ENGINEERING HUMANS

Nelson D. Kloosterman

My hearty thanks to the board of the Burlington Reformed Study Centre for inviting me to participate in these evenings of engaging and stimulating conversation with colleagues and scientists labouring in fields related to biotechnology. The opportunity you have afforded us will, with God's blessing, serve to educate and inform us of this exciting new frontier in our culture. This frontier is frightening in its newness and challenging in its opportunities to apply our faith to complex personal decisions surrounding life and death. (For a recent discussion of the issue of genetic engineering by a Reformed ethicist, see Douma, 1997, 150-172.)

Our Biblical Starting Point

Let me begin by explaining all too briefly our biblical starting point. Genesis 1-3 is foundational to our discussion of biotechnology because of its teaching concerning human beings as those who are created by God in his image. There are things we may do with respect to plants and animals that we may not do with respect to human beings, by virtue of the nature of human creation. Human beings are created in the image of God. In other words, human nature is not something we fashion for ourselves, but something that we receive.

This confession sheds light on issues like human cloning and stem cell research. If human nature is not a product of our own creative engineering processes and efforts, but rather is something fundamentally received from God's hand, then every attempt by man to make other human beings the product of his creative capacity must be rejected as a form of hubris and arrogance. The Bible forbids us from viewing nature as a mechanistic product rather than a creation.

Another important element of our Christian confession is that the nature of man's fall into sin is such that human corruption cannot be repaired by technology. A Christian approach to questions of biotechnology must continually declare this principle and reality. The most basic problem of the human race is not biological or genetic, but moral and ethical. I hope to return to this later.

In addition to Genesis 1-3, we learn from Psalm 8:1-9 about the position and glory that God has given to human beings. We read in this Psalm:

> O LORD, our Lord,
> how majestic is your name in all the earth!
>
> You have set your glory above the heavens.
> From the lips of children and infants you have ordained praise
> because of your enemies, to silence the foe and the avenger.
>
> When I consider your heavens, the work of your fingers,
> the moon and the stars, which you have set in place,
> what is man that you are mindful of him,
> the son of man that you care for him?
> You made him a little lower than the heavenly beings
> and crowned him with glory and honour.

You made him ruler over the works of your hands;
you put everything under his feet:
all flocks and herds, and the beasts of the field,
the birds of the air, and the fish of the sea,
all that swim the paths of the seas.

O LORD, our Lord, how majestic is your name in all the earth! (NIV)

From this Psalm we learn, among other things, the distinction that man is ontologically, qualitatively, essentially different from plants and animals - even though we share some of the genetic qualities of animals and plants.

A final scriptural starting point is Psalm 139:13-14:

For you created my inmost being;
you knit me together in my mother's womb.
I praise you because I am fearfully and wonderfully made;
your works are wonderful, I know that full well. (NIV)

Now let's be careful here. When the Bible says that God "knit us together in our mother's womb," we know that this is figurative, metaphorical language. But we may not use that observation to disqualify the relevance of these verses. We recognize, in terms of the biological processes we observe in conception, gestation, and birth, that the way the LORD knitted us together is indeed remarkable and mysterious - also biologically and genetically. So these verses do not answer all our questions, but they do function as a starting point for providing a moral judgment regarding the issues of stem cell research and human cloning.

Two Uses of Genetic Technology

As we seek to evaluate how Christians should respond to genetic technology, let me remind you of an important distinction with respect to this technology and its use. That is the distinction between *therapeutic* and *eugenic* use of biotechnology. The therapeutic use is the use whereby we try to repair, cure, remedy, and improve human conditions. But a eugenic use is a use of this technology whereby we seek to improve the human race as a genus, in terms of the gene pool and supply.

Part of our calling as stewards within and of God's creation is that our labour is to be restorative, reparative and curative in the face of the consequences of sin. However, altering the human genetic code is different than repairing defective human genes as a means to overcome disease and resist death. Therefore, our judgment regarding current technology is helped by this question: Is this technology designed to overcome the results of sin in God's creation, or is it designed to enable us to function as creators who alter the essential genetic code that makes us human beings?

Another part of our calling as stewards within and of God's creation is to protect and preserve the creation. Such features militate against experimentation with human life at any stage, and require respect for the pluriformity of life among species.

Two Rules of Thumb

Before proceeding to explain several cautions with regard to genetic engineering, I need to state and explain two

rules of thumb that we may use generally within the area of medical ethics. These will help us to make decisions and choices. Ignoring these rules of thumb can cause serious confusion and burden people with bad consciences.

