

Cultural Relativity and Acceptance of Embryonic Stem Cell Research

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ABSTRACT

There is a debate about the ethical implications of using human embryos in stem cell research, which can be influenced by cultural, moral, and social values. This paper argues for an adaptable framework to accommodate diverse cultural and religious perspectives. By using an adaptive ethics model, research protections can reflect various populations and foster growth in stem cell research possibilities.

Keywords: Stem Cell Research, Religion, Culture, Autonomy, Adaptive Ethics, Moral Pluralism

INTRODUCTION

Stem cell research combines biology, medicine, and technology, promising to alter health care and the understanding of human development. Yet, ethical contention exists because of individuals' perceptions of using human embryos based on their various cultural, moral, and social values. While these disagreements concerning policy, use, and general acceptance have prompted the development of an international ethics policy, such a uniform approach can overlook the nuanced ethical landscapes between cultures. With diverse viewpoints in public health, a single global policy, especially one reflecting Western ethics or the ethics prevalent in high-income countries, is impractical. This paper argues for a culturally sensitive, adaptable framework for the use of embryonic stem cells. Stem cell policy should accommodate varying ethical viewpoints and promote an effective global dialogue. With an extension of an ethics model that can adapt to various cultures, we recommend localized guidelines that reflect the moral views of the people those guidelines serve.

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BACKGROUND

Stem cells, characterized by their unique ability to differentiate into various cell types, enable the repair or replacement of damaged tissues. Two primary types of stem cells are somatic stem cells (adult stem cells) and embryonic stem cells. Adult stem cells exist in developed tissues and maintain the body's repair processes.¹ Embryonic stem cells (ESC) are remarkably pluripotent or versatile, making them valuable in research.² However, the use of ESCs has sparked ethics debates. Considering the potential of embryonic stem cells, research guidelines are essential. The International Society for Stem Cell Research (ISSCR) provides international stem cell research guidelines. They call for "public conversations touching on the scientific significance as well as the societal and ethical issues raised by ESC research."³ The ISSCR also publishes updates about culturing human embryos 14 days post fertilization, suggesting local policies and regulations should continue to evolve as ESC research develops.⁴ Like the ISSCR, which calls for local law and policy to adapt to developing stem cell research given cultural acceptance, this paper highlights the importance of local social factors such as religion and culture.

I. Global Cultural Perspective of Embryonic Stem Cells

Views on ESCs vary throughout the world. Some countries readily embrace stem cell research and therapies, while others have stricter regulations due to ethical concerns surrounding embryonic stem cells and when an embryo becomes entitled to moral consideration. The philosophical issue of when the "someone" begins to be a human after fertilization, in the morally relevant sense,⁵ impacts when an embryo becomes not just worthy of protection but morally entitled to it. The process of creating embryonic stem cell lines involves the destruction of the embryos for research.⁶ Consequently, global engagement in ESC research depends on social-cultural acceptability.

a. US and Rights-Based Cultures

In the United States, attitudes toward stem cell therapies are diverse. The ethics and social approaches, which value individualism,⁷ trigger debates regarding the destruction of human embryos, creating a complex regulatory environment. For example, the 1996 Dickey-Wicker Amendment prohibited federal funding for the creation of embryos for research and the destruction of embryos for "more than allowed for research on fetuses in utero."⁸ Following suit, in 2001, the Bush Administration heavily restricted stem cell lines for research. However, the Stem Cell Research Enhancement Act of 2005 was proposed to help develop ESC research but was ultimately vetoed.⁹ Under the Obama administration, in 2009, an executive order lifted restrictions allowing for more development in this field.¹⁰ The flux of research capacity and funding parallels the different cultural perceptions of human dignity of the embryo and how it is socially presented within the country's research culture.¹¹

