A POLICY STATEMENT *of the National Council of the Churches of Christ in the United States of America*

Genetic Science For Human Benefit

(Adopted by the Governing Board May 22, 1986)

1. Why is it advisable and timely?

Genetic engineering is one of the most significant scientific achievements in history. It is of very recent origin, and yet developing in unexpected ways with rapidity. It has profound implications for our understanding of all organic life, but especially of human beings. It thus poses new theological questions about the identity and value of humans. Its great potential for improving food production, drugs, medicaments and therapeutic procedures is unfolding with each new stage of discovery and development. Genetic engineering also instigates new problems for environmental control, commerce and government policy. It is clearly a matter on which Christians should express opinions based upon scientific data, theological understanding, ethical sensitivity and strong faith in God's revealed purposes.

2. What is the specific purpose of a statement?

The statement is addressed to several audiences: member communions of the National Council of Churches of Christ in the U.S.A.; other churches and religious bodies of the nation and world(1); persons in science, medical ethics, commerce and government who deal with genetic issues; the public. There are many who would welcome such a statement as this one as representative of theology and Christian ethics. It should stimulate study and discussion of the many particular questions about genetics; and the responses should contribute to a revised statement in several years. If the statement should merit widespread interest and approval, it will benefit the Council's reputation for facing a significant but difficult topic.

3. What is the theological basis?

Previously, the Council's Panel of Bioethical Concerns published an extended report, including its theological understanding, entitled Genetic Engineering (Pilgrim Press, 1984) pp. 20-31. The present statement condenses that material. The major affirmations are: God's purposeful creation; humankind's special place in creation; the sacred worth of human life attested by both creation in the image of God and the incarnation; the reality of disease, sin and mortality; human care of creation as newly involved in evolution; the Church's role in human history and creation as witness to fairness, justice and love. Still other theological themes are implied in the statement.

4. What are alternate competing views?
   a. Some writers, including both scientists and ethicists, have urged the banning of all genetic techniques applied directly to human beings, on the theological ground that God intends humans to remain "natural," or that genetic experimentation oversteps the bounds of action permitted to humans.
   b. Some scientists have strongly opposed any governmental restraint or regulation, on the ground that scientists are self-regulating.
   c. Many persons who claim no theistic faith are unimpressed by Christian declarations of God's interest in genetics. They either welcome or fear genetic engineering on humanistic grounds.
   d. Some of the above, as well as certain "process" philosophers, admit no inherent or categorical distinction between human life and all other life.
   e. Some are indifferent to experimenting with human embryos. Still others desire to eliminate all "defective fetuses" for eugenic reasons and favor sterilization by mandate.

1) See also the 1982 World Council of Churches' report, Manipulating Life Ethical Issues in Genetic Engineering and Genetics and the Quality of Life, ed. Charles Birch and Paul Abrecht (Pergaman Press 1975)

"Genetic Science for Human Benefit"

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NATIONAL COUNCIL OF THE CHURCHES OF CHRIST IN THE U.S.A.

"Genetic Science for Human Benefit"

I. THE UNEXPECTED ADVENT AND UNPRECEDENTED CHALLENGE OF BIOTECHNOLOGY.

A. In an era when rapid change and spectacular innovations of science-based technology are common, molecular biologists are accelerating the transformation of human understanding of organic life. Only since 1973, when the technique of recombining genes in the molecules of DNA was made known by researchers, have people been realizing that humanity has entered a new time of immense potentiality for good or ill. A great number of scientists, both famous and obscure, have learned not only to recognize but to manipulate the essential units of organic matter. The public can easily be misled by the extravagant and sometimes distorted announcements of journalists and sensational writers. The positive expectations for a better life through genetic science are widely held, however, even though these are also contested by critics who perceive possible perils and point to past social abuses in the name of genetics. Whichever may prevail in the future, the present activities in this field demand of responsible men and women a serious effort to gain knowledge of genetic engineering and raise questions about its likely consequences. Members of the churches of the National Council of Churches, including many scientists, share this responsibility and bring to its consideration a particular perspective of theology, ethics, faith and experience.

