

Jewish Bioethical Perspectives on the Therapeutic Use of Stem Cells and Cloning

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INTRODUCTION

Many exciting advances have taken place in medicine in the past few years. What was once considered science fiction is now routinely used to treat disease. Some of the most significant of these breakthroughs have occurred in the fields of stem cells and cloning.

Stem cells are relatively undifferentiated cells that can continue dividing indefinitely. There are two types of stem cells, embryonic stem cells and adult stem cells. While both are referred to as stem cells, they have different characteristic properties. Embryonic stem cells have limitless growth potential and can differentiate into any cell type. If they are put back into an early embryonic environment, they can give rise to all the tissues and cell types of the body.¹ On the other hand, adult stem cells are more restricted and can only give rise to certain types of cells.

The curative potential of these techniques appears unbelievable. For example, a patient dying of renal failure today faces few viable medical options. While doctors now can only resort to temporizing—not curative—methods, such as dialysis and kidney transplantation, future research promises the use of stem cells to grow a new kidney for the person. In fact, embryonic stem cells could be manipulated for use in any part of the body.

¹ Bruce Alberts et al., *Molecular Biology of the Cell*, 4th ed. (New York: Garland Science, 2002), chap. 22.

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However, this potential miracle cure brings a host of ethical problems. The primary controversy centers on how the embryonic stem cells are obtained. Cells can only be taken from human embryos that have already started the developmental process. Both medical and religious ethicists must grapple with questions of the life and nature of these embryos, and their proper place in scientific research.

The use of stem cells leads to a far more futuristic field, that of human cloning. The method of cloning includes the transfer of a nucleus from a somatic cell into an enucleated egg, producing a virtual genetic copy of the donor of the somatic cell. Once the cell develops to the blastocyst stage, it can be used for either therapeutic or reproductive purposes. In reproductive cloning, the blastocyst is implanted into a uterus to develop into a person, while in therapeutic cloning embryonic stem cells are extracted from the inner cell mass of the blastocyst, which is then destroyed.² The possible uses of cloning include allowing childless couples to conceive a child and producing genetic matches for organ transplantation. However, scientifically creating and manipulating a new life form poses deep ethical and theological problems. Can society play God and make a child to use his organs?

The rapid pace of development in the field of genetics and molecular biology may portend the routine use of these technologies within the coming years. With these developments comes the urgent need to examine them from an ethical and religious perspective. Jewish tradition contains a deep history of sources and literature, from which theologians attempt to draw information to tackle the difficult, and often unforeseen, questions presented.

The principles of Jewish bioethics are not determined simply by discussion between academics. Rather, as Rabbi Abraham Isaiah Karelitz (the *Hazon Ish*) wrote, “Ethical imperatives are . . . at one with the directives of Halakhah [Jewish law]. It is Halakhah which determines that which is permitted and that which is forbidden in the

² Tom Strachan and Andrew P. Read, *Human Molecular Genetics*, 3rd ed. (New York: Garland Science, 2004), 613.

realm of ethics.”³ Thus, a proper determination Halakhah’s conclusion is the cornerstone of understanding the general Jewish ethical approach.

The purpose of this paper is to survey the halakhic sources that have potential bearing on the clinical applications of stem cells and cloning. The specific issues involved in the therapeutic use of stem cells and cloning rest heavily on determining Judaism’s general view on the practice of medicine and on the practical application of scientific discoveries for the betterment of mankind. As such, we begin with a general survey of the Torah’s view of science and discovery. Following this, we will consider a number of sources that could apply specifically to stem cells and to cloning.

MAN AS HEALER

Judaism views God’s ways as mysterious and unknowable. While humans can attempt to understand His ways, they must always acknowledge that they lack access to the complete picture and reasoning. As a result, one could conclude that anything that occurs in this world is a manifestation of God’s will, and man should not try to tamper with it in any way. This line of reasoning is particularly applicable to illness and treatment of disease. When a person is stricken with an illness, the ailment is presumably God’s will, and, therefore, man should not try to cure the disease and prevent the manifestation of God’s divine plan.

Support for this stance may be found in a number of sources from the Bible. The Book of Exodus declares, “All ailments that I have placed on Egypt I shall not place on you, for I am God your healer.”⁴ Since God assures His nation that He is the divine healer, man has no place to begin tinkering with healing. Similarly, later in Exodus God assures the Jewish nation that He will “remove all illness from your

³ *Emunah, Bitahon Ve’Od*, p. 21.

