

WHOSE STEM, WHOSE CELL?
ON “THE ISLAMIC POSITION ON STEM CELL RESEARCH”

Muzaffar Iqbal

“What is the Islamic position on stem cell research?” The question emerges innocuously in conferences held to discuss the new issues arising out of contemporary scientific research which require “religious” or “ethical” responses. Many Muslims participating in such conferences feel embarrassment, for not much can be said in response to such questions. This leads to action: a *muftī* is quickly sought to extract a *fatwā* so that embarrassing situations can be avoided in conferences where representatives of world religions discuss cutting-edge questions emerging from the latest advances in scientific research. Before the *muftī* can issue a *fatwā*, he, however, needs to know more about stem cells: What are they? Where are they located in the body? What they do? He is a distinguished *faqīh* who has spent a lifetime acquiring knowledge of his discipline and is known internationally for his scholarly acumen, but he has no knowledge about the stem cells which are found in most multi-cellular organisms. This situation was, however, not unusual for Muslim scientists; they had previously been in similar situations with regard to organ transplants, test tube babies, embryo transplants, surrogate motherhood, and a host of other issues all of which had initially originated in the West and were then thrust upon other regions

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and religions of the world. On all these occasions, a *muftī* was sought and he was able to issue a *fatwā* that was later contradicted by another *fatwā* by an equally well-qualified *muftī*, whose later *fatwā* was then countered by yet another *fatwā*, the entire series giving rise to a host of mutually contradicting opinions and leaving the community of believers—the Ummah—in utter confusion.

In this case, however, the situation was far more complex, both for the *muftī* as well as for those who had sought him out. Until the early 1960s, scientists believed that the brain does not experience any neurogenesis, that is, ongoing stem cell activity, after a certain age. When two Canadian scientists, Siminovitch L. McCulloch and J. E. Till, presented evidence for adult neurogenesis in 1963, the older scientific “belief” was relegated to history, and was now pejoratively called “dogma”—something flimsy, merely based on blind, unsound, untrue, and scientifically unprovable assumptions. This revision of a once firmly held “scientific belief”—Cajal’s famous “no neuron theory”—did not occur overnight; in fact, the initial two papers by McCulloch and Till (published in *Nature* 197: 452-4 and *Journal of Cellular and Comparative Physiology* 62: 327-36) were largely ignored, and it was not until the early 1970s that a significant change took place in the attitude of the scientific community—a change that ushered a new era of scientific research.

When it became clear that stem cells can be grown and transformed into specialized cells with characteristics consistent with cells of various tissues, their potential therapeutic use dramatically changed the nature of the interest and funding for stem cell research. Among the most promising were two categories of stem cells—autologous embryonic stem cells generated through therapeutic cloning and adult stem cells from umbilical cord blood or bone marrow.

Those who had taken their question to the *muftī* had to tell him that the embryonic stem cell lines (ES cell lines) are cultures of cells derived from the epiblast tissue of the inner cell mass (ICM) of a blastocyst—an early stage embryo—approximately four to five days old in humans and consisting of 50 to 150 cells. ES cells are pluripotent and give rise during development to all derivatives of the three primary germ layers: ectoderm, endoderm, and mesoderm. In other words, they can develop into each of the more than 200 cell types of the adult body when given sufficient and necessary stimulation for a specific cell type. The attentive *muftī* was impressed when told that medical researchers believe that stem cell therapy can dramatically improve the treatment of human diseases and that bone