b. Ubuntu and Collective Cultures

African bioethics differs from Western individualism because of the different traditions and values. African traditions, as described by individuals from South Africa and supported by some studies in other African countries, including Ghana and Kenya, follow the African moral philosophies of *Ubuntu* or *Botho* and *Ukama*, which "advocates for a form of wholeness that comes through one's relationship and connectedness with other people in the society,"¹² making autonomy a socially collective concept. In this context, for the community to act autonomously, individuals would come together to decide what is best for the collective. Thus, stem cell research would require examining the value of the research to society as a whole and the use of the embryos as a collective societal resource. If society views the source as part of

the collective whole, and opposes using stem cells, compromising the cultural values to pursue research may cause social detachment and stunt research growth.¹³ Based on local culture and moral philosophy, the permissibility of stem cell research depends on how embryo, stem cell, and cell line therapies relate to the community as a whole. *Ubuntu* is the expression of humanness, with the person's identity drawn from the "I am because we are" value.¹⁴ The decision in a collectivistic culture becomes one born of cultural context, and individual decisions give deference to others in the society.

Consent differs in cultures where thought and moral philosophy are based on a collective paradigm. So, applying Western bioethical concepts is unrealistic. For one, Africa is a diverse continent with many countries with different belief systems, access to health care, and reliance on traditional or Western medicines. Where traditional medicine is the primary treatment, the "restrictive focus on biomedically-related bioethics" [is] problematic in African contexts because it neglects bioethical issues raised by traditional systems."¹⁵ No single approach applies in all areas or contexts. Rather than evaluating the permissibility of ESC research according to Western concepts such as the four principles approach, different ethics approaches should prevail.

Another consideration is the socio-economic standing of countries. In parts of South Africa, researchers have not focused heavily on contributing to the stem cell discourse, either because it is not considered health care or a health science priority or because resources are unavailable.¹⁶ Each country's priorities differ given different social, political, and economic factors. In South Africa, for instance, areas such as maternal mortality, non-communicable diseases, telemedicine, and the strength of health systems need improvement and require more focus.¹⁷ Stem cell research could benefit the population, but it also could divert resources from basic medical care. Researchers in South Africa adhere to the National Health Act and Medicines Control Act in South Africa and international guidelines; however, the Act is not strictly enforced, and there is no clear legislation for research conduct or ethical guidelines.¹⁸

Some parts of Africa condemn stem cell research. For example, 98.2 percent of the Tunisian population is Muslim.¹⁹ Tunisia does not permit stem cell research because of moral conflict with a Fatwa. Religion heavily saturates the regulation and direction of research.²⁰ Stem cell use became permissible for reproductive purposes only recently, with tight restrictions preventing cells from being used in any research other than procedures concerning ART/IVF. Their use is conditioned on consent, and available only to married couples.²¹ The community's receptiveness to stem cell research depends on including communitarian African ethics.

c. Asia

Some Asian countries also have a collective model of ethics and decision making.²² In China, the ethics model promotes a sincere respect for life or human dignity,²³ based on protective medicine. This model, influenced by Traditional Chinese Medicine (TCM),²⁴ recognizes *Qi* as the vital energy delivered via the meridians of the body; it connects illness to body systems, the body's entire constitution, and the universe for a holistic bond of nature, health, and quality of life.²⁵ Following a protective ethics model, and traditional customs of wholeness, investment in stem cell research is heavily desired for its applications in regenerative therapies, disease modeling, and protective medicines. In a survey of medical students and healthcare practitioners, 30.8 percent considered stem cell research morally unacceptable while 63.5 percent accepted medical research using human embryonic stem cells. Of these individuals, 89.9 percent supported increased funding for stem cell research.²⁶ The scientific community might not reflect the overall population. From 1997 to 2019, China spent a total of \$576 million (USD) on stem cell research at 8,050 stem cell programs, increased published presence from 0.6 percent to 14.01 percent of total global stem

cell publications as of 2014, and made significant strides in cell-based therapies for various medical conditions.²⁷ However, while China has made substantial investments in stem cell research and achieved notable progress in clinical applications, concerns linger regarding ethical oversight and transparency.²⁸ For example, the China Biosecurity Law, promoted by the National Health Commission and China Hospital Association, attempted to mitigate risks by introducing an institutional review board (IRB) in the regulatory bodies. 5800 IRBs registered with the Chinese Clinical Trial Registry since 2021.²⁹ However, issues still need to be addressed in implementing effective IRB review and approval procedures.