The first rule of thumb is that *can* does not equal *must*. The fact that we can do a procedure or employ some technology does not, by itself, mean that we are required to do that thing. *Ability does not constitute duty.* When we have aging parents, for example, and we are considering treatment options, the fact that we can do certain things for prolonging life does not thereby obligate us to do those things in order to prolong life. We still need to exercise moral judgment in gathering and interpreting relevant information.

The second rule of thumb is related. It states that *can* does not equal *may*. We can produce embryos in a dish, but this does not necessarily by itself mean that we may do so. We can bring about insemination of a egg by sperm provided by an anonymous donor, but the ability to do that does not by itself justify doing so. As Christians, we need to evaluate the moral impact of the technology that we are using. *Ability does not constitute permissibility.* We can do many things medically that may well be morally impermissible.

Four Concerns

Now in that light, let me alert you to four areas of concern with regard to cloning and stem cell research.

The first of these cautions or concerns is what may be called molecular - biological gnosticism. Gnosticism is an ancient heresy that teaches that the human body and physical existence are unimportant. What really counts in life is

introduction, through knowledge, to the mysteries of spirituality. Salvation consists of ascending from this earthly, material world to the heavenly, spiritual world.

Scripture teaches us the creation of the human race in God's own image (Gen 1:27) and the incarnation of Jesus Christ in that same image (Col 1:15). The church therefore confesses that imaging God and reflecting God in our persons and physical bodies is not to be located in our function, but in our essence and nature. My body is part of me, part of who I am. My physicality is part of my personality. Although humans share biological and physiological characteristics with animals, yet these characteristics belong to a different nature than an animal nature. My body-ness is integrated with my soul-ness. Part of that difference lies in God's calling and enabling human beings to reflect him by exercising stewardship, dominion, and caretaking in creation.

By molecular-biological gnosticism I mean the increasing denial of any value other than utilitarian to human tissue and genetic material. Such a view sees a human embryo as a "product of conception" or a "mass of tissue." This form of gnosticism speaks now of "body parts" that can be "harvested" for "use" in medical science. Such language can betray a form of gnosticism.

God's creation of humanity, the incarnation of Jesus Christ, along with his and our resurrections, teach us that the human body in all its parts and dimensions has value and dignity. This explains why rescuers in New York City and in Washington D.C. provide for a dignified and respectful removal and burial of the physical remnants of victims who died on September 11, 2001. People have an instinctive understanding, I think, of this danger of gnosticism.

The second caution that I would give involves the danger of reductionism. The new genetics seems to warrant assuming that human genes are the source of all human ills (Rifkin, 1998,150-160; also Douma, 1997,152-153). People today seek to explain everything from homelessness to schizophrenia to Alzheimer's in terms of a person's DNA.

Reducing the explanation of human behaviour to one's genetic predisposition is not new. For years people have spoken of someone's genetic predisposition to alcoholism, for example. But now expand this argument to include an uncontrolled temper. Is that curable by fixing some particular gene?

This tendency to reduce explaining human conditions and ills to genetics creates blind spots. For example, research that focuses on innate, inborn, genetic factors tends to ignore secondary, acquired, and supplemental factors that help account for behaviour. Moreover, the move is very short from genetic explanations of behaviour to social engineering designed to eliminate behaviour determined to be wrong (Rifkin, 1998,160-174). If we continue down this road of a reductionist explanation of human behaviour, then we will come to rely on the pharmaceutical companies to produce tablets to counter an overactive libido (which the Bible calls lust), to manage impulses underlying stealing and lying, and to assist people in overcoming road rage.

The third caution is eugenics. We may speak of negative and positive eugenics. The former seeks to prevent bad genetic material from being passed on, the latter seeks to improve healthy genes. So-called positive eugenics seeks not to make man better, but to make a better man (Douma, 1997,163-166; Rifkin, 1998,116-147).