marrow transplants are already being used to treat leukemia. The *muftī* was given the understanding that this was just the beginning of potential benefits of this research and in a not too-far distant future, it would be possible to use stem cells to treat cancer, Parkinson's disease, spinal cord injuries, muscle damage, and the like. This answered all the questions that arose in the mind of the *muftī*, but honesty demanded that the *muftī* also be told details of the widespread controversy over human embryonic stem cell research. When he was informed that, with the present state of technology, initiating a stem cell line requires the destruction of a human embryo and/or therapeutic cloning, he started to become tense. His fears were, however, somewhat relieved when he was told that it has recently been shown that in principle embryonic stem cell lines can be generated using a single-cell biopsy similar to that used in pre-implantation genetic diagnosis that may allow stem cell creation without embryonic destruction. But the situation became complex again when he was informed that some Westerners who oppose embryonic stem cell technologies oppose it on the grounds that this research is, in fact, a slippery slope to reproductive cloning, while supporters of embryonic stem cell research see enormous medical potential, including the use of excess embryos created during this research for in vitro fertilization.

In order to press the honorable *muftī* to issue his verdict, he was told that scientists at Advanced Cell Technology had cloned the first early (4-6 cell stage) human embryos for the purpose of generating embryonic stem cells in 2001; that, in 2003, Songtao Shi of NIH had discovered a new source of adult stem cells in children's primary teeth; that, in 2005, researchers at Kingston University in England claimed to have discovered a third category of stem cell, the cord-blood-derived embryonic-like stem cells (CBEs), and found that these cells were able to differentiate into more types of tissue than adult stem cells.

In the end, while the *muftī* did not understand all the scientific details of stem cell research, he did get an overall idea of what was being asked, and sought more time; he needed to consult other scholars and think through important issues related to the question. The urgency of the situation was conveyed to him by those who sought his *fatwā*: he was told that it is very embarrassing for Muslims not to have a position on this issue while everyone else did. The least that could be done is to demand regulatory frameworks from the governmental agencies, increase awareness among scientists, religious scholars, and the general public about the great potential of stem cell research.

II

While the *muftī* deliberated and discussed the issue with his colleagues, and, in fact, did issue a *fatwā* in the end, it is important to draw attention to unexamined questions of this ever-proliferating field of the “Islamic position” on issues arising out of scientific research in life sciences. These are questions of another kind which should have been asked before rushing to the venerable *muftī*, but which have not been asked: precisely why is it “embarrassing” to have no position on these and related issues? Why were the scientists who posed the question not able to answer the question themselves? If they did not really know the “Islamic position” on stem cell research, why were they involved in it? A minimum Islamic responsibility is to know, in advance, the legal status (*ḥukm*) of one’s action before it is performed. What is the relevance of such questions to the ground realities of the Muslim world? Why do all of these questions first emerge in a scientific and intellectual milieu not grounded in the Islamic worldview and then thrust upon *muftīs* who do not understand the questions? Whose stem and whose cell are being discussed and why? Are there not other, more urgent questions, waiting to be asked and answered before this question gains legitimacy, and, if yes, what are those questions?

These and similar queries are seldom raised by Muslims who rush to obtain a *fatwā*, primarily because of a deep-seated “catching-up syndrome” that has defined Muslim discourse on science ever since the Muslim world first came into contact with modern science. This catching-up syndrome found its most ardent propagators in the twentieth century, especially after the emergence in short order of some fifty-seven independent Muslim states around the middle of the twentieth century. Succinctly stated, this catching-up syndrome postulates that the Muslim world fell behind the Western world in science and technology and thereby engendered its own downfall; in order to recover, it must catch up with the West in science and technology. Once it does that, it will be able to stand on its own and meet the challenges of the twenty-first century.

There are various recipes for catching up, but all of these have a fundamental demand: that Muslim governments invest huge sums of money into scientific research. Repeated ad nauseam by various politicians, scientists, scientist-cum-bureaucrats, policy makers, and public figures, this mantra has received a favorable response—at least in certain Muslim countries flushed with oil money. These countries have invested millions of dollars in so-called scientific research with the hope that this invest-

ment will cure their perennial science deficit. This investment has, however, not produced any science worth its name. All that this venture has done so far is to produce numerous dysfunctional scientific laboratories in these countries where the latest scientific instruments sit idle for various reasons. Thus a nuclear magnetic resonance spectroscope that generates important scientific data in Saskatoon stands like a piece of furniture in Madinah which every guest to the Department of Chemistry must see and praise.

