

Enhancing Human Life: Would you like to be better than well?

Gathering

HYMN

(See hymn suggestions on p. 119)

PRAYER

Blessed are you, O Lord. You made the world in your love. You redeemed the world by your love. You sustain the world with your love. May we ever abide in your love, and give ourselves to you and to others in love. Amen.



HEARING THE WORD

Isaiah 65:13a, 17-25

DISCERNING THE WORD

Silence

Discernment

What did you hear in this reading? Is there a word of God for us here?

Introduction

Session summary

This session explores questions of faith and witness around the use of genetic knowledge and technology to “enhance” life. Christians claim a calling to care for the disabled and to heal disease. As disciples of Jesus, we seek to restore wholeness to the brokenness of life. But suppose that new powers over mind and body, today and in the future, allow us to be “better than well” in the sense of improving upon the genetic inheritance that we receive from God through biological parents. Is this a new calling for people and society? If so, what should this mean practically? If we can make people better, do we owe this to future generations?



Real life stories

1. Life extension now

In an effort to explain the “paradox” that some peoples have a low level of coronary heart disease despite diets high in saturated fats, researchers have been studying the properties of an antibiotic and antioxidant produced by red grapes called resveratrol. Also found in blueberries and peanuts, ingesting resveratrol has been shown to increase the lifespan of yeast, worms, fish, and mice by promoting healthy cell function and by protecting the body against cancer development, which increases in frequency as people age. Research on the life extension properties of resveratrol in humans is currently inconclusive but appears to be one of several promising ways for humans to significantly increase life span. Resveratrol nutritional supplements derived from the Japanese knotweed plant are available for consumption. Assuming that these products are safe and effective, should a person take this supplement? If taking resveratrol is good, what more should a person do in an effort to improve health and extend life?

2. Choosing embryos

Since the late 1970s, *in vitro* fertilization and embryo transfer technology have contributed to thousands of live births and have allowed thousands of individuals and couples



Isaiah sees God’s commitment to creating anew as following God’s rejection of those who have worshipped Fortune and Destiny (Isaiah 65:1-11) and ignored the Almighty. God’s generosity shall be for the faithful, not the idolaters.

How has Christ’s coming changed our view of God’s wrath? Or has it?

Gene therapy is the term used for treating disease by replacing, manipulating, or supplementing nonfunctional genes.

to be parents, who might otherwise not be able to be parents. It has created new social and family arrangements such as gamete donation and surrogate parenting. Since 1989, *in vitro* fertilization and embryo transfer have also allowed a prospective parent or parents to employ new and powerful genetic technologies to screen embryos for certain genetic information prior to implantation in the womb. Today, preimplantation genetic screening can detect sex as well as risk factors for over 100 conditions viewed as disease, such as cystic fibrosis and Huntington's disease. Today, people are likely to seek out such screening in the context of genetic counseling due to family history or prior reproductive experience. In the future, as depicted in the 1997 film *Gattaca*, preimplantation genetic screening could become a routine and expected procedure, coupled with selective embryo transfer for preferred characteristics. Some expert observers think that this trend is inevitable and should be embraced. Others lament a future where parents might seek the "perfect" baby. Is our society on a course toward routine preimplantation genetic screening and embryo transfer? Should a prospective parent or parents seek to give their child as many perceived advantages as possible through these technologies?

3. Designing people¹

If the purpose of medicine is not simply to cure and care for people afflicted by disease but also to improve upon given limits and deficiencies of the body, then preimplantation genetic screening and embryo transfer do not go far enough. Developing "gene therapy" to change the underlying genetic cause of illness or disability is not enough. In addition to reducing and removing the incidence of disease through preimplantation genetic screening or gene therapy, medicine should seek to alter individual human genomes so that they can be both healthy and better than healthy, in a word, "enhanced." In one vision of this future, perhaps 100 years from now, humans will have understandings and techniques that will allow them to add modules of genes for preferred characteristics by adding artificial, auxiliary chromosomes into our present 46. These modules could override or "knock out" certain genes we do not want to be expressed and add or "knock in" certain genes we want to improve our lives. Like computer software that gets upgraded, parents might choose not to pass on the artificial chromosomes that they received from their parents. They could instead use the latest version of auxiliary chromosomes for their child, which might protect better against cancer or increase toleration for heat. Some genetic research today is creating a pathway to such germline genetic intervention. Suppose that this technology could allow people to do more to experience life more richly, to understand it more deeply, to create better, to cooperate well, and to undertake all sorts of other human endeavors more competently and to be more of what people long to be. Should people use genetic technology to pursue this goal?

