

Genetic Research Poses Problems For Scientists and Churchmen

By RELIGIOUS NEWS SERVICE

The issue, says Jesuit theologian, Father Richard McCormick, is "a form of scientific research so staggering in its possible implications that it surely represents one of the greatest ethical and social crossroads faced by the human race."

It is called "recombinant DNA research." It results in artificially induced genetic changes, in effect, new forms of life. Weighing the potentials for good as well as ill, and in view of current unknowns connected with such gene-splicing, some scientists as well as theologians are questioning whether what can be done should be done in this field.

DNA is short for deoxyribonucleic acid. Found in all living things, it comes in the form of strands of chemical components — genes — which might be compared to a string of pearls. The thousands of genes of a particular kind of organism determine the myriad of characteristics. Most genes are grouped together in large microscopic chains on carriers called plasmids. A few combine in small rings known as plasmids.

Current recombinant research involves splitting the plasmids open, inserting new genes, and putting the plasmids back together. Reintroduced into a host — a common one is *Escherichia coli* (E coli), a harmless bacterium found in human and other animal intestines — the genes start to change the host's hereditary characteristics and are reproduced as the host multiplies.

The implications of this infant form of genetic engineering are alluring or alarming, depending on who is sketching the future. A host of agricultural and medical benefits is proposed. Some scientists, for instance, say certain food plants might be engineered so as to give them the capacity to convert nitrogen from the air directly into needed nutrients, thus reducing dependence on expensive fertilizers. In medical research, the recombinant DNA experiments could allow intensive study of genes related to diseases such as cancer, hemophilia and diabetes, thus advancing efforts to cure or prevent them. The recombinant DNA research also has implications for mass production of some rare or expensive drugs.

On the other hand there is the specter of accident or malevolence — new strains of disease-causing bacteria, for instance, might be made immune to drugs currently used to combat them.

Some have suggested that one good dream — a strain of organism which would consume oil spills in rivers and oceans — might turn into a nightmare. Accidentally let loose, it might run amok and attack oil supplies in storage tanks or automobiles.

What to do?

In the mid-1970s, molecular biologists themselves initiated a temporary moratorium on certain kinds of research in the field, and the National Institutes of Health subsequently developed a series of guidelines and controls for such research which receives NIH funding. After months of study and debate, Cambridge, Mass., adopted guidelines which affected Harvard University, the Massachusetts Institute of Technology, and other research centers in the city of Boston. To cover research funded privately, some are pressing Congress to give the NIH guidelines the force of general federal law.

Opponents and proponents of both guidelines and the research itself clashed with a verbal vehemence unusual in academic circles at a late Winter forum on the subject sponsored by the National Academy of Scientists. At one point, a banner reading "We Will Create the Perfect Race — Adolf Hitler 1933" was unfurled, a comment on the negative implications of gene-splicing.

Erwin Chargaff, retired Columbia University biochemist asks: "Have we the right to counteract, irreversibly, the evolutionary wisdom of millions of years in order to satisfy the ambition and curiosity of a few scientists?"

To which, Stanley Cohen, molecular biologist at Stanford University, replies that humans have often interfered with the natural order — by cross-breeding plants and animals and developing vaccines and antibiotics. It is "evolutionary wisdom that gave us the gene combinations for bubonic plague, smallpox, yellow fever, typhoid, polio and cancer," he says.



New research into DNA — the key to heredity in all living things from the smallest virus to this baby — would combine strains of different genetic material to create new life forms and open up revolutionary vistas of learning in biology. But many questions are being raised — with the first alarm sounded by scientists themselves and now by moralists and others — that great caution must be exercised in such research. (RNS)

Some erstwhile proponents of a moratorium on the research have now concluded with Roy Curtiss, a University of Alabama geneticist, that gene-splicing "offers no danger to any human being." Some worry about the effects of government control of basic research, raising the ghost of "Lysenkoism," a reference to a recent period in the Soviet Union when government controls based on inaccurate scientific theories greatly retarded research.

Whatever side the scientists are on, it seems clear that, in the words of Robert Sinsheimer, head of the Caltech biology department, "Biologists have become, without wanting it, the custodians of great and terrible power. It is idle to pretend otherwise."

This spring, the Committee for Human Values of the U.S. Catholic bishops urged "open communication between science and the public in the recombinant DNA debate."

