died after a few cell divisions would be loss of human "Babies."The one most rigid group among them prohibits even the very idea of therapeutic cloning too. The other groups accept it if it is confirmed that the clone would also possess "soul" like the zygote, otherwise that is also killing of a human person.<sup>576</sup>

Catholic bioethicist Albert Jonsen gives a historical perspective on the cloning debate by tracing the development of Catholic views on other medical technologies when they were invented. He goes on to say that when the concept of organ transplantation emerged at first, it was criticized and opposed as an infringement of the principle, "First, do no harm" because of the mutilation of the human body. Gradually the concepts of concern for others and charity softened the conception of organ transplantation and paved way for its acceptance.<sup>577</sup>

Suzanne Holland, assistant professor of Religious and Social Ethics at the University of Puget Sound, gives a brief illustration of the Protestant ideas about the sin of pride

---

<sup>575</sup> Macintosh, *Illegal beings*, 134.

<sup>576</sup> Paul G. Shiels, Alexander J. Kind, Keith HS Campbell, David Waddington, Ian Wilmut, Alan Colman, and Angelika E. Schnieke, "Analysis of telomere lengths in cloned sheep." *Nature* 399, no. 6734 (1999): 316.

<sup>577</sup> World Health Organization. "Development of a regional position on human cloning." EM/RC51/INF.DOC.11, (2004), 03.

and respect for persons and how these apply to human reproductive cloning. She suggests that cloning should be regulated and it would not be justified to ban it completely while considering it a means to infertility treatment moreover other means of the fertility assistance must also be regulated. She favours a ban over reproductive cloning for the companies and groups logging it for business purposes.<sup>578</sup>

On the other hand the Roman Catholic Church does not possess a diversity of opinion on the issue of human cloning and opposes all forms of it adamantly. Not only this but this church has extended his opposition by working to mobilize legal and political opposition to human cloning. The church holds the opinion that human life begins from the time of conception. This reason makes the church to hold the view that subsequent destruction of life after its conception even if for the research or therapeutic purposes is equivalent to intentional murder.<sup>579</sup>

On the issue of right to life, Pope John Paul II expressed the official position of the Roman Catholic Church in a speech to Vatican-based diplomats, in words:

“The most fundamental of human rights. Abortion, euthanasia, [and] human cloning . . . risk reducing the human person to a mere object. When all moral criteria are removed, scientific research involving the sources of life becomes a denial of the being and the dignity of the person.”<sup>580</sup>

He added further;

“These techniques, insofar as they involve the manipulation and destruction of human embryos, are not morally acceptable, even when

---

<sup>578</sup> World Health Organization, “Development of a regional position on human cloning”, 03.

<sup>579</sup> John H. Evans, “Religion and human cloning: an exploratory analysis of the first available opinion data.” *Journal for the Scientific Study of Religion* 41, no. 4 (2002): 750.

<sup>580</sup> N. Ohara, “Ethical consideration of experimentation using living human embryos: the Catholic Church’s position on human embryonic stem cell research and human cloning.” *Clinical and experimental obstetrics & gynecology* 30, no. 2-3 (2003): 80.

their proposed goal is good in itself. What is technically possible is not for that reason alone morally admissible.”

Like most of the religions he endorsed the view that the scientific inquiries must always be governed by the moral guidelines.<sup>581</sup>

Likewise, Orthodox Christian churches, including the Russian Orthodox Church and the Greek Orthodox Church, reject every possible situation in which cloning of human beings could be allowed or accepted. They opine that human reproductive cloning is an attempt to create human beings in man’s image rather than God’s. Father Vsevolod Chaplin, archpriest of the Russian Orthodox Church expresses his views in words:

“If human clones are bred for the egotistical reason of giving one person a second, a third, a hundred or more lives, then a profound moral crisis arises. What sort of person would it be, knowing that he, of all people, was somebody’s copy?”<sup>582</sup>

A Parish priest of Greek Orthodox Church and a holder of a PhD in genetics writes:

“As an Orthodox Christian, I speak out in opposition to any attempt to clone a human being because humans are supposed to be created by acts of love between two people, not through the manipulation of cells in acts that are ultimately about self-love.”<sup>583</sup>

Among Protestants there is a greater degree of disagreement. Clergy and congregants in conservative evangelical denominations tend to be closely aligned with the Roman Catholic Church on most social issues, for this reason their views on cloning are also similar to them. Opinion of a conservative Presbyterian minister Dr. D. James

---

<sup>581</sup> Ohara, “Ethical consideration of experimentation”, 79.

<sup>582</sup> Matthew C. Nisbet, “The competition for worldviews: Values, information, and public support for stem cell research.” *International Journal of Public Opinion Research* 17, no. 1 (2005): 100.

<sup>583</sup> Ibid, 112.

Kennedy can be quoted here who is of the view that: "Cloning is unethical and immoral and shows a complete disregard for the sanctity of human life." Such views tend to expose that the Protestants too disapprove all forms of cloning generally. Observation on the more liberal Protestant denominations reveals that however, among the more liberal Protestant denominations there is less uniformity of thought on the issue of human cloning.<sup>584</sup>

#### 4.5.2 Judaism

There are no clear rules mentioned in the Jewish law on cloning. Like any other divine religion Jewish laws also emphasize on the joining of male and female for reproductive purpose. According to the teachings of Torah Originally man and woman were:

"One being" but separated by God later on. A man and woman get back at their actual position when they marry. Torah commands them to be "Fruitful and multiply."<sup>585</sup>

They believe that God blessed male and female and said to them, "Be fertile and increase, fill the earth and master it; and rule the fish of the sea, the birds of the sky, and all the living things that creep on the earth."<sup>586</sup> Likewise at another place:

"That is why a man leaves his father and mother and is united to his wife, and they become one flesh."<sup>587</sup>

On October 12, 2001 the Markkula Center for Applied Ethics, Santa Clara University organized a dialogue on "California Cloning: A Dialogue on State Regulation." The purpose behind the organization of this dialogue was to prepare a road map for the state of California to proceed for the regulation of human cloning

---

<sup>584</sup> John Woodward, *The Ethics of Human Cloning* (Detroit : Thomson/Gale, 2005), 40.

<sup>585</sup> Genesis 09:01.

<sup>586</sup> Genesis 01:28.

<sup>587</sup> Genesis 02:24.

and stem cell research. Notable experts in religion, science, law and ethics were invited to discuss the topic. Ms. Laurie Zoloth (an expert from Jewish law) gave her expert opinion over the Jewish instance over human reproductive cloning by saying that:<sup>588</sup>

“The availability of such technology would make human life too easily commodified, putting the emphasis more on achieving a copy of the self than on the crucial parental act of creating a stranger to whom you would give your life. The Jewish ethicists vary considerably in their views about reproductive cloning; there is fairly broad agreement that stem cell research is justified.”<sup>589</sup>

She based her views on four famous Jewish traditions, which are;

- i) The embryo does not possess the status of a human person.
- ii) There is a commandment to heal.
- iii) Great latitude is permitted for learning.
- iv) The world is incomplete and invites human participation to become whole.<sup>590</sup>

Rabbi Edward Reichman, assistant professor of philosophy and history at Yeshiva University Einstein College of Medicine quotes:

“Jewish law is squarely on the side of medical research that has potential to save and preserve life, Reichman said. As a result, Jewish scholars are generally among the most vocal religious leaders in support of therapeutic cloning in as much as they can benefit the

---

<sup>588</sup> Daniel Eisenberg, “Stem Cell Research in Jewish Law.” *Jewish Law Articles*, (2001): 01.

<sup>589</sup> Ibid, 04.

<sup>590</sup> Sally Lehrman, “Undifferentiated ethics.” *Scientific American* 303, no. 3 (2010): 18.

world, especially medicine. We do not necessary perceive all advances as stepping on God's toes."<sup>591</sup>

Israel has endorsed regulation of embryonic stem cell (ESC) research which is considered as one of the most non-interventionist and liberal research areas in world. But, it is worth mentioning that many moral and ethical concerns formulated in the West have no room in the bioethical discourse in Israel. The reason behind it is religious in kind, as the Jewish religious scholars propagate that according to the Jewish religious teachings human cloning and conception of ESC research are unproblematic. Critics argue that the reason paving a way to "discourse to Israeli cells" is actually a "demographic threat", according to which, in not too distant future, the non-Jews Jewish population in Israel will be more than the Jewish population which takes them to opt for the risk of human cloning. The self-governing of individuals is the strategy to prevent the particular risks. By adopting and utilizing the notion of "thinkable and sayable" the Israeli bioethics discourse has assigned the task of shaping the regulations on human cloning and ESC research to the decision-makers, instead of governmental institutions.<sup>592</sup>

A joint statement between the Union of Orthodox Jewish Congregations of America and the Rabbinical Council of America states:

"If cloning technology research advances our ability to heal humans with greater success, it ought to be pursued since it does not require or encourage the destruction of life in the process."<sup>593</sup>

It can be said that Judaism does not hold a neagative view of cloning but it can be a dangerous point of view when most of the world wants to impose a ban on the

---

<sup>591</sup> "Development of a regional position", 04.

<sup>592</sup> Barbara Prainsack, "Negotiating Life: The Regulation of Human Cloning and Embryonic Stem Cell Research in Israel." *Social Studies of Science* 36, no. 2 (2006):175.

<sup>593</sup> Giovanni Frazzetto, "Embryos, cells and God: Different religious beliefs have little consensus on controversial issues such as cloning and stem-cell research." *EMBO reports* 5, no. 6 (2004): 553.



reproductive cloning. One of the reasons behind it is a fundamental tenet of Judaism that:

“God wants human beings to use all of their capacities to improve the health of others.”<sup>594</sup>

The Jewish law does not designate an embryo as a human being. This reason can easily permit the therapeutic cloning under Judaism, where the stem cells are extracted from the embryos; most Jewish scholars believe therapeutic cloning should be allowed. Because of the potential enjoyed by therapeutic cloning for cure of devastating diseases the the Rabbinical Council of America and the Union of Orthodox Jewish Congregations of America issued a policy statement recommending and allowing therapeutic cloning due to this attribute of it. They opined it in the words:

“The Torah commands us to treat and cure the ill and to defeat disease wherever possible; to do this is to be the Creator’s partner in safeguarding the created. The traditional Jewish perspective thus emphasizes that maximizing the potential to save and heal human life is an integral part of valuing human life.”<sup>595</sup>

However, orthodox Jewish clerics reject reproductive cloning, owing to the reason that familial relationships of a clone would be affected overall. Some Jewish scholars worry that in the case of reproductive cloning the selection of desired characteristics for height, intelligence or physical strength may treat human beings as commodities.<sup>596</sup>

---

<sup>594</sup> Frazzetto, “Embryos, cells and God”, 553.

<sup>595</sup> William A. Galston, “Catholics, Jews & Stem Cells.” *Commonweal* 132, no. 10 (2005): 13.

<sup>596</sup> *Ibid.*

On the other hand however, it can be concluded that all Jews do not disapprove reproductive cloning. For example Rabbi Michael Broyde expressed his views in favor of reproductive cloning in words:

“In sum, one is inclined to state that *Halacha* (Jewish law and custom) views cloning as far less than the ideal way to reproduce people; however, when no other method is available it would appear that Jewish law accepts that having children through cloning is perhaps a *Mitzvah* (blessing) in a number of circumstances and is morally neutral in a number of other circumstances.”<sup>597</sup>

#### 4.5.3 Hinduism<sup>598</sup>

For the Hindu, body and soul are two separate things. They are not created at the same moment. According to Hinduism the soul inhabits many bodies in its passage toward illumination and spiritual freedom. The Hindu's belief lies in the concern for the well being of the soul where the soul passes through the journey of life to life. Hinduism separates the spiritual strength and progress of soul from the bodily strength. The followers of this religion determine the preciousness of life by the inner progress towards inherent perfection and the Divinity, not the quality of physical existence.<sup>599</sup>

---

<sup>597</sup> Woodward, *The Ethics of Human Cloning*, 100.

<sup>598</sup> For details please see as Courtney S Campbell, *Cloning human beings: Religious perspectives on human cloning* (Oregon State University: National Bioethics Advisory Commission, 1997), 27 states that “Hinduism” is a western term for a family of philosophies and religious practices that have their origins in the Aryan period of Indian history and the Vedic scriptures (1200 BCE). There is no formal teaching authority for the world's one billion Hindus. However, classical texts and commentary have offered four principal values: Dharma (virtue, morality); Artha (wealth, power); Kama (aesthetics, sexuality) and Moksha (liberation) to guide Hindu life. Liberation from the cycles of rebirth is the ultimate goal within Hinduism, while Dharma regulates the pursuit of Artha and Kama. Using these values, scholars of Hinduism and Hindu practitioners have begun to initiate ethical discourse on a wide array of social practices in India and North America, including those of cloning.

<sup>599</sup> T. Byram Karasu, “Spiritual psychotherapy”, *American journal of psychotherapy* 53, no. 2 (1999): 143.

Hindus believe that all experience is governed by the complex laws of “Karma”, which according to them are as invisible as real and as compelling as gravity. They are of the view that there are “Karmic” consequences to every act, including cloning. The Hindus are concerned with the nature of the affects caused by the karmas due to such genetic interventions like cloning. Hindus also hold the opinion that if ever cloning clashes with spiritual progress of humans, then Hinduism would reject it unless due diligence and caution regulates it.<sup>600</sup>

Hindu religious scholars have issued flashing red lights on the issue of cloning so far. Which denote that they want a space and time to think over this issue and they have not rejected cloning altogether instantly. A Hindu’s objection of “playing God” is with a different dimension.<sup>601</sup>

Evaluation of the teachings of this religion on the concept of cloning reveal that apparently the cloning research in all its forms and techniques violates a fundamental principle of Hinduism, “doing no harm to other creatures.” So let alone the human cloning even the cloning experiments on animals, where a large percentage of the donors die, or the clones die prematurely or they live with serious birth defects, infringe the above mentioned principle. For this reason, most Hindus reject all types of animal and human cloning.<sup>602</sup>

Some Hindu scholars allow human cloning, but under very strict, restricted and exceptional circumstances. In the *Mahabharata*, an emphasis has been given to the establishment of father-son lineage. According to *Mahabharata* the continuation of generational lineage may take place through several different methods of having a son as offspring, including a “son by artifice, a son who comes by himself, ...[and] the son

---

<sup>600</sup> Adam Schulman, *Human Dignity and Bioethics: Essays Commissioned by the President's Council on Bioethics* (USA: Government Printing Office, 2008), 20.

