

# Religious Perspectives on Embryonic Stem Cell Research

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Human embryonic stem cells derive from the inner cell mass within an early-stage embryo called a blastocyst, which forms five to six days after conception and approximates a hollow ball of roughly one hundred cells. As development continues, cells of the inner cell mass grow and differentiate, ultimately assuming the specialized characteristics of the major organ systems. Many scientists believe that these pluripotential embryonic stem cells have the potential to improve the knowledge and treatment of life-threatening diseases such as cancer, Alzheimer's disease, diabetes, spinal cord injury, multiple sclerosis, cancer, and heart diseases. However, the use of these cells for medical research presents an ethical double-edged sword in that the potential value to human life is countered by philosophical questions about the destruction of human life. Any proposed solution to this controversy is sure to conflict with the strongly held moral and religious convictions of one group or another. What has been missing in this dialogue is a dispassionate exposition covering the range of religious views on this important topic; this chapter fills that void.

The fundamental issue of the beginning of human life appears to have created an unwarranted tension between science and religion when it comes to embryonic stem cell research. Is this one-hundred-cell blastocyst a human person? Does it have a soul? Our belief systems, regardless of our educational background, influence our views with regard to embryonic stem cell research. As we consider this critical issue, it is important

to note that the controversy is not over stem cell research per se but over the creation and destruction of human embryos. Even staunch opponents of human embryonic stem cell research indicate approval of other avenues of stem cell research, particularly investigations of adult stem cells. Further, many modern societies have already accepted the creation and destruction of embryos in in vitro fertilization (IVF) clinics. Some would argue that the creation and destruction of embryos for research that might lead to cures for disease is at least as justifiable as creation and destruction of embryos in IVF clinics.

Issues concerning human life have traditionally fallen in the domain of ethics or religion, with science and technology playing at best a supporting role. In the modern world, however, scientific and technological advances push even farther into these moral domains, posing greater dilemmas for those involved in policy making and implementation. Recent decades have witnessed numerous examples of the conflicts this creates. These advances further delineate natural laws and phenomena, pushing the frontiers of knowledge and modifying our fields of perception, our life experiences, and interaction with what lies outside the boundaries of our selves.

Policy discussions of human embryonic stem cell research remind us of the debates over recombinant DNA, in vitro fertilization, and pre-implantation genetic diagnosis; each debate takes us into uncharted waters. The idea that humans can interfere in a process so close to the origin of life itself is frightening to many, and for understandable reasons. It raises deeply troubling questions that have always plagued both religious and secular philosophy: What does it mean to be human? When and how does one gain moral status as a human person? When and how does one lose it? In many ways these are unproductive questions because what we mean by *human life* is itself not well defined.

In particular the “moral” aspect is difficult. Both scientific and non-scientific thought generally hold that human life begins at fertilization, yet there are profound differences between individuals and philosophical perspectives over whether that fertilized egg has the same moral status as a child or an adult. With this in mind, those involved in the debate over embryonic stem cell research view the issue through the prisms of religion, ethics, science, or some combination thereof. The question “Does the value we place on human life (its ‘moral status’) change as that life develops, and how?” comes to the fore because different cultures, different religions, and different philosophies give different answers.

TABLE 1. RELIGIOUS VIEWS ON THE MORAL STATUS OF THE EMBRYO AND FETUS

| Religion/Denomination    | Blastocyst<br>(to Day 6)  | Embryo<br>(to Week 8) | Fetus<br>(to Birth)  |
|--------------------------|---|-----------------------|--|
| Christianity             | No explicit textual position; conventional positions given as follows:  |                       |  |
| Roman Catholic           | Full moral status is obtained at conception   |                       |  |
| Eastern Orthodox         |   |                       |  |
| Fundamentalist Christian |   |                       |  |
| Mainstream Protestant    |   |                       |  |
| Buddhism and Hinduism    | Texts confer full moral status at conception, but karmic considerations come into play, making abortion and stem cell research possible |                       |  |
| Islam                    | Blastocysts and embryo have no moral status   |                       | Fetus has full moral status (at 120 days)                        |
| Judaism                  | Doctrinal positions given as follows:   |                       |  |
| Orthodox                 | Blastocyst and embryo have no moral status  |                       | Fetus has limited moral status (with respect to mother's health) |
| Conservative             | Blastocyst and embryo have no moral status  |                       | Fetus has full moral status                                      |

We show here that perceptions of the moral status of personhood, and the way those perceptions change through development, hinge on social, cultural, and religious tenets; the answers given to these questions are as varied as are religions and their denominations. It is not the goal of this chapter either to advocate for a particular set of beliefs or to reduce the issue to mere moral relativism. Instead, our purpose is to highlight critical aspects of major religious perspectives on human embryonic stem cell research (summarized in table 1).

