

*GOD, grant me the **Serenity** to accept the things I cannot change, **Courage** to change the things I can, and the **Wisdom** to know the difference.*

HUMAN GENETIC ENGINEERING

1. Screening for genetic diseases

Genetic diseases affect 20 million U.S. citizens and are responsible for 25 to 30 percent of admissions to children's hospitals.

Prenatal tests (amniocentesis) can determine if a fetus has any of a growing list of genetic diseases.

Ethical issues

Should genetic screening be voluntary or mandatory?

Who should have access to the results?

Do persons have the right *not* to know?

There exists a constant tension between Rights and Social Benefits.

Individuals should be encouraged to consider the social consequences of their decisions.

2. Somatic cell therapy.

Therapy on somatic cells affects only the individual treated and not the germ-line cells that influence future generations.

The hope is that as genetic knowledge and genetic techniques improve it will be possible to add a missing gene or to remove or replace a defective one.

3. Germ line therapy for genetic defects.

Germ line therapy would be passed on to future generations.

If defects could be corrected in a fertilized egg it would affect many different body tissues and also benefit future generations.

It would open the door to eugenic uses of germ line intervention.

4. The selection of desirable genes.

The combination of in vitro fertilization and germ line intervention could be used to seek positive genetic improvements.

In the United States, a deep freeze bank has been established containing the sperm of men of outstanding mental or physical abilities, from among which women can choose to be artificially inseminated.

There is no one gene for intelligence, much less for artistic ability or love and compassion.

1. Attitudes toward disabilities.

The diagnosis and therapy of genetic diseases is a commendable goal. But we must take care that it does not lead to resentment or condescension toward people with disabilities.

2. Dangers in eugenic programs.

By what criteria would selection be made?

We must be cautious in imposing on future generations our images of perfection.

Eugenic programs would also reduce genetic diversity and encourage intolerance toward differences.

3. The slippery slope argument.

Germ line therapy for genetic defects could be the first step toward germ line eugenics.

The line between therapy and eugenics requires more careful discrimination than distinguishing somatic from germ line cells.

4. Intervention in nature.

Some critics opposed all human genetic engineering as "tampering with nature". However, all medicines is an intervention in nature.

We must be grateful for the amazing human genetic heritage, aware of its complexity and fragility, and be cautious about changing it when our knowledge is so limited.

5. Playing God.

Human beings are endowed with intelligence and creativity to be co-workers with God in the fulfillment of God's purposes.

The social context of research.

Research considerations.

Most scientists acknowledge the right of the National Institutes of Health (NIH) to impose guidelines on its grant recipients.

Some regulations are about environmental risks, others regulations govern the research on human subjects.

Relations between universities and industrial corporations raise some important questions. Can the protection of industrial *trade secrets* be reconciled with the tradition of *open discussion* in the University and in the scientific community?

There is considerable concern about the effects of secrecy on collegiality.

Social considerations.

Access to genetic counseling and genetic therapy should be open to the widest possible range of recipients and not become a special treatment open only to those who can afford to pay for it.

The new power to modify living things must be used with caution because it's effects are so far-reaching.