ESSAYS ON SCIENCE AND SOCIETY

Morals and Primordials

Louis M. Guenin

teaches ethics at Harvard Medical School. His work in moral philosophy concerns the theory and mathematics of distributive justice, intellectual public goods in genetics, and the ethics of research. He is writing a book on utility theory and the social welfare function, and is editor of a forthcoming issue of *Synthese* on candor in science.

What may we do with a human embryo? On this moral question hinges the fate of embryonic stem cell research. To defeat such research, opponents appeal to the premise that killing an embryo is always wrong. Before we may pronounce the verdict of any moral view—including our own—we must look beyond slogans and ascertain that view's fundamental principles. Thereafter comes the task of identifying and rigorously scrutinizing arguments. Upon close study of principles and arguments, it becomes plain that embryonic stem cell research gains moral approval even within views that might be presumed to oppose such research.

Embryonic stem cells are derived from blastocysts at about day 5 of gestation, the window of opportunity for obtaining pluripotent cells that can be grown without differentiating. Let us define as an "epidosembryo" (after the Greek *epidosis* for a beneficence to the common weal) a human embryo that (i) was created in vitro in an assisted reproduction procedure, (ii) remained in storage after completion of all intrauterine transfers requested by the mother, and (iii) has departed parental control according to instructions to the attending physician that the embryo shall be given to research and that there shall not occur any transfer to a uterus, or ex vivo nurture beyond a number of weeks specified in the instructions, of either the embryo or any totipotent cell taken from the embryo. Let us assume that we owe great respect to any human embryo and to any possible person into which an embryo may develop. For the reasons explained below, I claim that experiments with epidosembryos are permissible at least for embryos that are less than 2 weeks old.

> **"If we spurn [embryonic stem cell] research, not one more baby is likely to be born."**

Before stating the case for this claim, we may put to rest a prominent argument that is not part of the case. A statute declares that no funds dispensed by the National Institutes of Health (NIH) "may be used for ... research in which a human embryo or embryos are destroyed."* NIH has introduced a well-intentioned argument that, rendered in its strongest form, runs as follows. First, research on embryonic derivatives is distinct from obtaining such derivatives. Second, pluripotent embryonic stem cells are not embryos. Therefore, research on pluripotent embryonic stem cells is not "research in which ... embryos are destroyed." For the first premise, NIH relies on an opinion of counsel that asserts only the second. The second premise is a truism, but the statute does not recognize the distinction asserted in the first. If destroying embryos is wrong, the first premise—and hence the conclusion—carries no more moral weight than does a bibliophile's claim, when observed perusing a stolen rare book, that he got it from a friend who visits archives. Notwithstanding that the embryos would perish anyway, embryonic stem cell investigation induces destruction of embryos. Hence investigators ride in the same moral boat with anyone who supplies them embryonic derivatives. With this we may contrast the case of stem cells derived from abortuses. Scientists stand to donated abortal tissue as transplant surgeons stand to organs or anatomy students to cadavers. The recipients have not induced the sources' deaths. So we assure by prohibiting inducements.† This constitutes the well-accepted justification for the use of donations from such sources.

Epidosembryo research is moral not because experiment and derivation are distinguishable, but because both are permissible. The argument for epidosembryo research is as follows. Outside a uterus, an embryo cannot long survive. When a fertility patient decides against intrauterine transfer of an embryo, that embryo's developmental potential fails of enablement. Donor instructions governing an epidosembryo allow nothing but research. Hence no possible person corresponds to an epidosembryo. Nor has the epidosembryo preferences that could be frustrated or sentience by which it could suffer. Nothing can be gained for an epidosembryo by arranging that it perish as waste rather than perish in aid of others. We have a duty, when our means allow, to aid those who suffer. If we spurn epidosembryo research, not one more baby is likely to be born. If we conduct research, we may relieve suffering. Therefore epidosembryo research is permissible and praiseworthy. Such research includes studies of embryos themselves, from which we may learn how birth defects occur, and studies of stem cells with their distinctive therapeutic promise.