Positive eugenics seeks to improve the hereditary

qualities of a race or a breed. Biotechnology confronts us with a new form of perfectionism - not a moral perfectionism but a biological perfectionism. Today we are beginning to hear biological definitions of "guilt," "crime," and "duty," definitions that enable us to equate biological advances with moral improvement. Any idolatrous science and a society that worships science are going to compel us and our children to make choices we've never dreamed about, exerting pressure first socially, then politically and legally. When will it be a crime to give birth to a genetically deformed baby? Already lawsuits are being filed for what is being termed "wrongful birth," alleging that doctors failed to give adequate information so parents could have chosen to abort their deformed offspring. We are being warned (Rifkin, 1998, 133-139; Meilaender, 1996, 49-56) to begin asking each other whether our new genetic technology will permit parents to give birth to a child suffering from Down Syndrome, spina bifida, Turner's syndrome, Tay-Sachs disease, or sickle-cell anemia.

Current practices of prenatal screening are becoming routine. Whether or not we desire it, genetic information regarding our (potential) offspring will be given to us for decision-making purposes. Information entails choice, and choice involves responsibility. Technology carries a certain momentum, which makes it difficult once we set foot upon the path of prenatal screening to find the exit (Meilaender, 1996, 55-56). Only by believing that every human life is God's gift can this approach be resisted. Any selection among embryos necessarily requires justification. And once humans are assigned this task, the acceptable criteria become debatable.

God's sovereignty is exercised in the formation of human persons. He gives us our mouths and our eyes (Exod

4:11). This Christian belief must shape both our use and our non-use of biomedical genetic technology. My caution is that genetic engineering has great potential to construe life as that which satisfies conditions rather than as that which God gives us.

My fourth concern is the danger of social Darwinism. Here we need mention only the Nazi experiment and the sickle-cell public policy disaster (involving the African-American population being screened without consent as part of public policy) to illustrate how genetic information, or the desire for it, can be used to discriminate against certain groups. Genetic profiling through carrier screening can become important, for example, for social policy, insurance companies (to determine coverage), and marriage licensing.

Interestingly, a community of Orthodox Jews in New York City uses carrier screening to discourage marriage or even dating between young people who are at risk of having a child with Tay-Sachs disease. Since 1983, the incidence of this disease in this community has dropped, and at least sixty couples who had considered marriage decided against it when advised of their genetic risk (Meilaender, 1996, 7). One possible reason for its success is that the Orthodox Jewish community is tightly knit with shared beliefs and commitments, whereas wider applications of this approach may court the danger of social control. I mention this only to illustrate that a policy acceptable within a tightly knit community may, when applied on a national scale, become wholly unacceptable.

Our Christian Response

What, then, must be our response as Christians? First, we need to express gratitude to God and delight in his creation.

Genetic discoveries are amazing and wondrous. Gratitude serves as the context for evaluating the proper uses of technology and scientific discoveries, and the proper application of new knowledge.

Some may view genetic manipulation and biotechnology as toying with, if not violating, the laws of nature. But we must be clear that all scientific and technological advances modify, manipulate, or otherwise transcend laws of nature. We build a spacecraft with engines powerful enough to boost it out of earth's reach, thus neutralizing the "law" of gravity. We introduce into the human body an organic mold (penicillin) in order to destroy other foreign bacteria. To investigate and manipulate the cellular structure of plants and animals is no more a violation of nature than these other acceptable inventions.

Our second response must be education. In view of the widespread ignorance in this area, there must be intensive education for and within every sector of life. Home, school and church must become involved in this education. If information leads to choice, and if choice in designing our offspring belongs only to God, then we must encourage couples, for example, to undergo prenatal genetic screening only for therapeutic purposes.

How many elders know of families within their districts who have made use of reproductive medical technology, or considered it? How many elders supervising couples or families considering such use would know how to counsel such couples from a biblical perspective? We desperately need to start talking about these things, within the context of the community of faith. I suspect that most couples wrestling with the problem of infertility are being left to find their own remedy, informed and guided only by their fertility specialists. These couples need the accompaniment and counsel of the church as they work through

significant genetic and technological issues. We must not compartmentalize life into the spiritual realm and the physical realm, so that people see the church and the Bible relating only to spiritual matters, whereas questions of physical medicine and biotechnology are seen as belonging only to medical and scientific experts. (Concerning the role of the church in health care, see Payne, 1985, 127-137, Frame, 1988, 38-41, 48-51.)

Particularly important is teaching awareness of the proper language of genetic technology, which may not coincide with the accepted language. Beware of viewing nature merely as a mechanism, a view underlying public vocabulary that speaks of the DNA *code*, gene *splicing*, and genetic *engineering*, of *reproduction* rather than *procreation*.

