

Genetics in your congregation

Confirmation of DNA as the potential unit of inheritance (heredity) was published in 1953. In the fifty plus years since the first publication of the double helix structure of DNA, increasing knowledge of heredity has enabled changes in almost every aspect of our lives. The information has grown so dramatically and so quickly that people within the various genetics disciplines can hardly keep up with all the latest advances. For those who went to school before DNA had been identified, before the number of chromosomes was known or before we could visualize genes and genetic manipulation, all this fuss about genetics doesn't seem worth the effort. It is too complex to matter. Many who did learn about genetics in school find the subject fascinating, but the details daunting. The lack of a fundamental knowledge of genetics information is a major barrier to any discussion of genetics and the new technologies it offers. Christians need to become genetically literate in order to understand and respond. We are called to responsible participation in genetic decision-making, both in personal and societal realms. This level of active involvement requires preparation.

So what do we need to do to understand more about genetics and new technologies? The easiest place to start may be to search out stories in your own congregation. Are there farmers in the congregation faced with the choice about whether or not to use genetically modified seed? Are there members of your congregation who work with DNA in research and development projects either at a local university or in a commercial lab? Are there members of your congregation with a disability or birth defect? Could members of the congregation who have been pregnant tell about their experience with the offer of genetic screening during the pregnancy? Are there people in the congregation who advocate for increased social services for those with cognitive disabilities? The number of people in your congregation involved with genetics and biotechnology will likely surprise you.

Stories from people you know, as well as the stories in the beginning of this session, can help your congregation both focus on the topics and personalize the issues. If Sally has diabetes at age fifteen, what can the youth group do to support her participation in events that are often centered on food? Could a community physician come to talk about diabetes, but also talk about the promise of stem cells together with the challenges in their use? John, who farms acres of corn and has for twenty years, may not fully realize the issues with GM corn and global corn distribution. Could your synod office connect him with a rural ministry or global ministry advocate who could help him understand the issues?

Congregational members who have expertise in genetics and biotechnology can help the congregation understand the changes, good or bad, in people's lives related to developments in genetics. It should be noted, however, that at times the work of these experts may be questioned simply because of what they do. For example, scientists who work with mice in order to better understand how the same gene operates in a human might be labeled as cruel to animals, even though he or she is doing the work with a passion to help cure disease.

As a church, we believe that Christians live out their call and God's claim on their lives in a variety of vocations. New opportunities made available through genetics technologies—such as genetically modified crops or genetic testing—have been developed and are being applied by individuals who, in many cases, understand their work in genetics to be a response to God's vocational call. Many of these people desire to discuss the ethical implications of the work they do through the lens of their faith. The congregation (and pastors) can provide a forum for them to do just that.

As a church we also recognize that the fruits of medical research and innovation are often means through which God blesses and heals creation. It commends the important work of medical research and supports investment in its goals of healing afflictions, relieving human suffering, and promoting wellbeing. We also affirm the important service to God and neighbor rendered by those who develop and use curative technologies and practices.² Many congregations have members who work in these fields and who can help congregational members understand the complicated science of, and moral issues

The Genetic Information Nondiscrimination Act of 2008, also referred to as GINA, is a new federal law that protects Americans from being treated unfairly because of differences in their DNA that may affect their health. The new law prevents discrimination by health insurers and employers. The President signed the act into federal law on May 21, 2008. The parts of the law relating to health insurers will take effect by May 2009, and those relating to employers will take effect by November 2009.

surrounding, genetics. A firm understanding of both the science and the moral issues involved will help Christians address such questions as: How should we think about genetics research and application in light of our Christian teachings and beliefs? How do we show love of our neighbor in this new context? Who is our neighbor with regard to this new technology?

True dialogue depends upon informed participants who are willing to discuss all the implications of the choices being considered. In the past, such openness has not always been experienced between the faith community and the scientific community. Scientists, pastors, and theologians need to openly and respectfully engage each other about the moral implications of genetics, and then share their conversations with the congregations. Pastors, congregational members, and experts from either within or outside the congregation can work together to enable meaningful public discussion of these important issues.

It is particularly important that congregations support educational opportunities for pastors to learn about issues surrounding genetics research, development, and the use of new technologies so that they can be effective in providing pastoral care for individuals and families whose lives are impacted by genetics.

