

The Global Reach of Genetics: Unprecedented powers and choices

A1

Gathering

HYMN

(See hymn suggestions on p. 119)

PRAYER

Lord God, you have called us to ventures of which we cannot see the ending, by paths as yet not traveled and through challenges and perils as yet unknown. Give us faith to go forward with good courage, not knowing what the future holds but confident that the future is in your hands. By your grace lead us and with your love support us, through Jesus Christ our Lord. Amen.

(*Lutheran Book of Worship Occasional Services*, p. 245)



HEARING THE WORD

Ecclesiastes 3:1-8

DISCERNING THE WORD

Silence

Discernment

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

Introduction

Session summary

This first session introduces the study of genetics from a faith perspective by focusing on the question “what is going on” in the world today. It describes how we are moving into an age of genetics that confronts us with unprecedented choices and daunting responsibilities. These choices and responsibilities often lead to profound disorientation and sharp controversy as we try to make wise decisions. This session suggests, also, that all of us have a personal responsibility in these developments, and it sketches some of the challenges—as well as the resources—for Christians living in these times.



Real life stories

Today Genetics is...
As common as chocolate.

“To save chocolate lovers from the agony of a potential candy bar shortage, McLean candy giant Mars® is investing \$10 million in a five-year project to develop cacao trees that fight drought, disease and poor harvests.

“Mars will announce today that it is partnering with IBM and the Department of Agriculture to sequence and analyze the entire cocoa genome. The team...plans to breed the genetically superior specimens to battle the foes that have shrunk the number of beans to make chocolate over the years.

“We have the ability as a private company to take charge of the future,” Howard-Yana Shapiro, global director of plant science for Mars, said.

“Unlocking the secrets of the genome and eliminating the guesswork in traditional breeding could bring economic stability to the 6.5 million small family cocoa farmers around the world and help fend off the environmental assaults that inflict \$700 million to \$800 million in damages to farmers each year,” Shapiro said.¹



Ecclesiastes’ wisdom is that different times require different insights and different skills, whether we choose the time or the time chooses us.

What is the time and purpose of your life right now?

Genetics in its narrowest sense simply refers to the study of biological heredity and the role of genetic material in the functioning of life. *Genetics*, as used in its broadest sense in this study, however, serves as a catch phrase for the collective developments, implications, and impacts of genetically informed knowledge and technology. The *science of genetics* will be indicated as such.

As complex as DNA itself

Watch *Cracking the Code of Life*, Segment 1: Instructions for a Human Being.

(Note: This NOVA program from public broadcasting introduces the science and technology of genetics by exploring the Human Genome Project (HGP), the huge scientific program to “decode” the basics of the human genome. The HGP is in many ways the symbol of the age of genetics.)

As global as food

In 1999, Larry Proctor, a Colorado businessman and farmer, was awarded U.S. Patent Number 5,894,079 for Enola beans. The Enola bean plants produce nutritious yellow beans. Proctor’s patent application claimed that he had developed this new variety of bean plant from another variety he purchased in a Mexican market. Proctor’s patent entitled him to 20 years exclusive control over the Enola beans and any hybrids grown from crossing other beans with just one Enola seed. After receiving his patent, Proctor enforced it aggressively against planting, selling, or exporting the beans without a license from him, claiming 60 cents on every pound of yellow beans sold in the United States. His actions resulted in a significant reduction in exports of yellow beans from Mexico to the U.S. These imports served a market for yellow beans created by immigrants from northwestern Mexico where yellow beans were commonly grown and consumed.

In April, 2008, however, the U.S. Patent and Trade Office revoked Proctor’s patent after a patent reexamination and appeal process. The review was initiated by the International Center for Tropical Agriculture (CIAT) of Colombia, which maintains a crop gene bank. CIAT showed that Enola beans were neither new nor was their development “non-obvious.” Rather, it said that they are indistinguishable genetically and by color from at least six varieties of yellow beans, known commonly in Latin America as *azufrado* or Mayocoba beans, in their collection. These beans, it claimed, had been grown there for generations and had been part of the diet of Latin Americans for over a century. It also demonstrated that there was published scientific literature about the beans. A scientific team unrelated to the patent reexamination independently concluded that the DNA of Enola beans is identical to a variety of Mexican yellow bean known as Azufrado Peruano 87 from which they were most likely directly derived. Proctor may still appeal the patent revocation to the Federal courts and possibly to the U.S. Supreme Court.²

As personal as whether you would choose to live to 280.