An essential element in this discussion is a clear definition of the term "health." Our definition of health will affect our moral evaluation of medical and genetic choices. We must become suspicious of expansive definitions of health which obscure important differences between curative and cosmetic improvement. As far back as 1946 the World Health Organization (WHO) offered this expansive description of health, which it still provides today: "Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity" (WHO 2001). By this definition, an adolescent with acne who suffers social awkwardness could be characterized as unhealthy. So too could a woman with noticeably imbalanced ears who won't get hired to model earrings. Because we now have effective human growth hormones that can help overcome dwarfism, "ordinary" shortness among children is being called a disease by physicians, pharmaceuticals and insurance companies. But if "ordinary" shortness is a disease, what then is health?

Just as different values and goals enable us to distinguish cosmetic surgery from restorative surgery, so too we must distinguish in our moral judgments between genetic therapy used to enhance life rather than to remove a malady or restore bodily function. But perhaps the very distinction between cosmetic and restorative surgery needs further refinement. Is laser surgery to improve vision cosmetic or restorative? What about plastic surgery? If we may use medical and genetic techniques and procedures to make a bad body good (think of prosthetics), may we also use them to make a good body better (steroids and growth hormones)? Where will we find the exit off this genetic highway?

Third, we need a legislative response. Legislation needs to include regulation, to be sure. But because of the scope of such scientific developments, there must also be global participation in evaluating consequences of biotechnology, for the sake of worldwide harmony and long-term cooperation.

Finally, the fourth response is that we demonstrate Christian compassion toward persons who suffer disability or physical deformity. What must we do in response to the surging popularity of genetic screening and in the face of immense political and financial pressure whose aim is preventing the birth of people with disabilities? The church must demonstrate the biblical attitude toward people with disabilities and defects. Those in our audience who belong to the Canadian Reformed Churches have established an institution to assist those with physical disabilities, called "Anchor." This is part of the church's demonstration of rescuing those with disabilities and defects who may well become marginalized as this technology advances. This demonstration includes cultivating the church as a community supporting parents of children with disabilities or

defects. I want to urge us to commit ourselves to watching our language, our gestures, our attitudes, toward those afflicted with disabilities and defects, so that in the church the "weak" may find protection, refuge, and defence.

The Gift of Contentment

Let me conclude by relating the profound analysis of Dr. Gilbert Meilaender regarding the matter of prenatal screening as an example of the moral and cultural conundrum resulting from genetic technology. Concerning the advancing technology of pre-natal screening, Gilbert Meilaender observes that we have no way out of our moral difficulties by simply going forward with our experiments and developments.

> We may tell ourselves that we only want to know the health of the fetus, that abortion is not a possible end in view, but for the most part, I think, we thereby deceive ourselves. *The technology carries its own momentum*, which, if not irresistible, is nevertheless very powerful. It prepares us not for the kind of commitment that parenthood requires, an unconditional commitment, but for a kind of responsibility that finite beings ought to reject. The time of pregnancy will be better spent learning to love the child we have been given before we begin to evaluate and assess that child's capacities. *Christians could do the world a considerable favor and could bear substantial witness to the meaning of God's own love for the world if they would simply say no to routinized prenatal screening* - thereby saying to their children and, by implication, to all others: "It's good that you exist" (Meilaender, 1996, pp. 55-56; italics added).

Perhaps the most eloquent answer we can give to some of this genetic technology is: "No. We won't use it, because we receive human life, created life, from God's hand." Now, I'm fully aware that such an answer doesn't solve all the problems. That is why we include as part of this conference a time of discussion for wrestling together with the problems and solutions that genetic engineering is designed to address.

We would be wrong to castigate those engaged in biotech research and development for seeking to "play God." They are part of a centuries-long process of mankind following the God-given cultural mandate. Moreover, God has designed human economic relationships such that for every manufacturer's push there is a consumer's pull. In other words, public demand for the results of their work is being both created and satisfied. So we are called to examine and govern our own desires - whether for tastier shrimp, smarter children, or pain-free living. Every scientific discovery, every technological application, every marketable invention confronts you with this question: To what extent are you satisfied with divine providence? Will this novelty, this development merely satisfy discontent in our lives, or will it enhance our stewardship and service toward God and our neighbour? What does it mean, really, to "be content in whatever circumstances" (Phil. 4.11)?

Works Cited

Douma, J. 1997. *Medische ethiek*. Kampen: J. H. Kok.