Congregations may also engage in advocacy to provide support where needed, to influence policy decisions, to push for responsible legislation, or simply to focus attention on key and challenging issues. Religious groups have long been identified with advocacy related to easing poverty, eliminating hunger, and achieving justice and human dignity. Advocacy regarding genetics issues has included many topics such as embryonic stem cell therapy, insurance discrimination, access to genetics services, and genetic testing. Advocacy in and of itself does not imply either a conservative or liberal position.

Developments in genetics science and technology also lead to questions about the regulation of genetics research and use via legislation. As an example, we can cite the new federal legislation called GINA, the Genetic Information Nondiscrimination Act.

Regulation affects both business and individual choices. How much and what kind of regulation should government exercise over the ways biotech businesses operate? What are the criteria that justify government regulation? Should the market be largely unregulated in order to encourage the development of profitable genetic technologies? Is it legitimate for religious institutions to adopt an official stance on public policy issues and advocate for specific pieces of legislation. What are the criteria that justify doing so? What kinds of legislation? Should the church take a public position with formal statements, and devote resources to legislative advocacy?

Three observations can be made regarding genetics developments and public policy. First, while there is general agreement that the moral and ethical principles (such as those described in sessions A4 and A5) should be used to shape public policy, there isn't agreement about how those principles should be applied to protect or regulate groups in our society. Second, public policy often seeks a position that is least offensive to the most people—the lowest common denominator—which may not promote the common good. Finally, the speed at which genetics technology is advancing means that the public policy of today almost certainly will not address the realities of tomorrow.

Resources for your congregation

We have only touched the surface of the challenges that the age of genetics brings to people of faith. Clearly, Christian congregations have important but complex responsibilities and ministries to sort out. What are the resources available within our congregation that can assist us in public discussion, moral deliberation and discernment, and action in the new context created by genetics science and technology? In what follows, we will answer this question by highlighting resources that were presented in more detail in sessions A4 and A5. If you missed those sessions, you are encouraged to take a few minutes to read through them.

Scripture

Our greatest resource is always scripture. Christian discussion and action with respect to social issues are grounded in the double love commandment: “You shall love the Lord your God with all your heart, and with all your soul, and with all your mind.... You shall love your neighbor as yourself.” (Matthew 22:37, 39). Love and justice are the “red thread” that runs throughout the Bible. Much of scripture “unpacks” this double love commandment and provides guidance for people of faith as they seek to live responsibly in accordance with God’s will in frequently complex and morally ambiguous circumstances. Scriptural teaching on creation and the care of creation also grounds Christian moral discernment and action. The Bible’s emphasis on human sinfulness and finitude add realism to Christian ethics. And the Bible’s teaching on redemption and salvation ground Christian hope and optimism in addressing seemingly intractable moral issues.

Congregations as communities of moral deliberation

The first social statement of the ELCA, *Church in Society: A Lutheran Perspective*, describes the church as a community of moral deliberation. The church seeks to “discern what is the will of God—what is good and acceptable and perfect” (Romans 12:2). Deliberation in the church gives attention both to God’s Word and God’s world, and to the relationship between them.

The church can provide a safe place for moral deliberation and discernment because we are a people united in Christ. True ethical deliberation will result in the expression of diverse perspectives; in the Christian community of faith we can leave partisanship at the doors of the church. This then raises the question whether such a commitment to honest give and take should stay inside the church doors. The answer is no. As a community of moral deliberation, the church seeks to engage those outside the church in discernment and action that leads to the common good. This larger engagement is critical with respect to matters of genetics and biotechnology.

Established principles to guide ethical deliberation

The ELCA is committed to certain principles to help guide our moral deliberation. For example, four principles—participation, solidarity, sufficiency, and sustainability—are clearly visible in three ELCA social statements (those on the environment, peace, and economic life) that address similar concerns to those that might be addressed in a social statement on genetics.³ These four principles (which are detailed in session A4) help to articulate a core ethics of “faith active in love through justice” for ELCA social policy.

