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Diversifying stem cell debates: Including Muslim contexts and perspectives

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Greater transcultural and transdisciplinary engagement within Muslim contexts and deliberate inclusion of diverse Muslim voices in the development of international guidelines is required to improve understanding of the state of stem cell science, strengthen thinking about attendant ethical complexities, enhance compliance, deepen public deliberation, increase trust, and strengthen practice standards.

Global concerns such as climate change and the COVID-19 pandemic make us keenly aware that the world is deeply connected. The field of stem cell research and related therapies is no exception. The implications of developments in this field, actual and promised, concern people and countries around the globe and future generations. International dialogue exists about the future of the research, where it should be directed, and how participants in the field can best shape priorities. While not absent, relatively silent in this conversation has been the diversity of voices from Muslim contexts.

In this paper we argue that facilitating the inclusion of perspectives from faith traditions, including viewpoints that emerge from texts, laws, and traditions of Muslims, may deepen understanding, improve quality of and compliance with international guidelines, widen public deliberation, increase trust, and strengthen practice standards. We advocate for global leaders in the field to find opportunities to involve the voices of Muslim scientists and scholars, political and faith leaders, and Muslim peoples themselves, in deliberations about the scientific, political, ethical, and moral issues that emerge from research and therapy related to stem cells and regenerative medicine.

For ethical guidelines to be effective, they need to speak to the contexts in which they are intended to be applied. Activities in research affect populations across the spectrum of economic and educational status, geographies, and diverse religious systems. The ethical decisions we make take place in relationship to particular communities, and for many of us our sense of morality, of what is important to pursue, is influenced by religious values and norms (Davis, 1999). The arguments for inclusion we offer in this paper apply across all faith traditions. This is because faith communities have made questions of medicine and science a part of their belief systems and thus, when their members inquire about the propriety of an action, they turn to these systems and leaders. This is certainly true for Muslims for whom faith is often described as a way of life, where the distinction between the domains of

Table 1. Examples of stem cell research guidelines in Muslim countries

Transnational institutions	• Islamic Organization for Medical Sciences, Islamic Fiqh Academy, and International Islamic Fiqh Academy institutionalized interdisciplinary collaboration and, with the deliberative mechanism of collective *ijtihad*, provided direction on themes including the beginning of human life and use of surplus embryos in research
Iran	• Council for Development of Stem Cell Sciences and Technologies and National Institute for Medical Research Development oversaw national stem cell research policy
	• National Committee for Ethics in Biomedical Research developed comprehensive research ethics guidelines on stem cell regenerative medicine in animals and humans
Jordan	• A multi-disciplinary committee including religious scholars, physicians, scientists, and Arabic language experts developed stem cell research and therapy legislation, overseen by a national committee
Malaysia	• National Guidelines for Stem Cell Research and Therapy established and enforced
Pakistan	• National Bioethics Committee developed guidelines on stem cell research
Qatar	• Ministry of Public Health issued a revised edition of the national regulatory framework
Saudi Arabia	• Issued the second edition of Law of Ethics of Research on Living Creatures, including stem cell research
Turkey	• Ministry of Health issued directives prohibiting all stem cell research not including adult stem cells

religious and worldly affairs is not recognized (Sajoo, 2010). Inclusion is critical when proposing science policy where the methods of investigation use gametes, human embryos, and stem cells, which are given special significance in these traditions as the bearers of fecundity and generativity.

Our focus in this paper is on Muslim voices. Muslim societies are diverse. They exist in geographies that vary from climate and culture to history and language. They differ in economic condition, from extreme poverty to extreme wealth. They are governed by monarchies, republics, and democracies of varying kinds, served by institutions at various stages of maturity.

To provide context for our analysis and recommendations, we offer a brief description of the long and storied relationship between Muslim societies and the global knowledge society.