B. Immense numbers of Americans, as well as others throughout the world, are experiencing the effects of genetic science. These are effects upon society at large as well as upon individuals. Many who are Christians are looking for ways to understand the mutual relation or interaction between their theologically-informed faith and the emerging data of genetics. For example, the chemical structure of human DNA is virtually identical to that of all other living organisms, a fact which seems to undercut some traditional beliefs about the uniqueness of human beings. Church bodies need to be informed and careful when pronouncing judgments on genetic science, especially due to their respect for the many scientists and others engaged in occupations touched by genetics who are deeply committed Christians.

C. Reticence on the subject is no sign of wisdom or virtue on the part of the churches. Assembled in congregations, special groups, or denominational and ecumenical conventions, Christians dare not remain aloof from the genetic revolution. To love God with all the mind implies a serious regard for new insights into God's creation; and the mandate of love, concern and support for all one's "neighbors" and for the "least of these" likewise requires attention to a scientific and social movement that affects the lives of very many. However provisional it may be, due to expanding knowledge, a statement of churches on genetics is legitimated by present circumstances. This document of the National Council is intended to help its member communions and others seek to understand God's will in this matter and find a common voice to express it.

D. That voice should be modest and restrained. Churches are well equipped to speak of the Bible, the Gospel, Christian doctrines and ethics; but they have no privileged wisdom about science as such. Scientists and others who do the work on genetic manipulation are respected for their knowledge, and their manifest contributions to human welfare and health should be welcomed. Nothing is to be gained by deliberately or inadvertently alienating scientists from religious faith by negative criticisms so long as their work is not contradicting recognized

Christian purposes and objectives. The sudden burst of genetic research and application may well be considered an activity of the divinely endowed mind and spirit of intelligent inquiry and will to serve. But appreciation for scientific achievement is not unconditional, for it is tempered always by humane and ethical considerations, and by awareness that all human endeavor is limited and flawed.

II. SIX AREAS OF CONCERN WHERE GENETIC TECHNOLOGY BEARS DIRECTLY ON HUMAN LIVES.

A. Genetic Counseling

The developing modes of gene-splicing technique and their application to human health and therapy demand the greatest attention. This is because Christian theology regards the effect on human life as the primary theological criterion for making ethical judgments about genetic science.

Before 1953, genetics was a statistical science; after the decoding of DNA it became a biochemical science. The statistical knowledge still remains important and useful in genetic counseling of prospective parents. If men and women will consent to consultation on the genetic history of their families and will act upon the professional information given, a great many cases of genetic disease in unborn and newborn babies could be avoided. In this regard, it is a matter of increasing necessity for pastors and other counselors to be well informed about the patterns of hereditary transmission of disease. Without infringing upon the freedom of couples to choose whether to attempt reproduction, pastoral counselors can assist them in thinking through the problems of risk and responsibility.

B. Ante-natal Diagnosis

With the advent of ante-natal diagnosis, genetic counseling presents people with a different set of questions. There are now sophisticated techniques for determining the presence of deleterious genes prior to birth. Genetic markers or probes are devised to identify such diseases as Huntington's chorea, hemophilia, neural tube defects and cystic fibrosis. Since gene therapy for these and other diseases is not yet feasible, each positive diagnosis confronts the prospective parents with numerous spiritual, ethical, medical, social and financial questions. Religious communities are frequently called upon to minister to and counsel with families facing such questions. The issues raised are approached differently within the various traditions, but are generally recognized to be of significant pastoral concern.

C. Pharmaceuticals

Pharmacology as a science is being revolutionized by genetic engineering, as is the pharmaceutical industry. Gene-splicing accomplished in bacterial growths of large volumes has made possible the manufacture of insulin, which is indispensable for diabetic persons. The boon to hemophiliacs is Factor VIII, the clotting agent in blood; for victims of dwarfism it is the genetic factor which releases growth hormones (GRF); for those with weak immune systems it is T-cell receptors; and interferon of various synthesized types is used for therapy of viral diseases and cancer. Equally to be welcomed from genetic laboratories are the inverse products of the therapeutic drugs, namely the new vaccines against several diseases. An obvious concern is that production should be done safely. In principle, all such efforts to prevent or to cure diseases deserve warm approbation.