⁴ Exodus 15:26.

midst.”⁵ Additionally, the Book of Job explains that God “wounds and heals.”⁶ Finally, the Book of Chronicles recounts a critique of King Assa for seeking help from doctors during his illness instead of trusting in God to heal him.⁷

The idea that one should place his trust in God and not seek treatment from his fellow man is also seen in a number of places in the Talmud. The Talmud records in two separate locations that King Hizkiah performed three acts that the sages approved of, one of which was removing the Book of Remedies⁸ from circulation,⁹ thereby possibly preventing doctors from curing sick patients. In another place, the Talmud writes that “the best of doctors will go to *Gehenom* [hell].”¹⁰

Based on these sources, one is tempted to conclude that Judaism condemns man’s attempts at medicine, criticizing them as interfering with the divine will. However, a closer look at the above sources can cast this subject in a different light. When King Assa is disparaged for seeking doctors, the commentators explain that the criticism is only because Assa turned exclusively to doctors, without appealing to God for help.^{11,12} However, had Assa believed that God would send him a cure *through* physicians, then it would have been permissible to seek a physician’s help, even for wounds inflicted

⁵ Exodus 23:25.

⁶ Job 5:18.

⁷ II Chronicles 16:12. “And Assa became ill . . . and even during his illness he did not seek God but his doctors.”

⁸ *Sefer Refu’ot*.

⁹ Pesahim 56a; Berachos 10b.

¹⁰ Mishnah, Kidushin 82a.

¹¹ *Mezudat David* on II Chronicles 16:12 explains the verse as “he did not seek God—to pray to him; rather he went to doctors, and placed his trust in the doctors alone.”

¹² In *The Lonely Man of Faith*, Rabbi Joseph B. Soloveitchik offers a slightly different explanation. He says that the doctors that Assa turned to were “priest-doctors who employed pagan rites and magic in order to ‘heal’ the sick.” Rabbi Joseph B. Soloveitchik, *The Lonely Man of Faith* (New York: Doubleday, 1992), 90.

by God.¹³ Thus, there is nothing inherently wrong with seeking a physician's help, provided that one is mindful that the physician is simply an agent of God.

Similar explanations are given by the commentators to explain the statements mentioned in the Talmud regarding medicine. Rashi explains that the sages approved of Hizkiah's disposal of the Book of Remedies "because [the people's] hearts would not turn to God for sick people because they were immediately cured."¹⁴ Again, we see nothing inherently wrong with man attempting to cure illness; only when man trusts solely in himself and in his ability to the extent that he forgets from where the cure is really coming is there a problem. Rashi utilizes the same line of reasoning to explain the phrase "the best of doctors will go to *Gehenom*." Rashi clarifies that the doctor referred to is one who "does not fear illness . . . and who does not subjugate his heart to God . . . and who has the ability to cure poor people, but does not do so."¹⁵ In other words, the doctor will not end up in *Gehenom* simply because he practiced medicine, but rather because he was brazen. This idea is similarly expressed in *Pirkei Avot*, where Yehuda ben Tema states that "the brazen go to *Gehenom*."¹⁶

Thus, it seems that Judaism does not view healing in a negative light. There are, in fact, many sources that point to the supreme importance of helping people in need. The Talmud states that "if any human being saves a single soul of Israel, Scripture regards him as if he had saved an entire world."¹⁷ Further, the Talmud derives from the verse "do not stand idly by your neighbor's blood"¹⁸ that one

¹³ *Bach (Bayit Hadash)* on the *Shulhan Arukh*, Yoreh De'ah 336:1.

¹⁴ Rashi on Pesachim 56a. In his commentary to the same passage as it appears on Berachos 10b, Rashi adds that Hizkiah did this so that the people would beg God for mercy.

¹⁵ Rashi on Kidushin 82a.

¹⁶ *Pirkei Avot* 5:24.

¹⁷ Sanhedrin 37a.