In addition to reducing and removing the incidence of disease through gene therapy, some think medicine should seek to alter individual human genomes so that we can be better than healthy, in a word, “enhanced.” In one vision of this future, perhaps 100 years from now, humans will have 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 genetic intervention. Suppose that this technology could allow people 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? People like Michael West think so. He is a scientist and entrepreneur who has achieved remarkable success as a kind of merchant of immortality. He founded a company in 1990, dedicated to studying the molecular causes of aging, named *Geron*, Greek for “old person.” West and Geron speak tirelessly of “immortalizing enzymes” and the “life extension of cells...”

The Age of genetics

Do you remember what it was like to start high school? Remember how exciting, nerve-wracking, awesome, and unfamiliar it was, all at the same time? Do you remember the challenge of finding your way through strange hallways, making the locker work, figuring out how to get out of gym on time, dealing with many new people and with what seemed like even more new expectations? No matter how well you made the transition, you had challenges and you knew life would never be the same. This experience inevitably raised a very basic question: Who am I going to be in this new school? Transitions always require us to figure out our identity all over again.

Transitions like this are as old as the human race itself, as is evident in the stories of God's people in scripture. In fact, scripture is one story after another of people being lead, urged, even pursued for the sake of new vocations in new times and places. (Jonah 1:1–3:3) Abram and Sarai are called to move from Haran to Canaan. (Genesis 12:1–9) God forms a new people by leading Moses and the Israelites out of Egypt through the tumultuous Red (or Reed) Sea. (Exodus 12:1–15:21) In the desert, the Israelites anxiously grumble about how they are going to be fed during the transition. (Exodus 16:1–17:7) God calls them into a new relationship through the giving of the Ten Commandments, which gives them laws for honoring God and their neighbors on the way. (Exodus 12:1–17) On the edge of the Promised Land, the Israelites must begin to figure out how to put into practice the laws that were given for this new time and place. (Joshua 1:1–10)

In the New Testament, God through an angel commands Joseph to take his family and flee to Egypt to avoid Herod the King. God also tells Joseph when it is time to return to. (Matthew 2:13–23) Jesus himself travels throughout Galilee up to its traditional borders with Syria and Phoenicia for the sake of his mission to preach the good news. (Mark 1:14–7:30 for instance) Once risen, Jesus commands the disciples to become apostles: those sent to the ends of the earth. (Acts 1:6–8) Each of these stories teaches that God is present in the midst of life's transitions and that each new time and place is sacred in the sense that God is already there—no matter what the troubles, failures, disorientation or new identity that God's people experience.

American society, and most of the globe, is now in transition. We are moving into what should be thought of as a new “place” or a new “age,” the age of genetics. It too is exciting and daunting, full of potential and worries. However, whatever else it will mean, “life will never be the same.” Just as the industrial and the information ages brought sweeping changes, so will the genetic age. In fact, the changes may be even more significant because of the different kind of power they place in human hands, and the extent of that power on all living things. It is already clear that the advance of genetics will alter in some way every aspect of life and every society across the globe. Those effects range from the way corn or chocolate is grown to the way medicine is practiced to the possibility of creating artificial life. They include the creation of whole new industries that respond to the ailments and misfortunes of life, and raise the possibility that humans could live three times as long as they do now. This new age also affects *all life* on earth in unprecedented ways since it involves the direct engineering of the biological code and related processes that are fundamental to life. Moreover, these changes will help reshape human self-identity, if for no other reason than that they show us how interdependent humans are with one another and with the rest of nature.

The transition into the age of genetics is certainly one of the more exciting, yet unsettling and daunting, changes human society has ever faced. It is understandable to wish it were simpler and less complex. The truth is, though, that for better or worse, our society, indeed the human race, is going to be living in the age of genetics for good. We must take responsibility for this new living space because it's not going away. Individual and collective decisions must be made, regulations must be developed, and profound questions about how to shape both nature and the human future must be faced. Some of the questions for Christians include: How then shall we live in a society increasingly driven by bioengineering? What perspective does our faith grant us on these developments? What are the givens? In what ways do we have power and choice? What do we think God's

This new era has many different names in the literature and media about it. These include: the age of biological manipulation, the genetic engineering era, and the age of biotechnology among others. Each of these terms highlights certain aspects of the unprecedented powers and choices that the science and technology of genetics includes. This study will use the summary phrase *age of genetics* most often but will employ alternate terms as appropriate.