<sup>601</sup> World Health Organization, 04.

<sup>602</sup> Woodward, *The Ethics of Human Cloning*, 88.

of unknown seed.” It is interesting to mention that *Mahabharata* also indicates that when a lineage is threatened by extinction, another principle “*Appaddharma*” could be applied which permits reproduction of a son/offspring even from the relationships outside of marriage (Desai, 246, 247). Another group of Hindu scholars are of the view that human cloning can be permitted when it is made obvious that it is beneficial for the spiritual well being of man, when alleviation of infertility is intended or the purpose of cloning is providing compatible bone marrow in order to save someone’s life, ultimately these goals come under the sphere of spiritual well being of man as the Hindu scholars opine. One finds the opinion of this religion on cloning as perplexed and confused when giving it a great space at one point and resisting animal cloning even, on the other hand.<sup>603</sup>

#### **4.5.4 Buddhism**

Buddhism has granted a great significance to the principle of “*Ahimsa*”, or non-harming. This is the reason that it is presumed to have severe reservations about any scientific procedure that is subject to destroy life of human beings or animals.<sup>604</sup>

As Buddhism lacks any central authority to pronounce and comment on ethical issues, it appears that there would be no ethical problem for the acceptance of therapeutic use of cloning. But the intentional demolition of human life for the research or reproductive purposes would deem to be ethically prohibited under the teachings of Buddhism.<sup>605</sup>

Buddhism believes that human life begins at the time of conception and this religion also endorses the concept of rebirth. The followers of this religion consider the newly

---

<sup>603</sup> Campbell, “*Cloning human beings*”, 20.

<sup>604</sup> David Seyfort Ruegg, “*Ahimsa and Vegetarianism in the History of Buddhism.*” *Buddhist studies/for W. Rahula* (1980): 234.

<sup>605</sup> Pinit Ratanakul, “*Bioethics in Thailand: The struggle for Buddhist solutions.*” *The Journal of medicine and philosophy* 13, no. 3 (1988): 302.

born or cloned individual of same respect and dignity as an adult is entitled to. Owing to this reason the Buddhism places the moral issues raised by stem cell research equal and similar to those which are raised by the IVF treatment where the issues of abortion and destruction of the spare embryos etc are discussed and gives a little regard to the aims and intentions of the researchers while conducting such experimentation.<sup>606</sup>

The Buddhists seem to hold quite an impartial attitude for cloning. Apparently the technique of cloning does not offend the Buddhists religious teachings or basic values of this religion.<sup>607</sup>

Buddhist scholars generally believe that life can begun by the individuals in many ways and the process by which children are born into the world is not specified hence it makes no difference. Likewise human reproduction includes but is not limited to human sexual generation. Most of the Buddhist scholars believe that cloning is a continuous method of reproduction with other methods (Keown) and it is merely an alternative method of generating new human life. The Buddhists ethicist are in support of this reproductive technology as long as it is beneficial to the childless couples and does not bring any harm or suffering to them. Some Buddhist scholars consider the process of human cloning as a poor means of procreation which will be considered inferior to the natural method of reproduction, however.<sup>608</sup>

Several Buddhist traditions contain stories of “spontaneous generation.” Buddhist scholar Damien Keown states that:

“If cloning is ever perfected in human beings, would show only that there are a variety of ways in which life can be generated. It would not

---

<sup>606</sup> Damien Keown, “No Harm Applies to Stem cell Embryos: One Buddhist’s View.” *Science and theology news* (2004): 01.

<sup>607</sup> Jens Schlieter, “Some observations on Buddhist thoughts on human cloning.” Roetz H.(Hg.), ed. *Cross-Cultural Issues in Bioethics: The Example of Human Cloning*. Amsterdam: Rodopi (2004): 10.

<sup>608</sup> Damien Keown, *Buddhist ethics: A very short introduction* (U.K: OUP Oxford, 2005), 80.

cast doubt on whether the host from which the clone was taken, or the clone itself, were ontological individuals.”<sup>609</sup>

Some Buddhists allow human cloning because of the chance to achieve enlightenment and illumination to the man. The Dalai Lama, the exiled leader of Tibetan Buddhism, was questioned once about his attitude towards the following hypothetical scenario:

“[What] if at some future time you could make by genetic engineering, with proteins and amino acids, or by engineering with chips and copper wires, an organism that had all of our good qualities and none of our bad ones,...?”

The Dalai Lama pointed out that he would definitely favour any such technological development like of cloning if it would smooth the process of liberation and rebirth.<sup>610</sup> Few Buddhist scholars reject human cloning on the ground that this technology is contrary to the basic teachings of Buddhism on the issues related to the parents’ rights and the generosity taught to a child by submitting his humbleness towards his parents. They argue that it would lessen the generosity and gratefulness of the child. A Buddhist monk Gen Kelsang Tubpa sets forth an enlightened opinion over human cloning by saying:

“Cloning is just another example of man’s belief that by manipulating the external environment he will create happiness for himself and freedom from suffering.”<sup>611</sup>

Some Buddhist scholars have shown some reservations related to the applications of cloning. They are of the view that social, economical or commercial agendas supporting human cloning are contrary to the interest of the clone. Not only this but

---

<sup>609</sup> Keown, *Buddhist ethics*, 80.

<sup>610</sup> George Dvorsky, “Better living through transhumanism.” *Humanist-Buffalo*, 64, no. 3 (2004): 13.

<sup>611</sup> *Ibid.*

these agendas put undue pressures on scientists and experts for frequent progress and development of organ harvesting for commercial gains.<sup>612</sup>

This religion lacks clear ethical and social values promoting or safeguarding the family values in the shape of institution of marriage for reproduction hence it can be concluded that only Buddhism seems to accept all types of human cloning among the major religions of the world. Even if it does not clearly embrace all at least it is neutral about them. Buddhism considers the earth as a place of suffering, enlightenment or the state of full understanding of the nature of existence can be the only way to be liberated from the unavoidable sufferings of this world including old age, diseases and such other hardships. Some Buddhist scholars endorse human cloning on the point that cloning can be encouraged in a case while it is taken as selective breeding for enhancing enlightenment. Professor Yong Moon from Korea's Seoul National University expresses his great admiration to cloning in the words:

“Cloning is a different way of thinking about the recycling of life. It's  
a Buddhist way of thinking.”<sup>613</sup>

#### **4.6 Legal Position of “Cloning”**

As far as the human cloning is concerned (both types of human cloning i.e reproductive and therapeutic) world policies range from total prohibition to no policies at all. Russia, Germany and France are among over 30 countries which have a total ban over human reproductive cloning. The legal instruments of around 15 countries, provide a complete ban over the reproductive cloning but allow therapeutic cloning, some of these countries are Japan, Israel and the United Kingdom.<sup>614</sup>

---

<sup>612</sup> Campbell, “Cloning human beings”, 25-27.

<sup>613</sup> Woodward, *The Ethics of Human Cloning*, 55.

<sup>614</sup> Kathryn Wheat and Kirstin Matthews, “World human cloning policies.” *Stem Cells: Saving Lives or Crossing Lines* (2004): 07.

Further a few countries such as Poland and Hungary have the prior legislations on biomedical issues which do not present a clear prohibition of therapeutic cloning or embryonic stem cell research. Most of the countries, such as the United States of America, have yet to pass any official or formal legislation on human cloning; the situation of the U.S.A is even more interesting as every state of it has got its different policy from the other in one or more aspects.<sup>615</sup>

In addition to the countries sketching their own policies, quite a lot of international organizations, including the most renowned ones such as the United Nations, the Council of Europe and the European Union have drafted their policy legislations on human cloning with recommendations on the subject. A number of other important organizations are unable to announce a formal statement so far even though they have been discussing the issue since long, such as the Arab Leagues and the African Union. It is important to mention that the International Society for Stem Cell Research (ISSCR) and a group led by Johns Hopkins Phoebe R. Berman Bioethics Institute, known as the “Hinxton Group”, are working to frame the ethical principles and guidelines for human embryonic stem cell research, keeping in view the internationally accepted standards and collaboration of different ethical and scientific institutions.<sup>616</sup>

Some of the important legislations/policies and rules enacted by the most distinguished world organizations are given below:

---

<sup>615</sup> Wheat and Matthews, “World human cloning policies”, 09.

<sup>616</sup> Ibid.



## **4.6.1 The International Organizations**

### **i) United Nations**

The United Nations has passed two documents directly prohibiting cloning. But these documents invite a lot of criticism since their enactment as they fail to differentiate between the two major types of cloning hence unable to define a uniform and universally acceptable code of ethics.<sup>617</sup>

#### **a) Universal Declaration on the Human Genome and Human Rights**

The United Nations Educational, Scientific and Cultural Organization (UNESCO) established in 1946 adopted the “Universal Declaration on the Human Genome and Human Rights” declaration by the general conference of the UNESCO at its 29<sup>th</sup> session in 1997. Article 11 of the declaration denotes:

“Practices which are contrary to human dignity, such as reproductive cloning of human beings, shall not be permitted. States and competent international organizations are invited to co-operate in identifying such practices and in taking, at national or international level, the measures necessary to ensure that the principles set out in this Declaration are respected.”<sup>618</sup>

A resolution was brought to the United Nations General Assembly endorsing the previous Universal Declaration on the Human Genome and Human Rights, stating that Article 11 on Human Cloning. It was endorsed by the General Assembly on 9<sup>th</sup> December 1998.<sup>619</sup>

---

<sup>617</sup> Sunstein, “Is there a constitutional right to clone”, 990

<sup>618</sup> *Universal Declaration on the Human Genome and Human Rights 1997*, Article 11.

<sup>619</sup> Cameron, Nigel M. deS, and Anna V. Henderson, “Brave new world at the General Assembly: The United Nations declaration on human cloning.” *Minn. JL Sci. & Tech.* 9 (2008): 145.

### **b) Declaration on Human Cloning, 2005**

On March 8, 2005, the United Nations General Assembly adopted the non-binding “Declaration on Human Cloning”, by which member states were called on to adopt “all measures necessary to prohibit all forms of human cloning in as much as they are incompatible with human dignity and the protection of human life.” The votes turned out to be 84 in favor, 34 against, 37 abstaining and 35 states did not cast their vote. The United States, Germany and Italy voted in favor, the United Kingdom, South Korea and Brazil voted against the declaration and South Africa and Israel were among the abstaining states. This Declaration is self evident of its weaknesses when it was unable to sustain a majority of the UN membership.<sup>620</sup>

While forwarding the formal explanation of their votes, many countries showed a great regret and discontent over the issue that the declaration being a key document is unable to differentiate between two major types of human cloning i-e reproductive cloning and therapeutic. As the chief objective assigned to the Legal Committee was to explore the issue of reproductive cloning in worldwide scenario but it made it more complicated by mixing up both types of cloning which turned the situation more multifaceted.<sup>621</sup>

The adoption of the Declaration does not satisfy the questions of burning interest in relation to the international regulations of human cloning and even worsens the scenario. As already stated the Declaration is unable to differentiate among the types of cloning as its text is ambiguous, thus it fails to recommend explicitly that which type of cloning should be banned by the states. States are now faced with the complexity “of defining and interpreting which forms of cloning are incompatible

---

<sup>620</sup> Mahnoush H. Arsanjani, “Negotiating the UN declaration on human cloning”, *American Journal of International Law* 100, no. 1 (2006): 164-179.

<sup>621</sup> Ibid.

with human dignity.” When “ought to be banned” type of cloning is not given there is a great chance of the likelihood that the states would utilize their own choice and reasoning while enacting legislation for the permissible and prohibited forms of cloning. Denouncing the cloning which is “incompatible with human dignity”, does not tend to diminish the significant ambiguity and confusion on the subject. It is noteworthy that just because of these ambiguities the states which support the therapeutic cloning, interpret their intension as “to mean that therapeutic cloning is compatible with human dignity and therefore not prohibited”, while the states opposing all forms of human cloning intend to interpret their will as that “both reproductive and therapeutic cloning are banned.” This feature of the declaration turns down it as ineffective and ambiguous in nature.<sup>622</sup>

For instance, during the session, the representative of the Republic of Korea, put emphasis on the fact that the Declaration would allow for therapeutic cloning since it “would reaffirm human dignity by relieving pain and suffering.”<sup>623</sup> The text of the Declaration is disputed and controversial.<sup>624</sup>

While exploring the cause of failure to achieve consensus, a number of delegations opined that they had voted against the text just because the reference to “human life”

---

<sup>622</sup> Timothy Caulfield and Audrey Chapman, “Human dignity as a criterion for science policy.” *PLoS Medicine* 2, no. 8 (2005): 244.

<sup>623</sup> Channah Jarrell, *No Worldwide Consensus: The United Nations Declaration On Human Cloning* (USA:University of Georgia, School of Law, 2007), 25.

<sup>624</sup> For details please see as *the United Nations Declaration on Human Cloning, 2005* states that: *Solemnly declares* the following:

- (a) Member States are called upon to adopt all measures necessary to protect adequately human life in the application of life sciences;
- (b) Member States are called upon to prohibit all forms of human cloning in as much as they are incompatible with human dignity and the protection of human life;
- (c) Member States are further called upon to adopt the measures necessary to prohibit the application of genetic engineering techniques that may be contrary to human dignity;
- (d) Member States are called upon to take measures to prevent the exploitation of women in the application of life sciences;
- (e) Member States are also called upon to adopt and implement without delay national legislation to bring into effect paragraphs (a) to (d);
- (f) Member States are further called upon, in their financing of medical research, including of life sciences, to take into account the pressing global issues such as HIV/AIDS, tuberculosis and malaria, which affect in particular the developing countries.

could be interpreted as a call for a total ban on all forms of human cloning and had there been a difference between both types of cloning defined they might have not rejected it wholly. The experts are also of the view that by such a negligence the Assembly had missed an opportunity to move a convention prohibiting reproductive cloning. This flaw also led to the undue rejection of the therapeutic cloning technique.<sup>625</sup>

### **c) Stance of OIC during the Session**

Iran, who spoke on behalf of the Organization of the Islamic Conference members (OIC) during the session supported a ban on human reproductive cloning only. In addition to it Iran made it clear that the OIC member states have not formed a uniform and joint position on the issue of research of stem cells yet, hence they do not intend to recommend a ban on this type of research at the moment. The state members of the Organization of the Islamic Conference based their stands on potential profit from research of stem cells.<sup>626</sup>

### **ii) Council of Europe**

Established in 1949, the Council of Europe is an international organization of 46 countries in Europe. The Council aims to set up and defend human rights and democracy and promote European citizens interests. The Council of Europe has several conventions that can be applied to human embryonic stem cell research and human cloning. The Council's 1997 Convention on Human Rights with Regard to Biomedicine<sup>627</sup> highlights the "need to respect the human being both as an individual and as a member of the human species." The protocol on cloning states that "any

---

<sup>625</sup> Press release by the UN General Assembly on 08-03-2005.