¹⁸ Leviticus 19:16.

must help a person in danger.¹⁹ Jewish law mandates that extreme measures be taken to help a person whose life is in danger; even the Sabbath must be violated to try and save a person's life.²⁰

The Talmud eventually used a verse in Exodus²¹ to derive that a physician may practice medicine: "It was taught in Rabbi Yishma'el's school: 'and he shall surely heal,' from this we derive that a doctor is given permission to cure."²² However, Tosafot notes that if not for the repetitive language in the verse,²³ man would only have been able to cure wounds inflicted by man, and not those inflicted by God.²⁴ The Talmud's ruling is codified as the law in the definitive code of Jewish law, the *Shulhan Aruch*, "permission has been granted to the physician to heal, and it is a mitzvah, and it is considered part of *pikuah nefesh* [saving an endangered life]."^{25, 26}

When defining the law that it is permissible to practice medicine, the sources understood the tension that existed between tampering with God's will and helping one's fellow man.²⁷ After resolving the issue, Jewish sages then went further to obligate humankind to heal and practice medicine. Jewish sages used two different sources to adduce this requirement. The Rambam writes that "the physician

¹⁹ Sanhedrin 73a.

²⁰ *Shulhan Arukh*, Orach Hayim 328:3.

²¹ Exodus 21:19.

²² Bava Kama 85a. This passage also appears in Berachos 60a.

²³ "And he shall surely heal" is written as *verappo yirappeh*.

²⁴ Tosafot on Bava Kamma 85a, s.v. *she' nitna*. However, Ibn Ezra, in his commentary on the Torah, Exodus 21:19, disagrees. He writes that man is only permitted to heal wounds inflicted by other men, and not wounds inflicted by God.

²⁵ *Shulhan Arukh*, *Yoreh De'ah* 336:1.

²⁶ Saving an endangered life takes precedence over almost all other commandments. This is derived in the Talmud, Yoma 85b, from Leviticus 18:5, "You shall observe My decrees and My laws, which man shall carry out and *by which he shall live*." See also Rambam, *Mishneh Torah*, Hilchot Shabbat 2:3.

²⁷ See above, regarding Tosafot on Bava Kamma 85a. Also, *Shulhan Arukh*, *Yoreh De'ah* 336:1 addresses this issue: "Do not say that God has smitten and I will heal, for it is not man's place to practice medicine, yet they have done so anyway . . . therefore we are taught that man has permission to heal."

is Biblically obligated to heal the sick of Israel. This is included in the verse ‘and you shall return it to him.’²⁸ Thus, according to the Rambam, healing is not only permissible but it is Biblically mandated, as part of the commandment of *hashavat aveidah* (returning lost items; healing is considered restoration of the body to its healthy state). The idea that healing is included in the commandment to return lost items is also mentioned in the Talmud.²⁹ In contrast, the Ramban uses a different verse to show that healing is Biblically obligated.³⁰ He includes healing in the commandment of “love your neighbor like yourself.”³¹ Based on this verse, the Ramban writes that any doctor who is knowledgeable in this field is obligated to heal.³² Thus, both the Rambam and the Ramban agree that man is not only permitted to heal others, but is in fact required to do so by Jewish law.

To highlight Judaism’s encouragement of man’s participation in the healing process, it is instructive to consider the following statements. The Talmud cautions scholars to only dwell in cities in which all essential needs, both spiritual and physical, can be attended to. Ten things are mentioned as necessary, one of them being a doctor.³³ As Rabbi Soloveitchik states: “The art of healing has always been considered by the Halakhah as a great and noble occupation . . . unlike other faith communities, the halakhic community has

²⁸ Deuteronomy 22:2.

²⁹ Bava Kama 81b. “From where do we know that returning a person’s body is also Biblically mandated? From the verse ‘and you shall return.’ ”

³⁰ It is interesting to note that the Ramban, in his commentary to Leviticus 26:11, writes that in an ideal world people would turn only to God when they were sick, and not consult physicians. However, he explains, this approach is not applicable in the world we live in.

³¹ Leviticus 19:18.

³² *Torat Ha’adam: Inyan Hasakanah*, ed. Rabbi Haim Dov Shaval (Jerusalem: Mossad Harav Kook, 1994), 42–43.

³³ Sanhedrin 17b. “Any city that does not have these things, a scholar may not dwell in.” Included in the list is a doctor.

never been troubled by the problem of human interference, on the part of the physician and patient, with God's will."³⁴

MAN AS CREATOR

We have established that man is permitted, and indeed obligated, to heal. Our sages do not view man in this capacity as tampering with the divine will, but rather consider it a noble endeavor. However, does this permissive view also extend to more revolutionary techniques? While Judaism permits therapeutic acts such as performing a surgical operation, creating a new person or regenerating body parts may be beyond the realm of religious permission.

