Imagine a day when patients with defective genes that cause them great disability can walk into a clinic and be given an injection of engineered cells that contain the proper sequencing of the genes to cure their diseases. Or, imagine a day when prospective parents can simply enter a medical clinic for assisted reproductive technology and pre-select the enhanced genetic traits that their future child will have. This is not just science fiction; it will likely become reality in the not-too-distant future—possibly within twenty or thirty years. Why? In June 2000 scientists from the Human Genome Project, originally a fifteen-year, publicly-sponsored project, and scientists from a privately-owned company, Celera Genomics, completed what many believe to be one of the greatest achievements of modern science. This combined effort mapped and sequenced approximately 90–95 percent of the human genetic code.

There are many categories of genetic science that overlap: diagnosis of genetic disease (e.g., prenatal diagnosis), eugenics as the elimination of disease-related traits (e.g., through sterilization), cloning, gene therapy, and genetic enhancement (Cahill, viii). Though all these categories are important, for our purposes I will focus on only the last two: gene therapy and genetic enhancement. Both are forms of what is called human gene transfer.

Medical scientists could conceivably develop four different types of human gene transfer from the results produced in the Human Genome Project (Anderson). In other words, within the next twenty or thirty years medical science will have the capacity to alter our genetic code in four ways. The first two types are therapeutic in nature because their intent is either to correct some genetic defect that causes disease or to prevent future disease. The other two types are not therapies at all, and many question whether they are part of medicine's proper goals as well. Rather, they are concerned with improving either various genetic traits of the patient him/herself (somatic cells) or with permanently enhancing or engineering the genetic endowment of the patient's children (germ-line cells).

The first kind of human gene transfer is somatic cell therapy in which a genetic defect in a body cell of a patient could be corrected by using various enzymes (restriction enzymes and ligase) to splice out the defect and to splice (transfer) in a healthy gene. Medical scientists have al-

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ready used a variation of this technique to help children who suffer from severe combined immune deficiency (ADA) by modifying bone-marrow cells (Walters, 270), and a similar procedure was used in August 1999 for children who have Crygler Najjar syndrome, a genetic disease that causes fatal brain damage (Schaeffer, 22; Miller, 1 and 11). Estimates are that between two to five thousand different genetic diseases are controlled by one gene (Lee, 183), and these diseases afflict approximately two percent of all live births (Zimmerman, 595).

Second, there is germ-line gene transfer therapy in which either a genetic defect in the reproductive cells—egg or sperm cells—of a patient would be repaired or a genetic defect in a fertilized ovum would be corrected in vitro before it is transferred to its mother’s womb (Johnstone, 301). In either case, the patient’s future children would be free of the defect by permanently altering their genetic code.

Next there are the two kinds of non-therapeutic human gene transfer. The first kind is enhancement somatic engineering. In this type, a particular gene could be inserted to improve a normal trait, for example, the insertion of a new gene or an improved one to enhance memory. Second, there is germ-line genetic engineering in which existing genes would be altered or new ones inserted into either germ cells or into a fertilized ovum such that these genes would then be permanently passed on to improve or to enhance traits of the patient’s offspring. In this last form of human gene transfer parents could design their children according to their own desires.

We as a society and we as a Church will have to decide which one or ones of these genetic interventions we will or will not support morally. Informed moral decision making is never done outside a context of meaning, even for those who are secularists. Religious traditions frequently inform the contexts that shape how believers morally decide complex bioethical topics, and this certainly has been the case for the Roman Catholic community. It’s not that the religious meanings substitute for or replace moral decision making; rather, a religious context can qualify, shape, and inform moral decisions. There are a substantial number of documents from the Roman Catholic tradition that have been produced on the scientific and medical interventions into the human genome, and the teachings found in these documents have illuminated the way believers have morally thought about and judged manipulations of the human genetic code. Pastoral ministers would be greatly helped by reflecting on these documents, and so I will devote the rest of this essay to such a reflection.

Permit me to begin with a very general conclusion about the Roman Catholic perspective on genetics and genetic interventions. Except for genetic interventions that involve human cloning, which has been consistently condemned in principle (Congregation for the Doctrine of the Faith [CDF], 703; John Paul II, 1995, 711), there is nothing in this tradition that theologically or morally prohibits interventions into the human genetic code, though in fact there may be circumstances in which a specific intervention might be immoral (Rahner). To prove this conclusion I will focus my attention primarily on documents from the magisterium or teaching authority of the Catholic Church, i.e., documents from recent popes, bishops, and Vatican II. I will proceed by analyzing two sets of issues that are at stake for the Catholic tradition on this topic. These two sets are concerned with: (1) anthropological issues and (2) moral issues. My analysis of each must necessarily be brief.