<sup>626</sup> Zeljko KaluderoVIC, "Bioethical analysis of the United Nations Declaration on Human Cloning." *JAHR*, Vol 01, No. 01 (2010): 14.

<sup>627</sup> *Convention for the Protection of Human Rights and Dignity of the Human Being with regard to the Application of Biology and Medicine: Convention on Human Rights and Biomedicine.*

intervention seeking to create a human being genetically identical to another human being, whether living or dead is prohibited.”<sup>628</sup>

Apparently, the council does not ban therapeutic cloning while it explicitly bans reproductive cloning. The Council left the interpretation of “human being” to the concerned legislatures while allowing therapeutic cloning where it is accepted. In some of the European countries where there is no defined legislation on the stem cell or cloning like Croatia, Bulgaria, Moldova, Cyprus, San Marino and Romania this convention is interpreted to mean that the human embryonic stem cell cloning is permitted whereas both reproductive and therapeutic cloning are banned and unacceptable.<sup>629</sup>

#### **4.6.2 Scientific organizations**

##### **i) American Association for the Advancement of Science**

The American Association for the Advancement of Science (AAAS) is well aware of the severity of the worldwide debate on the issue of human cloning. The AAAS has been arranging the public as well as specialized dialogues concerning the moral and ethical, social and scientific issues related to the human cloning and stem cell research since 1997.<sup>630</sup>

##### **a) Banning Reproductive Cloning**

AAAS favors and endorses a legally effective and enforceable ban on any effort to implant a human cloned embryo for the purpose of reproduction. The AAAS is of the view that the scientific arguments and proofs portraying that the grave nature of the

---

<sup>628</sup> *Additional Protocol to the Convention for the Protection of Human Rights and Dignity of the Human Being with regard to the Application of Biology and Medicine, on the Prohibition of Cloning Human Beings, January 1, 1998.*

<sup>629</sup> Wheat and Matthews, "World human cloning policies.", 07.

<sup>630</sup> Available at:

<https://www.aaas.org/page/american-association-advancement-science-statement-human-cloning>, Last Assessed on May 20, 2017.

biomedical and scientific health risks connected with the technique of human reproductive cloning render the process of human cloning futile and pointless. But at the same time the AAAS encourages an informative and prognostic public dialogue on the subject of human cloning. The AAAS suggests that it should be made sure that in such a discussion the scientific community must be an active participant. The experts on the scientific, moral and ethical aspects of human cloning can do wonders to enhance our understanding of this technology, by the passage of time.<sup>631</sup>

### **b) Support to Stem Cell Research (including Research Cloning)**

The AAAS extends its support to the use of nuclear transplantation technique, which is also known as the therapeutic or research cloning and stem cell research. The reason for such a viewpoint is to comprehend the gigantic prospective health benefits offered by these technologies. Such benefits can only be achieved by cautiously planned research subject, even if they can ever be comprehended in a later future (as they are not foreseeable yet). Owing to the religious, social and ethical concerns of the stakeholders the AAAS recommends that the research cloning carried out by the public and private sectors should also be regulated in accordance to the policies and rules framed by the federal government.<sup>632</sup>

#### **ii) American Society for Cell Biology (ASCB)**

It is important to mention that the cell biologists go up against the United Nations ban on cloning research. The American Society for Cell Biology, is a society of 11,000 basic biomedical researchers from the United States and 45 other countries around the

---

<sup>631</sup> Available at:

<https://www.aaas.org/page/american-association-advancement-science-statement-human-cloning.pdf>,  
Last Assessed on May 20, 2017.

<sup>632</sup> Ibid.

world. This group of people condemns the resolution put before the United Nations' General Assembly intending to impose a world-wide ban on an important scientific and medical procedure called "somatic cell nuclear transfer". It is important to mention that since 1997 the ASCB has always strongly condemned and criticized the reproductive cloning and opposes it at every forum and favours a complete ban on it.<sup>633</sup>

The ASCB forwards few scientific and biological reservations regarding the cloning techniques by stating that this technique is unqualified and completely flawed to form a biologically healthy embryo or human being. The ASCB however, endorses the potential scientific benefits of the therapeutic cloning, particularly for fighting against the most devastating and fatal diseases faced by the human beings. When the stem cell lines are possible to be produced by using the patient's own genetic material to generate "patient-specific" stem cells, they will be capable of providing the potential "patient-specific" cells, which will surely lessen the chances and complication of rejection for the therapies of deadly diseases such as: cancer, diabetes, heart disease, spinal cord injury, Parkinson's disease and AIDS.<sup>634</sup>

Dr. Larry Goldstein, Vice Chair of the American Society for Cell Biology Public Policy Committee states that:

"Stem cell research is an essential first step if we are ever to be able to achieve the promise of regenerative medicine, a wholly new approach

---

<sup>633</sup> Available at:

<http://www.ascb.org/wpcontent/uploads/2015/10/CellBiologistsOpposeUnitedNationsBanonCloningResearch.pdf>, Last Assesed on June 01, 2017.

<sup>634</sup> Ibid.

for repairing cells and tissues in the treatment of currently intractable human diseases.”<sup>635</sup>

The ASCB further elaborates that this era of biotechnological advancements demands that research should be carried out on all types of stem cells, either they are human adult stem cells or human embryonic stem cells. None of them can replace one another. The embryonic stem cells are of more potential use for the treatment and understanding of many diseases for which the adult stem cells would never provide a substitute. It has been observed that most of the times the adult stem cell researchers strongly support the need for embryonic stem cell research.<sup>636</sup>

### **iii) Federation of American Societies for Experimental Biology (FASEB)**

According to the FASEB’s official Statement on Human Cloning and Human Cloning Legislation, it can be summarized that FASEB considers itself a community of scientists and in that capacity it strongly opposes reproductive human cloning and describes it as a reckless and foolish act. The FASEB opines that in animal species where cloning has been attempted, most of the clones die at the time of birth and even if they survive they never come of their expected age due to the complications and complexities involved in the cloning process. Owing to the above mentioned biological reasons and many ethical and moral issues concerning human cloning, FASEB adopted a five-year voluntary moratorium on reproductive human cloning in September 1997. In that statement, it defines “cloning human beings” as:

“The duplication of an existing or previously existing human being by transferring the nucleus of a differentiated, somatic cell into an

---

<sup>635</sup> Available at:

<http://www.ascb.org/wpcontent/uploads/2015/10/CellBiologistsOpposeUnitedNationsBanonCloningResearch.pdf>, Last Assesed on June 01, 2017.

<sup>636</sup> Ibid.



enucleated human oocyte, and implanting the resulting product for intrauterine gestation and subsequent birth.”<sup>637</sup>

Again the FASEB is of the view that the reproductive human cloning must be differentiated from therapeutic cloning which has got great potential to treat human diseases and repair damaged tissues or organs. The FASEB suggests penalizing the individuals or groups who attempt or try to attempt human reproductive cloning. But it also fears that a broader prohibitory legislation can also have some adverse affects, like blocking important research and hindering the progress associated with this technology for the treatment of diseases. It specifies that only the process of implanting the cloned cells into a human uterus should be banned. The prohibitory legislations on cloning must not ban the use of human somatic cell nuclear transfer technology to produce cells, molecules and tissues for research and therapeutic uses.<sup>638</sup>

#### **4.6.3 The Biotechnology Industry**

##### **i) Biotechnology Industry Organization**

In 2002, Carl B. Feldbaum, President of the Biotechnology Industry Organization (BIO) issued a policy statement on Human Cloning in the following words: “BIO reiterates its strong opposition to human cloning on both safety and ethical grounds. If this announcement is proven true, we hope the child enjoys a full, healthy life and has a loving family.”<sup>639</sup>

The Biotechnology Industry Organization (BIO) represents more than 1,000 biotechnology companies, academic institutions, state biotechnology centers and related organizations in all 50 U.S. states and 33 other nations. BIO members are

---

<sup>637</sup> Available at:

<http://www.faseb.org/portals/2/pdfs/opa/humancclone.pdf>, Last Assessed on May 26, 2017.

<sup>638</sup> Ibid.

<sup>639</sup> Available at:

<https://www.bio.org/media/press-release/bio-statement-human-cloning.pdf>, Last Assessed on May 20, 2017.

involved in the research and development of healthcare, agricultural, industrial and environmental biotechnology products.<sup>640</sup>

#### **4.6.4 Medical Societies**

The stance and policies opted by the prominent medical societies in world are elaborated below in order to have a clear vision of policies on human cloning.

##### **i) World Medical Association**

World Medical Association (WMA) sturdily rejects the human reproductive cloning. The World Medical Association is the global representative body for the physicians. It has strongly criticized the research and experiments carried out by the private research companies on the area of human cloning. The organization has always opposed human cloning; no matter for what reason it is intended. The WMA President, Dr. Enrique Accorsi, a paediatric surgeon, stated:

“It is unacceptable that this type of research has gone this far. The WMA wants to state its unambiguous opposition to the cloning of human beings.”<sup>641</sup>

##### **ii) American Medical Association**

The American Medical Association supports cloning for Research purposes. Even though, the AMA, is commonly known for its conservative nature and usually it does not take a confrontational stand on the issues such as cloning, which have social or political implications. Although the AMA's official statement does not indicate an explicit ban to human reproductive cloning yet it has been frequently discussed at the

---

<sup>640</sup> Available at:

<https://www.bio.org/media/press-release/bio-statement-human-cloning.pdf>, Last Assessed on May 20, 2017.

<sup>641</sup> Available at:

<https://www.wma.net/news-post/wma-strongly-condemns-the-cloning-of-humans/>: Last Assessed on June 05, 2017.

annual meetings of the Association. Overall the guidelines of the AMA leave it on the physicians to opt for this type of research or not.<sup>642</sup>

#### **4.7 The Proponents' objections over the Anticlone Legislations**

Most of the times the legal documents provide a total ban on the reproductive cloning and sometimes it extends to the therapeutic cloning as well. Some of the objections raised by the proponents of cloning over the total or partial prohibition of cloning through the legal instruments are stated below.

- i) The proponents of human cloning claim that anticlone laws are derogatory and they outweigh the benefits of cloning.<sup>643</sup>
- ii) In their opinion these laws are meant to injure the rights of men and women who are already refused to be given with their fundamental right to get married with their own choice.<sup>644</sup>
- iii) They also claim that these laws also harm the children of mixed race couples by subjecting them to existential segregation and stigmatizing them as inferior. The anticlone laws also deny the legitimacy of the mixed race children and their social and legal status as well.<sup>645</sup>
- iv) They also believe that such laws create panic among the infertile, disabled and homosexual people and they will feel deprived and offended. For a man who has no functional sperm or a woman who has no functional eggs, sexual reproduction is not possible even with the help of IVF. In such cases only the reproductive cloning would provide them with an option to have their

---

<sup>642</sup> Available at:

[http://www.genomenetwork.org/articles/06\\_03/ama\\_cloning.shtml](http://www.genomenetwork.org/articles/06_03/ama_cloning.shtml): Last Assessed on July 20, 2017.

<sup>643</sup> Kerry Macintosh, "Human Clones and International Human Rights." *Santa Clara J. Int'l L.* 4 (2006): i.

<sup>644</sup> Erez Aloni, "Cloning and the LGBTI family: cautious optimism." *NYU Rev. L. & Soc. Change* 35 (2011): 01.

<sup>645</sup> J. B. Gurdon and Alan Colman, "The future of cloning." *Nature* 402, no. 6763 (1999): 743.

genetically related offspring, provided that this technique has been achieved at the point of excellence.<sup>646</sup>

- v) The anticloning laws hinder and stop the scientific freedom by making them deprived of practicing the cloning and achieving excellence in this regard.<sup>647</sup>
- vi) The proponents argue that if human cloning is safe and possible many people will go for it no matter it is banned, cloning can not be stopped.<sup>648</sup>
- vii) The anticloning laws support immigration when the couples wanting this method of reproduction would emigrate from their country if cloning is banned in their own country, in order to avoid unwanted and unnecessary circumstances.<sup>649</sup>
- viii) The anticloning laws when declare a cloned child to be illegal or illegitimate that will force that child to hide his genetic link. This will not only deprive the parents from the love and affection they want to shower to their offspring but that child would also be deprived of the love of many relatives of him. These laws will surely isolate him.<sup>650</sup>
- ix) The laws declaring that cloning must be prohibited as it treats humans as products are not narrowly tailored to understand that children born with the help of IVF are never treated as products and they are still loved by their parents likewise children born through cloning can never be treated as products.<sup>651</sup>

---

<sup>646</sup> Macintosh, "Human Clones and International Human Rights" ,iii.

<sup>647</sup> SM Mohaghegh Damad, "Human Cloning from the Viewpoint of Fiqh and Ethics." *Iranian Journal of Medical Law* 1, no. 1 (2012): 15.

<sup>648</sup> Macintosh, "Human Clones and International Human Rights" ,06.

<sup>649</sup> Margaret R McLean, "Red light, green light: The California cloning and stem cell laws." *The Hastings Center Report* 32, no. 6 (2002): 07.

<sup>650</sup> Damad, "Human Cloning from the Viewpoint of Fiqh and Ethics", 10.

<sup>651</sup> Ibid.

## **4.8 Conclusion**

The morality and ethics denounce cloning on some sound and solid grounds but proponents have their logic and arguments too, they favour cloning by defending against every criticism.