The substantial government funding and focus on scientific advancement have sometimes overshadowed considerations of regional cultures, ethnic minorities, and individual perspectives, particularly evident during the one-child policy era. As government policy adapts to promote public stability, such as the change from the one-child to the two-child policy,³⁰ research ethics should also adapt to ensure respect for the values of its represented peoples.

Japan is also relatively supportive of stem cell research and therapies. Japan has a more transparent regulatory framework, allowing for faster approval of regenerative medicine products, which has led to several advanced clinical trials and therapies.³¹ South Korea is also actively engaged in stem cell research and has a history of breakthroughs in cloning and embryonic stem cells.³² However, the field is controversial, and there are issues of scientific integrity. For example, the Korean FDA fast-tracked products for approval,³³ and in another instance, the oocyte source was unclear and possibly violated ethical standards.³⁴ Trust is important in research, as it builds collaborative foundations between colleagues, trial participant comfort, open-mindedness for complicated and sensitive discussions, and supports regulatory procedures for stakeholders. There is a need to respect the culture's interest, engagement, and for research and clinical trials to be transparent and have ethical oversight to promote global research discourse and trust.

d. Middle East

Countries in the Middle East have varying degrees of acceptance of or restrictions to policies related to using embryonic stem cells due to cultural and religious influences. Saudi Arabia has made significant contributions to stem cell research, and conducts research based on international guidelines for ethical conduct and under strict adherence to guidelines in accordance with Islamic principles. Specifically, the Saudi government and people require ESC research to adhere to Sharia law. In addition to umbilical and placental stem cells,³⁵ Saudi Arabia permits the use of embryonic stem cells as long as they come from miscarriages, therapeutic abortions permissible by Sharia law, or are left over from in vitro fertilization and donated to research.³⁶ Laws and ethical guidelines for stem cell research allow the development of research institutions such as the King Abdullah International Medical Research Center, which has a cord blood bank and a stem cell registry with nearly 10,000 donors.³⁷ Such volume and acceptance are due to the ethical 'permissibility' of the donor sources, which do not conflict with religious pillars. However, some researchers err on the side of caution, choosing not to use embryos or fetal tissue as they feel it is unethical to do so.³⁸

Jordan has a positive research ethics culture.³⁹ However, there is a significant issue of lack of trust in researchers, with 45.23 percent (38.66 percent agreeing and 6.57 percent strongly agreeing) of Jordanians holding a low level of trust in researchers, compared to 81.34 percent of Jordanians agreeing that they feel safe to participate in a research trial.⁴⁰ Safety testifies to the feeling of confidence that adequate measures are in place to protect participants from harm, whereas trust in researchers could represent the confidence in researchers to act in the participants' best interests, adhere to ethical guidelines, provide accurate

information, and respect participants' rights and dignity. One method to improve trust would be to address communication issues relevant to ESC. Legislation surrounding stem cell research has adopted specific language, especially concerning clarification "between 'stem cells' and 'embryonic stem cells'" in translation.⁴¹ Furthermore, legislation "mandates the creation of a national committee... laying out specific regulations for stem-cell banking in accordance with international standards."⁴² This broad regulation opens the door for future global engagement and maintains transparency. However, these regulations may also constrain the influence of research direction, pace, and accessibility of research outcomes.

e. Europe

In the European Union (EU), ethics is also principle-based, but the principles of autonomy, dignity, integrity, and vulnerability are interconnected.⁴³ As such, the opportunity for cohesion and concessions between individuals' thoughts and ideals allows for a more adaptable ethics model due to the flexible principles that relate to the human experience. The EU has put forth a framework in its Convention for the Protection of Human Rights and Dignity of the Human Being allowing member states to take different approaches. Each European state applies these principles to its specific conventions, leading to or reflecting different acceptance levels of stem cell research.⁴⁴