Epidosembryo donors turn statistical accident to good. Fertility clinicians recover and fertilize about a dozen eggs per patient; given the mortality rate of fertilized eggs (zygotes), any fewer fertilizations would fail to optimize chances of pregnancy. Once a patient has given birth to all the children that she wants, unused embryos usually

The author is in the Department of Microbiology and Molecular Genetics, Harvard Medical School, Boston, MA 02115, USA. E-mail: guenin@hms.harvard.edu

*Pub. L. No. 106-554, Title V, § 510 (2000), and verbatim predecessors since 1996.
†42 U.S.C. §§ 274e; 289g-1(b)(2)(A),(c); 289g-2(b).
‡J. E. Roemer, *Theories of Distributive Justice* (Harvard Univ. Press, Cambridge, MA, 1996), pp. 19–21.
§W. V. Quine, *Theories and Things* (Harvard Univ. Press, Cambridge, MA, 1981), p. 102.
‖Scientists in the United States may now obtain embryonic stem cells only from (i) WiCell Research Institute, Inc., a subsidiary of Wisconsin Alumni Research Foundation, patentee of method and derived cells described in J. A. Thomson *et al.*, *Science* **282**, 1145 (1998); (ii) WiCell licensees not using federal funds, or (iii) a foreign source.

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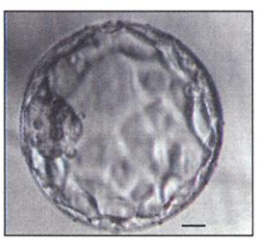
perish as waste. (Under U.K. law, an embryo ordinarily may be stored for only 5 years.) Whereas if given to research, a single embryo will yield a cell line long sustaining a stem cell investigator's work.

The foregoing argument differs from the utilitarian argument with which scientists often defend embryonic stem cell research. Utilitarianism commands us to maximize the sum of individual utilities. A utilitarian may predict greater aggregate utility from performing research than from forgoing it. This argument may convince confirmed utilitarians who imagine a calculation of aggregate utility, but doubtless only them. In the absence of interpersonally comparable utility measures, we cannot meaningfully sum utilities across a population.‡ Given intense preferences about an issue of life and death, we cannot put much store in a computational argument that lacks the computation. For many nonutilitarians, paramount moral principles supersede the maximization of any welfare index.



A 5-day-old blastocyst from whose inner cell mass (at 9 o'clock) investigators derive embryonic stem cells. Scale bar, 10 μm.

I now turn to two presumptive opponents of embryo research. We shall find that these views, when fully assembled, support epidosembryo research. Less strict views not mentioned below also join in support of such research. According to the views within this broad universe of support, if a government thwarts epidosembryo research, it does a disservice to the cause of morality.

The first presumptive opponent is Kantianism. That each of us possesses a dignity above price is an intellectual legacy from Kant. According to Kant, we should never treat humanity simply as a means, but always as an end. Embryo experimentation uses embryos solely as means. But for Kant, the basis of dignity is autonomous reason; humanity includes only rational beings. Embryos are not rational. In general, Kant holds that as rational beings we should act on those maxims that, without contradicting ourselves, we can will as universal laws. That a woman may decide against intrauterine transfer and donate an epidosembryo is such a universalizable maxim. We also have a duty of beneficence. We cannot decline to will that aid be given those in need if we wish it to be given us should we be in need. As soon as we imagine ourselves in the place of those who suffer in ways that epidosembryo research could prevent, we are impelled to the universalizable maxim that we should foster that research. This implies a duty to foster such research.