The principles of sufficiency, sustainability, solidarity, and participation *should* have *some* role in evaluating genetic products and processes for they point to the reality that genetics research and technology are significantly affected by social and economic structures and interests that may not have the “common good” in mind. These principles affirm that the wellbeing of the most vulnerable locally and globally must be protected and promoted. The church is responsible to see that the concerns of justice, social and environmental impact, and involvement of the broader public are included when decisions are made with respect to (1) areas of genetics research, (2) the delivery and use of genetics technology, (3) genetics related policymaking, and (4) government regulation of genetics related businesses.

Considering another principle

One contemporary idea that may also be worthwhile to consider is the *precautionary principle*. This principle has been defined by UNESCO as “When human activities may lead to morally unacceptable harm that is scientifically plausible but uncertain, action shall be taken to avoid or diminish that harm.”⁴ The precautionary principle has to do with issues of risk assessment, and asserts that, when there are too many “unknowns” and “uncertainties” to adequately assess the risks of particular lines of research or technology use, caution is called for. Indeed, the level of uncertainty as to whether or not “morally unacceptable harm” may be caused by particular human activities may be sufficient reason to avoid those activities—at least for the time being until the level of uncertainty is sufficiently lowered.

It should be noted that just because we don't know the outcomes and can't properly assess the risk doesn't automatically place a "never" in the way of any form of development. The precautionary principle supports restraint *until* sufficient cause and effect relationships are fully and safely established.

Congregation as Community: Christian Koinonia

Koinonia is an ancient Christian word drawn from the Greek of the New Testament and used widely in the early church. It can be variously translated as "communion with," "fellowship," "mutual service," and "compassionate care." It points to an understanding of the church as a community of mutual care.

Mutual care in the body of Christ (the Church) is grounded in God's grace and Christ's command: "I give you a new commandment, that you love one another. Just as I have loved you, you also should love one another. By this everyone will know that you are my disciples, if you have love for one another" (John 13:34-35).

Koinonia, the vision of the church as a community of mutual care, may often seem elusive, but it is a vision well worth seeking to realize, even if human sinfulness means it will not be realized perfectly. The degree to which we truly care for each other—often in spite of disagreements—is the degree to which we will be able to creatively confront and struggle through the complex challenges we face together in the age of genetics.

Invitation to conversation, prayer, and action



QUESTIONS FOR DISCUSSION

- In what concrete ways do we as a congregation enable each and every member, including those with physical disabilities, chronic illnesses, mental illnesses, or cognitive disabilities, to become fully involved in the ministry of this church? Would Belinda be able to navigate in her wheelchair in your church facility?
- How might congregational members on different sides of genetics-related issues talk with each other? In the second story what does Christian *Koinonia* look like?
- In our individualized and privacy-conscious society, the state of our health or illness is considered "for your healthcare providers' eyes only." How much does one share? With whom? How do we as pastors and congregational members provide support, but honor privacy?
- What are the unique contributions that pastors can provide when addressing ethical questions? What do pastors need to know to provide spiritual help and guidance concerning the options available through genetics technologies?
- What are the connections and resources in our congregation with the field of genetics and genetics technology?

Which of the following are actions that our congregation could take?

Provide members with education about genetics along with opportunities for deliberation and advocacy on issues specifically related to the ethical choices presented by new genetics technology.

Seek ways to encourage involvement in church life by those who are affected by genetic conditions.

Strengthen efforts to meet the spiritual and social needs of people facing life-long chronic illness or disability.

Advocate for access to social services that address special educational needs, specialized care requirements, and respite care for families with children who have special healthcare needs (often conditions that have a genetic basis or contribution).

Ensure that all paid staff of the congregation have access to services that provide thorough and accurate genetics information.

Closing prayers

INVITATION TO INTERCESSORY PRAYER

Pray for parents who are struggling to make right decisions, for congregations wanting to do what is supportive, and for pastoral care providers.

PRAYING WITH THE TRADITION

Almighty God, who has given us grace at this time with one accord to make our common supplication to you, and has promised through your well-beloved Son that when two or three are gathered in his name you will be in the midst of them: Fulfill now, O Lord, the desires and petitions of your servants as may be best for us; granting in this world knowledge of your truth and in the world to come life everlasting. Amen

(Prayer of John Chrysostom, who lived 347 to 407)

Resources

ELCA Advocacy

www.elca.org/advocacy

ELCA Disabilities Ministries

www.elca.org/Growing-In-Faith/Ministry/Disability-Ministries.aspx

Genetics and Public Policy Center www.dnapolicy.org/news.eneews.php?action=detail2&newsletter_id=22

Genetic Alliance www.geneticalliance.org/ An organization of organizations concerned about genetic conditions and genetics-related advocacy.