For example, in Germany, *Lebenszusammenhang*, or the coherence of life, references integrity in the unity of human culture. Namely, the personal sphere "should not be subject to external intervention."⁴⁵ Stem cell interventions could affect this concept of bodily completeness, leading to heavy restrictions. Under the Grundgesetz, human dignity and the right to life with physical integrity are paramount.⁴⁶ The Embryo Protection Act of 1991 made producing cell lines illegal. Cell lines can be imported if approved by the Central Ethics Commission for Stem Cell Research only if they were derived before May 2007.⁴⁷ Stem cell research respects the integrity of life for the embryo with heavy specifications and intense oversight. This is vastly different in Finland, where the regulatory bodies find research more permissible in IVF excess, but only up to 14 days after fertilization.⁴⁸ Spain's approach differs still, with a comprehensive regulatory framework.⁴⁹ Thus, research regulation can be culture-specific due to variations in applied principles. Diverse cultures call for various approaches to ethical permissibility.⁵⁰ Only an adaptive-deliberative model can address the cultural constructions of self and achieve positive, culturally sensitive stem cell research practices.⁵¹

II. Religious Perspectives on ESC

Embryonic stem cell sources are the main consideration within religious contexts. While individuals may not regard their own religious texts as authoritative or factual, religion can shape their foundations or perspectives.

The Qur'an states:

"And indeed We created man from a quintessence of clay. Then We placed within him a small quantity of nutfa (sperm to fertilize) in a safe place. Then We have fashioned the nutfa into an 'alaqa (clinging clot or cell cluster), then We developed the 'alaqa into mudgha (a lump of flesh), and We made mudgha into bones, and clothed the bones with flesh, then We brought it into being as a new creation. So Blessed is Allah, the Best of Creators."⁵²

Many scholars of Islam estimate the time of soul installment, marked by the angel breathing in the soul to bring the individual into creation, as 120 days from conception.⁵³ Personhood begins at this point, and the

value of life would prohibit research or experimentation that could harm the individual. If the fetus is more than 120 days old, the time ensoulment is interpreted to occur according to Islamic law, abortion is no longer permissible.⁵⁴ There are a few opposing opinions about early embryos in Islamic traditions. According to some Islamic theologians, there is no ensoulment of the early embryo, which is the source of stem cells for ESC research.⁵⁵

In Buddhism, the stance on stem cell research is not settled. The main tenets, the prohibition against harming or destroying others (ahimsa) and the pursuit of knowledge (prajña) and compassion (karuna), leave Buddhist scholars and communities divided.⁵⁶ Some scholars argue stem cell research is in accordance with the Buddhist tenet of seeking knowledge and ending human suffering. Others feel it violates the principle of not harming others. Finding the balance between these two points relies on the karmic burden of Buddhist morality. In trying to prevent ahimsa towards the embryo, Buddhist scholars suggest that to comply with Buddhist tenets, research cannot be done as the embryo has personhood at the moment of conception and would reincarnate immediately, harming the individual's ability to build their karmic burden.⁵⁷ On the other hand, the Bodhisattvas, those considered to be on the path to enlightenment or Nirvana, have given organs and flesh to others to help alleviate grieving and to benefit all.⁵⁸ Acceptance varies on applied beliefs and interpretations.