The goal of this chapter thus is twofold. First, we discuss varying religious points of view on the beginning of human personhood. Second, we ask how these divergent views influence perceptions on and practices in biological research, including governmental regulation and funding of human embryonic stem cell research. We argue that divergent religious perspectives lie at the heart of the public controversy over stem

cell research. The essence of the controversy surrounding embryonic stem cell research concerns the issue of when human personhood actually begins. As we will demonstrate, each of the major religions offers its own perspective on this issue. The lack of consensus increases the moral complexity of embryonic stem cell research.

From a purely philosophical point of view, we could present countless pages comparing the various belief systems and their views on the timing of ensoulment<sup>1</sup> of the fetus. Practical politics, however, is decisive, and public policies are collectively applied. What the collectivity decides regarding the start of human life—via the electoral process or other forms of decision making—leads us to confront directly these fundamental and troubling questions: Do we as a society have the obligation to protect a human life? At what age, day, or moment is the embryo considered a human person? And if we believe society is making an incorrect decision, as many do when it comes to matters of abortion or embryonic stem cell research, what is our obligation as individuals? Such complex issues are what give the debate over embryonic stem cell research a particular poignancy and urgency.

#### DIVERGENT RELIGIOUS VIEWS ON THE ORIGIN OF LIFE AND STEM CELL RESEARCH

In this essay we focus on the divergent views held by the world's major religions on embryonic stem cell research. Although disagreements exist among various religious traditions and within each tradition itself, their answers to these questions should provide a framework for a more productive dialogue between religious and scientific communities. Such a dialogue is needed to resolve the controversy that is hindering the advancement of this branch of science. Our analysis focuses on the major world religions and not, for the most part, on their numerous denominations. For each religion, scripture, ethical, and legal traditions are referenced to allude to the beginning of human life and the moment of ensoulment. Where present, the official consensus statement on embryonic stem cell research for that particular religion is noted.

#### *Christianity*

The Christian religions include Catholicism and the various Orthodox and Protestant churches. Christianity as a whole lacks a unified and definitive statement on when an embryo becomes a person, although

fundamentalist Christians<sup>2</sup>—whether Protestant or Catholic—tend to be more opposed to embryonic stem cell research (Wall Street Journal Online Health-Care Poll 2005).

Christian scripture refers to God's involvement in the creation of the human being in the mother's womb, thus invoking our responsibilities toward the fetus and our consideration of its rights. This scripture does not, however, clearly address when human life begins, though the Bible does make reference to the origin of human life at the first breath and not at conception. According to the Christian tradition, ensoulment occurs when there is a physical body to ensoul (Gilbert 1996). Of course, this is a highly interpretable statement; early Christian philosophers would have had little understanding of the development of the fetus and no conception whatsoever of a blastocyst.

*Christian Views on the Moral Status of Stem Cell Research* In general, Roman Catholics tend to believe that the embryo should be treated as human life from the moment of conception or fertilization and thus should be protected. The Vatican cites this as the primary reason why it is morally wrong to create or use embryos for stem cell research (John Paul II 2001). Likewise, the Eastern Orthodox perspective holds that human life and personhood begin with the zygote, whether created in situ or in vitro, because it can ultimately lead to a human life.

Protestants as a whole have no standard position regarding the status of embryos. The positions that various Protestant churches take on the status of the embryo fall across the entire spectrum. For fundamentalist sects, embryos are the weakest people among humankind and therefore should not be sacrificed to benefit others. For more moderate sects, however, the use of blastocytes for research purposes is permissible, since at this early stage of development the embryos do not possess the same moral status as that of a developed fetus or a full-born person.

*Christian Views on Embryonic Stem Cell Research* For Catholics, the central moral concern with stem cell research is the source and kind of the stem cells; embryonic stem cells taken from a viable blastocyte are the most morally objectionable. The Catholic Church has less restrictive views on the use of adult stem cells, placental blood, or miscarried fetuses,<sup>3</sup> though it does voice concerns regarding stem cell research on embryos that have already been destroyed. According to this belief system,

while the scientist may not have been involved with the destruction of the embryos and may only be using them for scientific purposes, his act is still considered morally suspect (Farley 1999).