Endnotes

- 1 Excerpted and adapted from February 24, 2008 By AMY HARMON *New York Times*
- 2 These ideas are evident in *Caring for Health: Our Shared Endeavor*, Evangelical Lutheran Church in America, adopted at the Churchwide Assembly, August 15, 2003.
- 3 *Caring for Creation: Vision, Hope, and Justice*, Evangelical Lutheran Church in America, adopted at the Churchwide Assembly, August 23, 1993; *For Peace in God's World*, Evangelical Lutheran Church in America, adopted at the Churchwide Assembly, August 20, 1995; *Sufficient, Sustainable Livelihood for All*, Evangelical Lutheran Church in America, adopted at the Churchwide Assembly, August 20, 1999.
- 4 UNESCO, 25.

Genetics and Human Identity: Who are we, really?

Gathering

HYMN

(See hymn suggestions on p. 119)

PRAYER

Holy Wisdom, giver of all life and source of all creating, we give you thanks that your Spirit moves throughout the world, transforming us, and calling us to you. In faith and trust we bring to you our uncertainties, our fears, our questions, and our hopes. Free us in Christ for service to our neighbor as we dwell in your Word and listen for your Spirit. Guide us, we pray, in Christ's name. Amen.



HEARING THE WORD

Romans 5:12-21

DISCERNING THE WORD

Silence

Discernment

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

Introduction

Session summary

Each of us was given a genome at birth—that is, we were given a specific sequence of DNA with a specific collection of genes. This collection of genes or genotype largely, though not exclusively, determines our phenotype (our body). Our genotype may also significantly influence our patterns of behavior. As Christians, should we consider our genome to be our essence? Is the answer to “who we are” found in the genome? Can we reduce the most sublime of our intuitions to gene expression? Are we so determined by our inherited genetic makeup that what we take to be daily freedom is a delusion? Do our genes lead us to sin? Can God's grace work through gene expression? If we answer affirmatively to these queries, then would scientists who alter our genomes be “playing God”? These are the kinds of questions about human identity discussed in this session.



Real life story

Alice found it hard to believe the changes in the last seven years. Raised by an alcoholic and abusive single mother, at sixteen she ran away and eventually ended up living on the street. Befriended by a homeless man who preached on street corners and claimed to hear God speaking to him, she felt a measure of security. However, after being assaulted too many times, and when she discovered she was pregnant, she fled to a homeless shelter run by local churches.

Through the caring and generosity of the volunteers at the shelter she was able to receive prenatal care and got on the WIC program. She quit smoking and enrolled in a program to get her GED. By the time her baby boy, Bryce, was born, she was living in transitional housing, was working as a teacher's aide at a child development center, and had met a wonderful young man from the Lutheran church that ran the center. Two years later she and Bryce were baptized Lutherans and she married Jesse who adopted Bryce. Life was perfect—everything she had wanted and needed as a child she could provide for her little



The Hebrew meaning for “Adam” is “the earth creature,” which is a reference to all humanity (Genesis 2:1-25). When St. Paul uses “Adam” (Romans 5:14), he is using it in that sense. He also uses the Greek word for “human being” to describe Adam and Christ, so as to make clear that the earth creature's sin was not just the sin of one individual, but of a class of creation—an anti-type of the Coming One, the Messiah (Romans 5:14). The reader may choose to substitute “human” rather than “man” in Romans 5:12, 15-19 to make this point clearer.

How do you experience sin reigning over you because of death? How is that different from grace reigning over you through righteousness unto eternal life through Christ (Romans 5:21)?

guy.

Having worked at the developmental center for several years, she became concerned that Bryce seemed to be developing slower than the other kids. In particular, his speech was limited and very difficult to understand. One day, Alice mentioned these concerns to the developmental specialist at the center. She gave Alice the name of a developmental pediatrician and made an appointment for Bryce. At the end of the visit, the pediatrician sat down next to Alice and said that she was very concerned that Bryce might have a genetic condition called Velo-Cardio-Facial syndrome (VCF) that is caused by a missing piece of chromosome 22.