D. Gene Therapy

Gene therapy will be based upon accruing knowledge gained through laboratory research with animals, but it has not yet been given proper authorization to be attempted with human subjects. Whenever clinical trials are made with human beings, they will first be applied to tissues which are affected by relatively simple, monogenic irregularities, such as immune deficiencies, anemias of the bone marrow or Lesch-Nyhan disease. Put simply, unhealthy genes will be replaced directly by healthy ones. Such procedures will have effect upon the patient's somatic cells, or body cells, which constitute almost all of the human organism. The others are the sex, or germ-line, cells, which are confined to the reproductive organs. The distinction is categorially important, because somatic cells all die when the individual person dies, but the germ-line cells live on in future offspring. Therefore, any mutation of the sex cells caused by therapeutic procedures with the embryo will pass on irrevocably to future generations. Given the primitive state of this art, as well as the unknown and uncontrollable risks involved in possible genetic mutations, researchers and religious and secular commentators should approach it with extreme caution.

E. The Gene Pool

Reference to future generations raises the question of present responsibility for them. Do people of one generation live only for themselves, for their own health, or should they always keep the coming generation in mind? This is the question which summons consideration of the "gene pool." It is a matter of vast implications. Susceptibilities to more than three thousand genetic diseases, as well as other physical and psychological disabilities, are determined by the invisible, sub-molecular arrangements of certain nucleic acids on the strands of DNA in the chromosomes of human cells. Everyone carries eight to ten defective genes. Slight changes, or mutations, in the genes of one's genome (the total information carried in the germ-line cells) will modify those susceptibilities in the offspring, for better or for worse. Also, the more people having genetic diseases or afflictions survive and procreate children, the greater will be the transmission of their harmful genetic material. Thus, the total quantity of genes in a family lineage, or a society, or the entire human race may be thought of as a "gene pool," which may either be "polluted" or "cleansed." Recognizing this process, people have conceived of various schemes to make eugenic progress for the human race. Some plans are respectable but idealistic, such as appealing to men and women to abstain from procreation when they know they are carriers of diseases. Others are contrived and tend toward elitism, such as promoting artificial insemination with germ plasm of outstanding men and women. Still others have been coercive, political or diabolical, calling for mandatory sterilization, or even the killing, of "unworthy" people. In recent years, advocates of eugenic programs have been further impelled by factors of population expansion and economic restraint. In any case, significant effects upon the gene pool require mutations over many generations.

The advent of genetic engineering seems to have given new encouragement to some persons to believe that the eugenic processes can be expedited. They are supported, further, by the social phenomenon of "health and fitness" enthusiasm, the striving for physical "perfection," and the belief that only "perfect" babies should be accepted. However tempting may be the eugenic ideology, sober reflection shows that Christian concern for personal integrity and value, therefore, makes involuntary eugenic research morally unacceptable.

Some persons advance theories, based upon allegedly scientific or pseudo-scientific evidence, that maintain that people belonging to certain ethnic groups are genetically predisposed to inferiority of intelligence and anti-social behavior.

While researchers continue to find causal relation between genes and susceptibility to diseases, there is manifest danger in an ideology of genetic behaviorism which implies that levels of human action and social worth are genetically determined.

This ideology is especially troublesome for us in the United States, where technological utopianism has a peculiar hold on our thought. We have been too easily disposed to explain away many social, economic, and political inequities in terms of biological destiny. Genetic science has long been used to justify subjugation of ethnic minorities and exclusion of them from full participation in American society. Remembering this, the churches should keep ever alert to the dangers of allowing genetic science and technology to be used as a tool for political, economic, and social domination over any persons.

F. Assisted Reproduction

Concurrent with the sudden rise of skills in genetic modification are the various methods of "technological reproduction" or "non-coital procreation." Radically altered attitudes in the population towards sexuality, the family, the role of women and children in the context of the technologizing of culture contribute to the problem of evaluating what is happening. The laboratory technique of in vitro fertilization is understandably welcomed by some infertile, childless couples. It also permits new practices, shocking to many sensitivities, of embryo freezing, embryo experimenting, and surrogate mothering. Furthermore, the in vitro method enables researchers to practice "gene surgery" in insects and mice, replacing the nuclei of embryonic cells with chosen genetic material. This may or may not eventually be feasible in humans to prevent genetic disease. Some envision the potential to modify such characteristics as height, weight or intelligence.

Some people reject these reproductive technologies as contrary to Christian faith and morals because they violate the "natural" modes of procreation, wherein sexual union and conceiving children are linked in intention. Others approve the method of helping infertile couples to have children, but disapprove of careless treatment of embryos. Still others justify the entire enterprise as an achievement of human, God-given intelligence, opening the way for populations of the crowded future to be regulated. While the debate continues, the practices develop and spread.