4. Smart drugs

Well before humans might be able to add auxiliary chromosomes to their cells, medicine will give people opportunities to improve on their given genetic constitutions through pharmacogenomics (or pharmacogenetics), the effort to tailor-make pharmaceutical agents to individuals. For various reasons, research dollars invested in this enterprise vastly outpace investments in gene therapy. As understandings of genetic process grow, researchers believe that better medicines attuned to individual genetics are possible. These individualized medicines could have an enhancement effect. Currently, people across the world routinely receive various immunizations to improve resistance to infectious diseases such as influenza or measles or rubella. Immunizations are considered basic and essential treatment. But some observers would say that they are enhancements because people are healthy when they receive a vaccine; their immune systems are strengthened by immunization. Pharmacogenomics would be a more powerful way to improve the body and the mind. With this technology, people could make their own choices about "design," rather than being designed by others in the case of germline enhancement. While scientists work on gene therapy and germline enhancement, should society pursue individualized drugs? How should access be determined?

Pharmacogenetics is the study of genetically-controlled variations in individual responses to drugs or products that use genetic susceptibility as part of the rationale for their use. Pharmacogenetics and pharmacogenomics are essentially the same process even though sometimes distinguished.

The opportunities and challenges of enhancement

Until the 20th century, humans could do relatively little to control disease and death. Western physicians were taught “above all, do no harm” because the body either healed itself or it did not. Physicians cared more than they cured. In the 20th century, modern sanitation, improved diets, viral immunizations, and antibiotics did wonders to improve health and to extend life spans. In 1900, average life expectancy in the United States was 48 years; by 2000, it was 78. The advent of the genetics age in the second half of the 20th century added little to this change. But after fifty years, genetics-based medicine stands on the threshold of precise and extensive interventions into the body and the mind that could become routine for most people in wealthy societies like the United States. How far and how quickly such changes extend beyond wealthy societies remains to be seen.

With these new powers, human health decisions could involve more than whether to cure diseases through prevention and therapy assisted by genetic knowledge. Thousands of problems with genetic sources will be better understood and powerful new therapies may be available. The knowledge that enables us to understand the genetics of illness and death will also allow us to create life that reflects human design. Increasingly, humans understand how the building blocks of life are arranged and function. Increasingly, humans will face decisions about whether to use this understanding to make life “better” than in the past.

Drawing upon genetic science, should humans seek to enhance or improve the human body in new and different ways? For some time, bioethicists have generally thought about genetic “enhancement” as something different from “therapy” and have generally seen therapy to be less morally complex. Therapy involves efforts to treat recognized diseases or disabilities with a view to restoring or establishing a “normal” or species-typical state of health. If it is morally right for a doctor to prescribe an approved drug with a patient’s informed consent, it follows that this doctor may do well to prescribe a drug tailor-made to the patient’s particular genes, assuming that the technology is safe. Similarly, genetic therapy aimed to address the underlying genetic condition that calls for drugs treatment would be indicated. Pharmacogenomics and gene therapy are new interventions. Yet, from an ethical point of view, they are no different than the therapeutic prescription drugs that people take every day.

Bioethicists often view using genetic technology to improve normal functioning of the body as a different and morally complex intervention. Some view such enhancement as morally questionable, arguing that therapy has greater urgency and standing than enhancement. Recently, a presidential bioethics panel has abandoned the distinction between therapy and enhancement, seeing it as less helpful than some hold in determining right from wrong and good from bad. The distinction depends upon concepts such as “normal,” “health,” and “disease” that are difficult to define. Individual characteristics and capacities vary along a continuum. “Normal” is usually a set or range along this continuum.

For example, suppose that a person believes that she or he was born with poor memory and has access to a drug that improves memory function. Is this therapy or enhancement? How should we classify the routine use of orthodontia in America today? Is this therapy or enhancement? A surgical procedure to treat skin cancer clearly addresses a disease and is therapeutic. What about surgery to improve facial appearance at 50? Many people have such “cosmetic” surgery, believing that enhancement of appearance in response to the aging process is a valid use of medical resources. In place of the distinction between therapy and enhancement, perhaps we should be asking about the proper and wholesome uses of technology. What are good and bad uses of surgery? Perhaps this is the question: in Lutheran terms, what is good for the neighbor?