Catholicism does not support embryonic stem cell research, as it entails creation or destruction of human embryos. This destruction conflicts with the belief in the sanctity of life. For example, in the Old Testament, Genesis describes humanity as being created in God's image and multiplying on the Earth, referencing the sacred rights to human conception and the purpose of development and life. In the Ten Commandments, the tenet that one should not kill has numerous interpretations where killing could mean murder or shedding of the sanctity of life, demonstrating the high value of human personhood. In other books, the theological conception of when life begins is interpreted as in utero,⁵⁹ highlighting the inviolability of life and its formation in vivo to make a religious point for accepting such research as relatively limited, if at all.⁶⁰ The Vatican has released ethical directives to help apply a theological basis to modern-day conflicts. The Magisterium of the Church states that "unless there is a moral certainty of not causing harm," experimentation on fetuses, fertilized cells, stem cells, or embryos constitutes a crime.⁶¹ Such procedures would not respect the human person who exists at these stages, according to Catholicism. Damages to the embryo are considered gravely immoral and illicit.⁶² Although the Catholic Church officially opposes abortion, surveys demonstrate that many Catholic people hold pro-choice views, whether due to the context of conception, stage of pregnancy, threat to the mother's life, or for other reasons, demonstrating that practicing members can also accept some but not all tenets.⁶³

Some major Jewish denominations, such as the Reform, Conservative, and Reconstructionist movements, are open to supporting ESC use or research as long as it is for saving a life.⁶⁴ Within Judaism, the Talmud, or study, gives personhood to the child at birth and emphasizes that life does not begin at conception:⁶⁵

"If she is found pregnant, until the fortieth day it is mere fluid,"⁶⁶

Whereas most religions prioritize the status of human embryos, the Halakah (Jewish religious law) states that to save one life, most other religious laws can be ignored because it is in pursuit of preservation.⁶⁷ Stem cell research is accepted due to application of these religious laws.

We recognize that all religions contain subsets and sects. The variety of environmental and cultural differences within religious groups requires further analysis to respect the flexibility of religious thoughts and practices. We make no presumptions that all cultures require notions of autonomy or morality as under

the *common morality theory*, which asserts a set of universal moral norms that all individuals share provides moral reasoning and guides ethical decisions.⁶⁸ We only wish to show that the interaction with morality varies between cultures and countries.

III. A Flexible Ethical Approach

The plurality of different moral approaches described above demonstrates that there can be no universally acceptable uniform law for ESC on a global scale. Instead of developing one standard, flexible ethical applications must be continued. We recommend local guidelines that incorporate important cultural and ethical priorities.

While the Declaration of Helsinki is more relevant to people in clinical trials receiving ESC products, in keeping with the tradition of protections for research subjects, consent of the donor is an ethical requirement for ESC donation in many jurisdictions including the US, Canada, and Europe.⁶⁹ The Declaration of Helsinki provides a reference point for regulatory standards and could potentially be used as a universal baseline for obtaining consent prior to gamete or embryo donation.

For instance, in Columbia University's egg donor program for stem cell research, donors followed standard screening protocols and "underwent counseling sessions that included information as to the purpose of oocyte donation for research, what the oocytes would be used for, the risks and benefits of donation, and process of oocyte stimulation" to ensure transparency for consent.⁷⁰ The program helped advance stem cell research and provided clear and safe research methods with paid participants. Though paid participation or covering costs of incidental expenses may not be socially acceptable in every culture or context,⁷¹ and creating embryos for ESC research is illegal in many jurisdictions, Columbia's program was effective because of the clear and honest communications with donors, IRBs, and related stakeholders. This example demonstrates that cultural acceptance of scientific research and of the idea that an egg or embryo does not have personhood is likely behind societal acceptance of donating eggs for ESC research. As noted, many countries do not permit the creation of embryos for research.

Proper communication and education regarding the process and purpose of stem cell research may bolster comprehension and garner more acceptance. "Given the sensitive subject material, a complete consent process can support voluntary participation through trust, understanding, and ethical norms from the cultures and morals participants value. This can be hard for researchers entering countries of different socioeconomic stability, with different languages and different societal values."⁷²

An adequate moral foundation in medical ethics is derived from the cultural and religious basis that informs knowledge and actions.⁷³ Understanding local cultural and religious values and their impact on research could help researchers develop humility and promote inclusion.

IV. Concerns

Some may argue that if researchers all adhere to one ethics standard, protection will be satisfied across all borders, and the global public will trust researchers. However, defining what needs to be protected and how to define such research standards is very specific to the people to which standards are applied. We suggest that applying one uniform guide cannot accurately protect each individual because we all possess our own perceptions and interpretations of social values.⁷⁴ Therefore, the issue of not adjusting to the moral pluralism between peoples in applying one standard of ethics can be resolved by building out ethics models that can be adapted to different cultures and religions.