Many specialists worry that we have only a 10-to-20-year window in which to build the legal and regulatory structures necessary to channel this new genetic knowledge, and its technology, in directions that will encourage healing and genuine human flourishing rather than lead to Huxley's nightmare.

intentions are in all of this? What should this church, and we as members of it, be saying both in the public debates and about the decisions that need to be made?

Fortunately, God's people can humbly yet courageously face these questions and live in this new age. This is possible because of some of the "givens" we bring with us as people of faith. Foremost among these "givens" is the assurance of God's presence and goodness. We can be sure that God is active in this transition and that it is therefore one in which God's people are called to be faithful and responsible. Yes, there are problems to be faced, harms to be avoided, and perils to be recognized. But this new age also offers the opportunity to multiply benefits, learn more about our God, and appreciate anew our God-given inheritance. It is a new chance to be faithful in caring for the neighbor and a new "place" where we are called to learn more about ourselves as we discern what God is doing and calling us to do.

In addition we should not forget that we move into this new era with "other students." The knowledge, power, and changes afoot involve other people at both the local and global level who are Christian brothers and sisters. It also involves others of different faiths or even of no faith who, Christians believe, can serve as God's hands in the world too. This move into the age of genetics involves many different actors through whom God would work for the good of all, and for whom there is a crucial stake in how our civilization settles into the genetics era. Finally, we can walk confidently into this new age because there are resources from the inheritance of faith that we carry with us.

Resources for faithful engagement

Christian commitments

1. Christians claim that Christian faith provides a framework story within which all human and non-human experience unfolds. The story of God's creation, redemption, and consummation (God's intended fulfillment of creation) provides the most basic framework of meaning for the human enterprise (and for the whole universe itself for that matter!). This overarching framework can help us integrate the new experiences and identities we need in the age of genetics because, while this framework includes the universe, it is at the same time as personal as God's love shown in Christ for each human, molecule, and particle.

The center of the story is Jesus Christ, "who, though he was in the form of God, did not regard equality with God as something to be exploited, but emptied himself, taking the form of a slave (to God) being born in human likeness." (Philippians 2:6-7) Jesus Christ is also the one "in whom all things in heaven and on earth were created, things visible, and invisible, whether thrones or dominions or rulers or powers—all things have been created through him and for him." (Colossians 1:15-20) He is, on the one hand, the model of the form that human nature should take. He is on the other, the one in whom all alienation, tragedy, and guilt is overcome. This Christian story firmly recognizes human beings as natural creatures who yet have accountability for their actions before God in relation to one another and all of nature.

2. Christian faith can speak of the goodness of genetics as part of God's creation in the highest terms. This follows from understanding God as the creator who affirms the handiwork of nature through the incarnation of Christ (Jesus had 46 chromosomes too!) by raising Jesus from the dead. Christians claim that God's work in the cross and the resurrection of Jesus is a down payment on God's promise to bring creation to fulfillment (Romans 8:21). Thus, humans can celebrate being part of the creation into which genetic knowledge gives us insights.

3. Christians affirm that nature belongs to something greater than human design and that the human race is accountable to this greatness—to the God we know in Jesus Christ. To know that the infinite God is active in finite nature is, therefore, to have a resource to critique the sometimes subtle but overweening pride when biotechnology is offered as the solution to a set of problems. Christian faith, then, will not tolerate any intervention into nature that looks upon creation as a personal belonging or believes that humans may do

whatever they want with it. Christians call this sin and recognize that it is present in all personal and structural dimensions of life.

4. This suggests that Christians should see genetic developments in our lifetime as a life space in which to meet God and discover new meanings of Christian faith. This includes recognizing God's work in the huge social and economic forces at work, while yet calling each individual to personal responsibility. It also includes recognizing that God dwells with us in such everyday places as the medical office or the biotech boardroom, etc. The age of genetics involves global-sized corporations and decision makers, hungry people, doctors and patients, international trade agreements, government policy, insurance companies, farmers, entrepreneurs, and on and on. All of these "actors," along with each individual, have a role in determining what the living space of the age of genetics will look like. A key challenge is to avoid idolizing human power while knowing that God acts through and is active in such real world places.