III. WHERE GENETIC ENGINEERING OF NON-HUMAN LIFE AFFECTS HUMAN WELL-BEING.

Being dependent upon the natural environment for water, air and sustenance, human beings cannot avoid the impact of genetic modifications of certain animals, plants and ecological systems. It is not simply the case that non-human organisms are modified for good or ill, but that the changes have indirect effects upon humans, also for good or ill. Modern science confirms that people are more closely bound to animals, plants and eco-systems than earlier generations knew. The bond lies at the molecular level, and not merely in physical appearance, shared space and mutual interdependence.

A. Animals Bred for Food.

The breeding and cross-breeding of domesticated animals has been achieved over many centuries. Today it can be done in weeks or months. Artificial insemination of livestock has been practiced for more than a century. Now added to that mode of fertilization is the technique of embryo transfer. Embryos removed from the female by lavage are easily transferred to others for gestation. Or else, the embryos may be quickfrozen and kept indefinitely for implantation wherever desired. Moreover,

at its earliest stage of cellular growth, the embryonic nuclei may be cut in two, producing twins or multiples. And the introduction of growth hormones, extracted from humans (!) leads to larger animals, more valuable for food or hides. The potential for "manufacturing" not only livestock, but poultry and fish, for human consumption seems almost limitless.

What might be welcomed as an easing of the food problems of carnivorous humans is nevertheless deplored and challenged by many others, but for differing reasons. Some perceive it as human arrogance when shortcuts of the evolutionary process are devised, thus violating nature as given. Others stress the inherent value of "species integrity," so that experimental efforts to cross species barriers are impugned. The recent birth of a "geep," which at embryonic stage was a mixture of the germ plasm of a sheep and a goat, was unwelcome news to those who honor the natural order of organisms. Added to such concern are the strong feelings of "animal rights" advocates, who claim that animals are not only to be spared suffering but must be respected for their species identity. On top of these judgments and anxieties is the fear that genetic and reproductive manipulation of animals presages the same with human beings, whose mammalian bodies are susceptible to similar procedures.

B. Agri-genetics

The promises of abundant supplies of grains, vegetables and fruits enhanced by genetic engineering seem to be fulfilled just in time to meet the needs of the world's rapidly increasing population. As with animals, the long periods of plant breeding to produce better hybrids or hardier, more edible species have been greatly foreshortened by genetic researchers; and future predictions of achievements can hardly be doubted. Food plants will resist fungi, diseases and pests; they will require less water, draw nutrition from the nitrogen of the air, and even grow on saline soil. The huge savings in resources and costs for making artificial fertilizers may have a dramatic effect upon market costs. Furthermore, non-edible fibres and bio-mass will readily be transformed into alcohols and fuels for industrial use. Such processes and products seem to be of unambiguous value to humanity. Perhaps so. Research in plant genetics, however, is in a relatively early stage. More remains to be learned. One problem has to do with the reducing and narrowing of the varieties of related species such as those of wheat and corn, making them more vulnerable to destructive diseases. Diversity of varieties protects against catastrophic elimination of species. There is also a serious socio-economic concern about the concentrated ownership of patented seed grains and other seeds, a factor of immense importance for farmers throughout the world, particularly in poor nations where patents are held by rich ones.

C. The Ecological Impact of Genetic Technology

Not only those styled "environmentalists," but people everywhere, have been sensitized and educated with respect to the balanced eco-systems of the earth's fragile biosphere. Long periods of deforestation, dehydration, pollution and toxification have resulted in today's global crisis of environment. Now come new threats in the form of genetically engineered bacteria which, if released recklessly, might wreak further damage upon natural ecology and thus on human life. Scientists are divided over the potential dangers, even as they were in 1974 on the hazards of laboratory experimentation with genetically altered bacteria and viruses. If scientists impelled by curiosity and entrepreneurs by profit seeking have learned anything from the nation's experiences with chemistry and nuclear fission, they will proceed with greater caution, as well as with government oversight, to avoid causing further, irrevocable damage.