Being a contemporary issue most of the religions lack clear cut rulings on human cloning but Buddhism can be considered embracing this concept as this religion lacks clear ethical and social values promoting or safeguarding the family values in the shape of institution of marriage for reproduction, in comparison to the other religions. Most of the key legislations on cloning are unable to differentiate between the two major types of it hence are not appreciated by the critics, experts and scholars at large. While banning all types of cloning not only prohibits the therapeutic cloning as well but raises many questions regarding human right of freedom and choice. The proponents of cloning argue that cloning is not detrimental to the principles of individuality and human dignity while it allows the infertile and needy ones to have their own offspring and live a respectful and dignified life. Moreover they claim that the likelihood of using this technique for the destructive purpose is merely a myth as it is costly and very few people would be able to afford it even if allowed and practised with full excellence.

## **CHAPTER FIVE**

### **FINDINGS, RECOMMENDATIONS AND CONCLUSION**

#### **5.1 Research Findings**

Before setting forth the recommendations and concluding the dissertation, research findings are summarized as under:

1. Plant cloning is not a new technique. It is worldwide accepted and practised since ages. Innovations are taking place in plant cloning technique too. A wide scope of research is awaited in the field of plant cloning where many more techniques can be adopted in order to attain more beneficial and prolific productions through applying the cloning techniques. There is a great potential to have many more vaccines and other medications ready by using new techniques of plant cloning for the treatment of many hereditary and other diseases in the animals and humans.
2. Gene modification in animals is practised for many purposes, including the increase in milk and meat of animals.
3. Human cloning has two main techniques or types. Therapeutic and reproductive cloning. The reproductive cloning serves the reproductive purpose for the infertiles or ones who can not have their own offspring by using other ARTs. Whereas the perspectives and grounds for the therapeutic cloning are vast hence serve many fold purposes. If this technique is achieved with perfection it will help to cure many severe diseases like cancer and it will also enable the medical practitioners to develop the human organs in replacement to the damaged ones or lost. This technique has got much potential and can bring miracles in the world of medical science.

4. The holy Qur'ān is an exhaustive and comprehensive book with regard to the knowledge and information on the beginning of life and human creation. The modern knowledge of science on embryology endorses the teachings of the holy Qur'ān on the subject. Creation of human being from sperm, the layers in the abdomen during pregnancy and information regarding different senses are few instances from a bulk of information provided by the Qur'ān and endorsed by the science now. Islam gives much emphasis over attainment of knowledge and using it for the benefit of human beings collectively as well as individually.

5. Islam gives a great importance to the institutions of family and marriage. Marriage is a union between a male a female hence a source for reproduction and mental and sexual gratification. Islam rejects any form of adoption which tends to change the lineage or identity and having one's own offspring is considered a blessing. But the contemporary artificial reproductive techniques or ARTs such as Artificial Insemination, In-Vitro Fertilization (IVF), Donor eggs and donor sperms and Surrogacy can not be declared "permitted" without observation of essential Sharī'ah requisites, such as the application of such techniques between the spouses only, during their marriage and without intervention of any third party etc. The available literature fails to give a detailed description of the issue and there is great room for a comprehensive research on the subject.

6. Medical profession is of high significance and importance according to the teachings of Sharī'ah. But Islam focuses on compliance of highest standards of morals and ethics while discharging the duties in medical practice. Sharī'ah limitizes and regulates the conduct of medical professionals and also its application and stresses to comply with the permissible and approved methods and ways in this regard.

7. Muslim jurists have never been unaware of the advancements in science and technology; same is the case with cloning. They have been discussing this issue since its emergence and urged the need to understand the issue from jurisprudential as well as scientific or biological dimensions. The most learned Muslim scholars of the time give a profound adherence to the rules of Sharī'ah and understand this issue accordingly. Most of the Muslim jurists denounce reproductive human cloning on the basis of being unnecessary and undesirable. As far as the therapeutic cloning is concerned, most of them allow it in the case of dire need and necessity, for example to develop new organs for replacement of damaged or lost organs.

8. While examining the nature of current research on the topic of cloning in the Islamic states, Iran and Pakistan both countries seem to possess a bright future, not only with respect to research and innovation but from the ethical perspective as well. But Iran, being a Shī'ah majority state differs from Pakistan with respect to jurisprudential view on the subject.

9. The objectives of Sharī'ah theory can be applied over the subject of cloning in order to find out Sharī'ah ruling on it but the five purposes preserved by this theory reject reproductive cloning altogether. Hence it is against the very nature of the objectives of Sharī'ah preserving the religion, life, progeny, intellect and property. The therapeutic cloning too can only be allowed if performed within the limits prescribed by Sharī'ah and with due caution under the Islamic principles of ethics.

10. The analysis of the issue of cloning in the light of Islamic legal maxims too does not support cloning except its therapeutic form and that too in the case of dire need only. The objective of Sharī'ah and Islamic legal maxim provide a good methodology



to understand and evaluate the issue of cloning and other contemporary medical issues.

**11.** The morality and ethics denounce cloning (particularly reproductive cloning) on some sound and solid grounds but proponents have their logic and arguments too, they favour cloning by defending against every criticism. They find it crucial in the modern time and a dire necessity for those who are in real need of it.

**12.** Being a contemporary issue most of the religions lack clear cut rulings on it but Buddhism can be considered as the most embracing to it due to lack of defined reproductive rules and ethical standards for reproduction under this religion, in comparison to the other religions.

**13.** Most of the key legislations on cloning are unable to differentiate between the two major types of it hence are not appreciated by the critics and scholars at large. While banning all types of cloning prohibits the therapeutic cloning as well, which can have a great potential for the diagnosis and cure of the diseases as well as the organs transplantation.

**14.** The issue of cloning has also raised many questions regarding human rights of freedom and choice. The proponents of cloning argue that cloning is not detrimental to the principles of individuality and human dignity while it allows the infertile and needy ones to have their own offspring and live a respectful and dignified life. Moreover they claim that the likelihood of using this technique for the destructive purpose is merely a myth as it is costly and very few people would be able to afford it even if permitted.

## **5.2 Scientific Findings and Recommendations**

1. Despite a major misconception, the cloned individuals will not be behaviorally or physically identical with each other at comparable ages either they are born at the same or different times. Reproductive cloning involves the creation of individuals that contain identical sets of nuclear genetic material (DNA). To have complete genetic identity, clones must have not only the same nuclear genes, but also the same mitochondrial genes.

2. Stem cells are those cells which possess an extensive ability to differentiate and self-renew. This attribute makes them important as a potential source of cells for therapeutic transplantation. Embryonic stem cells derived through nuclear transplantation into eggs are a potential source of pluripotent (embryonic) stem cell lines that are immunologically similar to a patient's cells. Research with such cells has the goal of producing cells and tissues for therapeutic transplantation with minimal chance of rejection.

3. In general, the efficiency of reproductive cloning in animals remains extremely low despite several years of experimentation. Dolly's birth was the result of 277 experiments, collectively. Most of the times the animal cloning results in a wide variety of abnormalities, such as early and late gestation, larger size than normal (both during gestation and after birth), greater postnatal mortality, fetal morbidity and mortality and various developmental defects in the immune, cardiovascular and possibly nervous systems (subtle behavioral and mental defects might be undetectable in animal models). In addition to the risks inherent in the overproduction of oocytes from egg donors, increased maternal morbidity and mortality are to be expected.

4. Before human reproductive cloning is feasible, a great more deal research is necessary, including studies of cloning in non-human primates. Research focused on

gaining an understanding of all aspects of reprogramming and imprinting, determining which steps in the reproductive cloning technique contribute to the overall low efficiency and determining how these problems can be overcome would be most useful.

5. Reproductive cloning efficiencies observed in animals are extremely low as compared with efficiencies seen with current human IVF.

6. ART procedures have been minimally regulated in all over the world and the lack of regulation has resulted in a shortage of data pertaining to experimental ART procedures and the number of eggs obtained, embryos donated for research and the studies for which they were used. Certification of clinics could allow greater control over any new ART procedures.

7. If ever, any attempts to the human reproductive cloning are successful, that will bring a revolution in the field of research as well. Then the reproductive cloning would not amount to mere innovative therapy but a huge field of research will take its commencement. Such research would pave way to the external ethical and technical review by impartial review boards in order to check the ethical and technical standard of such proposed experiments and also to see their compatibility with basic human rights of all parties involved. That review process must be known to the common public and transparent in nature. Both public and private sector research should be subject to such a strict review and governments of every area must hold a vigilant position to check the application of such a rule.

8. The biological fate of the cloned flock of animals will be one. Environmental factors will bring benefit, or damage to them altogether. There are many extinct birds and animal species, the scientists can conduct a comprehensive research work in order

to check if their extinction can be stopped by having their clones before they diminish completely or the species which have already extincted.

9. The reproduction of a cell whose genes carry certain disease requires that the born Individuals resulting from this cloning would carry that disease, if more than one clones are reproduced, that disease may destroy all clones at once.

10. The cell taken from a male, produces clones of a male, and a cell of female, produces clone of female which creates an imbalance and hence it is contrary to the nature and inherent balance between the two sexes.

11. Let alone the religious or ethical concerns, even scientific and medical findings indicate that cloning procedures are currently not safe to be carried out on humans. So far no responsible scientists or physicians are likely to undertake to clone a human. Yet, world legislations and systems lack policies and documentations which could provide an exhaustive and restriction over human reproductive cloning.

12. It is worth mentioning that as some organizations have announced their intention to clone humans and many of the reproductive technologies needed are widely accessible in private fertility clinics that are not subject to any governmental regulations, there is need to introduce substantial penalties for deterrence of such actions. Mere restrictions are not enough in this regard.

13. If no effective ban is imposed on human reproductive cloning, there is a greater possibility that some individuals or organizations will attempt it. Even though their success rate is not anticipated as productive and there is likelihood of its failure but, yet, there is a high probability that they would be associated with serious risks to the woman carrying the developing fetus or any possible fetus or newly born child.

14. The updated evaluation of human reproductive cloning would require two elements primarily; Firstly, an exhaustive and thorough review to check the

effectiveness and safety of the procedure from medical and scientific perspectives. Secondly, examining the issue in the light of religious as well as social and ethical values and teachings. There is need to propogate the extent of the abnormalities and risks associated with human cloning which have already been observed in animal cloning experiments. So far human reproductive cloning can not be assumed to be free from such risks and abnormalities.

**15.** For any future process designed to evaluate the scientific and medical evidence on cloning, there is need to involve the ethicists and the general public alongwith the scientists and the physicians. The findings of the public debate should be structured to play their role in the policing and legislation on cloning. There is also a need to educate the general public on the issue that clones are not the accurate replicas of the originals but they only share the identical genetic material.

**16.** The science of cloning is an international one with research conducted throughout the world. Furthermore, the issue of human reproductive cloning is the subject of worldwide debate. A number of countries and international organizations have enacted legislations, prepared reports and issued statements on the subject, this subject needs to be evaluated internationally and more intensely.

**17.** Human reproductive cloning has not been performed before and its introduction, if it ever occurred, would require systematic research. That research would likely entail full review by institutional review boards and other human-subjects protections, including informed consent of donors and recipients of all biological materials.

### 5.3 Conclusion

Biotechnology in cloning sector is a topic that will have endless debate regarding whether it is allowed or not. Reproductive cloning is indeed prohibited according to the majority of stakeholders, owing to ethical, social, and religious concerns. Reproductive cloning has the benefit to help infertile married couples to have a child but, this result will not give them the child they desire. On the other hand, therapeutic cloning is a very promising field of technology in science. It potentially holds the promise of a cure for many incurable diseases like cancer and to replace the damaged organs. An important conclusion drawn could be that therapeutic cloning is allowed in Sharī'ah, considering its benefit that we may achieve. But it is essential to ensure the safety of the procedure, for example clinical trials that will show if the treatments are effective and safe, before it can be implemented in the real practice of medical treatment.

No one can challenge or oppose Allāh S.W.T's will. Hence, if the matter is achieved then it is certainly under the will of Allāh S.W.T. Nothing can be created without His will to create it. As long as people continue to do so, it is the will of Allāh S.W.T. Actually; we do not search for the question whether it is in accord with the will of Allāh S.W.T or not but our search is whether the matter is licit or not.

It is important that the Islamic countries come to a consensus on this vital issue. Developing science and technology for better health is a religious and moral obligation under the Sharī'ah teachings. There is an urgent need for Muslim scholars to discuss the issues on cloning rationally, with careful analysis of the benefits and harms associated with it. The League of Arab States has also stressed the need for a regional dialogue on health care ethics and human cloning at all levels. Some countries within the Islamic world are at the threshold of cutting edge

research and technology in genetics. There is need to educate all stakeholders that we must not close the door to this technology and its development without discussing all possibilities, judging all the criteria involved and considering the potential impact of it on human health and alleviation of suffering.

# BIBLIOGRAPHY

## ARTICLES

1. Ab Malek, MS Mohd, M. J. Jeniwaty, M. Sulaiman, and S. Mohd Harun. "In the Purview of an Oath from the Jurisprudential Method of Islamic Law of Evidence." In *Islamic perspectives relating to business, arts, culture and communication*, Springer, Singapore (2015): 463-474.
2. Abd Al-Ati, Hammudah. "The Family Structure in Islam." *Utica College*(1982): 04-12.
3. Abduh, Muḥammad. "The Sociological Laws of the Qur'ān." In *Modernist and Fundamentalist Debates in Islam*, Palgrave Macmillan. New York (2000): 41-43.
4. Abdul Aris, Nooraslinda. Rafidah Mohd Azli, and Rohana Othman. "Maqāsid Shari'ah in Islamic finance: assessment on ideologies of Muslim philosophers and economists." In *Proceeding of the Islamic Economics System Conference*, vol. 5. (2013): 427-440.
5. Abdul-Rauf, Muḥammad. "Marriage in Islam". In *New York: Exposition Press*, vol. 19711(1972):14-15.
6. Abdur Rab, Muḥammad, and M. Haytham Khayat. "Human cloning: Eastern Mediterranean region perspective." (EMHJ) *Eastern Mediterranean Health Journal* (2006): 01-09.
7. Adzhubei, I.A., Schmidt, S., Peshkin, L., Ramensky, V.E., Gerasimova, A., Bork, P., Kondrashov, A.S. and Sunyaev, S.R., "A method and server for predicting damaging missense mutations." *Nature methods*, 7(4), (2010): 248-253.