One could postulate that when man creates a body or life form, he is adding to God's creations in a more radical manner than other productive ventures. Since God did not originally create the intended object, man does not have the right to create as God does, thereby directly altering the divine plan. The Book of Psalms declares, "How great are your works, God, You make them all with wisdom."³⁵ Specifically, if man begins creating his own beings, he may be implying that God's works were not made with wisdom. To determine whether the use of stem cells and cloning for therapeutic purposes would be permitted, we must first establish whether these techniques would be considered tampering with the divine plan of creation.

From an analysis of the original Biblical creation narrative we can glean certain insights into how God himself views His own creation.³⁶ The phrase "And God saw that it was good" appears six times during the description of creation.³⁷ The end of the story of the creation reads, "And God saw all that He created, and behold

³⁴ *Lonely Man of Faith*, 89.

³⁵ Psalms 104:24.

³⁶ Genesis, chap. 1.

³⁷ Genesis 1:4, 10, 12, 18, 21, 25.

it was very good.”³⁸ When man adds to creation, therefore, perhaps he intrinsically asserts that while God viewed His creation as “very good,” it in fact lacked some essential items, leaving a need for improvement. Further, the first three verses of the second chapter in Genesis state four times that God completed his creation and rested from work.³⁹ If God so clearly completed His work, man cannot resume it.

While these sources appear to imply that man in the role of creator is tampering with the divine plan, it is possible to read the Biblical account of creation in a different light. Perhaps God wanted man to be His partner in creation, and to help Him make the creation complete. One could say that “Let *us* make man”⁴⁰ reflects God’s view of creation—God created, but wanted to have man participate as well. Before God created man, He said that man should “exercise dominion” in the world, and after man was created, God told him to subdue the earth.⁴¹ Ramban, in his commentary on these verses, explains that man is to rule in a strong manner over the land itself.⁴² Similarly, when man was told to subdue the earth, Ramban explains, God gave man power and license over the land to do with it as he pleases.⁴³

From the very fact that the Torah records the whole story of creation, Rabbi Joseph B. Soloveitchik inferred that “we may clearly derive one law from this manner of procedure—that man is obliged to engage in creation.” He continues further, that when God created the world, He left a place for man to engage in creation. As such,

³⁸ Genesis 1:31.

³⁹ For example, Genesis 2:2. “And with the seventh day God completed His work that He had made, and with the seventh day He ceased from all His work that he had made.”

⁴⁰ Genesis 1:26.

⁴¹ Genesis 1:26, 28.

⁴² Ramban on Genesis 1:26.

⁴³ Ramban on Genesis 1:28. Radak, in his commentary on this verse, echoes the Ramban, saying that “man should rule over the creations on the earth.”

man is obligated to complete what God purposely left “deficient” in His creation.⁴⁴

Man is unlike other life forms that can merely react to their environments. Rather, humanity must play an active, enterprising role in the world, creating and discovering continually. God did not create the earth with cities built for man to live in and fires made to keep man warm; He left these for mankind to construct. God intended creation to be a work in progress, with man contributing according to his ability. This idea is emphasized in the second chapter of Genesis: “for with the [seventh day] He had ceased from all His work which He, God, had created *to continue shaping it*.”⁴⁵ It would seem that a different phraseology, such as “as He had shaped it,” would be more appropriate for a work that had been completed. The wording in this verse implies that creation is a work in progress, with man as God’s partner. God’s imperative to Adam as He placed him on earth was to work the land and to guard it,⁴⁶ clearly establishing for him a dual active role—to work the land; to create and develop it, and also to guard, keep and protect it. This idea is furthered in Psalms, which states, “The heavens are God’s, but the earth He has given to mankind,”⁴⁷ to improve and develop it. This duality is reflected by contemporary rabbinic thinkers. Rabbi Joseph B. Soloveitchik wrote that “Man reaching for the distant stars is acting in harmony with his nature which was created, willed and directed by his Maker. It is a manifestation of obedience to rather than rebellion against God.”⁴⁸ Similarly, in Rabbi Aharon Lichtenstein’s discussion of Genesis 2:15 (“to work the land and to guard it”), he writes that man is charged with a creative task—to develop, to work, and to innovate. “‘To work’ is not meant simply to maintain the

⁴⁴ Rabbi Joseph B. Soloveitchik, *Halakhic Man* (Philadelphia: Jewish Publication Society, 1983), 101. “The peak of religious ethical perfection to which Judaism aspires is man as creator.”