Though not advocating a cessation of such research, the committee report said that because not all scientific advances are really signs of human progress, society should "pause before we pursue everything which is scientifically feasible. Wisdom is also necessary if the good of humankind is really to be achieved."

The statement asked wariness toward "a strictly utilitarian mode of reasoning... A good end or good purpose does not justify any means. There might well be a worthy scientific goal which ought not be pursued if it unjustifiably violates another human good. In other words, ethical constraints might slow down, or even preclude some scientific advances."

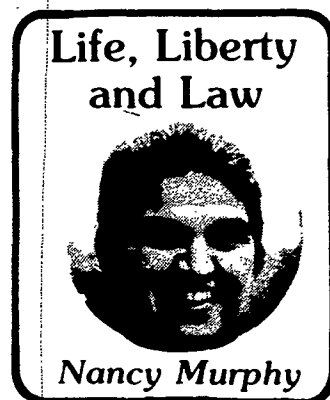
More recently, Sister Ann Neale, executive director of the committee, urged that a proposed study of the implications of recombinant DNA research precede further research as "a logical priority and very possibly a moral imperative." She said it is "an unsatisfactory aspect of recombinant DNA activity thus far" that "the research has continued, not only in advance of more detailed knowledge of possible hazards, but also in the absence of serious consideration of issues other than biohazards."

Some who oppose such research say it functions as a "technical fix," that is, rather than working to avoid oil spills or the release of cancer-causing substances into the environment the emphasis is on cleaning up the spills or curing the cancer. A society dedicated to genetic betterment they also say, would victimize the poor, uneducated, and uncultured.

Writes Nancy McCann, an editor of *Sojourners*, monthly of the Peoples' Christian Coalition, a Washington, D.C., community with evangelical roots: "With past political ulterior motives in mind (the gas chambers at Auschwitz started as an experiment in eugenics), and present evidence of very human influences (the allure of a Nobel prize could sway one's scruples), Christians should avoid embracing this society's technological faith by merely regulating recombinant research. The Christian goal is not simply to improve nature. We worship as our absolute a God who, while he is revealed in nature, transcends it. It is this difference in our starting points that leads the Christian to question the 'good' scientists would seek, first in genetic manipulation, eventually in eugenics ('good genes'), to improve our lot. Does good mean more passive? More productive? More predictable? ... Perhaps, as one person has remarked, when we lack sufficient wisdom to do, wisdom consists in not doing."

But that point of view, objects David Moberg of Marquette University, would mean "there will never be any innovation and creativity for the benefit of humanity because of the fear of potential detrimental consequences." He suggests that "by emphasizing the importance of creative research designed to promote genuine love and service to hungry, ill, and poor people in a context of genuine Christian stewardship, it may be possible to gain a victory over materialistic, imperialistic and militaristic interests which otherwise might dominate this significant development."

Speaking of the bishops' committee report, Father McCormick notes that it "does not give a set of answers or prohibitions. But that is precisely where we are. No one really has all the answers to these serious questions. And we are not likely to discover them by acting as if we did." The document, he says, "teaches well. And because that is the case, it returns heavy responsibilities to the 'taught.' In so many moral matters that is where it belongs."



Life, Liberty and Law

Nancy Murphy

subject to domination by the devil. Some well-meaning modern teachers reject the fall of man, deny the existence of the devil and often refer to Original Sin in quotation marks as though it were a fairy tale, but the Church remains faithful to her teaching. Original Sin is present in each of us from the moment of our conception. Mary alone was preserved from its stain and effects, and although subject to "general human defects," she remained free of any sign of concupiscence, any sign of moral error.

The Church further teaches that regardless of the moment of ensoulment the human body, as the nest of the immortal soul, is sacred from the moment of its conception (footnotes 17, 18 and 19, Vatican Declaration on Procured Abortion). This position is directly opposed and rejected by Catholic writers such as Daniel Callahan who insist that the worth of human life can be determined on a "sliding scale" wherein the unborn increases in "value" as he approaches birth and visibility.

Interestingly, it was not until the 20th century that science discovered and now teaches that human life begins with all characteristics intact at the point of fertilization, conception. Science proves man's existence, history records his deeds. Man himself, often devoid of faith, stresses his worth or social value. But the Church recognizes his sanctity.

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