Muslim societies have a particular obligation, based on centuries-old traditions, to promote the pursuit of knowledge and explore new boundaries of learning. In the pre-modern world, Muslim scientists and thinkers were in constant communication with the existing heritages of Asia and the Mediterranean World, which preserved the development of science. The necessary catalyst was a spirit of pluralism. Learning was drawn from wherever it could be found, regardless of tradition, and academic work was undertaken by scholars from diverse backgrounds and faiths with various interests of study (Nanji, 1988). The production of knowledge flourished in multiple centers and was spread widely. Muslim civilizations succeeded partly because of their openness and their ability to create educational institutions and networked knowledge societies. This pursuit of knowledge in the Muslim world contributed significantly to the evolution of modern science and mathematics (Masood, 2009).

A shift then occurred in many Muslim contexts away from the new sciences and discoveries developing in the West. This was due to greater focus on traditional, inherited knowledge; the impact of colonialism and conflict, which created social and economic conditions inhospitable to investment in science and research; an ensuing lack of infrastructure and expertise; and isolation from the international research community owing to physical distance and language (Ofek, 2011; Hoodbhoy, 2007; Yusuf, 2019). This was also due to the fact that few academic institutions of note emerged to address modern scientific questions. To receive training, interested scholars had to go overseas. When they returned, they were highly invested in replicating Western models of research, failing to contextualize this to conditions in their own world (Mobareksheva, 2017).

In recent decades, many Muslim countries have been investing resources in developing high-quality research institutions. Among these are the University of Central Asia, established through partnership between Tajikistan, the Kyrgyz Republic, Kazakhstan, and the Aga Khan Development Network, focusing on the needs of high mountain populations. The King Abdullah University of Science and Technology in Saudi Arabia reflects almost every Persian Gulf country's growing interest and investment in emerging biotechnologies. The Erciyes University in Turkey is pursuing adult stem cell research. There is also much closer collaboration between these institutions and those in the Western world and the rest of the Muslim world.

The field of stem cell research and regenerative medicine is a specific area with which the Muslim world seems especially ready to engage.

With a more flexible stance on the use of human embryonic stem cells, Iran is a global leader in stem cell research popularity and clinical trials. Several national and transnational bodies in Muslim countries have produced guidelines related to stem cell research and/or therapy. Prominent examples include Iran, Saudi Arabia, Turkey, Jordan, Pakistan, and the Gulf countries (Table 1).

This historic and contemporary background suggests the potential for greater engagement with Muslim perspectives globally.

Inclusion of diverse Muslim contexts in international deliberation can also strengthen best-practice standards in science and policy. Consider the 14-day rule, emanating from the United States (1979) and the United Kingdom (1984). This rule states that human embryos, for whatever purpose, should not be grown *in vitro* for longer than 14 days post fertilization, in part because of the special status of the embryo after this stage. Muslim approaches, of which there is a diversity, consider the issue of moral status differently. The official policy in Turkey prohibits the use of human embryos for research purposes (Karakaya and Ilkilic, 2016). In an alternative interpretation, some scholars of Islam understand the embryo to go through three developmental stages, after the third of which it acquires a human soul (ensoulment) and gains moral status. In this view the use of human embryos for research would be permissible up to 40 days post fertilization (Sachedina, 2009).

Yet the 14-day rule is applied in most countries, even where human embryo research is permissible. Observation of the 14-day rule in Muslim settings is attributed to the need to meet international standards as a requirement for publication in international journals. However, the standard is not the product of reflection that emerged in Islamic contexts—it holds scientists whose values are shaped by Islam to standards that do not align with their local normative frameworks. Thus, it makes different expressions of moral reasoning irrelevant, which may slow the possibility of legitimate advances in our understanding of the complexities of the research.

Despite the historical tradition of scientific inquiry, largely absent from most Muslim countries is a robust public debate on ethical issues and participation of citizens in policy-making processes (Sing, 2008). If the scope of international deliberations is broadened and the implications for these contexts are engaged, it can also improve public deliberation in these parts of the world about issues that are of deep concern to these citizens. This is necessary to better understand public concerns and expectations so that these may inform regional policies.