What is seldom understood by all those who have suggested recipes for catching up with the West is that modern science—like all other human endeavors of this kind—is not a stand-alone piece of equipment that can be bought and placed in a home-grown laboratory; it is one of the most complex and largest components of a civilization that is now being driven by this self-created Frankenstein in a direction and at a speed over which no one has any control. Proponents of the catching-up syndrome also do not understand that one cannot “jump-start” science merely by importing instruments and, moreover, that modern science is an integral part of a much larger whole within modern Western civilization—a civilization that emerged on the basis of an understanding of God, life, and the cosmos which fundamentally differs from how Islam views Allah, the Most High, and what He has created.

It was neither accidental nor incidental that it was a team of Canadian researchers working in a laboratory located in Canada, and not Muslim scientists working in a laboratory located in a Muslim country, that first presented scientific evidence of adult neurogenesis. What is utterly alien to those who rush to *mufliis* to seek answers to every new question arising out of an ever-increasing encroachment of modern science in human affairs is, ironically, also that which is most relevant to the situation of Muslims today with regards to natural sciences: what governs the direction of research in modern science? Whose needs are being fulfilled by this research? Since the vast majority of 6.6 billion human beings who share this ravaged planet do not even have access to potable water and decent housing, why have scientists not invested all their efforts to find solutions to these basic needs? After all, in addition to providing a certain kind of knowledge about the physical universe, science (and more specifically, technologies produced by its application) are also techniques which can solve basic problems confronting humanity. Furthermore, is it not worthwhile for Muslims to ask: why is science such a powerful utility for modern Western civilization and not for Muslims? Would it not be more

worthy of Muslim scientists to find sustainable, non-intrusive, and non-violent solutions to the fundamental needs of their societies before they indulge in hair-splitting over stems and cells? Would it not be more in line with the guiding principles of their own religion to focus on the well-being of the greatest numbers before attending to the fancies of a few?

Then, there is the lament of the Earth yearning to be heard. What modern science and its more aggressive affine, technology, have done to the Earth is not a secret. What has been done to life-supporting mechanisms on and around Earth in just the last fifty years far surpasses the impact caused by humans to these systems during the entire history of their existence. Aggressive technologies have destroyed huge forests, massive chunks of land, water systems, and air quality. Genetic composition of fruits, vegetables, and animals has been modified. Greed, caprice, and sheer human folly have introduced poisonous chemicals into water systems. The sanctity of mountains, rivers, and living species has been violated. In fact, the entire order of nature has come under attack in a manner and on a scale that was unthinkable fifty years ago.

Muslim scientists who rush to extract *fatwās* from *muftīs* on religious and ethical issues arising out of scientific research in the West fail to recognize that these issues emerge from within a very large enterprise that is anchored in a worldview which does not admit the sanctity of the created order. It is a worldview in which no limits are acceptable for human folly; if humans can devise ways to reap profit by genetically modifying fruits and vegetables, there is no harm in doing so. If in their myopic understanding of the order of nature, they think it suits them to alter the course of mighty rivers, destroy huge forests, extract oil from tarsands even at the cost of destroying pristine lands and lakes, and change the hormonal balance of animals, nothing should stop them. The arrogance (*kibr*) of this attitude toward nature is built into the very structure of modern science. What scientists are doing at the cellular level is a daring intervention in natural systems which are so complex and interdependent that no one can completely conceive the effects of such intervention.