8. Afridi, Muḥammad Adil Khan. "Maqāsid al-Sharī'ah and preservation of basic rights: under the theme: Islam and its perspectives on global & local contemporary challenges." *Journal of education and social sciences*, vol. 4, June (2016): 274-285.
9. Ahmad, Norhayati Haji. "Assisted reproduction--Islamic views on the science of procreation." *Eubios journal of Asian and international bioethics: EJAIB* 13, no. 2 (2003): 59-61.
10. Ahmed, Habib. "Islamic law, adaptability and financial development." *Islamic Economic Studies* 13, no. 2 (2006): 79-101.
11. Alahmad, Ghiath, Muḥammad Al-Jumah and Kris Dierickx. "Review of national research ethics regulations and guidelines in Middle Eastern Arab countries." *BMC medical ethics* 13, no. 1 (2012): 34-44.
12. Al-Aqeel, Aida I. "Human cloning, stem cell research. An Islamic perspective." *Saudi medical journal* 30, no. 12 (2009): 1507-1514.
13. Al-Bar, Mohammed Ali, and Hassan Chamsi-Pasha. "Contemporary bioethics." *Islamic Perspective* (2015): 01-09.
14. Al-Hasani, Al Bai Bin Ibrahim and Wan Mohd Yusuf Bin Wan Chik. "Maqāsid Shariyyah According To Al-Qaradawi In The Book Al-Halal Wa Al-Harām Fi Al-Islam." *International Journal of Business and Social Science* 2, no. 1 (2011): 02-11.
15. Ali, Azam, and Tanveer Kishwar. "An Exploration of the Variables That Help Create Maqāsid Al-sharī'ah Based Financial Institutions Development Index." *SHARE Journal of Islamic Economics and Finance* 6, no. 1 (2017):01-11.

16. Ali, Sumera, Raafay Sophie, Ayesha M. Imam, Faisal I. Khan, Syed F. Ali, Annum Shaikh, and Syed Farid-ul-Hasnain. "Knowledge, perceptions and myths regarding infertility among selected adult population in Pakistan: a cross-sectional study." *BMC Public Health* 11, no. 1 (2011): 760.
17. Almeling, Rene. "'Why do you want to be a donor?': gender and the production of altruism in egg and sperm donation." *New Genetics and Society* 25, no. 2 (2006): 143-157.
18. Al-Mubārak, Tawfique. "Surrogacy and Islam: Between Permissibility and Prohibition." *Islam and Civilisational Renewal (ICR)* 5, no. 2 (2014):02-06
19. Aloni, Erez. "Cloning and the LGBTI family: cautious optimism." *NYU Rev. L. & Soc. Change* 35 (2011): 01-09.
20. Amer, Mona S. "Breaking the Mold: Human Embryo Cloning and Its Implications for a Right to Individuality." *UCLA L. Rev.*43 (1995): 1655-1672.
21. Amin, Latifah, Siti Fairuz Sujak, Siti Nur Shazwanie Ramlee, Abdul Latif Samian, Mohamad Sabrie Haron, and Mohamad Nasran Mohamad. "Educating the Ummah by introducing Islamic bioethics in genetics and modern biotechnology." *Procedia-Social and Behavioral Sciences* 15 (2011): 3399-3403.
22. Andorno, Roberto. "Global bioethics at UNESCO: in defence of the Universal Declaration on Bioethics and Human Rights." *Journal of Medical Ethics* 33, no. 3 (2007): 150-154.
23. Annas, George J. "Human cloning: a choice or an echo." *U. Dayton L. Rev.* 23 (1997): 247.

24. Aramesh, Kiarash and Soroush Dabbagh. "An Islamic view to stem cell research and cloning: Iran's experience." *The American Journal of Bioethics* 7, no. 2 (2007): 62-63.
25. Aramesh, Kiarash. "Iran's experience with surrogate motherhood: an Islamic view and ethical concerns." *Journal of medical ethics* 35, no. 5 (2009): 320-322.
26. Armour, Kim L. "An overview of surrogacy around the world." *Nursing for women's health* 16, no. 3 (2012): 231-236.
27. Arsanjani, Mahnoush H. "Negotiating the UN declaration on human cloning." *American Journal of International Law* 100, no. 1 (2006): 164-179.
28. Athar, Shahid. "Enhancement technologies and the person: an Islamic view." *The Journal of Law, Medicine and Ethics* (2008): 59-64.
29. Aurelia, Enescu et al., "Ethical Considerations on Human Cloning", *Current Health Sciences Journal*, Vol 37, No. 03 , (2011): 148-155.
30. Bach, Fritz H., Hans Winkler, Christiane Ferran, Wayne W. Hancock and Simon C. Robson. "Delayed xenograft rejection." *Immunology today* 17, no. 8 (1996): 379-384.
31. Baderin, Mashood. "Understanding Islamic law in theory and practice." *Legal Information Management* 9, no. 3 (2009): 186-190.
32. Baig, Lubna A., D. Akram, and Syeda Kauser Ali. "Development of the community-oriented medical education curriculum of Pakistan: A case report on the national initiative on curriculum development." *Education for Health-Abingdon-Carfax Publishing Limited*- 19, no. 2 (2006): 223-235.

33. Baines, Paul. "Medical ethics for children: applying the four principles to paediatrics." *Journal of medical ethics* 34, no. 3 (2008): 141-145.
34. Bauman, D. E., I. H. Mather, R. J. Wall, and A. L. Lock. "Major advances associated with the biosynthesis of milk." *Journal of dairy science* 89, no. 4 (2006): 1235-1243.
35. Beauchamp, T. L. "The four principles' approach to health care ethics." *Principles of health care ethics* (2007): 3-10.
36. Beauchamp, Tom L. "Methods and principles in biomedical ethics." *Journal of Medical ethics* 29, no. 5 (2003): 269-274.
37. Beckwith, Jo Ann, Timothy Hadlock and Heather Suffron. "Public perceptions of plant biotechnology: a focus group study". *New Genetics and Society*,(2003) :22-27.
38. Bowring, Finn. "Therapeutic and reproductive cloning: a critique." *Social science & medicine* 58, no. 2 (2004): 405-408.
39. Braun, Anette, Ann Bruce, Renate Gertz, Cecilia Oram, Jonathan Suk, Joyce Tait, Chris Warkup, and Bruce Whitelaw. "Animal Cloning and genetic modification: a prospective study." *Institute for Prospective Technological Studies (IPTS)*(2005):01-117.
40. Brock, Dan W. "Cloning Human Beings", *Commissioned Paper* (The Brown University) 06-10.
41. Burrell, Celia, and Leroy C. Edozien. "Surrogacy in modern obstetric practice." In *Seminars in Fetal and Neonatal Medicine*, vol. 19, no. 5. Elsevier, (2014): 272-278.
42. C., Marcia and Zeynep B. Gurtin. "Infertility and resource considerations". *Facts Views & Visions in ObGyn, Monograph* (2012): 28-34.

43. Cader, Shaikha Kouthar Allie. "Family Life in Islam/ Women in Islam", *World Family Policy Forum*, South Africa, (2003): 03.
44. Camara, D., Dimitrova Ir, M. Doynova, L. Jachacz, D. Kachakova, M. Kepka, C. B. Ould Isselmou, J. P. Vorniere, Yungarva Tsv, and Agro campus Rennes. "Transgenic and cloned animals: Ethical Problems?." *EU SOCRATES ERASMUS European Community* (2008):01-20.
45. Cameron, Nigel M. deS, and Anna V. Henderson. "Brave new world at the General Assembly: The United Nations declaration on human cloning." *Minn. JL Sci. & Tech.* 9 (2008): 140-160.
46. Caulfield, Timothy, and Audrey Chapman. "Human dignity as a criterion for science policy." *PLoS Medicine* 2, no. 8 (2005): e240-e254.
47. Chamsi Pasha, Hassan, and Mohammed Ali Albar. "Western and Islamic bioethics: How close is the gap?." *Avicenna journal of medicine* 3, no. 1 (2013): 05-11.
48. Channah Jarrell, "No Worldwide Consensus: The United Nations Declaration On Human Cloning", J.D., University of Georgia, School of Law, Emory University, (2007): 2003.
49. Character Building", *International Journal of Social Science and Humanity*, Vol. 3, No. 6.( 2013): 40-59.
50. Cibelli, Jose B., Keith H. Campbell, George E. Seidel, Michael D. West, and Robert P. Lanza. "The health profile of cloned animals." *Nature biotechnology* 20, no. 1 (2002): 13-20.
51. Clift, Reginald A., C. Dean Buckner, Frederick R. Appelbaum, Scott I. Bearman, Finn B. Petersen, Lloyd D. Fisher, Claudio Anasetti, Patrick

- Beatty, W. I. Bensinger, and Kristine Doney. "Allogeneic marrow transplantation in patients with acute myeloid leukemia in first remission: a randomized trial of two irradiation regimens." *Blood* 76, no. 9 (1990): 1867-1871.
52. Cloning Islami Nuqta-e-Nazr, Jadeed Fiqhi Masail, Madrasah Dār-ūl-Ūloom Sabeel-ūl-Islam, (Zamzam Publisher: haiderabad Dakkān, India), 107-111.
53. Cloning Ki Shari Hasiyat, Mahnāmā Hāq, April 2006, Pakistan, 01-06.
54. Cloning Se Touleed, Kitāb-ūl-Fatāwā by zāmzām Publishers, 217-218.
55. Cooper, D. K. C., Y. Ye, L. L. J. Rolf, and N. Zuhdi. "The pig as potential organ donor for man." In *Xenotransplantation*, Springer, Berlin, Heidelberg (1991): 481-500.
56. Cooper, D. K. C., Y. Ye, L. L. J. Rolf, and N. Zuhdi. "The pig as potential organ donor for man." In *Xenotransplantation*, Springer, Berlin, Heidelberg (1991): 481-500.
57. Cyranoski, David. "Cloning comeback." *Nature* 505, no. 7484 (2014): 468-479.
58. Daar, AbdAllāh S. "Ethics of xenotransplantation: animal issues, consent, and likely transformation of transplant ethics." *World journal of surgery* 21, no. 9 (1997): 975-982.
59. Damad, SM Mohaghegh. "Human Cloning from the Viewpoint of Fiqh and Ethics." *Iranian Journal of Medical Law* 1, no. 1 (2012): 11-24.
60. Davis, Dena S. "Religious Attitudes Toward Cloning: A Tale of Two Creatures." *Hofstra L. Rev.* 27 (1998): 509.

61. Devolder, Katrien, and Julian Savulescu. "The moral imperative to conduct embryonic stem cell and cloning research." *Cambridge Quarterly of Healthcare Ethics* 15, no. 1 (2006): 7-21.
62. Di Berardino, Marie A. "Animal cloning: The route to new genomics in agriculture and medicine." *Differentiation* 68, no. 2-3 (2001): 67-83.
63. Dobson, J. "Gene therapy progress and prospects: magnetic nanoparticle-based gene delivery." *Gene therapy* 13, no. 4 (2006): 283-286.
64. Dr. Malik, Maszlee. "Al-Maqāsid al-Shari'ah (the Comprehensive Objectives of Shari'ah)", *The Penang Institute-G25 Forum*, Bayan Lepas, Pulau Pinang, Malaysia, International Islamic University Malaysia IIUM (2015):01-07.
65. Dr. Wasil, Muḥammad. "Al-Istinsākh' albashri fi Sharī'ah wa Qanoon" *Majjalah Jamia Damishq*, almajaled alsamin ashr (2002) Jamia Damishq: 31-43.
66. Dunkel-Schetter, Christine, and Marci Lobel. "Psychological reactions to infertility." In *Infertility*.. Springer, Boston, MA, (1991): 29-57.
67. Dusuki, Asyraf Wajdi, and Nurdianawati Irwani Abdullah. "Maqāsid al-Sharī'ah, Maslahah, and corporate social responsibility." *American Journal of Islamic Social Sciences* 24, no. 1 (2007): 25-33.
68. Dvorsky, George. "Better living through transhumanism." *Humanist-Buffalo*, 64, no. 3 (2004): 07-16.
69. Ebrahim, Abul Fadl Mohsin. "Vaccination in the context of al-Maqāsid al-shari'ah (objectives of divine law) and Islamic medical jurisprudence." *Arabian Journal of Business and Management Review (Oman Chapter)* 3, no. 10 (2014): 44-49.

70. Eich, Thomas. "Muslim voices on cloning." *ISIM Newsletter* 12 (2003): 02-10.
71. Eisenberg, Daniel. "Stem Cell Research in Jewish Law." *Jewish Law Articles*, (2001): 01.
72. Elgariani, Fawzy Shaban. "Al-Qawa'id al-Fiqhiyyah (Islamic Legal Maxims): Concept, Functions, History, Classifications and Application to Contemporary Medical Issues." *The University of Exeter*(2012): 01-500.
73. Elliott, David. "Uniqueness, individuality, and human cloning." *Journal of Applied Philosophy* 15, no. 3 (1998): 217-230.
74. Evans, John H. "Religion and human cloning: an exploratory analysis of the first available opinion data." *Journal for the Scientific Study of Religion* 41, no. 4 (2002): 747-758.
75. Fadel, Hossam E. "Developments in stem cell research and therapeutic cloning: Islamic ethical positions, a review." *Bioethics* 26, no. 3 (2012): 128-135.
76. Fadel, Hossam E. "The Islamic viewpoint on new assisted reproductive technologies." *Fordham Urb. LJ* 30 (2002): 146-157.
77. Faye, Loic, Aurelia Boulaflous, Meriem Benchabane, Véronique Gomord, and Dominique Michaud. "Protein modifications in the plant secretory pathway: current status and practical implications in molecular pharming." *Vaccine* 23, no. 15 (2005): 1770-1778.
78. Fazeli, Shirin and Maliheh Poursattar Mahadi. "Investigation of the Pride Truth by Verses Perspective." *Journal of Social Studies* 1, no. 10 (2015): 174-178.



