CRISPR Homework Selection

<https://www.ncbcenter.org>

## *Dignitas personae* on Gene Therapy and Enhancement: A Commentary on *Dignitas Personae*, Part Three, nn 24-27

**Stephen Napier, Ph.D., NCBC Ethicist**

We continue our discussion of the 2008 Vatican document on bioethics, *Dignitas Personae* (DP). One of the issues addressed was gene therapy and enhancement. There are numerous diseases that have a genetic base, either causing or predisposing one to disease. Gene therapy aims to address such abnormalities and pathologies through modification of the gene/genetic complement that is functioning abnormally. Although gene therapy trials have not had significant success to date,1 advancements are being made and the risk-benefit ratio for this research is slowly changing. DP recognizes that gene therapy may progress more rapidly and with cautious foresight considers that gene research might not only be used to cure disease, but to *enhance* our capacities or abilities.

To adequately consider the ethical issues, DP makes some needed distinctions. First, there are two kinds of gene-therapy: somatic cell therapy which “seeks to eliminate or reduce genetic defects on the level of …cells which make up the tissue and organs of the body” (n. 25), and germ-line therapy which “aims instead at correcting genetic defects present in [sperm and eggs] with the purpose of transmitting the therapeutic effects to the offspring of the individual” (n. 25). Second, there is an intuitive distinction between *therapy and* *enhancement*. As is commonly understood, therapy refers to procedures or practices that aim to cure a pathology or disease. Enhancement (in this context) refers to procedures that aim to improve the capacities or abilities of the person through modification of his or her genome. The ethical issues, then, are that gene therapy seeks to adjust our genetic complement, and the risks of doing so are as yet uncertain. Furthermore, such research on the embryo requires the embryo to be engendered through IVF, itself an immoral practice. And lastly, seeking enhancements manifests an attitude of domination of man over man.

Regarding body-cell therapy, DP renders a positive judgment saying that “such actions seek to restore the normal genetic configuration of the patient or to counter damage caused by genetic anomalies or those related to other pathologies” (n.26). Germ-line (sex cell) therapy is given a more cautious judgment because the modifications affect one’s offspring. These risks are unknown, or at least, the present state of research cannot determine the level of risk to offspring of one receiving germ-line therapy. “Because the risks connected to any genetic manipulation are considerable and as yet not fully controllable, *in the present state of research, it is not morally permissible to act in a way that may cause possible harm to the resulting progeny*” (n. 26).

To explain this position further, germ-line modification would be done for the sake of future children. For example, the decision to eliminate the gene that causes sickle cell anemia would theoretically produce future children free of this disease. But it might also have serious and unknown side-effects. The gene for controlling this type of anemia also protects children against malaria. Efforts at germ-line engineering seek to take control of our genetic patrimony, but we do not yet have the wisdom to do this successfully. Once changes are made in the germ line, they may be very difficult to reverse.

DP also addresses genetic enhancement technologies. In such a scenario, one would modify a gene, or have one added, that would confer greater abilities or capacities to a particular individual. Parents who enjoy athletics might wish to have a child who is a speedy runner. Such a plan is highly unlikely to succeed as many of our capacities are poly-genetic, meaning that they involve a group of genes manifesting complex interactions with one another, or that our most meaningful traits and abilities are not genetically determined but are learned and formed through practice, upbringing, formal learning and environment.

The President’s Council on Bioethics, when it discussed enhancement technologies, did not bother to address genetic enhancement saying that in such cases the relationships and interactions among these genes (and between one’s genes and the environment) are certain to be enormously complex. Isolating all the relevant genetic variants, and knowing how to work with them to produce the desired result, will therefore prove immensely difficult.2

Nevertheless, in the event that such advances are made, DP renders the following judgment: Apart from technical difficulties and the real and potential risks involved, such manipulation would promote a eugenic mentality and would lead to indirect social stigma with regard to people who lack certain qualities, while privileging qualities that happen to be appreciated by a certain culture or society; such qualities do not constitute what is specifically human (n. 27).

The teaching goes on to point out that seeking enhancements violates both the principles of justice and charity. Justice is violated because the equality of all humans would be compromised in a culture that had an enhanced and unenhanced class, or one in which certain capacities were favored, and lacking them meant lacking full moral status.

Seeking enhancement violates charity in that seeking to modify oneself manifests at some level, a disgust with oneself, a rejection of the finite nature of man. Implicitly, man takes on a domineering role, seeking to rule and control his nature and life. Such is the height of hubris and is contrary to the self-love required to respect every human being, even ourselves. DP closes this section as follows:

In rendering a negative judgment on these kinds of interventions, DP says that they imply “*an unjust domination of man over man*” and urges us to “an attitude of care for people and of education in accepting human life in its concrete historical finite nature” (n. 27).

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
  
1 See, Melinda Wenner, “Tribulations of a Trial,” *Scientific American* 301(3) (2009): 14-15.   
2 President’s Council on Bioethics, *Beyond Therapy: Biotechnology and the Pursuit of Happiness* (Washington D.C. 2003), 38.