IV. EFFECT OF GENETIC ENGINEERING UPON SCIENTIFIC PRACTICE

Taken as a whole, the science of recombinant DNA manipulation is a singular achievement, ranking with nuclear physics, cybernetics and exploration of space. The art of identifying and sequencing genes, and the techniques of recombining them, have contributed significantly to laboratory method. However, the rush to develop marketable products is having effects upon scientific practice which raise questions and engender concerns. If churches are serious about making comments on genetic engineering, they should be equally serious about maintaining standards of good science.

The sudden leap from laboratory to factory has seldom, if ever, been made so rapidly as in the case of genetic research. Within five years of the announcement of recombinant DNA method, a commercial firm was established for purpose of marketing. Within seven years, a United States patent had been granted on a "new life form" of bacteria. Thereafter, hundreds of genetic corporations have arisen, mostly in America, but also in Europe and Japan. This phenomenon can be condemned in principle only by those who categorically reject capitalism. Even granting the legitimacy of profit-motivation and regulation, there are consequences of the present rush to the market which are disturbing.

A. The End of Pure Science?

The distinction has long been drawn and accepted between "pure" and "applied" research. The solitary seeker of knowledge, oblivious to the world outside the laboratory, is a romantic fiction. Even so, "disinterested" research has been well regarded, whether by an individual or a team of scientists. Some of the most valuable discoveries have been unanticipated side-lines of experimentation. While basic genetic research continues, there is increasing temptation for the researcher to think about the financial rewards which will accompany successful experiments. Competition between laboratory teams, whether in universities or commercial firms, becomes more intense. It fosters secrecy about formulae and methods, which erodes the tradition of openness, cooperation and publication in journals. And prominent biochemists and molecular biologists in the universities and indeed the universities themselves become holders of considerable equity in corporations which have proprietary interest in their research.

B. Public Support, Obligation and Regulation

Most biological and biochemical research done in America has been funded by grants from federal governmental agencies such as the National Institutes of Health and the National Science Foundation. When research so funded eventually leads to processes or discoveries which hold most lucrative promise for the scientist, the question of obligation arises. There is uncriticized precedent in many fields of research for the recipients of federal grants to realize profits on their work. Is it now just a matter of scale which calls genetic research into account? A similar question pertains to commercial companies. Should the government lay claim to a portion of individual or corporate profits? Or, at least, insist on satisfactory contributions to public health and well being?

Unsolved as these new problems of policy and law may be, they play a role in the discussions of governmental oversight or regulation. In theory, some hold that the scientific community can regulate itself. Certainly the scientists do not wish to be instructed by persons of a bureaucracy whose knowledge and judgment may not be adequate. However, regulation is already a fact. The statutory powers of the Food

and Drug Administration, the Environmental Protection Agency, the Department of Agriculture, and the Occupational Safety and Health Administration are sufficiently strong to restrict research or trials which are not in the public interest. Moreover, there is a specific, if limited, authority over genetic research exercised by the National Institutes of Health with the counsel of its Recombinant DNA Advisory Committee. In spite of these, citizens and legislators have been urging the establishment of a Commission on Genetic Engineering, because of genetic engineering's unique potential to affect future as well as present generations.

C. Military Uses.

Biological weapons, like chemical gases, are generally regarded with abhorrence because, like nuclear bombs, they kill people indiscriminately. They are formally banned by international treaty, the Biological Weapons Convention, signed by the major powers. Even so, the Department of Defense has been extending the scope of research on genetically engineered pathogenic bacteria and toxins, but always with the justifying explanation that they would be used only defensively. Whether such ultimate weapons of human destruction are intended for offense or defense, their hazardous and repugnant nature is self-evident, and the morality of their being used is highly questionable. With respect to the integrity of microbiological researchers and the branch of science they represent, it is also questionable whether science can keep from being corrupted by employment for military purposes.

D. Global Implications.

Modern science, in all branches, has become increasingly international in scope, cooperation and communication of research data. In a secular sense of the word, the scientific community of tens of thousands of persons has become "ecumenical." This transnational community is inhibited and damaged, however, by enforcement of policies of national interest with respect to one or another branch of science. Thus, embargo is being imposed on some genetic information. In addition, the economic competition of international or transnational biogenetic corporations has a divisive effect.

Variations in national laws governing public health and biological research give rise to another kind of global concern. It is the way American or European companies can conduct experimental trials and market their products in countries which are more lax in restraints. These are mainly countries of the southern hemisphere: poor, populous and subject to exploitation and danger to health and life. If such commercial activities are not deemed wise or ethical toward one part of the world's population, on what basis can they be justified in other parts?