79. Franklin, Sarah, and Helena Ragoné, eds. *Reproducing reproduction: Kinship, power, and technological innovation*. University of Pennsylvania Press, 1998.
80. Frazzetto, Giovanni. "Embryos, cells and God: Different religious beliefs have little consensus on controversial issues such as cloning and stem-cell research." *EMBO reports* 5, no. 6 (2004): 553-555.
81. French, Andrew J, Samuel H. Wood, and Alan O. Trounson. "Human Therapeutic Cloning: Healing begins with a single cell." *Stem Cell Reviews* 2 (2006): 02-07.
82. Galston, William A. "Catholics, Jews & Stem Cells." *Commonweal* 132, no. 10 (2005): 13-19.
83. Ghaly, Mohammed. "Human cloning through the eyes of Muslim scholars: The new phenomenon of the Islamic international religiouscientific institutions." *Zygon* 45, no. 1 (2010): 7-35.
84. Gillon, Raanan. "Medical ethics: Four principles plus attention to scope." *BMJ: British Medical Journal* 309, no. 6948 (1994): 184-188.
85. Gordon, Jon W., George A. Scangos, Diane J. Plotkin, James A. Barbosa and Frank H. Ruddle. "Genetic transformation of mouse embryos by microinjection of purified DNA." *Proceedings of the National Academy of Sciences* 77, no. 12 (1980): 7380-7384.
86. Gurdon, J. B., and Alan Colman. "The future of cloning." *Nature* 402, no. 6763 (1999): 742-748.
87. Gurtin, Zeynep B. "Practitioners as Interface Agents between the Local and the Global: Te Localization of IVF in Turkey." (2012).

88. Gurtin, Zeynep B., Marcia C. Inhorn, and Soraya Tremayne. "Islam and Assisted Reproduction in the Middle East: Comparing the Sunnī Arab World, Shī'ah Iran and Secular Turkey." In *The Changing World Religion Map*. Springer, Dordrecht, (2015) : 3137-3153.
89. Hall, Vanessa J., Petra Stojkovic and Miodrag Stojkovic. "Using therapeutic cloning to fight human disease: a conundrum or reality?." *Stem cells* 24, no. 7 (2006): 1628-1637.
90. Hamburger, Viktor, and Howard L. Hamilton. "A series of normal stages in the development of the chick embryo." *Journal of morphology* 88, no. 1 (1951): 49-92.
91. Hameed, Salman. "Bracing for Islamic creationism." *Science* 322, no. 5908 (2008): 1637-1638.
92. Haneef, Sayed Sikandar Shah. "Islamic Jurisprudence on Reproductive Technology: A Methodological Appraisal." In *Proceedings of the International Conference on Science, Technology and Social Sciences (ICSTSS)* Springer, Singapore, (2012): 389-395.
93. Harris, John. "Goodbye Dolly? The ethics of human cloning." *Journal of Medical Ethics* 23, no. 6 (1997): 353-360.
94. Hashi, Abdurezak Abdulahi. "Islamic ethics: An outline of its principles and scope." *Revelation and Science* 1, no. 3 (2011): 122-130.
95. Hassan, Muḥammad Haniff. "Can Islam be contextualised?." *RSIS Commentaries*. Singapore: Nanyang Technological University(2005):01-04.
96. Hassan, Riffat. "Muslim women and post-patriarchal Islam." *After patriarchy: Feminist transformations of the world religions* (1991): 39-64.

97. Hassanein, Gamal HE. "Hyperfine Description of Human Creation in the Three Dark Zones in Qur'ān." *QUR'ĀNICA-International Journal of Qur'ānic Research* 7, no. 2 (2015): 1-10.
98. Hoeger, Kathleen. "In Vitro Fertilization Process, Risk, and Consent". Department of Obstetrics and Gynecology Strong Fertility Center, (2008):80-83.
99. Hopkins, Patrick D. "How popular media represent cloning as an ethical problem." *Hastings Center Report* 28, no. 2 (1998): 06-13.
100. Hossain, Arif. "Consequential approach of Islamic bioethics." *Bangladesh Journal of Bioethics* 3, no. 1 (2012): 19-22.
101. Houdebine, Louis-Marie. "Production of pharmaceutical proteins from transgenic animals." *Journal of biotechnology* 34, no. 3 (1994): 269-287.
102. Imam, Ibrahim, Abdul Raheem Mustapha, M. A. and Ibrahim-Eletu, K. K. "A Jurisprudential Analysis of the Fundamental Rights of Fetus (an Unborn Child) Under the Conventional and Islamic." *University of Ilorin, Nigeria* (2011): 01-23.
103. Inhorn, C and Marcia C, "Global infertility and the globalization of new reproductive technologies: illustrations from Egypt", *Social science & medicine* 56, no. 9 (2003): 1837-1851.
104. Inhorn, C and Zeynep B. Gurtin. "Infertility and resource considerations." *Facts Views & Visions in ObGyn, Monograph* (2012): 28-33.
105. Inhorn, Marcia C. "Making Muslim babies: IVF and gamete donation in Sunnī versus Shi'a Islam." *Culture, medicine and psychiatry* 30, no. 4 (2006): 427-450.

106. Inhorn, Marcia C., and Zeynep B. Gurtin. "Infertility and assisted reproduction in the Muslim Middle East: social, religious, and resource considerations." *Facts Views & Visions in ObGyn, Monograph* (2012): 24-29.
107. Iqbal, Muzaffar, ed. *Contemporary Issues in Islam and Science*. Vol. 2. Routledge, 2017.
108. Jadid Scienci Tehqeeq: Insani Cloning Ki Shari Hasiyat, Fatāwā Haqqānīa, Dār-ūl-ūloom Haqqānīa, Aūkorā Khatāk, Pakistan, 323-329.
109. Jafarey, Aamir Mustafa, Saima Pervaiz Iqbal, and Mariam Hassan. "Ethical review in Pakistan: the credibility gap." *JPMA. The Journal of the Pakistan Medical Association* 62, no. 12 (2012): 1354-1357.
110. Jami-al-Fatāwā, Idāra Taleef Ashrafia, Fawara Chowk, Multan, 344-345.
111. Kaluderovic, Zeljko. "Bioethical analysis of the United Nations Declaration on Human Cloning." *JHR*, Vol 01, No. 01 (2010): 01-14.
112. Kamali, Muḥammad Hashim. "Actualisation (Taf'il) of the Higher Purposes (Maqāsīd) of Sharī'ah." *Islam and Civilisational Renewal (ICR)* 8, no. 3 (2017): 295-321.
113. Kamali, Muḥammad Hashim. "Legal maxims and other genres of literature in Islamic jurisprudence." *Arab Law Quarterly* 20, no. 1 (2006): 77-101.
114. Kamali, Muḥammad Hashim. "Maqāsīdal-Sharī'ah: The objectives of Islamic law." *Islamic studies* 38, no. 2 (1999): 193-199.
115. Kamali, Muḥammad Hashim. "Qawā'id Al-Fiqh: The legal maxims of Islamic law." *The Association of Muslim Lawyers*(2008): 01-07.

116. Karasu, T. Byram. "Spiritual psychotherapy." *American journal of psychotherapy* 53, no. 2 (1999): 143-149.
117. Keller, Gordon. "Embryonic stem cell differentiation: emergence of a new era in biology and medicine." *Genes & development* 19, no. 10 (2005): 1129-1155.
118. Keown, Damien. "No Harm'Applies to Stem cell Embryos: One Buddhist's View." *Science and theology news* (2004): 01-09.
119. Kfoury, Charlotte. "Therapeutic cloning: promises and issues." *McGill Journal of Medicine: MJM* 10, no. 2 (2007): 112-118.
120. Khalid Masud, Muḥammad, Joseph A. Kéchichian, Brinkley Messick, Ahmad S. Dallal, and Jocelyn Hendrickson. "The Concept of Fatwā." *The Oxford Encyclopedia of the Islamic World* (1960).
121. Khālsa, Manbir kaur. "Different Techniques of Asexual Reproduction in Plants." *Imperial Journal of Interdisciplinary Research (IJIR)* Vol.2, Issue-8, College of Pharmacy, Amritsar(2016): 1445-1449.
122. Khan, Robyna Irshad. "Informed consent and some of its problems in Pakistan." *Journal of the Pakistan Medical Association* 58, no. 2 (2008): 82-90.
123. Kim, Tae Kyung, and James H. Eberwine. "Mammalian cell transfection: the present and the future." *Analytical and bioanalytical chemistry* 397, no. 8 (2010): 3173-3178.
124. Kind, Alexander, and Angelika Schnieke. "Animal pharming, two decades on." *Transgenic research* 17, no. 6 (2008): 1025-1033.
125. Kiran P. Nallella, Rakesh K. Sharma, Shyam SR Allamaneni, Nabil Aziz, and Ashok Agarwal. "Cryopreservation of human spermatozoa:

- comparison of two cryopreservation methods and three cryoprotectants." *Fertility and sterility* 82, no. 4 (2004): 913-918.
126. Klein, Ronald L., Wen-Lang Lin, Dennis W. Dickson, Jada Lewis, Michael Hutton, Karen Duff, Edwin M. Meyer, and Michael A. King. "Rapid neurofibrillary tangle formation after localized gene transfer of mutated tau." *The American journal of pathology* 164, no. 1 (2004): 347-353.
  127. Knowles, Lori P. "Science policy and the law: reproductive and therapeutic cloning." *NYUJ Legis. & Pub. Policy* 4 (2000): 13-17.
  128. Kues, Wilfried A., and Heiner Niemann. "The contribution of farm animals to human health." *TRENDS in Biotechnology* 22, no. 6 (2004): 286-294.
  129. Lanza, Robert P., Jose B. Cibelli, David Faber, Raymond W. Sweeney, Boyd Henderson, Wendy Nevala, Michael D. West, and Peter J. Wettstein. "Cloned cattle can be healthy and normal." *Science* 294, no. 5548 (2001): 1893-1894.
  130. Larijani, Bagher, Farzaneh Zahedi and Hossein Malek Afzali. "Medical ethics in the Islamic Republic of Iran." *Eastern Mediterranean Health Journal*, Vol. 11, (2005): 04-12.
  131. Larijani, Bagher, Hossein Malek Afzali, Farzaneh Zahedi, and Elaheh Motevaseli. "Strengthening medical ethics by strategic planning in the Islamic Republic of Iran." *Developing World Bioethics* 6, no. 2 (2006): 106-110.
  132. Latif, Khalid. "The place of morality in Islam and its relation to worship." *Islam Religion*, ( 2008): 01.

133. Lechler, Robert I., Megan Sykes, Angus W. Thomson and Laurence A. Turka. "Organ transplantation: How much of the promise has been realized?." *Nature medicine* 11, no. 6 (2005): 605-610.
134. Lee, Jeoung Eun, Young Gie Chung, Jin Hee Eum, Yumie Lee, and Dong Ryul Lee. "An efficient SCNT technology for the establishment of personalized and public human pluripotent stem cell banks." *BMB reports* 49, no. 4 (2016): 197-200.
135. Lehrman, Sally. "Undifferentiated ethics." *Scientific American* 303, no. 3 (2010): 18-20.
136. Li, Zibiao and Xian Jun Loh. "Water soluble polyhydroxyalkanoates: future materials for therapeutic applications." *Chemical Society Reviews* 44, no. 10 (2015): 2865-2879.
137. Lisker, Ruben. "Ethical and Legal Issues in Therapeutic Cloning and the Study of Stem Cells", *Archives of Medical Research* 34 (2003): 607–611.
138. Lyall, Jon, Richard M. Irvine, Adrian Sherman, Trevelyan J. McKinley, Alejandro Núñez, Auriol Purdie, Linzy Outtrim et al. "Suppression of avian influenza transmission in genetically modified chickens." *Science* 331, no. 6014 (2011): 223-226.
139. Lyons, Kristen and Geoffrey Lawrence. "Alternative Knowledges, Organic Agriculture, and the Biotechnology Debate". *Culture and Agriculture*, Vol. 21, (1999), 01-10.
140. Macintosh, Kerry. "Human Clones and International Human Rights." *Santa Clara J. Int'l L.* 4 (2006): i.

141. Macnaghten, Phil. "Animals in their nature: A case study on public attitudes to animals, genetic modification and 'nature'." *Sociology* 38, no. 3 (2004): 533-551.
142. Mahdi, Esmailzadeh, Farhadi Abolfazl and Shahghasemi Hamid. "Developmental biology in Holy Qur'ān." *Journal of Physiology and Pathophysiology* 3, no. 1 (2012): 1-7.
143. Malik, S. Jamal. "Legitimizing Islamization: The Case of the Council of Islamic Ideology in Pakistan." (1989): 253-265.
144. Mansour, Ragaa T., Ahmed M. Abou-Setta and Omnia Kamal. "Assisted reproductive technology in Egypt, 2003–2004: Results generated from the Egyptian IVF registry." *Middle East Fertility Society Journal* (2011): 1-6.
145. Masud, Muḥammad Khalid, Joseph A. Kéchichian, Brinkley Messick, Ahmad S. Dallal, and Jocelyn Hendrickson. "The Concept of Fatwā." (1960).
146. McKinnell, Robert G., and Marie A. Di Berardino. "The biology of cloning: history and rationale." *BioScience* 49, no. 11 (1999): 875-885.
147. McLean, Margaret R. "Red light, green light: The California cloning and stem cell laws." *The Hastings Center Report* 32, no. 6 (2002): 01-14.
148. MHK, Talukderet al. "Basicideasonmedical ethics." *Bangladesh Journal of Medical Sciences*, Vol. 09, No. 03, (2010): 24-29.
149. Miller, W. R. "Motivational interviewing in service to health promotion." *American Journal of Health Promotion* 18, no. 3 (2004): A1-A10.



150. Mitelman, Felix. *Catalog of Chromosome Aberrations in Cancer: Chromosomes 1-12;[2], Chromosomes 13-22, X, Y, References. Wiley-Liss* (1994):03-10.
151. Moazam, Farhat, and Aamir M. Jafarey. "Pakistan and biomedical ethics: Report from a Muslim country." *Cambridge Quarterly of Healthcare Ethics* 14, no. 3 (2005): 249-255.
152. Moore, Keith L. "A Scientist's Interpretation of References to Embryology in the Qur'an." *Journal of the Islamic Medical Association of North America* 18, no. 1 (1986):15-17.
153. Moosa, Ebrahim EI. "Genetically modified foods and Muslim ethics." State University of New York (2009): 08-20.
154. Moosa, Ebrahim. "Human cloning in Muslim ethics." *Voices Across Boundaries* 2003 (2003): 23-26.
155. Nabavizadeh, Seydeh Leilā, Davood Mehrabani, ZabihAllāh Vahedi, and Farzad Manafi. "Cloning: A Review on Bioethics, Legal, Jurisprudence and Regenerative Issues in Iran." *World journal of plastic surgery* 5, no. 3 (2016): 213-220.
156. Naldini, Luigi. "Gene therapy returns to centre stage." *Nature* 526, no. 7573 (2015): 351-355.
157. Nasr, Seyyed Hossein. "The male and female in the Islamic perspective." *Studies in Comparative Religion* 14, no. 1-2 (1980): 67-75.
158. National Bioethics Advisory Commission. "Cloning human beings: report and recommendations of the National Bioethics Advisory Commission." (1997).