**Anthropological Issues**

There are several background beliefs about the human that function as starting
points for a moral discussion of gene therapy, but I will mention only two. First, the Roman Catholic tradition consistently argues not only that the nature of the human person is both body and spirit but also that there is a oneness among these distinguishable but inseparable aspects. As the Pastoral Constitution on the Church in the Modern World (Gaudium et Spes) stated the matter: “Though made of body and soul, man is one” (Vatican II, n. 14). The current pope, John Paul II, has reiterated this belief in several of his recent statements on genetics. For example, in his 1982 address to the Pontifical Academy of Sciences, the pontiff claimed that, “The human body is not independent of the spirit, just as the spirit is not independent of the body, because of the deep unity and mutual connection that exist between one and the other” (John Paul II, 1982, 342). Thus, any genetic intervention into the human subject must recognize and respect this unity; any view that separates the two is dualistic and leads to a denigration of one or another aspect of the person.

Second, the Catholic tradition argues that there are various kinds of goods whose pursuit of and acquisition by persons will define their well-being and flourishing. Two of these goods are particularly important here: life and health. In their working report on genetic intervention, the British bishops argued that, “To be fulfilled in our existence as human beings requires some degree of bodily well-being. Health is a good which is a dimension of the basic good of life” (British Catholic Bishops, 17). Thus, if health is a basic good that all pursue, even though there are definite limits to this pursuit, the nature of this good itself becomes the ground for the obligation on the part of both patients and physicians to seek remedies for genetic disease. The role of medicine, then, is to serve health, and the technological means by which medicine realizes this good are ultimately subject to the objective standards of morality, which themselves are based on the nature of the human person in all its dimensions (John Paul II, 1979, n. 16).

Moral Issues

Recent documents from the magisterium, especially those from John Paul II, reveal a remarkable positive thrust toward genetic intervention. Many of these texts demonstrate an awareness of the difference between somatic cell and germ-line cell interventions, in which the latter is distinguished into gonadal cell and the cell line of the pre-embryo. The distinction between therapy and enhancement is acknowledged as well. In principle, none of these in itself is judged morally wrong, but each must be judged according to moral standards. Some of these standards are established moral principles; others serve as the foundation for the moral principles. In what follows, I will list and briefly analyze four of these moral standards in relation to the various types of genetic intervention.

1. Do Good, Avoid Evil:
The Fundamental Moral Imperative.

Following Thomas Aquinas’s discussion of the natural law in the thirteenth century (Thomas Aquinas, I–II, q.94, art. 2), this moral standard in the Catholic tradition has been considered the foundation for all moral principles. In the present discussion, the particular goods that we are to pursue are the goods of life and of health. The nature of these goods ground the obligation to pursue them on behalf of ourselves and on behalf of others. However, we are only strictly obliged to avoid harm; we do not have a strict obligation to accomplish all good (Bishops’ Committee, 203). This understanding of our obligations clearly indicates that a good end does not justify a
morally bad means and that a strict risk-benefit calculus is not the sole perspective from which to judge the moral appropriateness of genetic interventions (Bishops’ Committee, 203–4).

2. Genetic Interventions Must Respect the Dignity of the Human Person.

This is clearly the most fundamental moral principle that applies to our discussion of genetic intervention, and it takes various forms in the documents under consideration. In its most general terms, science and technology require for their own intrinsic meaning an unconditional respect for this principle (CDF, 699). Respect must be present from the very moment of conception (Friend, 523), and it requires that we not reduce life to a mere object (John Paul II, 1983, 388). Scientific interventions into the human genome respect the integrity of the person when they focus on benefits for the patient. Thus, genetic experimentation on human subjects, including embryos, can be justified morally as long as there is informed consent (by the patient or by proxy) and the experiments avoid harm and are directed to the well-being of the person (CDF, 702). Furthermore, experiments that are not strictly directed toward therapy but are aimed at improving the human biological condition (enhancement) can be justified, at least in part, on the grounds that the experiments respect the human person by safeguarding the identity of the person as one in body and soul (John Paul II, 1983, 388). However, genetic experiments that are directed toward sex selection or other predetermined qualities (Catholic Health Association, 26) and those directed toward the creation of different groups of people (John Paul II, 1983, 388) are forbidden morally because they violate the dignity of the person.

3. Genetic Interventions Must Promote the Well-Being of the Patient.

I have already alluded to this standard above, but it does have the status of a distinct moral principle in the Catholic tradition. John Paul II has used it in part to justify morally the use of therapeutic genetic interventions to cure disease (John Paul II, 1983, 388). Likewise, the Science and Human Values Committee of the National Conference of Catholic Bishops in the U.S. has used this principle in permitting genetic testing for a cure or effective therapy of genetic diseases (National Conference of Catholic Bishops, 771).

4. Proportion Between the Risks and Benefits.

This is an important moral principle that applies to this topic, though most of the documents studied reject this as the sole principle that would apply to genetic interventions. The risks and benefits must be calculated in terms of their potential impact upon a patient’s well-being; not in terms of their impact on existing others or future humanity (Friend, 524). In the end, if the benefits to the patient reasonably outweigh the risks, then this proportion can in part justify genetic interventions.

Conclusion

There are a substantial number of documents from the magisterium of the Catholic Church that have been produced on the topic of scientific and medical interventions into the human genome. For the most part, these teachings have been quite positive in their evaluation of these potential technologies, though there are also some cautions. In the end, these teachings can be a tremendous resource for pastoral ministers as they help others arrive at moral decisions about genetic interventions.
References