All four scenarios above present situations where humans face contemporary and future decisions about enhancement made possible by genetic knowledge and technology. The first two illustrate that enhancement opportunities are available today. However, “enhancement” on a large scale with major improvements has yet to be realized. Ingesting resveratrol and preimplantation genetic screening today offer relatively little gain compared

to possible powers of the future. Researchers working on life extension contend that another doubling in lifespan (like the 20th century) will require intervention into the genetic sources of aging and death such as cell parts called telomeres which control cell replication and which shorten over time (except cancer cells). Genetic engineering will need to switch off this natural shortening process before humans can live to 160 or more. Until then, people can increase chances of personal longevity by restricting calorie intake, taking certain hormones, and eating antioxidants.

To double human life span for some or for all, society will need to invest huge resources into aging research coupled with some effective delivery system for changing gene function. Taking resveratrol is a personal decision; doubling current life space will require a social decision with certain social consequences. The science and the technology that could enable humans to live until 160 is probably beyond the lifespan of most of us (although some researchers believe that some young people today could live to see a doubling and more of lifespan). A major question, then, is whether society ought to pursue this goal, among other community desires and imperatives. And with this question come further questions of gains, costs, and future consequences.

Similarly, preimplantation genetic screening offers gains today in preventing certain diseases being passed from biological parents to children. As time goes on, this technology may be able to screen for genetic characteristics that parents want to pass along to their offspring, say, eyesight better than 20/20. In both cases, these children could be seen as “improved” over traditional reproduction where the genetic intervention that humans exercise is the decision to procreate with another person. But in this intervention, parents have little to no influence over genetic outcomes.

Despite current limits, preimplantation genetic screening with embryo transfer offers a major change in human reproduction. As the scenario on “designing people” suggests, it would be a necessary feature of germline engineering through artificial chromosomes. Today, preimplantation genetic screening is not routine for several reasons. As with significant lifespan extension, routine use of preimplantation genetic screening would change the way that human beings are conceived and brought into the world. The institution of parenting would change in important respects. Among other changes, parents would experience more decisions and more responsibility. The concept of a “genetic duty” to use preimplantation genetic screening may emerge. It could become normative from the point of view of social approval or medical service access. Such personal and cultural changes are hard to predict, but broad social acceptance of preimplantation genetic screening would change social attitudes, values, and expectations.

The best prospects for enhancing human life will be achieved when genetic science has advanced to the point where we can engage in germline manipulation, perhaps through the insertion of auxiliary chromosomes. The idea of “designer” people will require scientific understanding and societal resources that can only be imagined today. However, recent developments in research and development are giving credence to the view that the “genetic” era has arrived. We live in a time called to consider and to discern whether humans ought to do everything within their powers to make people smarter, healthier, happier, and generally excellent in these and other ways. We already seek these goals through social means such as education and religion. The time has come where humans can employ genetic engineering and other technological developments such as regenerative medicine to seek substantial betterment of the human condition. Should humans do this and how?

Thinking faithfully about enhancement

As Christians, we seek to live and act in ways that mirror God’s will and actions in the world. Christians seek to love God and to love the neighbor in response to the gracious actions of God upon them. The questions of whether and how humans should enhance life through genetic engineering should be informed by Christian convictions about God’s actions in this world. Christians see a world where God acts in creation, redemption, grace, incarnation, and transfiguration. They see a world that is good but broken and disordered;

they see a world where a gracious and living God seeks to bring the world into harmony with God's purposes.

The response of Christians to this world is disclosed in the life, death, and resurrection of Jesus. In Jesus, Christians see a God who seeks to overcome the brokenness of the world and who promises to overcome even death. The life of Jesus gives testimony to God's special concern for the weak, the sick, and the poor. Jesus calls upon his disciples to do as he does, or as Martin Luther said, "to be little Christs to the neighbor."

Christians have wondered and even debated whether humans can participate faithfully in God's creative and redemptive actions. Some Christians believe that the rare individual, the saint, can do God's will. Others think that the Christian community can be a place where the reign or rule of God occurs. For others, God's intentions can be glimpsed in common morality such as democracy or marital equality. Despite these differences, all agree that humans can participate in God's action in this world. Although judging when they do is difficult, Christians agree that God intends for humans to be dead to sin and alive to God in Christ.