159. Negash, Legesse. "Successful vegetative propagation techniques for the threatened African pencil cedar (*Juniperus procera* Hoechst. ex Endl.)", *Forest ecology and management* 161, no. 1-3 (2002): 53-64.
160. Nīāzī, Sāmīa Maqbool. "Islamic Law and the Surrogate Mother." *Islamabad Law Review* 1, no. 1 (2014): 25-30.
161. Nisbet, Matthew C. "The competition for worldviews: Values, information, and public support for stem cell research." *International Journal of Public Opinion Research* 17, no. 1 (2005): 90-112.
162. Noah, Lars. "Assisted reproductive technologies and the pitfalls of unregulated biomedical innovation." *Fla. L. Rev.* 55 (2003): 603-607.
163. Nor, Siti Nurani Mohamed. "Human genetic technologies and Islamic bioethics." In *GenEthics and religion*. Karger Publishers (2010) : 129-137.
164. Nordin, Musa Mohd. "Human genetic and reproductive technologies: an international medico-legal-religious impasse." *Bangladesh Journal of Medical Science* Vol.10 No.1 (2011): 01-10.
165. Nusair, Naim. "Human nature and motivation in Islam." *Islamic Quarterly* 29, no. 3 (1985): 148.
166. Ohara, N. "Ethical consideration of experimentation using living human embryos: the Catholic Church's position on human embryonic stem cell research and human cloning." *Clinical and experimental obstetrics & gynecology* 30, no. 2-3 (2003): 77-81.
167. Ombelet, Willem, and Johan Van Robays. "History of human artificial insemination." *F, V & V in ObGyn* (2010): 1-5.
168. Omran, Abdel-Rahim, ed. *Family planning in the legacy of Islam*. Routledge (2012): 20-29.

169. Ontario Consultant on Religious Tolerance, "Therapeutic Cloning: How it is done and possible benefits", (2000): 20-25.
170. Payne, L. N., S. R. Brown, N. Bumstead, K. Howes, Judith A. Frazier, and Margaret E. Thouless. "A novel subgroup of exogenous avian leukosis virus in chickens." *Journal of general virology* 72, no. 4 (1991): 801-807.
171. Pellegrino, Edmund D. "Patient and physician autonomy: conflicting rights and obligations in the physician-patient relationship." *J. Contemp. Health L. & Pol'y* 10 (1994): 47-51.
172. Prainsack, Barbara. "'Negotiating Life: The Regulation of Human Cloning and Embryonic Stem Cell Research in Israel.'" *Social Studies of Science* 36, no. 2 (2006): 173-205.
173. Radin, Margaret Jane. "Market-inalienability." *Harvard law review* (1987): 1849-1937.
174. Rahim, Adibah Binti Abdul. "Understanding Islamic ethics and its significance on the character building." *International Journal of Social Science and Humanity* 3, no. 6 (2013): 508-519.
175. Ratanakul, Pinit. "Bioethics in Thailand: The struggle for Buddhist solutions." *The Journal of medicine and philosophy* 13, no. 3 (1988): 301-312.
176. Rehman, Jalees. "Searching for scientific facts in the Qur'an: Islamization of knowledge or a new form of scientism?." *Islam & Science* 1, no. 2 (2003): 245-248.
177. Robertson, John A. "Liberty, identity and human cloning." *Tex. L. Rev.* 76 (1997): 1371-1376.

178. Robertson, John A. "The question of human cloning." *Hastings Center Report* 24, no. 2 (1994): 6-14.
179. Robertson, John A. "Two models of human cloning." *Hofstra L. Rev.* 27 (1998): 609-611.
180. Ruegg, David Seyfort. "Ahimsa and Vegetarianism in the History of Buddhism." *Buddhist studies/for W. Rahula* (1980): 234-241.
181. Russell, William Moy Stratton, Rex Leonard Burch, and Charles Westley Hume. "The principles of humane experimental technique." *Johns Hopkins Center for Alternatives to Animal Testing (CAAT)*, (1959): 01-04.
182. Safian, Mohd, and Yasmin Hanani. "Islam and Biotechnology: With Special Reference to Genetically Modified Foods." *The Metanexus Institute, Science and Religion: Global Perspectives* (2005): 01-13.
183. Said, Abdul Aziz and Nathan C. Funk. "Peace in Islam: an ecology of the spirit." *Islam and ecology: A bestowed trust* 162 (2003): 01-09.
184. Saifuddeen, Shaikh Mohd, Chang Lee Wei, Abdul Halim Ibrahim and Nor Aina Mhd Khotib. "Islamic Ethical Framework to tackle Scientific and Technological Dilemmas". *Journal of Dharma* 38, no. 4 (2013): 373-386.
185. Saifuddeen, Shaikh Mohd, Noor Naemah Abdul Rahman, Noor Munirah Isa, and Azizan Baharuddin. "Maqāsidal-Sharī'ah as a complementary framework to conventional bioethics." *Science and engineering ethics* 20, no. 2 (2014): 317-327.
186. Salmati Hayatiyati Technology Me Hunay Wali Taraqiyaan,(Idāratul Qur'ān Wa-uloom Islamia, Karachi, Pakistan), 133-143.

187. Sanchez-Sweatman, Louise R. "Reproductive cloning and human health: An ethical, international, and nursing perspective." *International Nursing Review* 47, no. 1 (2000): 28-37.
188. Saniei, Mansooreh and Raymond De Vries. "Embryonic stem cell research in Iran: status and ethics." *Indian J Med Ethics* 5, no. 4 (2008): 181-184.
189. Savulescu, Julian. "Should we clone human beings? Cloning as a source of tissue for transplantation." *Journal of Medical Ethics* 25, no. 2 (1999): 87-95.
190. Schlieter, Jens. "Some observations on Buddhist thoughts on human cloning." Roetz H.(Hg.), ed. *Cross-Cultural Issues in Bioethics—The Example of Human Cloning. Amsterdam: Rodopi* (2004): 10-22.
191. Scianna, Joseph D., Susan R. Winslow, Mark E. Majerus, Lori M. Gruber, and Sam A. Reid. "Asexual Plant Propagation: Special Techniques and Considerations for Successful High Altitude Revegetation." In *USDA Natural Resources Conservation Workshop*, no. 13 (1998): 105-117.
192. Sekaleshfar, Farrokh B. "A critique of Islamic arguments on human cloning." *Zygon®* 45, no. 1 (2010): 37-46.
193. Serour, Gamal I. "Bioethics in artificial reproduction in the Muslim world." *Bioethics* 7, no. 2-3 (1993): 207-217.
194. Serour, Gamal I., M. El Ghar, and R. T. Mansour. "Infertility: a health problem in the Muslim world." *Population Sciences* 10 (1991): 41-58.
195. Shadpour, Kaveh. "Primary health care networks in the Islamic Republic of Iran." (*EMHJ*) *Eastern Mediterranean Health Journal*, 6 (4), (2000): 822-825.

196. Shaikha Kouthar Allie Cader, "Family Life in Islam/ Women in Islam", South Africa, World family forum, (2003) : 01-04.
197. Sharfuddin, I. "Toward an Islamic administrative theory." *The American Journal of Islamic Social Science* 4, no. 2 (1987): 229-244.
198. Shiels, Paul G., Alexander J. Kind, Keith HS Campbell, David Waddington, Ian Wilmut, Alan Colman, and Angelika E. Schnieke. "Analysis of telomere lengths in cloned sheep." *Nature* 399, no. 6734 (1999): 316-320.
199. Silver, Lee M. "Cloning, ethics, and religion." *Cambridge Quarterly of Healthcare Ethics* 7, no. 2 (1998): 168-172.
200. Smith, Kevin, and Corrado Spadafora. "Sperm-mediated gene transfer: Applications and implications." *Bioessays* 27, no. 5 (2005): 551-562.
201. Spar, Debora L. "The baby business: How money, science, and politics drive the commerce of conception." Bioethics Research library of the Kennedy institute of Ethics (2006): 01-07.
202. Steinbock, Bonnie. "The NBAC Report on Cloning Human Beings: What It Did and Did Not Do." *Jurimetrics* 38, no. 1 (1997): 39-46.
203. Sunstein, Cass R. "Is there a constitutional right to clone." *Hastings LJ* 53 (2001): 987-110.
204. Swain, Margaret E . "Oocyte donation: legal aspects." In *Third-Party Reproduction*, Springer, New York, NY (2014): 31-39.
205. Syed, Ibrahim B. "Islamization of Attitude and Practise in Embryology." In *Islamization of Attitudes and Practices in Science & Technology: Proceedings of Workshop on Islamization of Attittudes [sic]*

*and Practices in Science and Technology, Herndon, Virginia: February 27-March 1st 1987 AC*, no. 9, IIT (1989):117-150.

206. Thomas, Clare E., Anja Ehrhardt, and Mark A. Kay. "Progress and problems with the use of viral vectors for gene therapy." *Nature Reviews Genetics* 4, no. 5 (2003): 346-348.
207. Tsai, D. F. "Ancient Chinese medical ethics and the four principles of biomedical ethics." *Journal of medical ethics* 25, no. 4 (1999): 315-321.
208. Uzogara, Stella G. "The impact of genetic modification of human foods in the 21st century: A review." *Biotechnology advances* 18, no. 3 (2000): 179-206.
209. Vayena, Effy, Patrick J. Rowe, and P. David Griffin. "Current practices and controversies in assisted reproduction: Report of a meeting on medical, ethical and social aspects of assisted reproduction, held at WHO Headquarters in Geneva, Switzerland." (2002): 24-37.
210. Venter, J. Craig, Mark D. Adams, Eugene W. Myers, Peter W. Li, Richard J. Mural, Granger G. Sutton, Hamilton O. Smith et al. "The sequence of the human genome." *science* 291, no. 5507 (2001): 1304-1351.
211. Verhey, Allen D. "Cloning: revisiting an old debate." *Kennedy Institute of Ethics Journal* 4, no. 3 (1994): 227-234.
212. Washburn, Sherwood L. "Tools and human evolution." *Scientific American* 203, no. 3 (1960): 62-75.
213. Way, Amy L. "Transgenic Animals in Agriculture." *NACTA Journal* 46, no. 3 (2002): 59-61.

214. Wheat, Kathryn, and Kirstin Matthews. "World human cloning policies." *Stem Cells: Saving Lives or Crossing Lines* (2004): 07-16.
215. Wilmut, Ian, Angelika E. Schnieke, Jim McWhir, A. J&amp Kind, and Keith HS Campbell. "Viable offspring derived from fetal and adult mammalian cells." *Nature* 385, no. 6619 (1997): 810-812.
216. Yadav, Sachdev. "Human Cloning: Perspectives, Ethical Issues and Legal Implications." *International Journal Of Pharma And Bio Sciences*, Vol. 02, (2011): 02-07.
217. Young, Lorraine E., Kevin D. Sinclair, and Ian Wilmut. "Large offspring syndrome in cattle and sheep." *Reviews of reproduction* 3, no. 3 (1998): 155-163.
218. Yusuf, Hajiya Bilkisu. "Sexuality and the marriage institution in Islam: An appraisal." *African Regional Sexuality Resource Center*(2005), 05-10.
219. Zahedi, Farzaneh, and Bagher Larijani. "National bioethical legislation and guidelines for biomedical research in the Islamic Republic of Iran." *Bulletin of the World Health Organization* 86, no. 8 (2008): 630-634.
220. Zakariyah, Luqman. "Custom and Society in Islamic Criminal Law: A Critical Appraisal of the Maxim al-‘Ādah Muḥakkamah (Custom is Authoritative) and its Sisters in Islamic Legal Procedures." *Arab Law Quarterly* 26, no. 1 (2012): 75-97.
221. Zuhur, Sherifa. "Of milk-mothers and sacred bonds: Islam, patriarchy, and new reproductive technologies." *Creighton L. Rev.* 25 (1991): 1725-1730.



## BOOKS

1. Ahmad, Khurshid. *Family life in Islam*, Leicester: Islamic Foundation, 1974.
2. Al-Bahusayn, Yaqub. *Al- Qawā'id al-Fiqhiyyah*. First Edition, Riyadh: Maktabat al-Rushd, 1998.
3. Al-Bukhari, Muḥammad Ibn Ismaiel. *Sahih Al-Bukhari*, Arabic-English, Trans. Dr. Muḥammad Muhsin Khan, Riyadh: Dārussalam, 1997.
4. Al-Ghazali, Abū Ḥāmid Muḥammad ibn Muḥammad. *Al-Mustasfa min ilm al-usul*, Beirut: Dar-Ul-Fiker.
5. Al-Haq, Farooqi Shahnawaz. *Nafsiyati Cloning se jismani cloning tak*. Okarra Khatak.
6. Al-Jurjani, Al-Sharif. *Al-Tarifaat*. Beirut: Dar al-Kutub alIlmiyyah, 1983.
7. Al-Juwaīni, Abdul-Mālīk. *Ghiath Al-Umam Fi Illtiyath Al-Zulam*, ed. Abdul-Azim al-Deeb, Qatar: Wazarat al-Shuun al-Dīniyah, 1400 H.
8. Al-Nawawi, Yahya ibn Sharaf. *Sharah Sahih Muslim*, Dammam: Dar ibn Al-Jouzi.
9. Al-Qaradhawi, Yusuf. *Malaamihal-Mujtama'al-Muslim alladhi Nanshuduhu*, Glimpse of the Charecteristics of Islamic Society we Aim for) Cairo: Maktabahal-Wahbah, 1993.
10. Al-Qarafi, Shihabuddin, *Al-Dhakheerah*, Beirut: Dar al-Arab, 1994.
11. Al-Shatibi, Abbu Ishaq. *Al-Muwafaqat fi Al-asool al-sharī'ah*. Tunisia: Dawlat Al-Tunisia.
12. Al-Suyuti, Alimam Jalaluddin Abdurehman. *Al-Ashbah wa-Nazair*. Beirut: Dar-ul-Kutb-al-Ilmiyah, 1993.