Building a shared moral sensibility through inclusion of Muslim perspectives can enable greater commitment to and compliance with international standards and guidelines in stem cell research and therapy. This can also build trust and help protect public safety: today, for-profit rogue companies and institutions in different geographical areas are promoting unproven and potentially harmful stem cell-based therapies. These pose risks to patients and could undermine support for the development of evidence-based therapies. An engaged society is a lever for enacting and adhering to standards for regulating such activity.

Greater inclusion will require action by leaders in multiple contexts. Within the Muslim world, governments and higher education institutions need to build bridges among religious scholars, biomedical scientists, social scientists, and bioethics researchers to develop an understanding of each other's work and collaborate in the search for answers to complex ethical problems in this field. The Human Heredity and Health in Africa consortium (2010) is one model whereby fundamental genomic research into diseases on the African continent, led by African scientists for the African people, pursues the development of infrastructure, resources, training, and ethical guidelines to support a sustainable African research enterprise. The consortium's approach integrates research into ethical, legal, and social implications, training and capacity building for bioinformatics, capacity for biobanking, and coordination and networking.

Government forums and bodies that formulate international research guidelines can purposefully widen circles of deliberation to include the diversity of other ethical traditions, especially religious traditions. International ethical guidelines currently rest on prevailing approaches to bioethics which are largely dominated by a principle-driven approach that sees itself as universal. Nominally secular, this approach has deep, historical indebtedness to the Western Christian tradition (Ali, 2016). This implicit bias, together with the lack of diversity in science and in science communication (Thorpe, 2020), indicate the importance of consciously expanding the participation of thought leaders. Participation should be broadened to those from traditions and contexts that are impacted but not currently involved or that do not have easy cultural access to present-day norm-forming institutions. For example, the International Society for Stem Cell Research (ISSCR) could work with Muslim scientists, ethicists, and policy and thought leaders to more systematically include voices from diverse Muslim societies in the formulation and communication of guidelines for stem cell research.

In its attempt to model a method for inclusion and collaboration in stem cell research and policy making, the Aga Khan University has been undertaking an exercise to bring together leading scholars from multiple countries and faith perspectives with backgrounds in science, medicine, ethics,

law, and politics to exchange views about the state of the science, ethics, and policy in multiple settings, with a focus on Muslim contexts. The scholars released "The Lisbon Statement" (Thinking Group on Regenerative Medicine, 2019) advocating that:

- As research and dialogue extend to more countries and contexts, a central goal should be to build upon established, transcultural guidelines (such as those of the ISSCR). These should increasingly be inclusive of wide, pluralistic representation from multiple competency areas; dynamic and flexible to enable response to new advances and discoveries; and advisory, providing direction to different governing bodies to be incorporated in their respective jurisdictions.
- To enable more inclusive dialogue and deliberation, it will be key to support the creation of multiple deliberative spaces. These forums should be accessible to a full range of participants in civil society including scientists, ethicists, lawyers, and journalists. The participation of policy makers, religious scholars, and community leaders from traditions and contexts impacted by but not currently involved in the conversation should be enabled wherever possible.

We believe that more of such actions are needed to enrich our understanding of current science and ethics practice, to support research and knowledge creation, to better appreciate public concerns and expectations, to improve international cooperation and the enhancement of best practice, and, in general, to inspire and broaden participation in the global knowledge society.

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CONFLICTS OF INTEREST

All authors are members of the Aga Khan University Thinking Group on Ethics and Regenerative Medicine, Stem Cell Research and Associated Therapies. J.R. is a member of the Editorial Board for *Stem Cell Reports*, Steering Group for the 2021 ISSCR Stem Cell Guidelines, and Board of Directors of Notch Therapeutics. H.d.M. is a member of the National Council on Medically Assisted Reproduction, Vice-President of the Portuguese Bioethics Association, President of the Association for the Study of Biolaw, and invited Professor of Porto Medical School.

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