If God seeks to overcome the brokenness and disorder of the world, can humans participate in God's creation and redemption through genetic enhancement? For some Christians, the power of sin coupled with the power of 21st century genetics are cause for great concern. Despite God's intentions, sin pervades and distorts all human endeavor, both individual and corporate. While genetic knowledge and technology can be instruments of God's presence in the world, they can be used unjustly and can damage values systems and institutions that sustain human life. By seeking to enhance human life, will we be like Adam and Eve in the garden—refusing to live within the good Creation that God provides? By seeking to enhance human life, will we be saying "no" to God and God's giving and "yes" to our own projects of creation? For some Christians, enhancing human life should be renounced because it embodies the primal sin of Adam and Eve—the sin of pride where humans refuse God's grace and turn away from God, seeking to live by their own judgments and powers.

This sense of sin may result in an absolute rejection of enhancing human life. It may result in a deeply cautious approach that errs on the side of therapy and rejects enhancement because horrible results could occur and because humans do not know enough to risk such harm. Either response puts Christians at odds with the typically positive appraisal of "technology" in American society. This cultural outlook does not deny that technology creates problems, but the problems engendered by technology can be solved by technology, and the benefits of change generally outweigh the costs. In its strongest terms, this outlook sees technology taking us toward utopia.

For some Christians, there is a middle position between pessimism and utopianism. On this view, the power of sin cannot be dismissed and forgotten. But neither can the power of Jesus to guide the right use of genetic technology. While not dead to sin, Christians can be alive to Christ sufficient to see and to strive for uses of genetics that further discipleship of Christ. If human technology is guided by the ethics of Jesus, perhaps it can be said that genetic enhancement can participate in God's creation and redemption of the world. For Lutherans, people who live out callings in service to others are what Luther termed "masks of God." They are worldly instruments of God's giving of life. When genetic technology upholds the dignity of the individual, it participates in God. When it respects the self-determination of the individual, it participates in God. When it meets the basic needs of all people, it participates in God. When it enables humans to flourish in times of environmental change, it participates in God. Such conditions for good and wholesome use of genetic engineering mirror Jesus' actions toward the weak, the sick, and the poor. They offer guidance for discerning whether and when humans may seek to enhance life through genetic engineering.

Key issues and moral disagreements

Some thinkers see little moral significance in the distinction between therapy (or treatment) and enhancement. Some see no inherent difference between the enhancement of

life that humans have practiced for thousands of years in the development of tools and agriculture and the enhancement of the human body and mind through genetic technology. Others object that the integrity of the human genome should be respected and not altered. It is a gift from God. Humans should not “play God” in the sense of redesigning the basic genetic mechanisms of life. Consequently, the distinction between therapy and enhancement marks an important boundary in the proper use of human creativity.

In addition to the question of whether genetic enhancement as such is problematic, there are several questions about the proper use of this new power. First, there are issues of harm and risk of harm, and of consent to experimentation that need to be addressed. In 1978, when the first human being conceived through *in vitro* fertilization and embryo transfer was born, it was not known whether this technology could cause miscarriage or congenital damage. Louise Brown was born healthy, but she was not asked whether she wanted to participate in an experiment. Gene tinkering is complex and risky. People have died during gene therapy trials. Despite the amazing benefits that genetic enhancement could make possible, some people call for precaution, which does not necessarily mean that genetic research for human benefit should not be undertaken. But precaution requires rigorous care in avoiding risk, and people can disagree over safety standards and practices.

The question of harm comes into play in another respect when *in vitro* fertilization, preimplantation genetic diagnosis, and embryo transfer are used for genetic enhancement. The moral status of the embryo comes into play when multiple embryos are created and when some are destroyed as part of the process. People of faith disagree over the moral status of embryos and over the ethical treatment of embryos. Any comprehensive discussion of genetic enhancement needs to deal with this question.

The destruction of embryos is one consequence of genetic engineering research and one delivery system for germline manipulation. Critical observers take different sides on consequences on a larger societal level. First, because genetic science and technology require extensive societal resources, wealthy nations, and perhaps wealthy people in those societies, could be the first to have access to these new powers. This benefit would increase an existing social advantage, thus increasing the power gap between peoples. Some critics respond that the basic needs of all should be met first, before society devotes any resources to enhancement. Others say that new powers that benefit the rich will eventually benefit all. Genetics engineering presents a great question about the just use of limited societal resources for present and future generations.