⁴⁵ Genesis 2:3.

⁴⁶ Genesis 2:15.

⁴⁷ Psalms 115:16.

⁴⁸ *Lonely Man of Faith*, 20.

original standard; rather, we have been given the right and the duty to try to transcend it. . . . Man was empowered and enjoined to create something better, as it were.”⁴⁹

Man is inherently inquisitive, aspiring to discover and create. In fact, it is only through these discoveries that man can appreciate the greatness of God. In the *Mishneh Torah*, the Rambam writes that the way to love and fear God is to learn about the intelligence in the wonderful creations of God.⁵⁰

STEM CELLS

We have so far addressed the broader issues that apply both to the use of stem cells and cloning for therapeutic purposes, and particularly the imperative to heal and create. We now encounter the more specific issues which apply to the use of these two techniques.

Perhaps the most important source to consider when discussing the boundaries of man’s performance in the areas of science and technology is the words of the *Tiferet Yisrael* in his commentary on the Mishnah tractate *Yadayim*. He writes that “Anything for which there is no reason to forbid is permissible with no need for justification, because the Torah has not enumerated all permissible things, [but] rather forbidden ones.”⁵¹ The *Tiferet Yisrael* introduces a very important principle that has widespread ramifications for scientific research.⁵² As new techniques evolve with no specific prior prohibitions, Judaism should view them as permissible. Unless related exclusions can be utilized to forbid the new science, Judaism should

⁴⁹ Rabbi Aharon Lichtenstein, *By His Light: Character and Values in the Service of God*, ed. Rabbi Reuven Ziegler (Alon Shevut: Yeshivat Har Etzion, 2002), 9.

⁵⁰ Hilchos Yisodei Torah 2:2 and 4:12.

⁵¹ *Tiferet Yisrael* on *Yadayim* 4:3.

⁵² However, with this power comes incredible responsibility. Man must use his creative abilities to do good. If man emulates God as a creator, he must also emulate His other qualities. See Deuteronomy 8:6, 19:9, 26:17, 28:9, 30:16; Sotah 14a; Rambam, *Sefer HaMitzot*, positive commandment 8.

not reject them offhand as radical, but rather should possess an open and welcoming view of the developments.

Using the principle from the *Tiferet Yisrael*, we shall consider the possible prohibitions regarding the use of stem cells and cloning. While traditional halakhic sources obviously do not specifically address the use of embryonic stem cells or the production of human clones, we will consider other cases whose principles can be utilized to shed light on how the Halakhah views these particular advances.

The primary problem with regard to the use of embryonic stem cells is the source from which they are procured, namely a human embryo. The method of harvesting embryonic stem cells inevitably involves destruction of the early human embryo from where they are culled.⁵³ This relates most closely to the more familiar discussion of abortion.

There are two seemingly contradictory references in regard to feticide in the Torah. On the one hand, Scripture states in Exodus, “If men shall fight, and they collide with a pregnant woman, and she miscarries, but there will be no fatality . . . he shall pay.”⁵⁴ Rashi explains that the term “but there will be no fatality” refers to the woman’s being harmed. Thus, the killing of the fetus alone does not result in the death penalty, rather the punishment for feticide is monetary. Conversely, the Torah states in Genesis: “Whoever sheds the blood of man within man, his blood shall be shed.”⁵⁵ This verse seems cryptic; what does “the blood of man within man” mean? The Talmud explains: “Who is a ‘man within a man’? It must mean a fetus in the womb of his mother.”⁵⁶ The halakhic community rules in accordance with the view expressed in the latter verse, as suggesting more serious ramifications for harming a fetus, and thus performing an abortion is prohibited.⁵⁷

⁵³ *Human Molecular Genetics*, 612.

⁵⁴ Exodus 21:22.

⁵⁵ Genesis 9:6.

⁵⁶ Sanhedrin 57b.