The next months were a blur with appointment after appointment. The chromosome test confirmed the doctor's suspicion. Finally, the day came to see the geneticist. He seemed very interested in the family history. Alice felt embarrassed because she didn't know much about her family. How could she possibly tell this doctor about Bryce's father? Before she knew it, Jesse told the geneticist that he wasn't Bryce's father and then Alice began telling him about the street preacher and his visions.

After a moment of silence the geneticist said, "I am willing to bet Bryce's father had VCF. Schizophrenia is more common in people with this specific chromosome problem. That would explain his visions—they were probably auditory and visual hallucinations." Her world collapsed. Is my baby going to end up on the street listening to and seeing things that aren't real? Is he going to be moving from shelter to shelter, rousted by the cops, ignored by people walking by, invisible? Jesse is going to hate me. How could I have brought this problem into our family? What are we going to do?

Who are we, biblically speaking?

Who are we as human beings? The Bible gives us the basics. Each human being is a creature living in the tension between soil and spirit: "then the LORD God formed an earth creature from the dust of the ground, and breathed into its nostrils the breath of life; and the earth creature became a living being" (Genesis 2:7). On the one hand, we are soil, dust, dirt, ground, earth. On the other hand, with God's spirit, we envision rising to heaven, transcending the earth. On the one hand, everything we eat derives originally from the dust of the earth; and many, if not most, of the genes in our DNA we share with the animals and plants. On the other hand, our airplanes wing above the clouds, our minds ferry our imaginations into the outer reaches of space, and our spirits cultivate a thirst for life with the angels and unity with God.

Will the genetic revolution eliminate this tension? Will we cut off our transcendent yearnings? Will we resign ourselves to spiritless soil, to DNA and dust? When we ask the Old Testament to help us understand who we are, we find ourselves drawn toward the angels. In Psalm 8:1-9, we find that God created human beings just a little lower than the citizens of heaven. This passage complements the decisive text about humankind's creation in the image of God: "Then God said, 'Let us make humankind in our image [*tselem, icon, imago*], according to our likeness [*demuth, homoiousias, similitudo*]; and let them have dominion over the fish of the sea, and over the birds of the air, and over the cattle, and over all the wild animals of the earth, and over every creeping thing that creeps upon the earth'" (Genesis 1:26). This passage can prompt our curiosity. Just what is it about us that marks God's image? The original Hebrew does not help us because the terms *tselem* and *demuth* seem to suggest that we are a physical representation. But since God is not just an overgrown human being, it is less than clear just how we represent God in our bodies.

Jesus Christ represents God in his body. He is God incarnate. According to St. Paul, Christ "is the image of the invisible God, the firstborn of all creation" (Colossians 1:15). Christ is the image of God. He is also the image of who we are; or, more precisely, who we will become by the Spirit's power. Christ is the new Adam, the new human being, a model for all men and women. 1 Corinthians 15:45-47 observes: "Thus it is written, 'The first human, Adam, became a living being'; the last Adam became a life-giving spirit. But it is not the spiritual that is first, but the physical, and then the spiritual. The first human was

from the earth, a creature of dust; the second human is from heaven.” Even though Adam and Eve predate Jesus Christ, the latter takes precedence. Christ provides the defining images of the human race in relation to heaven, in relation to God. Adam and Eve anticipate Christ; Christ provides the definition of what is truly human.

Who we are in Christ includes more than just our physical makeup, more than the dust of the earth. It includes our redemption. Romans 5:17-18 contends: “If, because of the one person’s trespass, death exercised dominion through that one, much more surely will those who receive the abundance of grace and the free gift of righteousness exercise dominion in life through the one person, Jesus Christ. Therefore just as one person’s trespass led to condemnation for all, so one person’s act of righteousness leads to justification and life for all.”