The Eastern Orthodox tradition opposes embryonic stem cell research but accepts such research when fetuses from spontaneous miscarriages and not elective abortions are used. Orthodox Christians encourage medical research and support research on discovering alternative sources of stem cells such as adult stem cells (Demopolos 1999).

Mainstream Protestants tend to support embryonic stem cell research because of its potential therapeutic benefit but believe that embryos should not be created for the sole purpose of stem cell research, regardless of the status of the embryos. The majority of these moderate Protestant denominations balance these two divergent views by encouraging research on finding alternate sources of stem cells (Cole-Turner 1999). Fundamentalist denominations, by contrast, tend to oppose embryonic stem cell research as part of their general beliefs about the sanctity of the human procreative process. But even so, there is evidence of broad support for stem cell research among all Christian sects. A recent Wall Street Journal poll (Wall Street Journal Online Health-Care Poll 2005), for instance, found that support among religious denominations for stem cell research on human embryos ranged from 53 percent of those identifying as born-again Christian to 79 percent of those identifying as Protestant; opposition to such research was highest among born-again Christians (29 percent).

In summary, the Roman Catholic, Eastern Orthodox, and some Protestant churches believe that the zygote has obtained the full moral status of personhood and therefore should not be sacrificed for research purposes. It is worth mentioning that despite this overall consensus, a number of Catholic theologians do not support this restrictive view and support embryonic stem cell research (see Reichhardt, Cyranoski, and Schiermeier 2004).

### *Judaism*

Under Judaism, both theological convictions and the Jewish ethical-legal tradition are brought to bear on Jewish perspectives on embryonic stem cell research. Jewish law, or halakah, is interpreted and presented by rabbis—called *poskin*—qualified to decide matters of Jewish law. Jewish perspectives on embryonic stem cell research therefore are based on these two components that are profoundly intertwined.

To understand Jewish views embryonic stem cell research, one needs to evaluate how Jewish theological convictions and the ethical-legal theory deal with such research. The salient principle of Jewish law is that life is precious and that any action that will protect life is permissible.

*Jewish Views on the Status of the Embryo* Conservative and Orthodox Judaism differ on the moral status of the embryo forty days post fertilization. Conservative Judaism teaches that human life begins forty days after conception.<sup>4</sup> It is believed that the fetus is alive before this time but is not a person. Hence, its life need not be protected. Even after the fortieth day, the fetus does not have full rights until birth. According to Orthodox Judaism, forty days after the conception the fetus has moral rights and cannot be aborted unless this is done to protect the health of the mother. In addition, in vitro-created embryos may be used as sources of stem cells because these embryos have no moral status under Jewish law.

*Jewish Views on Embryonic Stem Cell Research* Although Conservative and Orthodox Judaism differ on the moral status of the embryo forty days post fertilization, they both support embryonic stem cell research. Whereas in other religions the moral status of embryonic tissue is of paramount importance, in the Jewish tradition this factor is secondary. The main focus of Jewish bioethics is to save a life. The halakah states that to save even one life all religious laws—other than murder, adultery, and idolatry—should be abrogated. Furthermore, the Jewish tradition argues that prior to forty days' gestation, the fetus is not a human person and therefore that the destruction of such fetuses is not forbidden and is not murder. A preimplanted embryo is considered a nonensouled creature that should be respected but is not considered a human person (Feldman 1968). On the basis of these principles, the embryo may be used for research purposes that can result in life-saving efforts. Although the majority of Jewish *poskim*<sup>5</sup> support embryonic stem cell research, the question of whether we should create embryos for the purpose of using their stem cells, even to save a life, remains unanswered.

In summary, the protection of life is an important Jewish ideal. According to both Jewish theological convictions and ethical-legal traditions, embryos acquire human person status during their developmental process. But because there is a “cutoff date” set at forty days, it is

permissible to use embryonic tissues, from aborted fetuses and from preimplanted embryos, for therapeutic research purposes. Thus the majority of Jewish denominations support stem cell research because it could potentially cure diseases and save lives (Dorff 1999; Zoloth 2001).