⁵⁷ For a complete discussion of this topic, see Immanuel Jakobovits, “Jewish Views on Abortion,” and J. David Bleich, “Abortion in Halakhic Literature,”

The Talmud differentiates the various stages of development of the embryo/fetus. In the tractate of Berachot the Talmud discusses the prohibition of praying for something that has already occurred. However, it states that during the first forty days of pregnancy, one may pray regarding the gender of the embryo, since during the first forty days the gender remains undetermined.⁵⁸ This is mirrored in the Halakhah that states: “One who prays for something that already happened, such as . . . if his wife is pregnant and he says: ‘May it be God’s will that my wife has a boy,’ this is a prayer in vain. This is true only once forty days of inception have passed, but within forty days, his prayer is useful.”⁵⁹

Clearly, the status of the early embryo⁶⁰—that is, the embryo during the first forty days of development—has a fundamentally different status than the embryo and fetus in subsequent stages of development. As Rabbi Aharon Lichtenstein writes, “In the early stages of pregnancy . . . the missing element of full life is not merely that birth has yet to occur, but rather the absence of full development and the fact that in its current state it is not viable outside the womb.”⁶¹

Elsewhere in the Talmud, a name is given to this first stage of development. In the tractate of Yevamot, the sages discuss the status of a daughter of a *kohen* whose non-*kohen* husband died. The law states that an unmarried daughter of a *kohen*, as well as the daughter of a *kohen* who is no longer married and who has no children, may eat *terumah* (the priest’s share of the crop). However, should the daughter of a *kohen* have a child from a non-*kohen*, she may no longer eat *terumah*. During the analysis of the case in which the

in *Jewish Bioethics*, ed. Fred Rosner and J. David Bleich (Hoboken, N.J.: Ktav Publishing House, 2000), 139, 155.

⁵⁸ Berachot 60a.

⁵⁹ *Tur*, Orach Hayim 230.

⁶⁰ The stages of human development as denoted by the terms embryo and fetus differ from the halakhic delineation of development. The term “early embryo” will be used to refer to the first forty days of development.

⁶¹ Rabbi Aharon Lichtenstein, “Abortion: A Halakhic Perspective,” *Tradition* 25:4 (1991) pp. 3–12.

daughter of the *kohen* is no longer married, the following question is posed: Shouldn't we wait to see if the woman is pregnant before allowing her to eat *terumah*? The answer is that there is no need to wait, because "until forty days it [the early embryo] is mere liquid,"⁶² thereby ascribing to the early embryo a fundamentally different status.

The differentiation between the early embryo and later stages of development is not simply a theoretical suggestion in the Talmud. The Rambam cites the case discussed in the Talmud as the accepted law: "The daughter of a *kohen* married to an Israelite whose husband died may . . . eat *terumah* beginning on the night [of the death of her husband] for forty days . . . because for the first forty days an embryo is considered nothing but mere liquid."⁶³

Since the early embryo does not have the status of the subsequent embryo and fetus, it is possible that the prohibition of abortion that applies to the developing human would not apply to this early "mere liquid" stage. In the words of Rabbi Lichtenstein: "It would thus be logical to assume that such an abortion would not be classified as an act of murder. Murder, it would appear, is defined as the termination of currently existing life, and not the curtailment of potential life."⁶⁴

Returning to the *Tiferet Yisrael*'s principle, Judaism apparently possesses no source that prohibits the destruction of an early embryo. This, coupled with the fact that the stem cells derived from the embryos are being used in an attempt to heal, would suggest that their use would be permitted. Nevertheless, the fact that an early embryo has the potential to develop into a human being means it must be treated with respect, and one should not conclude from this argument that abortions as a rule are permitted on embryos within forty days of fertilization.

⁶² Yevamot 69b.

⁶³ Hilchot Terumot 8:3.

⁶⁴ Rabbi Aharon Lichtenstein, "Abortion: A Halakhic Perspective."

CLONING

When considering possible prohibitions that may relate to cloning, the most prominent one seems to be *kil' ayim* (forbidden mixtures): “You shall not mate your animal into another species, you shall not plant your field with mixed seed.”⁶⁵ The Torah describes the commandment of *kil' ayim* as a *hok*—a decree whose reason is not known.⁶⁶ However, the Ramban does try to rationalize the commandment of *kil' ayim*, suggesting that “the reason for [the prohibition of] *kil' ayim* is that God created all of the species in the world . . . and He commanded that they propagate according to their species and they shall not change forever. . . . One who combines two species . . . negates the laws of nature, therefore God commanded ‘You shall observe My decrees.’ ”⁶⁷

Before encountering this explicit prohibitive verse, one could have assumed that *kil' ayim* would have been permissible, stemming from God’s commandment to Adam to work and guard the land. However, sources consider *kil' ayim* inherently different, placing it outside the realm of normal human behavior. When discussing the prohibition of *kil' ayim*, *Sefer HaHinuch* explains that “God knows that everything He wrought is perfectly suited to its purpose, as it is needed in His world.”⁶⁸ This statement does not imply that man is forbidden to create; rather, it establishes boundaries within which man is allowed to work. The natural order established by God, as represented by the term *l'menayhu*,⁶⁹ imposes a limit beyond which man cannot go. While man is encouraged, and in fact obligated, to create and work, his efforts must remain within the framework of

⁶⁵ Leviticus 19:19.