V. GENETICS ON THE SCALES OF CHRISTIAN FAITH.

As representatives of the member churches of the National Council of Churches of Christ in the U.S.A., we feel obligated to speak to the problems raised by genetic science and technique. This is not our final word, for the problems are too profound and complex; the development of the science is too rapid and unpredictable. Yet there are certain firm convictions which Christians hold and share regarding God's purpose for individual human beings and for humanity as a whole. These matters of faith, informed by experience and reason, include expecially: (1) the sacred worth of human life; (2) the values of fairness, justice and love; and (3) responsibility to God through human activity in God's creation. These three affirmations provide the warrant and substance of this policy statement.

A. The Worth of Life and Living.

The emerging powers of genetic engineering, both current and potential, impel us to consider most seriously the nature, purpose and worth of human life. Common phrases like "the image of God" and "the sanctity of life" express the uncommonly important conviction that each and every human being belongs to God as Creator in a special way. What God values in a divine relation is therefore valuable in human relation. That God creates each human being is the belief which attributes value to each. That God's eternal Word once became human in Jesus Christ, ministering, dying and rising for the salvation of all, is the belief which confirms the created value for all humanity. Physical life is not the absolute value, but true humanness is found in the unity of the body with the mind and spirit, constrained by love. So life may be sacrificed for still higher value or for other lives, as symbolized by the Cross. (John 15:13) Valuing all humans, a person may accept grave personal risk for the sake of others, including future lives.

1. The Burden of Sin and the Weight of Mortality.

The high valuation of life does not imply the belief in physical and moral perfectibility. Neither does it warrant an avoidance or denial of the realities of disease, suffering, sin, injustice and mortality. Genetic modification can be used to prevent and cure diseases, to reduce suffering, promote better health, and provide economic benefits. For these purposes it is welcomed as an enhancer of life. However, its promises ought not seduce people into believing, on a eugenic platform, that human beings can be made into perfect specimens of physical form and total health. The concept of human "wholeness" is ever conditioned by the organic and moral disabilities of creatureliness during earthly temporal existence. Human powers are sometimes tragically distorted and misused. "Life in all its fullness" (John 10:10) is a goal offered in Christ by faith, not a promised possibility of human achievement.

2. Personal Integrity and Non-discrimination.

Because human life is sacred, all reasonable measures should be taken to preserve individuals and communities from involuntary risks to health and life. The right of persons to refuse to be subjects for genetic experimentation must be respected. Likewise, patients offered the choice of treatment by genetically engineered medicines or by gene therapy have the right to decline them. Neither experimentation nor therapeutic treatment should be practiced without the reasonably informed consent of the subject or patient. Some procedures of uncertain risk or consequence should be done only upon societal approval beyond the informed consent of the participant. Gene therapy of germ-line, or sex, cells of human embryos - if ever practicable - will deserve especially stringent control.

The worth of human life is not bounded by race, sex, nationality, culture, age or physical handicap. The ability to manipulate genes should not be used to reduce the rich diversity of humanity nor damage the integrity of the individual.

3. Human Life and the Natural Environment.

Genetic knowledge shows that genes are as much a part of the created order as rivers, soil and forests. The intimate genetic relation of human beings to all other living matter, as well as the chemical relation to all matter as such, means that humans are a part of their own environment, even while transcending it. Ours is the first generation in history which, knowing DNA, can understand this. Greater seriousness than ever thus attaches to the ancient, enduring biblical requirement for men and women to care for the creation as a responsibility to God and to coming generations. While holding to the primacy in value of all human life, we must also to respect animals for their own worth and do what is possible to preserve the earth's

whole biosphere. A certain risk is a concomitant of all experimentation, but the risks of ill-advised or inadvertent abuses of genetic technology dictate a stern prudence. The unbalancing of ecosystems, like the mutation of germ cells, is irrevocable.

B. Fairness, Justice and Love.

We believe that the whole of humankind, created by God, living under God, offered salvation by God, is a unity. From a belief in this principle arise our cherished concepts of equality of worth, equal opportunity, and participatory social organization. We are not ignorant, however, of the persistence of gross and widespread contradictions of this belief in both theory and practice. Especially do we deny the racist notion that human worth and social acceptability are genetically determined. We affirm our belief in the good creation of each and every person and in the redemptive love of God in Jesus Christ for all humanity.