### *Islam*

There are three major sources in the Islamic legal system: the Quran, Sharia, and *ijtihad*. The Quran is considered to be the divine revelation and thus is the prime authority in Islamic law. Its jurisdiction is analogous to that of the Supreme Court in the sense that it has precedence over any other interpretation. However, the Quran is neither an encyclopedia nor a blueprint that provides specific information about how God views each moral problem, issue, or situation (Maguire 2001). For that reason, Islamic scholars turn to other sources in the Islamic legal system when making rulings on issues that are not revealed in the Quran. The second source of Islamic jurisprudence, Sharia, comprises the law system inspired by the Quran; the Sunna and Hadith (acts and sayings of the Prophet); older Arabic legal systems (such as the Bedouin law); and work of Muslim scholars over the first two centuries of Islam (Kjeilen 1996). The third source is *ijtihad*, the research and deliberation of qualified Islamic scholars on issues that are not addressed in the Quran (Islamic Institute 2001). The rulings that come out of *ijtihad* should be consistent with Quranic principles and take into account benefits to humanity. It is important to remember that there is no papal figure or ruling class in Islam that can impose its views on all Muslims or intervene in the practices of governments in Muslim countries. (The only possible exception may be a radical Islamist government that strictly follows Sharia law.) Therefore, the beliefs and practices of Muslims on issues of reproduction and embryonic stem cell research are more diverse than what is reflected in this essay.

To understand the Islamic perspective on stem cell research, one needs to look at how the Islamic legal system deals with the status of the embryo. Despite the regional diversity noted above, there is relatively little debate among Islamic scholars on the status of the embryo. Chapter 23, verses 12–14 of the Quran read: “We created [*khalaqna*] man of an extraction of clay, then we sent him, a drop in a safe lodging, then we created of the drop a clot, then we created of the clot a tissue, then we created of the tissue bones, then we covered the bones in flesh; thereafter we produced it as

another creature. So blessed be God, the best of creators [*klaliqin*]” (Sachedina n.d.).

This passage has been interpreted as to suggest that the embryo cannot be perceived as a human being until it has developed further biologically (Weckerly 2002). The Quran does not say exactly when the soul enters the body. However, a Hadith says that “the soul is breathed into the body” when the fetus is 120 days old in the womb (Syed 1988). Since the embryonic stage runs from conception to the end of the eighth week (fifty-six days), according to Islam the embryo does not have a soul and thus is not a human being, whether grown in a petri dish (in vitro fertilization) or inside the uterus of a mother (natural environment) (Syed 1988).

Despite the understanding shared by the majority of Islamic scholars on the status of the embryo and ensoulment of the fetus, some scholars have taken a different stance on the issue. Imam Al Ghazali in his *Ihy’ Ulum al Din* described human existence as occurring in stages, the first stage beginning with the settling of the semen in the womb, the disturbance of which would be a crime (Ahmad 2003). Even if one were to adopt this relatively conservative interpretation of when life begins, there is a difference between fertilization in a laboratory dish and fertilization in the womb of a mother (Siddiqi 2001).

*Islamic Views on Embryonic Stem Cell Research* Islamic jurisdiction has long supported the treatment of infertility. Infertile couples seeking treatment for their problem are not seen as going against Islamic laws (Ahmad 2003). In that sense, in vitro fertilization is seen as a legitimate technique to treat infertility and is allowed as long as the fertilization is done with the sperm of the lawful husband during the couple’s married life (Siddiqi 2001). The debate among scholars arises, not regarding whether IVF is in accordance with religious laws, but rather regarding how to treat the remaining embryos. Assisted reproductive technology often results in excess embryos that are not transferred into the uterus of the mother. There are three basic ways of dealing with this issue. First, the couple can spare those embryos to donate to other infertile couples. But this option would be impermissible according to the Islamic law because surrogacy (implantation of an embryo into the womb of another woman who is not legally married to the man from whom the sperm was taken) is held to be illegitimate. Similarly, transferring an excess embryo into the uterus of another woman would also be illegitimate, since it would involve a third party to whom the husband was

not legally married (Ahmad 2003). This leaves two options for a Muslim couple who have undergone fertility treatment and are left with excess embryos: to discard the remaining embryos or to donate the embryos for research purposes. The Islamic Institute has convened a panel of experts to develop an Islamic perspective on stem cell research. At the end of the deliberations the Islamic Institute issued a statement saying, “It is a societal obligation to donate those extra embryos for research instead of discarding them” (Weckerly 2002).

The survey data available on the attitudes of ordinary Muslims toward stem cell research indicate that there is general support by Muslim Americans for embryonic stem cell research. The Islamic Institute’s poll among 629 Muslim Americans revealed that 62 percent of survey participants supported embryonic stem cell research. Seventy-three percent of the respondents stated that they supported using embryos that had been donated after in vitro fertilization procedures, and 49 percent said it was acceptable to produce embryos specifically for stem cell research purposes. Also, 69 percent of the respondents said that the federal government should fund embryonic stem cell research (Islamic Institute 2001).