Biblically speaking, then, is our identity determined by what we have biologically inherited? Jesus’ teaching suggests “no.” In a discourse in Mark about his mother and his siblings, Jesus speaks to another identity: “Then his mother and his brothers came; and standing outside, they sent to him and called him. A crowd was sitting around him; And he replied, “Who are my mother and my brothers?” And looking at those who sat around him, he said, “Here are my mother and my brothers! Whoever does the will of God is my brother and sister and mother” (Mark 3:31-35). Who we are in relation to God is not determined by our genetic inheritance.

One more biblical consideration needs mentioning here, namely, sin. When we turn to a founding document of our Lutheran tradition, the Augsburg Confession, we remind ourselves of our estrangement from God, of the distortion that contaminates the image of God associated with us. “Since the fall of Adam, all human beings who are propagated according to nature are born with sin, that is, without fear of God, without trust in God, and with concupiscence.” Now, in the age of genetics, we need to ask: is our propensity for concupiscence and our lack of trust in God due to our inherited DNA? Is our body estranged from God, so that we look for our Christ-likeness and our redemption not in the body but rather in the spirit? Is there an unbridgeable split between soil and spirit? Or might God’s spirit and God’s grace be at work in our DNA as well?

Is it all in the genes?

When Christians grapple with interpreting science in light of our faith, we need to discriminate between what can be known in the strictly scientific sense and the myths which surround science. Yes, modern people can indeed believe in myths, even science myths! “Myth” here refers to a framework of assumptions or beliefs that surround science but which themselves are not scientifically demonstrated. Like a mitten on a hand, in our culture, the sciences dealing with our genes are surrounded by what can be called a “gene myth.” It is important to grasp the difference between the hand and the mitten, between what we can know scientifically and the gene myth.

According to the gene myth alive in our culture, “it’s all in the genes.” According to this mythical framework, our genome is the “blueprint” of what makes us human, the essence of who we are. To say “it’s all in the genes” fosters belief in *genetic determinism*, even genetic essentialism. What does this mean? Consider three ways in which the gene myth influences the way we interpret the advance of genetic science. First, *puppet determinism* is the assumption that our genome dictates who we are and what we do. Like a puppet dancing on strings, we dance on genetic strings. Accordingly, our genotype (genetic code) determines our phenotype (our body) along with our intelligence, emotional states, potential for professional success, inclination toward moral or immoral behavior, what kind of person we will eventually marry, and whether we will vote as a Democrat or Republican.

The second form of determinism is *promethean determinism*, which places human ingenuity into the driver’s seat. It capitalizes on the technological imperative, described in an earlier session. If our genetic code has the puppet power to determine who we are, so the logic goes, then perhaps our scientists can turn us into the puppeteers. Perhaps we can design the genomes of our own babies, bringing to birth the “perfect child,” so to

speak. On a broader scale, if our scientists can take control of our genes, we will be able to determine the future of the human race. If our laboratory scientists could get into the human genome with their wrenches and screwdrivers and rearrange our DNA, then we could determine the quality of human life that will prevail in future generations. We in the present generation may have inherited our DNA from our evolutionary history; but now we will take the power of nature into our own hands and guide the next phase of human evolution.

Promethean determinism may frighten us more than puppet determinism. We fear the *hubris* or pride of unbridled scientific advance that may lead to catastrophe. This fear leads to the third of the gene myth beliefs, namely, the commandment against *playing God*. We fear that if our scientists dig into our DNA with their wrenches and screwdrivers, they will make mistakes. These mistakes could become dreadfully damaging. Perhaps our scientists will accidentally alter the delicate balance of genetic systems, and this will cause a devastating genetic malfunction. Perhaps a new disease will be let loose on the human race, causing suffering on a large scale. Perhaps a grotesque and irreversible genetic reality will reap violence. Like Frankenstein, our geneticists may inadvertently create an unstoppable monster. We will then be sorry that we had altered the nature we inherited in our DNA. We must stop our scientists before they lead us past the point of no return, or so it seems.

Together these three beliefs associated with the gene myth look like something sensitive Christians should take on as a concern. The gene myth includes a version of the fall into sin. According to the gene myth, human *hubris* or pride expressed by our scientists will lead us to violate something in nature; and nature will retaliate violently with an uncontrollable disease or something similarly damaging. The ancient myth of Prometheus, who was punished by the god Zeus for stealing fire from the sun, has appeared again in the modern world in the form of the Frankenstein myth. In our modern era, the Frankenstein scientist steals secrets from nature; and then nature takes its revenge by letting loose uncontrollable and violent forces. The genetic version of the Frankenstein myth can be seen in the once popular movie, *Jurassic Park*.