Other concerns include medical tourism, which may promote health inequities.⁷⁵ Some countries may develop and approve products derived from ESC research before others, compromising research ethics or drug approval processes. There are also concerns about the sale of unauthorized stem cell treatments, for example, those without FDA approval in the United States. Countries with robust research infrastructures may be tempted to attract medical tourists, and some customers will have false hopes based on aggressive publicity of unproven treatments.⁷⁶

For example, in China, stem cell clinics can market to foreign clients who are not protected under the regulatory regimes. Companies employ a marketing strategy of “ethically friendly” therapies. Specifically, in the case of Beike, China’s leading stem cell tourism company and sprouting network, ethical oversight of administrators or health bureaus at one site has “the unintended consequence of shifting questionable activities to another node in Beike’s diffuse network.”⁷⁷ In contrast, Jordan is aware of stem cell research’s potential abuse and its own status as a “health-care hub.” Jordan’s expanded regulations include preserving the interests of individuals in clinical trials and banning private companies from ESC research to preserve transparency and the integrity of research practices.⁷⁸

The social priorities of the community are also a concern. The ISSCR explicitly states that guidelines “should be periodically revised to accommodate scientific advances, new challenges, and evolving social priorities.”⁷⁹ The adaptable ethics model extends this consideration further by addressing whether research is warranted given the varying degrees of socioeconomic conditions, political stability, and healthcare accessibilities and limitations. An ethical approach would require discussion about resource allocation and appropriate distribution of funds.⁸⁰

CONCLUSION

While some religions emphasize the sanctity of life from conception, which may lead to public opposition to ESC research, others encourage ESC research due to its potential for healing and alleviating human pain. Many countries have special regulations that balance local views on embryonic personhood, the benefits of research as individual or societal goods, and the protection of human research subjects. To foster understanding and constructive dialogue, global policy frameworks should prioritize the protection of universal human rights, transparency, and informed consent. In addition to these foundational global policies, we recommend tailoring local guidelines to reflect the diverse cultural and religious perspectives of the populations they govern. Ethics models should be adapted to local populations to effectively establish research protections, growth, and possibilities of stem cell research.

For example, in countries with strong beliefs in the moral sanctity of embryos or heavy religious restrictions, an adaptive model can allow for discussion instead of immediate rejection. In countries with limited individual rights and voice in science policy, an adaptive model ensures cultural, moral, and religious views are taken into consideration, thereby building social inclusion. While this ethical consideration by the government may not give a complete voice to every individual, it will help balance policies and maintain the diverse perspectives of those it affects. Embracing an adaptive ethics model of ESC research promotes open-minded dialogue and respect for the importance of human belief and tradition. By actively engaging with cultural and religious values, researchers can better handle disagreements and promote ethical research practices that benefit each society.

This brief exploration of the religious and cultural differences that impact ESC research reveals the nuances of relative ethics and highlights a need for local policymakers to apply a more intense adaptive model.

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² Poliwooda, S., Noor, N., Downs, E., Schaaf, A., Cantwell, A., Ganti, L., Kaye, A. D., Mosel, L. I., Carroll, C. B., Viswanath, O., & Urits, I. (2022). Stem cells: a comprehensive review of origins and emerging clinical roles in medical practice. *Orthopedic reviews*, 14(3), 37498. <https://doi.org/10.52965/001c.37498>

³ International Society for Stem Cell Research. (2023). *Laboratory-based human embryonic stem cell research, embryo research, and related research activities*. International Society for Stem Cell Research. <https://www.isscr.org/guidelines/blog-post-title-one-ed2td-6fcdk>; Kimmelman, J., Hyun, I., Benvenisty, N. *et al.* Policy: Global standards for stem-cell research. *Nature* 533, 311–313 (2016). <https://doi.org/10.1038/533311a>

