

# ISSUES IN PERSPECTIVE

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## An Ethical Dilemma: Genetic and Reproductive Technologies and the Human Embryo

Ethically speaking, does the end always justify the means? Does a seemingly good end (having healthy babies free of all genetic disorders) justify the means (in vitro fertilization, preimplantation genetic diagnosis, etc.)? Reproductive and Genetic Technologies have empowered humans to a degree unimaginable only a few years ago. These technologies are also empowering parents to decide what kinds of children they want. Therefore, these technologies raise profound ethical questions, including ethical questions about the human embryo.

For example, the *New York Times* recently reported on Bradley and Amanda Kalinsky, who knew that there was a deadly disease in her genetic background—Gerstmann-Straussler-Scheinker disease (GSS), which inevitably leads to a slow and terrible death in adulthood. This rare neurological disease had taken many of her family members, including her father. The Kalinsky's now have three children, all free of the deadly GSS gene. How did this occur? Preimplantation genetic diagnosis (PGD) is the answer. They chose the method of in vitro fertilization, a procedure where her eggs were fertilized by his sperm in a petri dish. The resulting multiple embryos were then tested for the disease causing gene. Only those embryos without the gene were implanted in her womb. [In their situation, in vitro fertilization produced 12 embryos, with 6 of those being destroyed because of the GSS gene.] This combined procedure is quite expensive (about \$20,000) and is usually not fully paid by the typical health insurance plan. There are no regulations in the US that limit PGD. Those embryos not used after the testing are destroyed. Furthermore, PGD is also being used for testing of other things besides genetic disorders. For example, a recent international survey discovered that 2% of more than 27,000 uses of PGD were made to choose a child's sex. Finally, the use of PGD is growing. The Reproductive Genetics Institute in Chicago has seen its caseload rise 40% in the last two years. As in the case of the Kalinsky's, the logic of PGD is that it is ethically acceptable to destroy many embryos rather than destroy a fetus diagnosed with a genetic disorder through abortion.

There is nothing more agonizing than infertility for a young couple. Equally agonizing is the potential of having children with severe genetic disorders. The growing use of genetic and reproductive technologies can deal with such agonies. However, the growing use of such technologies raises profound ethical questions about the human embryo and its value. We cannot ignore them. Consider these:

1. **THE USE OF DONOR EGGS IN IN VITRO FERTILIZATION** Used in 12% of all IVF cases, the result is the mind bending phrase, "bio-genetic child," meaning a child who is both

biologically and genetically related to each of its parents, but, for the first time in history, separating those components. Ethical Questions with using donor eggs:

- Should the woman who donates her eggs be paid?
- Should we accept the practice of selling eggs with specific personal attributes in mind?
- Should we permit parents (or other mothers) to choose the person they want to donate the eggs?
- Should the basis be IQ, appearance, heritage or race?
- Are we getting close to eugenics if we, as a civilization, permit this?
- Do the children of such a procedure have the right to know that the egg which was fertilized is not the egg of their mother who raised them?
- Should there be “open-identity” donation procedures?
- Should we, as a civilization, provide opportunities for children to establish a relationship with their donor egg mother or donor sperm father?

2. **PREIMPLANTATION GENETIC DIAGNOSIS (PGD)** Through IVF, eggs are fertilized and allowed to divide for three days (at the 8-cell stage). The cells of the embryo are tested for defective genes carried by the mother or father. Embryos free of defective genes are then implanted in the mother’s uterus or frozen. Ethical Questions with PGD:

- Is it wise to allow widespread use of PGD? (It is currently used in about 10% of IVF procedures in the US.)
- Could PGD be used to determine other traits or characteristics? Could it become a tool in fact for eugenics?
- Should there be limits to the empowerment of parents using PGD?
- Who would set those limits?

3. **CYTOPLASMIC HYBRID EMBRYO** Recently, the UK’s Human Fertilization and Embryology Authority cleared the production of cytoplasmic hybrids for stem cell research. The nucleus of an animal ovum is replaced with human DNA, producing an embryo that is 99.9% human. Ethical Questions:

- Does such a procedure violate a deeply ingrained principle of “species distinction” between humans and animals? Is there a “creation-order distinction” being violated here?
- Do “interspecies embryos” pose a slippery slope of unintended consequences?
- Does this procedure challenge human dignity?

Conclusion: We must consider life as a continuum: “Human development begins at fertilization, the process during which a male . . . sperm unites with a female [egg] to form a single cell called a *zygote*. This highly specialized, totipotent cell marked the beginning of each of us as a unique individual. [A *zygote* is defined] “as the beginning of a new human being.” “Although most developmental changes occur during the embryonic and fetal periods, some important changes occur during later periods of development: infancy, childhood, adolescence, and adulthood. Although it is customary to divide human development into *prenatal* (before birth) and *postnatal* (after birth) periods, birth is merely a dramatic event during development resulting in a change in environment. *Development does not stop at birth.*” [Moore, Keith L.

and Persaud, T.V.N. *The Developing Human: Clinically Oriented Embryology*. 6<sup>th</sup> edition. Philadelphia: W.B. Saunders Company, 1998, pp. 2 and 18.] At the very least, human civilization must have a conversation about the ethical implications of the procedures discussed in this *Perspective*. As a part of the conversation, I believe we should also revisit the ethical value of the human embryo. And, since Psalm 139:16 declares the importance of the human embryo to God, it is important for Christians to declare that value as a part of this conversation.

See Gina Kolata in the *New York Times* (3 February 2014); Rob Stein in the *Washington Post* (30 September 2010); and Dan Vergano in *USA Today* (4 October 2010).