The second presumptive opponent is Catholicism. The Greeks and Romans routinely killed slaves and barbarians; the Spartans abandoned infants to the elements. Against these and later assaults, the Catholic church has championed human life. Against abortion the church now asserts two doctrines: (i) the sanctity of life, the belief that human life is a sacred gift of God that we must respect, and (ii) zygotic personhood, the thesis that fertilization suffices to create a new person. Held inconsistent with the sanctity of life are destruction of embryos and (as departures from God's manner of giving life and as a path to eugenics) in vitro fertilization, intrauterine transfer, and embryo cryopreservation. Given that in vitro fertilizations nonetheless occur, we must decide what to do with epidosembryos. It seems difficult to deny that relieving widespread suffering is morally better than destroying embryos at no gain. One who opposes abortion may further promote life by endorsing research on epidosembryos. Donors of epidosembryos give fresh voice to esteem for life.

Zygotic personhood, which does collide with embryo research, is an implausible contradiction of the Catholic church's magisterium for most of its history. Until 1869, the church followed Aristotle's view that not until at least day 40 does an embryo develop sufficient human form to acquire an intellectual soul, that which distinguishes human from beast (*Historia Animalium* 583b). Until then, said Aquinas, "conception is not completed." Aristotle believed that form and matter correspond, a view known as "hylomorphism," from which it follows that a being without a brain cannot house an intellectual soul. Hence the wrongfulness of abortion was said to vary with time of gestation. Pope Innocent III in 1211 settled on quickening (at 12 to 16 weeks) as the time of ensoulment. In 1869, Pope Pius IX, without mentioning time of gestation, listed those procuring abortions among the excommunicated. This was read to imply zygotic personhood. Recently in *Donum Vitae* (1987), the church has conceded that personhood is a philosophical question, and so we search its texts for an argument for zygotic personhood. Scripture is silent. We find in *Declarato de Abortu Procurato* (1974) that the church argues for zygotic personhood by identifying a person with a genome. But the magisterium cannot maintain this materialist thesis, this radical genetic reductionism, without contradicting its belief in mind and soul. And even for materialists, only a being capable of consciousness can be a person for purposes of the duty not to kill.

In any case, the matter comes to rest on one necessary condition of personhood. Until day 14, the possibility of monozygotic twinning (and recombination) remains. That is, until day 14, identity of an individual is not established. "No entity," said the philosopher W. V. Quine, "without identity."§

To identify a source of stem cells, NIH would define the set of donated embryos that have yet to form "the mesoderm." This is ambiguous as between the extraembryonic mesoderm (forming around day 10) and the intraembryonic mesoderm (forming as late as day 16). The law of the U.K. forbids laboratory nurture of embryos beyond day 14.

At the foundation of Christianity lies the second greatest of the commandments—that one love one's neighbor as oneself—as well as the Golden Rule, a form of which appears in virtually every moral view since Confucius, and the call to charity. These precepts require us to imagine ourselves possessing the preferences of those who suffer. Concerning medicine, the Catholic church teaches in *Declarato de Abortu Procurato* that "in the outpouring of Christian generosity and charity every form of assistance should be developed."

Many moral views also urge justice in the distribution of resources. To exclude publicly funded scientists from embryonic stem cell research serves only to constrain progress while privatizing it. If we give away the public store by abstaining from public research, we may wake up to find patentees controlling most of the transplantable cell types. The poor will likely be the losers. And if the government does not permit public scientists to derive cells, we may be forsaking, for no moral gain, the benefit of innovations in cell derivation.‖

Consider too that a broad brush now paints as unavailable for study any embryo created "for research purposes."* This precludes work on autologous transplants—by transfer of patients' nuclear DNA to activated mammalian eggs and derivation of their own pluripotent stem cells 5 days later—and the use of donated gametes to create banks of transplantable histocompatible tissues. Such procedures need not raise moral concerns about unnatural reproduction. They would not produce children. They too would employ only unindividuated and unenabled blastocysts.

We honor human life by probing our moral views to their foundations. There we find a common conclusion. It is virtuous to eliminate suffering in actual lives when we may do so at no cost in potential lives. In this work of mercy, scientists form the vanguard. They also respect human life who toil to relieve its afflictions.

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