When we formulate our faith response to the frontier of genetic research, how should we treat the gene myth? Can we distinguish between solid science and its mythical overlay? Can we take the science more seriously than the myth? How should we address the fear that the myth can create, even while we approach genetic science with caution? On what basis can we criticize the myth if it seems to be leading us astray?

Does the science of genetics deny freedom of the will?

The gene myth results from the interactions of science and culture. Right or wrong, many Americans rely upon the gene myth because it is the dominant lens through which we interpret genetics science; and the science in turn seems to feed the validity of the myth. To get at the interaction between science and culture, three different approaches to genetics need to be distinguished and understood.

The first genetic science is *molecular biology*. Molecular biology pursues the chemical analysis of DNA; identifies the nucleotides which make up our chromosomal strands; locates protein producing genes and their promoters; and tracks gene expression. Molecular biologists look for specific genes or combinations of genes that are responsible for heritable traits or dispose us toward certain diseases. Molecular biologists recognize that genes are influential on our bodies, to be sure; but they see our genes more as a predisposition with a range of possible phenotypic outcomes rather than a strict determinism.

The second science is *behavioral genetics*. Behavioral geneticists examine statistical data about behavior which correlate to heritable traits. Among the traits they study are schizophrenia, depression, anxiety, and alcoholism. Behavioral geneticists often study identical twins, fraternal twins, and full siblings, half siblings, and step-siblings to sift out behavioral patterns that appear to be determined more by the genetic relationship than through social relationships. Some results of such studies are striking in what they reveal about the apparent power of the genes to influence our behavior. Yet, studies also reveal dramatic

differences in behavior between persons with identical or similar genomes. This implies that our behavior cannot be reduced to DNA alone. Recently, molecular and behavioral geneticists are collaborating to locate genetic predispositions to maladies such as bipolar and other affective disorders. Learning more about the genes identified with well-defined disorders, such as bipolar disease, may help to elucidate the pathways enabling more effective treatment and improved quality of life.

The third approach to genetics is *sociobiology*. Sociobiology is an interdisciplinary science that attempts to explain social behavior in all species by considering the evolutionary advantages the behaviors may have. It investigates social behaviors like violence or kinship in nonhuman species and uses them to illuminate human social behavior. Sociobiologists contend that genes play a central role in human behavior and that variation in traits such as aggressiveness can be explained by variation in peoples' biology as well as social environment. Sociobiology is based on the idea that some behaviors (both social and individual) evolved over time. The discipline explains behavior as a product of natural selection and as an effort to preserve one's genes in the population. Inherent in sociobiological reasoning is the idea that certain genes or gene combinations that influence particular behavioral traits can be passed from generation to generation.

Critics of sociobiology often complain that its reliance on genetic determinism, especially of human behavior, provides tacit approval of the status quo. If male aggression is genetically fixed and reproductively advantageous, then male aggression seems to be a biological reality (and, perhaps, a biological good) about which we have little control. This seems to be both politically dangerous and scientifically implausible. Genetic determinism, in fact, does not establish our individual personhood or identity. Who we are as an individual self does incorporate the influences of gene expression, but we are also greatly influenced by our environment. Our family, childhood experiences, social location, our baptism, and the significant choices we make contribute to identifying us as who we are. We are our stories. We are our biographies. And each of our biographies includes all our relationships, including our relationship with God. The appearance of our self-consciousness and personal identity emerges well beyond the strict domain of gene influence.

Genetic determinism in the sense of genetic predisposition is real. But genetic predisposition does not exhaustively predetermine. Our genome provides us with a wide range of possibilities within a frame of both opportunity and limitation. This genetic frame does not in any way undercut or make delusory our daily experience of free will. Our freely made choices are also real. Who makes these choices? Our DNA? The *self* makes choices. The self makes decisions and determines what actions we will take. Our genomes provide the enabling substrate upon which our personal self is constructed; and this self emerges as a distinct reality above and beyond our physical substrate. What we experience as human freedom is actually a three part determinism: our free action is determined (1) by our genome (our nature), (2) by the environment in which we live and grow (our nurture), and (3) by the decisions we make and the actions we take that determine key events in our life story. Genetic determinism is not incompatible with self-determination—that is, with what we know as every day free and responsible activity.