⁶⁶ Rashi on Leviticus 19:19.

⁶⁷ Ramban on Leviticus 19:19. God’s command for all species to propagate according to their species (*l'menayhu*) is found in Genesis 1:12, 21, 25.

⁶⁸ *Sefer HaHinuch*, Mitzvot 244, 245.

⁶⁹ See above, n. 66.

the natural order. God desires that the world should be settled in the natural way that was set for it at the beginning of creation.⁷⁰

Like *kil' ayim*, cloning is an activity that is beyond the realm of the natural order. Natural biology dictates that humans are created by the union of two gametes. When humans step in and fuse a somatic cell with an enucleated egg, the normal reproductive process is completely bypassed, and any semblance of natural human creation utterly dismissed.

Furthermore, a Talmudic account from the tractate of *Sanhedrin* appears to substantiate the prohibition against human cloning. The Talmud relates that Rava created a man and sent him to Rav Zeira. When Rav Zeira saw that Rava's creation could not speak, Rav Zeira immediately destroyed it. Rava's creation is commonly referred to as the *golem*, a creature who was fashioned mystically from the dust of the land.⁷¹ Some authorities use the clear differences between the *golem* and a clone to suggest that cloning would not be prohibited based upon this Talmudic passage, emphasizing that the *golem* was created from dust through the use of mystical incantations, while a clone would be created scientifically from human cells in a biologically acceptable manner.⁷² However, Rav Zeira's harsh, immediate response against another life form reflects Judaism's clear abhorrence of creatures obtained from unnatural means. Such a response leaves little room for distinguishing between the verbal capacities of these unnaturally created lives, and represents an admonition against continuing such practices.

On the other hand, there is a passage in the Talmud which one could interpret as an endorsement of cloning. The Talmud in tractate *Niddah* states that if a woman gives birth to a creature that has the form of an animal, it is still considered human.⁷³ One might con-

⁷⁰ *Sefer HaHinuch*, Mitzvah 62.

⁷¹ *Sanhedrin* 85b.

⁷² See, for example, J. David Bleich, "Survey of Recent Halakhic Periodical Literature," *Tradition* 32:3 (1998): 58.

⁷³ *Niddah* 23b. A similar concept is discussed in *Bechorot* 5b: "The product of an

clude that, even if a clone is unnatural, if its origin is human, it can be considered a human creature. However, such an explanation betrays a misunderstanding of the statement's true intent. The Talmud addresses an unfortunate *de facto* situation, that is, the birth of an unnatural creature whose species status requires clarification. How this life form was created is not discussed, or endorsed by the Talmudic sages. The Talmudic passage describes a *bedieved* (*ex post facto*) situation, and does not recommend such a process *lechatchilah* (before the fact), and therefore could not be used as encouraging the process of cloning.

These sources suggest that cloning would not be halakhically acceptable. While God gave man control over the world, He did establish certain limitations within which man is allowed to work. Jewish law prohibits cloning for the same reason it abhors *kil' ayim*; both practices deviate from the natural reproductive capacities of species, and therefore fail to remain within the constraints of natural law. Therefore, just as making a mixture of seeds is prohibited, on the grounds that it creates an alien species, the production of a clone would be likewise forbidden.

CONCLUSION

Dealing with the Jewish perspective on new scientific techniques requires a careful examination of traditional sources that were not composed to address our contemporary questions. However, by applying the principles established in these sources, we can attempt to clarify Judaism's view on innovative technologies and techniques, such as the use of stem cells and cloning. Certainly, many more issues will continue to arise as the use of stem cells and cloning in medicine becomes more mainstream, requiring additional careful consideration as new techniques are developed and refined.

impure animal is impure, and the product of a pure animal is pure, regardless of the appearance of the animal."