Another issue of societal consequence concerns subtle changes in the values of society and the loss of social standing and freedom that may result from mass participation in genetic enhancement. While proponents of technological change often praise technology because it expands choices, others believe that great, new technology tends to become normative and socially transformative through unexpected consequences (i.e., e-mail). When preimplantation genetic screening becomes both diagnostically powerful and cheap, will it be normative such that people who choose not to use this technology will lose social respect or benefits? If preimplantation genetic screening becomes widely used, will most users choose to select out embryos with “disability”? Will people with disability be subject to new discrimination? Some thinkers argue that gene selection against disability will not result in loss of social standing for disabled people. Others worry that the societal gains of respect, equality, and inclusion of the 20th century will be eroded, if not lost.

Finally, concerning possible subtle social harms, genetic enhancement—be it life extension or children engineered for preferred traits—raises issues of the wisdom of pursuing enhancement when that pursuit involves significant expenditure of personal and societal resources at the expense of other life goods. Humans are creatures of desire. These desires are often frustrated. With genetic engineering, ancient human dreams of control over life seem within human grasp. While the pursuit of better life is laudable, humans need to reckon with limits to mastery over the world and to wrestle with contingency and finitude. They need to reckon with sometimes competing interests in freedom and self-determination. For proponents of genetic engineering, the orders of life are evolving, not static. Humans can and will grow into the new responsibility that they shoulder as a

result of dramatic interventions into life. Human striving to improve life does not undermine gratitude for the giftedness of life and for solidarity with those who suffer. Although “perfect” may be beyond human grasp, people need to pursue making life better because humans feel this calling to serve and because humans have, over the centuries, improved life on Earth. People of faith who hold this conviction believe that enhancing life through genetic intervention could be God’s will for us today.

Invitation to conversation, prayer, and action



QUESTIONS FOR DISCUSSION

- Is it helpful to distinguish between medical therapy and enhancement? If so, how does the distinction help us to weigh right and wrong, good and bad? How does it help us to understand the scope of human accountability? Are there limits to human genetic manipulation? Can genetic enhancement as such be understood as a new form of Christian love?
- Should Christians support life extension research and technology? If so, what kind of life span do we want? Consider a life where youth, adulthood, and aging are equally divided parts of life versus one where humans mature quickly, live a very long middle life and then age and die quickly. How will these decisions affect the needs of society and interactions between the generations? Suppose that genetic engineering could give Americans an average lifespan of 200 by 2050, how would society in 100 years be different?
- When people speak about a “duty,” they refer to an obligation. If it is permissible for Christians to use genetic technology to make humans better than well, is it a duty? Are we obligated to enhance our offspring? Do we owe it to future generations of humanity? Is there any sense in which Christians should affirm a “genetic duty”?
- Will genetic enhancement expand or erode choice and opportunity for future generations? Will new powers to diminish “disease” and “disability” undermine social respect and care for those who live with various diseases and disabilities? What societal risks must be addressed in order to pursue genetic enhancement responsibly?
- We live in a time when tens of millions of people in the United States and billions of people throughout the world lack resources to meet their basic healthcare needs. Is it justifiable to devote huge resources to enhancing life, especially when such expenditures will benefit future generations? Should genetic enhancement be an important part of the medical research agenda today? What reasons might justify the allocation of significant societal resources to future generations?

Closing prayers

INVITATION TO INTERCESSORY PRAYER

Pray for all who struggle to understand and struggle to implement the right use of genetic technology.

PRAYING WITH THE TRADITION

Come, my Light, and illumine my darkness. Come, my Life, and revive me from death. Come, my Physician, and heal my wounds. Come, Flame of divine love, and burn up the thorns of my sins, kindling my heart with the flame of your love. Come, my King, sit upon the throne of my heart and reign there. For you alone are my King and my Lord. Amen.

(Prayer of Dimitri of Rostov, who lived 1651 to 1709)

Resources

Ronald Cole-Turner, *The New Genesis: Theology and the Genetic Revolution* (Louisville: Westminster/John Knox Press, 1993).

Carl Elliott, *Better Than Well: American Medicine Meets the American Dream* (New York: W.W. Norton & Company, 2003).

Ramez Naam, *More Than Human: Embracing the Promise of Biological Enhancement* (New York: Broadway Books, 2005).

Bill McKibben, *Enough: Staying Human in an Engineered Age* (New York: Henry Holt and Company, 2003).

President's Council on Bioethics, *Beyond Therapy: Biotechnology and the Pursuit of Happiness* (Washington: U.S. Government Printing Office, 2003).

Michael J. Sandel, *The Case Against Perfection: Ethics in the Age of Genetic Engineering* (Cambridge: Harvard University Press, 2007).

Endnotes

- 1 This story is also used in session A1.

Response Form