Can genetics explain sin? Grace?

Consider again the above quoted passage from the Augsburg Confession: "Since the fall of Adam, all human beings who are propagated according to nature are born with sin, that is, without fear of God, without trust in God, and with concupiscence." That is, humans are born with the passionate desire to compete, steal, plunder, own, exert power over others, and so on. We have no freedom here; we must accept the birth we have been given. Humans are simply born with the innate drive to survive. Does this explain scientifically what Christians have meant by the term *original sin*?

Long before the age of genetics, theologians distinguished between *original sin* and *inherited sin*. As genetic sciences advance, we might gain a scientific explanation for "inherited sin" as the result of what some thinkers are calling the "selfish gene," namely, a biological explanation for the propensity for selfishness and violence that each generation

of human beings exhibits. It might explain human phenomena such as xenophobia, racism, nationalism, and jingoism. It could not explain every form of discrimination, however. Sexism, for example, could not be the result of a “selfish gene” because the genomes in men need women to win in the genetic struggle for existence.

While the search for one gene to explain all human evil seems misguided, the genetic sciences may give us insights into human evil. Current developments in molecular biology and behavioral genetics could make the science of inherited sin look quite different. Rather than rely on the idea from sociobiology that all DNA seeks to replicate itself, molecular biologists and behavioral geneticists are looking for specific gene configurations that connect with specific forms of behavior. Advances here may allow us to know that one individual might be more disposed toward violent behavior than his or her neighbor, due to the specific genes they possess. Some experiments have already shown that within extended families genetic markers can identify those individuals more prone to antisocial behavior or crime than those whose lives are more conventional and responsible. In this case, the theological concept of inherited sin would be illuminated by genetic science. Some of us inherit a greater propensity for concupiscence (evil desires, evil lusts) than others.

When Christian theology looks for insight from the genetic sciences, it may find illumination for the concept of inherited sin, but not for original sin. When theologians use the concept of original sin they refer to the situation of estranged existence that characterizes all life in God’s creation. We speak of the world as “fallen.” Regardless of what is in a person’s particular genome, all of us are members of a single human race that is both estranged from God and graced by God. Our behavior, whether criminal or virtuous, does not affect original sin. St. Paul writes in 1 Corinthians 15:22: “for as all die in Adam, so all will be made alive in Christ.” Paul’s reference to death in Adam refers to what theologians identify as original sin and being made alive in Christ refers to God’s grace whereby sinners are forgiven and the dead are raised. Nothing in the genetic sciences seems capable of illuminating our understanding of the dialectic between sin and grace.

Can our genes become a means of God’s grace? Yes, a Lutheran would say. This is because we believe God can use the physical realm for gracious action. In the Incarnation, God used the physical body of Jesus as a means of redemption. The physical element of water in Baptism, along with bread and wine in the Eucharist, are means of divine grace. So, it should not surprise us to find occasions in which divine action takes place at the genetic level. This is not to say that our genomes are by definition sacred. This is not to say we should embrace the gene myth and contend that our essence or our identity is to be found in our genomes. Rather, we ought to think of genes as simply one more aspect of the physical world, even if a wondrously complex aspect. Like anything physical, our genotype is part of God’s creation and potentially a means through which God can show love and favor.

Invitation to conversation, prayer, and action



QUESTIONS FOR DISCUSSION

- What principles for action seem to emerge from the new genetic sciences?
- Is the knowledge that we gain from the genetic sciences relevant to being faithful people? Does it help us understand Christian belief or how to be better disciples of Christ?
- Should Christians celebrate the advance of the genetic sciences and their potential for improving human health and wellbeing? Do we need to be more knowledgeable about genetics?
- How should we think about human identity and human freedom in light of this new science? Is our identity defined by our genes?
- If we commit a moral wrong or break the law, can we claim innocence on the grounds that “my genes made me do it”? Does genetic determinism governed by our DNA absolve us of personal moral responsibility?