Unlike the Catholic Church and many American evangelical Christians, who tend to favor strong restrictions on embryonic stem cell research, most Islamic scholars have ruled that embryos terminated for medical reasons within 120 days of conception can indeed be used for research concerning life-saving treatments.

In summary, the Quran and other sources of Islamic law can be used to support embryonic stem cell research.

### *Buddhism and Hinduism*

It is often difficult to find definitive statements of Buddhist or Hindu religious thought. The Buddhist and Hindu perspectives on embryonic stem cell research are no exception. Aside from certain central texts—the words of the Buddha passed down in the Pali canon and the teachings of Krishna recorded in the Bhagavad Gita, the Upanishads, and the Brahma Sutras—the faiths are split along major and minor philosophical divides, with no central authority to dictate opinion. However, the more frequently cited works that deal with the moral and philosophical issues surrounding embryos and medicine (Keown 1995, 2000; Lafleur 1992; Crawford 2003; Coward, Lipner, and Young 1988) all note that the primary texts of both religions clearly place the beginning of life at the

time of conception. Indeed, Keown (1995) makes the comparison explicit. In Buddhism, conception is held to occur after intercourse if “an intermediate being” is present to descend into the womb, while the Hindu texts use the more specific term *jiva*, or individual soul, which descends into the union of semen and menstrual blood. The biological union, the fertility and virility of the respective partners, and the spiritual presence of the unborn are all equally necessary for conception to occur and gestation to begin.

Unfortunately, there is little available in the literature that directly addresses stem cell research. The argument above is generally offered in discussions about the ethics of abortion to show that Buddhism and Hinduism alike tend to be strongly prolife. Yet unlike the more familiar discussions that occur in Christian contexts in the United States, discussions among Buddhists and Hindus do not simply or even primarily concern the life and the rights of the fetus. Instead, debates about embryos and medicine tend to focus on two articles of faith that both religions share: the doctrine of karma and the doctrine of ahimsa.

*Karma* is a casual word in English, sometimes defined (inappropriately) as fate, but in Eastern philosophy it has a more specific meaning. Its literal translation would be “doing” or “action”; it is used to indicate what might best be described as a moral or spiritual equivalent of Newton’s laws. Thus Pantajali’s *Yoga Sutras* (Coward, Lipner, and Young 1988) claim that all our thoughts and actions leave memory traces that can then be triggered and reinforced, leading us to repeat the same behaviors, while Buddha’s discourses frequently remind us that each of our acts will produce a reaction in the world around us. A skillful practitioner of either faith will take care of the momentum inherent in his thoughts and actions, the way an aeronautical engineer would account for all the forces and inertias involved in making a plane fly. One way of achieving this skillful practice lies in the principle of *ahimsa*—a term generally translated as “nonviolence” or “non-injury.” Ahimsa is a compassionate proscription against hurting any living being, similar to the “do no harm” clause of the Hippocratic Oath, except abstracted as a general moral principle. Unlike the Hippocratic Oath, however, ahimsa is not concerned solely with the harm done to others but also with the karmic burden—the complex reactive chain of consequences—that is created by any such action.

Given that the embryo is considered a living being from the moment of conception, ahimsa requires that no harm be done to it. However, the same concern is given to the mother and other concerned parties, making

for a complex moral calculus. Most Buddhist and Hindu sects, for instance, believe in reincarnation—harm is done to the embryo only because it is forced to reincarnate into another existence immediately and denied the opportunity to relieve or add to its own karmic burden in this lifetime. Some sects go further, claiming that the intermediate being or *jiva* cannot fully embody until all the outer coverings of humanity are present, with a developed physical form and the beginnings of mental activity, a point sometimes calculated as late as the end of the second trimester. For them, the karmic consequences of acts done to an embryo are minimal and easily balanced by other factors. The main concern, then, is whether the parents and the doctors involved believe they are creating positive karma, or at least preventing the creation of deeper harm.