5. A critical commitment among Christians is to use the resources given to us by our heritage of faith. The most fundamental written resource is, of course, Holy Scripture through which God communicates. Lutherans look also to their Confessions as a faithful interpretation of the Bible and they value their heritage of theological reflection. One particular expression of faith's intersection with contemporary thought is found in the ELCA's social statements. These social statements will be important because they indicate established points on many particular matters affecting genetics, like economic life, health care, human responsibilities for creation, and more.

The Lutheran heritage of faith also affirms drawing from what it has typically called "sound reason" or what could be called *common knowledge*. It includes good logic, scientific knowledge, civil law, business practices, and more. Lutherans understand that there are no guarantees that Christians will think more clearly than others about the science of genetics and matters of public policy. Therefore, we affirm all such knowledge and wisdom that encourages the good of the neighbor and does not make false claims about God.

Critical engagement

The approach suggested by these commitments could be called one of *critical engagement*. Critical engagement follows from, for instance, the conviction that genetic developments are to be understood as occasions in which God is engaged as creator, redeemer, and sanctifier to bring about the good. God is engaged and calls God's people to be also. Gratitude and religious concern are the starting points. This involves a critical tension, quite clearly, given the Christian recognition that sin is just as assuredly present in this human enterprise. God is engaged to protect from harm and evil and so God's people must be *critically* engaged. Overweening pride and the misuse of power and knowledge is prevalent in genetics, as in all human activity. Mindful of this, and because God encounters us precisely in such ambiguous situations, we are called to be attentive to God's activity and will.

Critical engagement means, also, that the only satisfactory way to approach genetics is by engaging the scientific, medical, and economic knowledge involved. This idea assumes that legitimate two-way connections exist between everyday life and the religious language of faith—that is, between "Monday" and "Sunday." Further it holds that Christians *must* address genetic issues and do so deliberately. Neither uninformed rejection nor complacent acceptance is an adequate response.

Critical engagement, finally, signifies that the developing genetic knowledge and its application are to be affirmed in principal as means to aid human endeavors for healing, the alleviation of suffering, and so forth. At the same time, it holds that people of faith must critically consider each specific development according to judgments informed by Christian resources such as scripture. Does this use of genetics really serve the good of the neighbor? Do these decisions lead to justice? Christians sometimes will resist a particular employment of genetic knowledge and technology while accepting its use in other ways.

Common knowledge is common in the sense that it is not specific to our religious experience or faith. Such knowledge may be contested, of course, as in the case of laws or available primarily to experts as in the case of scientific technology. Still, in theory it can be understood by the general public regardless of their faith beliefs.

Invitation to conversation, prayer, and action



QUESTIONS FOR DISCUSSION

- Share your memories about going to high school. What was it like? What were some of the “givens?” What were some of the choices that had to be made? What excited you? What was difficult? How did it change who you were? How did it not?
- How has your life been affected by the advance of genetic knowledge? Share an illustration of that. What worries you about the huge impact of genetics on society? What excites you about it? What do you find challenging?
- What Christian resources do you think Christians bring with them into this age of genetics? How will they help you make decisions?
- Action question: Name two specific personal or public issues that must be considered regarding the use of genetic knowledge and technology. Have you (or could you) accept responsibility for dealing with one of them? In what ways? Does your congregation have any responsibility to respond to matters related to genetics? What actions could you, your congregation, or your civic leaders be encouraged to take?

Closing prayers

INVITATION TO INTERCESSORY PRAYER

Pray for those who anxiously stand at the “thresholds” of life uncertain of what the future holds, and pray for those who serve as teachers, mentors, and spiritual guides.

PRAYING WITH THE TRADITION

O Living God, to turn away from you is to fail, to turn toward you is to rise, and to stand before you is to abide forever. Grant us, dear God, in all our duties, your help; in all our uncertainties, your guidance; in all our dangers, your protection; and in all our sorrows, your peace, through Jesus Christ our Lord. Amen.

(Prayer of Augustine of Hippo, who lived 354-430)

Endnotes

1 Kendra Marr; Washington Post Staff Writer; Thursday, June 26, 2008
www.washingtonpost.com/wp-dyn/content/article/2008/06/25/AR2008062503374.html

2 For more on this incident see “USPTO rejects patent protection for yellow bean,” *BioSpectrum—Asia Edition*, May 5, 2008 (www.biospectrumasia.com/content/050508oth6144.asp, accessed September 16, 2008).