⁴ International Society for Stem Cell Research. (2023). *Laboratory-based human embryonic stem cell research, embryo research, and related research activities*. International Society for Stem Cell Research. <https://www.isscr.org/guidelines/blog-post-title-one-ed2td-6fcdk>

⁵ Concerning the moral philosophies of stem cell research, our paper does not posit a personal moral stance nor delve into the “when” of human life begins. To read further about the philosophical debate, consider the following sources:

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⁶ Vazin, T., & Freed, W. J. (2010). Human embryonic stem cells: derivation, culture, and differentiation: a review. *Restorative neurology and neuroscience*, 28(4), 589–603. <https://doi.org/10.3233/RNN-2010-0543>

⁷ Socially, at its core, the Western approach to ethics is widely principle-based, autonomy being one of the key factors to ensure a fundamental respect for persons within research. For information regarding autonomy in research, see: Department of Health, Education, and Welfare, & National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research (1978). The Belmont Report. Ethical principles and guidelines for the protection of human subjects of research.; For a more in-depth review of autonomy within the US, see: Beauchamp, T. L., & Childress, J. F. (1994). *Principles of Biomedical Ethics*. Oxford University Press.

⁸ *Sherley v. Sebelius*, 644 F.3d 388 (D.C. Cir. 2011), citing 45 C.F.R. 46.204(b) and [42 U.S.C. § 289g(b)]. [https://www.cadc.uscourts.gov/internet/opinions.nsf/6c690438a9b43dd685257a64004ebf99/\\$file/11-5241-1391178.pdf](https://www.cadc.uscourts.gov/internet/opinions.nsf/6c690438a9b43dd685257a64004ebf99/$file/11-5241-1391178.pdf)

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Culturally, autonomy practices follow a relational autonomy approach based on a paternalistic deontological health care model. The adherence to strict international research policies and religious pillars within the regulatory environment is a great foundation for research ethics. However, there is a need to develop locally targeted ethics approaches for research (as called for in Alahmad, G., Aljohani, S., & Najjar, M. F. (2020). Ethical challenges regarding the use of stem cells: interviews with researchers from Saudi Arabia. *BMC medical ethics*, 21(1), 35. <https://doi.org/10.1186/s12910-020-00482-6>), this decision-making approach may help advise a research decision model. For more on the clinical cultural autonomy approaches, see: Alabdullah, Y. Y., Alzaid, E., Alsaad, S., Alamri, T., Alolayan, S. W., Bah, S., & Aljoudi, A. S. (2022). Autonomy and paternalism in Shared decision-making in a Saudi Arabian tertiary hospital: A cross-sectional study. *Developing World Bioethics*, 23(3), 260–268. <https://doi.org/10.1111/dewb.12355>; Bukhari, A. A. (2017). *Universal Principles of Bioethics and Patient Rights in Saudi Arabia* (Doctoral dissertation, Duquesne University). <https://dsc.duq.edu/etd/124>; Ladha, S., Nakshawani, S. A., Alzaidy, A., & Tarab, B. (2023, October 26). *Islam and Bioethics: What We All Need to Know*. Columbia University School of Professional Studies. <https://sps.columbia.edu/events/islam-and-bioethics-what-we-all-need-know>

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For further research on specific European countries regarding ethical and regulatory framework, we recommend this database: *Regulation of Stem Cell Research in Europe*. Eurostemcell. (2017, April 26). <https://www.eurostemcell.org/regulation-stem-cell-research-europe>

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Jeremiah 1:5 “Before I formed thee in the belly I knew thee; and before thou camest forth out of the womb I sanctified thee...”

In prophet Jeremiah’s insight, God set him apart as a person known before childbirth, a theme carried within the Psalm of David.

Psalms 139: 13-14 “...Thou hast covered me in my mother's womb. I will praise thee; for I am fearfully and wonderfully made...”

These verses demonstrate David’s respect for God as an entity that would know of all man’s thoughts and doings even before birth.

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