Frame, John M.1988. *Medical Ethics: Principles, Persons, and Problems*. Phillipsburg, NJ: Presbyterian and Reformed

Meilaender, Gilbert. 1996. *Bioethics: A Primer for Christians*. Grand Rapids: Eerdmans.

Payne, F. E. 1985. *Biblical medical ethics: The Christian and the practice of*

medicine. Milford, MI: Mott Media.

Rifkin, Jeremy. 1998. *The Biotech Century: Harnessing the Gene and Remaking the World*. New York: Penguin Putnam.

World Health Organization (WHO). 2001. "Definition of Health." (www.who.int/aboutwho/en/definition.html).

DISCUSSION

Following the keynote speeches by Dr. Tony Jelsma and Dr. Nelson D. Kloosterman, a public discussion chaired by Dr. Cornelis Van Dam took place.

1. *Dr. Kloosterman, you suggested that therapeutic use of genetic technology to cure a disease may be used. But how far can we take this? Should we use organ transplants to prolong life of which God says "you are dust and to dust you shall return" (Gen 3:19)?*

Kloosterman: Let me focus my answer on the issue of organ transplants. Theoretically, I suppose, we can imagine a person who is made up out of all kinds of spare parts. He has somebody else's heart, somebody else's kidney and perhaps liver and lung. When do we stop? I think here we rely on the medical profession to give us a risk benefit analysis. As the technology improves, so does the quality of the life of people who receive these organs. In our congregation we have someone who a year ago received a new heart. Now in this case that is not a spiritual description but a physical one, although we have people who receive a new heart under the preaching of the Word too! But this person underwent a heart transplant. As I observed him, to my astonishment he had far less trouble with the problem of rejection than I have seen in other patients.

So, how far can we go is not an easy question to answer in the abstract. As a pastor and as one who has also been involved in family situations recently involving the dying and death of loved

ones, and also as a professor who teaches ethics, I find this kind of question extremely difficult to answer in the abstract. I would prefer a concrete case for then we have the variables, histories, prognoses, as well as other choices perhaps. I think we do as much as we feel comfortable with in terms of the quality of life. I believe the quality of life argument is inescapable in medicine. We have to be careful with it, but it factors in nevertheless in terms of our decision, for instance, whether or not to begin a patient on morphine in order to deal with his or her pain in fighting cancer.

I don't think we need to be too idealistic about these things but neither should we be very abstract about them. A patient's well-being, the quality of life, the comfort of the family in making certain decisions, the prospect of restoring to acceptable levels of living - all these considerations may play a role. For example, as we all know, there is allocation of medical resources out there. We wouldn't give a heart transplant to someone who is eighty-five years old. But we would give it to an eighteen year old because of certain allocation and risk- benefit considerations. That is expected! And I think that is normal and natural.

These kinds of factors come into our decision regarding organ transplants.

2. *In a covenantal worldview, where do you position the role of government or the state? Would the state not need to increase its involvement in this time of rapid change and transition? Also I wonder whether we can sufficiently trust the marketplace to develop appropriate self-control.*

Kloosterman: Because we live in a fallen world I don't think we may place implicit trust in the marketplace, the so-called invisible hand of the marketplace. We do live in a fallen world and

because of that I believe the free market is better than state regulations and state policies.

However, having said that, I do believe we need our governments to stand on the side of human life. This is necessary in terms of the ethos that is developing. I believe therefore the government has a responsibility as well as an opportunity to guide its citizenry by such a declaration which will set the tone and the contours for research and development. Unfortunately, in our current situation, our governments, both in the U.S.A. and Canada, are not quite as noble. I think our governments have been willfully negligent in this matter of in vitro fertilization, and the processing or production of surplus embryos. You heard tonight that in Germany and Austria they have very strict regulations about this so that you must implant as many embryos as are fertilized, or made by means of fertilization. I believe that many of the ethical problems we are facing today are a result of that neglect.

So, I believe there is a role for the state to protect nascent, embryonic human life. This can be done by means of policies and declarations. If the government is obligated to protect its citizens from foreign attack, it is also obligated to protect its citizens from invasion in the womb, it seems to me. We need to exploit and explore whatever market possibilities there are to bring to bear both in research and development the proper kinds of conditions for doing what is right.

3. *Dr. Jelsma, can you explain the differences between DNA and genes?*

Jelsma: Simply put I would say that genes are the information that is contained on the DNA. The DNA contains all the genetic material which is organized into distinct genes and they

are all found on the DNA. So, genes are made of DNA. A good analogy is your computer. The hard drive is the DNA, but the programs on that hard drive are the genes.