These concerns become matters of lengthy debate in cases—such as abortion, around which most of the literature revolves—where a fetus is merely destroyed. For the purposes of stem cell research and similar medical practices, however, ahimsa becomes a much less contentious point. Crawford (2003), speaking from the Hindu perspective, argues convincingly that in vitro fertilization and embryo transfer are in no way negative karmic acts. Since the bulk of embryonic stem cells used in research are surplus cells donated by the parents, and since the doctors using the cells are researching medical procedures, the positive acts of having tried to bring a child to life and attempting to ease the suffering of others weigh heavily in the karmic balance. These issues have barely entered into Hindu and Buddhist moral debates, but it seems clear that the discussion in both faiths will not center on the question of whether the fetus is a living person; most Buddhists and Hindus would take that assumption as fact. Instead, the arguments will focus on the needs and intentions of the donors and the scientists involved and the potential recipients of the cures that are developed, to ensure that the most compassionate course for all is followed.

## CONCLUSION

In discussing religious views toward the beginning of life, and by extension toward the religion's views of embryonic stem cell research, it is important to recall how deeply personal a religious belief is and how varied the world's religious sects are. With this caveat in mind, however, some general statements can be made about embryonic stem cell research. According to the Catholic faith and some Protestant religions, the

zygote is a human person that should not be destroyed in the course of research. This stance explains their broad opposition to embryonic stem cell research. Muslims, Jews, and the majority of Protestants, by contrast, argue that the zygote is neither a human nor an ensouled person and therefore can be used in embryonic stem cell research without moral qualms, though undoubtedly this position is tempered by other moral and aesthetic issues. Finally, Buddhists and Hindus generally take the zygote to be a person, but they concern themselves more with the ramifications to spiritual life than with those to physical life. Embryonic stem cell research is acceptable so long as it satisfies ahimsa.

Every religion has an esoteric and an exoteric dimension. The exoteric—or outer—dimensions of religions vary from one religion to the next and from one region to the next because of the influence of a multitude of social, cultural, political, philosophical, and even geological considerations. Time and history will bring faiths with the same root to produce different flowers, as the saying goes, and the result is the wide variety in rituals, practices, and beliefs evident in the world today. The esoteric or inner dimensions of all religions, however, are unified in their belief that there is more at issue here than mere physical embodiment and that—whatever else might be said—the proper attitude toward living beings is one of reverence and compassion.

Medical science has ventured into areas that traditionally have been the sole province of religious belief. On an exoteric level, this is bound to have all the effects of a tiger appearing in the midst of a dinner party. What have been amiable, millennia-long discussions about the nature of life and birth are now confronted by the cold, analytical, authoritative glare of the doctor looking down through his microscope. This is bound to unsettle some, drive others into loud protestations of their own beliefs, and sow confusion in everyone as people try to reevaluate their deeply held beliefs in light of a science that few will ever fully understand. What is lost in this cacophony, though, is that the mainstream medical profession shares the reverence and compassion for life that marks religious faith. On the esoteric level there is only one goal, and though it may express itself differently in medicine and faith, there is that much common ground with which to work.

From the outset, theological issues surrounding stem cells have been as far-reaching as the technology itself. Theological implications have already helped frame the national debate and have influenced how research is conducted and funded. Nor will these theological issues go

away; they are an established and settled element of the discourse. However, it must be remembered that the science of embryonic stem cells is not and never was intended to disturb deeply held religious beliefs. Debate arises only as all sides try to discover the most ethical and compassionate approach to truly worthy human aims.

#### NOTES

1. *Ensoulement* is a religious term referring to the inception of a soul within a human being or other creature. In general we prefer to speak of the moment when the fetus takes on moral status as a human individual, which we see as a more general category; the notion of a soul has varying meanings in different faiths, so *ensoulement* is not an unambiguous term. However, it is the conventional term, and we will continue to use it for brevity.

2. *Fundamentalism*, here and elsewhere, refers to a strict or literal reading of their central text(s), as opposed to those that allow for various interpretations and modernized readings.

3. Use of fetal tissue from miscarriages does raise a new direction of debate concerning abortion, which is wholly unacceptable in the Catholic tradition.

4. The significance of forty days is unclear. Some have suggested that it reflects the fetal “quickening,” or point at which the fetus first begins to move—usually commencing after the seventh week. It is worth noting, however, that the number forty carried special meaning to the authors of the Bible: the great flood lasted for forty days, the Hebrew tribes wandered in the desert for forty years, and Moses spent forty days on the mountain; even Jesus spent forty days wandering in the wilderness.

5. A *posek* (plural, *poskim*) is a rabbi whose decisions are considered authoritative and effectively incontestable; in the practice of Jewish law, *poskim* are the ones consulted to resolve otherwise intractable debates.

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