13. Al-Tufi, Najmuddin. *Al-Tayin fi Syarhal-Arbain (al-Tayinin Explaining al-Nawawis forty Ḥadīths)*, Beirut: Muassasah-Risalah, 1989.
14. Al-Zarqa, Ahmed Ibn al-shiekh. *Al-Madkhal al-Fiqhhi*, Damascus: Dar ul-Qalam, 1999.
15. Al-Zarqa, Ahmed Ibn al-shiekh. *Sharah Al- Qawā'id al-Fiqhiyyah*, Damascus: Dar ul-Qalam, 2001.
16. Al-Zuhāyilī, Muḥammad. *Al- Qawā'id al-Fiqhiyyah Wa Tatbiqatuha fi-l-Madhahib al- Arbaah*. Damascus: Dar al-Fikr, 2006.
17. *Annual Report of the Council of Islamic Ideology*, Pakistan (2002-2003).
18. Arber, Werner, *21st century technologies promises and perils of a dynamic future organization*, Organization for Economic Co-Operation and Development, 1998.
19. At-Tabrizi, Muḥammad bin Al Khateeb. *Mishkat Al-Masabih* (Arabic-English) Sh. Muḥammad Ashraf, Vol: 02 #945-47, Riyadh: Darussalam Publishers, 1975.
20. Auda, Jasser. *Maqāsid Al-Sharī'ah as philosophy of Islamic Law: a systems approach*. International Institute of Islamic Thought (IIIT), 2008.
21. Awdah, Jaseer. *Fiqhal-Maqāsīdi: Inatahal- Ahkaamal- Syariyyah bi Maqāsīdihaa (Fiqhal- Maqāsīdi: Formulation of Islamic Legal Rulings Through Islamic Higher Objectives of Shari'ah)*, Virginia: International Institute of Islamic Thought, 2006.

22. Ayatollah Sheikh Muḥammad Hussein Al-Ansari, *Human Cloning: An Islamic Study on its Permissibility and Implications*, trans; Muḥammad Basim Al-Ansari. Iraq:AlAnsari Foundation.
23. Baum, Frances. *The new public health*. No. Ed. 4, U.S.A. : Oxford University Press, 2016.
24. Beauchamp, Tom L., and James F. Childress. *Principles of biomedical ethics*. Oxford University Press, USA, 2001.
25. Beckford, Roy. *Plant Propagation Methodologies: Agriculture & Natural Resources Agent*, University of Florida: IFAS Extension.
26. Bloch, Sidney and Peter Reddaway. *Soviet Psychiatric Abuse: The Shadow Over World Psychiatry*. London: Victor Gollancz Limited, 1984.
27. Campbell, Courtney S. *Cloning human beings: Religious perspectives on human cloning*, Oregon State University: National Bioethics Advisory Commission, 1997.
28. Dr. Alkhadmi, Nooruddin Mukhtar. *Al-Istinsākh' fi du al-Asuk wa al-Qawā'id wa al-Maqāsid al-Sharī'ah*, Riyadh: Dar Ul Zahim Lilnashr wa Touzee, 2001.
29. Dr. Hawari, Muḥammad. *Al-Istinsākh' albashri bein alsoura al-elmiyah wa al-dawabit al-Ikhlaqiyah wa al-Fiqhiyah*, London: Al-Majis al-urbi Lilifta wa al-Bahoos.
30. Dr. Mahmood Idrees, Abdul Fatah. *Al-Istinsākh' fi Nazr al-Islam*, Qahirah: Jamia al-Azhar.

31. Dr.Rafiabadi, Hamid Naseem.*World Religions and Islam: A Critical Study*,  
New Delhi: Sarup & Sons, 2003.
32. Fletcher, Joseph F. *The Ethics of Genetic Control: Ending Reproductive  
Roulette: Artificial Insemination, Surrogate Pregnancy, Nonsexual  
Reproduction, Genetic Control*. Prometheus Books, 1988.
33. Franklin, Sarah, and Helena Ragoné, eds. *Reproducing reproduction: Kinship,  
power, and technological innovation*. USA: University of Pennsylvania Press,  
1998.
34. Freshney, R. Ian. *Culture of animal cells: a manual of basic technique and  
specialized applications*. John Wiley & Sons, 2015.
35. Glossary of Biotechnology terms, ed., Kimball Nil, USA: CRC Press, 2002.
36. Hassan, Muḥammad Haniff. *Can Islam be contextualised?*RSIS Commentarie,  
Singapore: Nanyang Technological University, 2005.
37. Ibn al-Qayyim, Muḥammadbin Abu Bakar (n.d.). *Ilaam al-Muwaqiinan Rabb  
al-Alamin* (Guidance for the *Mujtahid* Scholars).Beirut:Matbaah Beirut.
38. Ibn Al- Subki, Taj al-Din. *Al-Ashbah wal-Nazair*. Beirut: Dar al-Kutub al-  
Ilmiyyah, 1991.
39. Ibn al-Arabi, Abu Bakr al-Maliki, *Al-Mahsoul Fi Usul Al-Fiqh*, ed. Hussain  
Ali Alyadri and Saeed, Amman: Dār al-Bayariq, 1999, vol. 5.
40. Ibn Ashur, Muḥammad al-Tahir. Ibn Ashur *Treatise on Maqāsid Al-sharī'ah*.  
trans. Mohamed El- Tahir El-Mesawi, vol. 1<sup>st</sup>, London-Washington:  
International Institute of Islamic Thought IIIT, 2006.

41. Ibn Majah, Abu Abdullah. *Sunan Ibn Majah*, Arabic-English, Trans, Riyadh: Dārussalam, 1997.
42. Ibn-Nujjam, *Al-Ashbahah wa Nazair*. Beirut:Matbaah Beirut.
43. *Informal listing of selected international codes, declarations, guidelines, etc. on medical ethics*, World Health Organization and Council for International Organizations of Medical Sciences (1998) .
44. Iqbal, Muzaffar, ed. *Contemporary Issues in Islam and Science*, UK:Routledge, 2017.
45. Islam, Islam. *A Brief Illustrated Guide to Understanding Islam-Miracles of the Holy Qur'ān*, London: Al-Muntada Al-Islami Centre , 2008.
46. *Islamic Fiqh Council Conference on cloning*, organized in Casablanca (Morocco) and Jeddah (Saudi Arabia), 1997.
47. Jarrell, Channah. *No Worldwide Consensus: The United Nations Declaration On Human Cloning*, USA:University of Georgia, School of Law, 2007.
48. Joseph F Fletcher, *The Ethics of Genetic Control: Ending Reproductive Roulette: Artificial Insemination, Surrogate Pregnancy, Nonsexual Reproduction, Genetic Control*, USA: Prometheus Books, 1988.
49. Jughaim, Numan. *Turuq Al-Kashf an MaqāsidAl-Shari*, International Islamic University, Malaysia. Published by Dar al-Nafaes, 2002.
50. Kathir, Ibn. *Qasasul Anbiya*, Beirut: Dar Al Kotob Al Ilmiyah, 2013.
51. Keown, Damien. *Buddhist ethics: A very short introduction*. OUP Oxford, 2005.

52. Khan, Dr. Muhammad Iqbal. *Medical Ethics: An Islamic Perspective*. Islamabad: Institute Of Policy Studies, 2015.
53. Khan, Maulana Wahiduddin. *The Secret of a Successful Family Life*. Trans; Farida Khanam, New Delhi: Goodword Books, 2010.
54. Kolata, Gina. *Clone: The road to Dolly and the path ahead*, London: Penguin Books Ltd, 1997.
55. Kumar, G.N.M. *Propagation of Plants by Grafting and Budding*, USA: A pacific Northwest Extension publication.
56. LeVine, Harry. *Genetic engineering: a reference handbook*. California: Abc-Clio Press, 2006.
57. Macintosh, Kerry Lynn. *Illegal beings: human clones and the law*. Cambridge University Press, 2005.
58. Mattick, Jacqueline. *Development of a Genetic Counseling Clinical Supervisor Evaluation Tool*. Sarah Lawrence College, 2015.
59. Mernissi, Fatima. *Women and Islam: An historical and theological inquiry*, Columbia: South Asia Books, 1991.
60. Miles, Steven H and Mary Crowley, *From birth to death and bench to clinic: The Hastings Center bioethics briefing book for journalists, policymakers, and campaigns*. Garrison, NY: The Hastings Center, 2008.
61. Milunsky, Aubrey and Jeff M. Milunsky. *Genetic disorders and the fetus: diagnosis, prevention, and treatment*, USA: John Wiley & Sons, 2015.
62. Mohamad Akram Laldin. *Islamic Law: An Introduction*, International Islamic University Malaysia Kuala Lumpur, Malaysia, 2006.

63. Muwata Imam Maliki: *English and Arabic Translation*: Vol. 1& 2, Lagos: Alasela Islamic Publication, 1980.
64. Nair, A.J, *Introduction to Biotechnology and Genetic Engineering* , New Delhi: Infinity Science Press LLC, 2007.
65. Najmuddin al-Tufi, *Al-Ta'in Fi Sharh Al-Arba'in*. Beirut: al-Rayyan, 1419 H.
66. Nasr, Seyyed Hossein, and Giorgio De Santillana. *Science and civilization in Islam*. Cambridge MA: Harvard University Press, 1968.
67. National Bioethics Advisory Commission. "Cloning human beings: Report and recommendations of the National Bioethics Advisory Commission", 1997.
68. National Research Council. *Guide for the care and use of laboratory animals*.U.S.A: National Academies Press, 2010.
69. Nill, Kimball. *Glossary of biotechnology terms*. CRC press, 2005.
70. Nyazee, Imran Ahsan Khan. *Legal Maxims in Islamic law*, Rawalpindi: Federal Law House.
71. Omran, Abdel-Rahim, ed. *Family planning in the legacy of Islam*. UK: Routledge, 2012.
72. Organisation for Economic Co-operation and Development. *21st century technologies: promises and perils of a dynamic future*. OECD Publishing, 1998.
73. Panahizadeh M, Moosavi SKH. *An Approach to Ethical Fundamental and Interpretation, of Human Cloning and Its Relationship with Jurisprudence*. 2nd Congress on Review of Islamic Regulations in Medicine, 2013.

74. Panno, Joseph Panno. *Animal Cloning: The Science of Nuclear Transfer*, New York: Library of Congress Publication Data, 2005.
75. Peacock, Kathy Wilson. *Biotechnology and genetic engineering*. Infobase Publishing, 2010.
76. Pence, Gregory E. *Who's afraid of human cloning?*. Rowman & Littlefield Publishers, 1998.
77. Peters, Ted. *Playing God?: Genetic Determinism and Human Freedom*, UK: Routledge, 2014.
78. Post, Stephen Garrard. *Encyclopedia of Bioethics, 5 Volume Set*, U.S.A: Gale, 2004.
79. Rafter, Nicole Hahn. *Creating born criminals*, USA: University of Illinois Press, 1997.
80. Rahman, Fazlur. *Islam*. Chicago: University of Chicago Press, 1979.
81. Roy Beckford, *Plant Propagation Methodologies: Agriculture & Natural Resources Agent*, University of Florida: IFAS Extension.
82. Rutovitz, Jay, and Sue Mayer. *Genetically Modified and Cloned Animals: All in a Good Cause?*. GeneWatch UK, 2002.
83. Said, Abdul Aziz, Nathan C. Funk, and Ayse S. Kadayifci. *Peace and conflict resolution in Islam: precept and practice*. Univ Pr of Amer, 2001.
84. Schulman, Adam. *Human Dignity and Bioethics: Essays Commissioned by the President's Council on Bioethics*, USA: Government Printing Office, 2008.
85. *Scientific and Medical Aspects of Human Reproductive Cloning*, National Academy of Sciences (US), National Academy of Engineering (US), Institute of Medicine (US) and National Research Council (US) Committee on Science,



- Engineering, and Public Policy, Washington (DC): National Academies Press (US), 2002.
86. Searle, John. *Making the social world: The structure of human civilization*, UK: Oxford University Press, 2010.
  87. Sewell, Elizabeth Missing, *Margaret Percival*. Vol. 1, D. Appleton & Company, 1847.
  88. *Sexual and Asexual Reproduction of Plants*, Performance of Technical Skills Related to Plant and Soil Science and Technology, Texas: A&M University, Instructional Materials Service.
  89. Shahzad, Qaiser. *Biomedical Ethics: Philosophical and Islamic Perspectives*. Islamabad: Islamic Research Institute, 2009.
  90. Sharmin Islam, *Ethics of Assisted Reproductive Medicine: A comparative study of westernsecular and Islamic bioethics*, USA, Herndon: The International Institute Of Islamic Thought (IIIT) .
  91. ST Sharfstein, *Biotechnology* ,New York: SUNY Polytechnic Institute, 2017.
  92. Tarazi, Norma. *The child in Islam*, USA: American Trust Publications, 1995.
  93. The Council of Islamic Ideology, Pakistan, *Annual Report 2002-2003*.
  94. UN Declaration of Human Rights 1948.
  95. Veatch, Robert M. *A theory of medical ethics*. USA: Basic book publishers, 1981.
  96. *Vegetative Tree Propagation in Agroforestry Training Guidelines and References*, eds. Hannah Jaenicke and Jan Beniast, Kenya: International Centre for Reseach in Agroforestry, Nairobi, 2002.

97. Vergragt, Phili J. *How technology could contribute to a sustainable world*  
Boston: the Tellus Institute, 2006.
98. White, Leslie A. *The science of culture, a study of man and civilization*, South  
Carolina: Bibliolife DBA of Bibilio Bazaar II LLC, 2015.
99. Woodward, John. *The Ethics of Human Cloning*, Detroit : Thomson/Gale,  
2005.
100. World Health Organization. "Development of a regional position on human  
cloning." EM/RC51/INF.DOC.11, 2004.
101. Yount, Lisa. *Milestones in Discovery and Invention: Modern genetics:  
Engineering Life*, New York: Chelsea House, 2006.

