

National Academy of Sciences and National Academy of Medicine

Committee on Human Gene Editing:
Scientific, Medical and Ethical Considerations Consensus Study
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Thank you, members of the Committee, for your interest in broad public perspectives about the issues before you.

No one can speak for all religious positions, or even for all Christians. As you may know, in the US, although our relative numbers are declining, about 70% of the public identify with Christianity and over 60% claim to be members of churches. We are divided in roughly equal numbers among Catholics, Evangelical Protestants, and so-called mainline denominations, such as my own denomination, the United Church of Christ. Bearing in mind these numbers, I will try to summarize Christian perspectives

Common among all Christians is a presumption of strong religious support for medicine. Christians regard Jesus as a healer, sometimes referring to him as the “great physician.” Support for healing extends to support for research and support for hospitals.

At the same time, religious objections to science in general and biomedical research in particular are often heard but often exaggerated. Christians themselves rarely complain that biomedical advances amount to “playing God.” That phrase is more commonly used by secular bioconservatives who claim widespread support for their opposition by saying it offends those who are religious, Christians especially.

As one theologian has responded, we are not forbidden but are obliged to imitate God, to play God as God plays God...that is, for healing and human benefit. It is a duty, not a crime. Others have used the phrase “co-creation” to suggest how human skill should play a supportive role in what is ultimately God’s own work. Many Muslims and Jews, along with those of other faiths, agree with these ideas.

Because religious objections are so often exaggerated, it may come as a surprise to some to hear that Christian scholars and denominations actually offer cautious support for human germline modification. There are, of course, constraints on this support, having to do mainly with safety. In some cases, the concern for safety amounts to a

temporary moratorium but not a permanent ban. For example, a 2006 resolution of the Southern Baptist Convention includes these words: “RESOLVED, That we cannot endorse any use of human germline modification at this time, no matter how well-intentioned, due to the unpredictability of the process and the possible introduction of irreversible destructive errors into the human gene pool...”

Also in 2006, the multi-denominational National Council of Churches adopted a statement similar in tone. It refers to the “tremendous potential for eliminating genetic disease” offered by germline modification, but recent safety concerns meant that “the case for germ line therapy...has become even more difficult to make.” In 2000, the United Methodists also raise concerns for safety because of “current technology.”

Perhaps the most interesting statement comes from the Catholic Church. In addition to a general concern for safety, Catholic support is constrained by their objection to *in vitro* fertilization. While noting these twin concerns, a 2004 Vatican statement offers support nonetheless to the basic objective:

Germ line genetic engineering with a therapeutic goal in man would in itself be acceptable were it not for the fact that it is hard to imagine how this could be achieved without disproportionate risks especially in the first experimental stage, such as the huge loss of embryos and the incidence of mishaps, and without the use of reproductive techniques. A possible alternative would be the use of gene therapy in the stem cells that produce a man’s sperm, whereby he can beget healthy offspring with his own seed by means of the conjugal act. (*Communion and Stewardship* 2004: 90).

Here the Vatican is supporting the general idea of therapeutic human germline modification. Are they at the same time suggesting a way in which new or future technologies might work around other long-standing Catholic concerns?

More broadly, however, I see three important questions arising from these statements, questions that must in the end be answered by the widely shared opinion of leading technical experts.

1. What is a reasonable standard for safety, and how will we know when our technology meets the standard?
2. Does gene editing actually offer, in the words of the National Council statement, “tremendous potential for eliminating genetic disease.” In other words, is religious (and possibly general public support) for germline applications based on a realistic view of what gene editing technologies will actually provide?
3. Religious statements are open to germline modifications for therapy but not for enhancement. Nothing is said in these statements about applications that might

be seen as falling in between obvious therapy and obvious enhancement, perhaps to lower the risk of disease. My guess is that Christians would support at least some of these possibilities, but options should be clarified so that support for them can be developed.

I want to stay with the therapy/enhancement distinction for a moment. Religious statements in support of germline modification are open to its use for therapy but not enhancement. But what do people visualize when they speak of enhancement? The Vatican statement quoted earlier is actually open to enhancement, but never to a “subhuman” or a “superhuman.” According to the statement, “The use of genetic modification to yield a superhuman or being with essentially new spiritual faculties is unthinkable, given that the spiritual life principle of man – forming the matter into the body of the human person – is not a product of human hands and is not subject to genetic engineering.” (*Communion and Stewardship* 2004: 91).

If “superhuman” is what people have in mind when they think of enhancement, no wonder they are concerned about gene editing as a slippery slope. I suggest that today there are broadly-held questions and fears about enhancement, fanned by pop culture, competitive sports, mass media, and transhumanist rhetoric. While there are many paths to enhancement, not just gene editing, these generalized fears hang over your project.

In other settings, I urge Christian leaders and scholars to get out in front of these possibilities and to think broadly about what it means for humanity to flourish, to be lifted up, or (dare I say) rightly enhanced.

Here in this setting, I simply want to suggest that this committee keep in mind these fears and the imminent dangers they pose for good science and good medicine. Some people worry about the harm that science and technology will produce. I want to encourage you to worry about the harm these fears might do to science. If there is good to come from human gene editing, we do not want public fear to keep us from getting to that good. My advice is that in your report, you be as clear as possible, based on what we know and what we are reasonably likely to learn, about possible applications of CRISPR/Cas9 and related advances. For example:

- If it is germline gene editing for therapy, specifically what applications? Why this approach and not some other?
- If it is to be used for something that edges even slightly beyond therapy, what are the potential benefits, limits, and risks?
- If it is ever used for something that is more clearly identifiable as enhancement, what are the possibilities and the obstacles that must first be identified and overcome? And finally,

- If some of these uses are scientifically and medically justifiable today, say which ones. More than that, also say which one might be justifiable someday, contingent upon better techniques and better knowledge. But make it clear that rigorous expert and public debate must precede any decision to go from what is scientifically and medically justifiable today to what may be appropriate in the future.

Clarity alone will not allay everyone's fears. But clear identification of future stopping points, at which more reflection will be required before going forward. It will undercut somewhat the fear of a slippery slope. It will make it clear that rigorous expert debate and public review must precede any decision to go to the next step or to move from what is scientifically and medically justifiable today to what might be appropriate in the future. It will help reassure the public that those who develop and use these technologies are keenly aware of the current social and moral limits of their use. It will also help maintain the strong support of religious communities for medical advances and for the careful work needed to bring them from research to the clinic.