What modern science and technologies based on it are now able to do is simply unprecedented. This greatest venture of modern Western civilization considers the Divine order of nature entirely at its mercy. Integrally linked to technologically-driven economies, fed by a vast military-industrial complex, supported by greedy pharmaceutical companies, most of modern scientific research is goal-oriented; its end-goal is to serve those who fund, utilize, and extract profits out of scientific research. At a differ-

ent level, it helps to propel the worldview of modern Western civilization into regions of the world which are outside its sphere. People who live outside the sphere of modern Western civilization have no science of their own, for whatever science they used to have has been destroyed or made obsolete. They are entirely dependent on modern Western civilization to provide them science and modern technology. What is ironic, however, is that in most regions of the world, these people have not even applied the well-known, open-source, scientific solutions to those problems of their lands that can be solved on the basis of what is sound scientific knowledge.

While it is true that science is not, or should not be, merely a utility to solve known problems, it is also true that science is a human enterprise, a means to gain knowledge of the physical world. But it can also be a tool to gain harmful knowledge, rather than useful knowledge, or knowledge that does not benefit. Even if stem cell research is conceived as research that produces useful knowledge, it cannot be thought of as a stand-alone enterprise, in total isolation of other areas of scientific research. Since modern scientific research is goal-driven and is linked to the needs of the society in which it takes place, and since it is also guided by a belief system (whether or not its presence is acknowledged), is it not more pertinent for Muslims to clearly identify the broad framework of modern science before attempting to obtain *fatwās* on specific issues? What is more relevant, therefore, is not an isolated *fatwā* on this or that aspect of modern scientific research, but a broad consensus on the nature, purpose, direction, and utility of modern science itself. Such an undertaking, however, requires that the catching-up syndrome be shaken off and a clearer formulation be made of the malaise of the Muslim Ummah on the basis of sound observations of ground realities and clear guidance derived from the two primary sources of Islam—*al-Furqān*, the Book that distinguishes between truth and falsehood, and the Sunnah of the most Noble Messenger, upon whom be peace and blessings. Since science is a civilizational enterprise, a clearer understanding of the role of science in Islamic civilization will provide the basic framework, guidelines, and orientation for scientific research in the Muslim world. These, in turn, would provide insights into many questions for which artificial answers are sought from *mufītīs* who neither understand the scientific data of such questions nor the broader issues of modern science.

Thanks to the endeavors of a small group of thinkers, a broad theoretical outline for laying the foundations of a legitimate and authentic

framework for science in the Muslim world already exists. What is needed now is its application at a practical level. This task cannot be accomplished by individuals who work in only one narrow field of modern science; it must be jointly undertaken by those trained in natural sciences, religious scholars, policy makers, and thinkers who understand the theoretical underpinnings of modern science. Such a cooperative effort is needed not only for formulating a broad framework of scientific research in the Muslim world but also for identifying issues specific to the Muslim world that can be solved by applying known, or yet to be discovered, scientific solutions. Production of energy, protection of the environment, management of mega-cities, water systems, waste disposal, and recycling are obvious problems faced by all Muslim countries. If solutions for these pressing problems are found within the bounds set by the Qurʾān and the Sunnah, they will immediately provide the much needed relief to millions of human beings. These solutions will also alleviate, at least to some extent, the suffering of the Earth. Likewise, attention needs to be paid to the religious, cultural, and social implications of technologically-driven lifestyles: how do they impact Islamic norms and praxis? In addition, there is an urgent need to pay attention to the numerous technologies invented by Muslim scientists and technologists of the previous centuries which were harmonious with the rhythm of nature; many solutions to contemporary problems may already be available in these time-tested techniques.

Muslim scientists who rush to *muftīs* to get a *fatwā* on stem cell research or other similar “cutting-edge” research may not realize this, but if timely attention is not paid to the destruction being caused to Islamic civilization by the rapid encroachment of lifestyles dependent on modern technology, there will soon be nothing left of that enchanting Islamic space where the ever-proliferating stem cells have never existed as isolated entities severed from their Creator.

Waʾl-lāhuʾl-mustaʿān, wa mā tawfīqī illā biʾ-l-lāh

Wuddistān

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