1. Access to Genetic Benefits

We hold in principle that all people should have access to the benefits of biogenetic innovations. In practice we advocate that as many as possible enjoy the benefits in the form of food, medicine, synthetic and manufactured products. Just as these should not be confined to the rich of the world, so conversely the poor must not be disproportionately put at risk by the developing and testing of therapeutic procedures and genetic products. The poor, many being of ethnic minorities and including countless children, elderly, sick and incarcerated, have too long been victims of exploitation and too seldom benefit from this type of new technology.

2. Profit on Genes.

Scientists, investors and managers who provide the knowledge and capital necessary for bio-technological development and marketing deserve fair compensation for their ingenuity, work and willingness to incur economic risks. Yet, the warnings raised above in IV.A, concerning the threats to science itself, ought to be heeded by researcher and entrepreneur. More serious still is the admonition against monopolistic ownership of genetically modified organisms or substances which are known to be essential to human life for nourishment and health.

We hold, further, that companies and legislators should devise ways for the public at large to share in the benefits of profits made on the sale of products, the basic development of which has been enabled by public funding for research.

C. Responsibility to God through Human Activity in God's Creation

1. Evolution and the Quest for Knowledge

Creation by divine power is not static but dynamic and ongoing. As creatures uniquely made in God's image and with purpose, humans participate in the creative process through the continuing quest for knowledge, which now includes unraveling and learning to control the intricate powers compressed in genes of DNA molecules. Respect for the value of life, for fairness and justice, should accompany this quest and if with love, so much the better for all. We recognize that this awesome scientific capability, which will doubtless increase, can impose a deliberate human will upon the process of organic evolution itself. We do not ask scientists to abandon this effort where microscopic organisms, plants, animals and humans are concerned, but only to advance with unmost caution, cognizant that this is a concern of all society.

2. Limits to Knowledge, Limitations on Research and Production

We cannot agree with those who assert that scientific inquiry and research should acknowledge no limits. All that can be known need not be known if in advance it clearly appears that the process for gaining such knowledge violates the sanctity of human life. Remembering its own history, the church should not oppose scientific advance, but it must speak out in judgment when the quest for new knowledge supercedes all ethical concerns. We do not allow this stance to be called, nor to become, one of anti-intellectual or anti-scientific bias. Neither do we imply that genetic scientists are morally irresponsible, or that institutional review boards cannot make proper decisions on research protocols.

We have noted above (III., B) that governmental agencies are already empowered to oversee and regulate certain developments, procedures and products of gene-splicing. Some such powers are limited to projects receiving public funding, others to private enterprise as well. We believe that the responsible exercise of freedom of research and production will be promoted by a federal regulatory commission, consisting of members drawn from a variety of scientific and non-scientific fields. The commission should possess sufficient powers to exercise reasonable public review and to establish guidelines as required by the public interest. Such an agency should be responsive to public comment as well as professional proposals. It should keep in mind the protection of individuals, various groupings of people and the environment. And it should foster the free flow of information derived from genetic research, while advocating the continuing funding by the government of needed research.

3. The Role of the Church and the Churches

As Christians, we recognize the distinctive place of humankind in the whole chain of life which God has created, and we profess our belief in the unity of humankind as indicative of God's purpose. Moreover, we see the Church of Jesus Christ as having a special role in the historical human venture of finding healing and wholeness of life in freedom and fulfilment. Scientific techniques which affect both the organic substance of human beings and their environment are matters of concern to Christians.

We believe that churches can contribute to the public awareness and understanding of issues relating to biotechnology. They should undertake programs of research and education on the scientific, sociological and political aspects of it, as well as on the theological, ethical and moral ones. Theological seminaries in particular should provide basic education in genetic counseling and its pastoral implications. Furthermore, men and women of advanced theological knowledge should be challenged and encouraged to become involved in the urgent study and discussion of genetic issues. The churches should especially assist local congregations in their role as forums for discussion of these issues.

Acknowledging that the National Council of Churches represents only one large segment of Christian teaching, doctrine and opinion, we think it is urgently important to join in study of genetic engineering questions with persons of other religious bodies. The aforementioned "ecumenism" of the world's scientific community deserves nothing less from ecumenism of religious faith.