4. *Is there really more funding and research for pluripotent stem cell research in Canada than totipotent? And is it not naïve to think embryonic stem cell research will not increase considering the motivations and clout of those who promote it?*

Jelsma: I am not really sure whether there is more in terms of funding for one versus the other. I do know that in scientific research you generally go with what works. So, the promise of success, never mind the ethics, is probably greater with the embryonic stem cells than with the adult stem cells. However, if you can get progress with adult stem cells you can get recognition, publicity and that sort of thing as well. I do not think that the ethics behind embryonic stem cells will restrict the research that is going on. Ethics are often put in the background.

Kloosterman: I recently published an article evaluating the compromise decision of President Bush which he made with regard to government funding for embryonic stem cell research. In that article I observed something I wish to bring up tonight and that is that a lot of the rhetoric is banking on the promise and the potential of some of this research. This is a highly dubious premise. I don't think we have to make policy decisions on the basis of potential or promise but on the basis of reality and actuality. I would therefore criticize President Bush's decision for a number of reasons, not the least of which is that it seems to me that it gives too much credence to this rhetoric of promise and potential.

Out of respect for human life, I would like to see the

government force and compel direct research to go toward the adult stem cells or to the umbilical cord, placenta type stem cell research, rather than embryonic stem cell research.

5. *My question also has to do with stem cell research. Speaking very personally I thought I had this fairly well figured out about whether we should allow such things or not. But then someone very near and dear to me was diagnosed with a disease for which stem cell research showed great promise. Then the issues become clouded and not as clear. How would you counsel a Christian who is in that situation? In your speech you spoke about how beneficial the heart transplant can be. A person who sees some hope of life could argue that rather than transplanting an organ you are transplanting into me some stem cells. Is there a difference? Is it a difference of kind, or just of degree?*

Jelsma: I think the question we need to ask though is: where did those stem cells come from? Have those stem cells been produced by the destruction of a human embryo? If that is the case, then it is morally unacceptable. If you can derive stem cells from other sources, I am all for it. However, we need to ask whether a human life has been sacrificed to treat someone else?

Questioner: *If I could respond to that, I agree with you, the source is a concern. I am wondering though whether we as Christians can do something other than just not use it with respect to in vitro fertilization. It's here, there are embryos that are being discarded anyway. The ethics of those who do not have a God-centered worldview is such that this is here and I don't see it changing too much. Is there anything else that we can do besides just boycotting the procedure for our own personal use?*

Van Dam: *And connected with that, there is another written question that has come in. As Christians how should we view using stem cells from body parts which are discarded, such as the umbilical cord?*

Kloosterman: What can we as Christians do rather than simply boycott a procedure like in vitro fertilization? How about starting a discussion as to whether we as Christians can consider a program of adopting embryos? Such an embryo adoption program would become our Christian testimony to the sacredness of human life. Actually I should not use the phrase "sacredness of human life" for it can lead us down the wrong road. Human life may be taken in certain circumstances. It is not absolute or ultimately sacred. Let me rephrase that. The Christian adoption of embryos could testify of our deep respect for human life and that we are willing to sacrifice financially as well for it. In the early church's history, Christians were the ones who were known to pick up from the roadside babies that had been abandoned by their parents. And Christians became known thereby as people of compassion and mercy.

I happen to believe that to these many deep ethical problems in our society there is a specific Christian answer. Take, for example, abortion. The Christian answer is not placarding. That is a democratic answer; it is a legal answer. But a Christian answer is the answer of compassion and mercy, such as having "Shepherding Homes." Here we invite women who are pregnant to live with us to carry their children to term. That is showing the Christian alternative. Also with this new emerging technology, we have an opportunity to show Christian alternatives to the world's ethic. Considering adopting embryos may be just one thing. I think we can do that and still not use the technology. Thereby we also

testify to the dignity and the deep respect we have for the procreation process. Now we are not here tonight to discuss in vitro fertilization, that would take another evening, but we should have some significant questions about the legitimacy of that procedure. That is one solution.

With regard to using stem cells, say from an umbilical cord, that is not a problem. There is no difficulty in so using the resources of the human body, acknowledging the difference between cells that then are cultivated and applied to disease for curative and remedial purposes. The difference between that and taking a body part (an "eye") from another person, a cornea transplant, is only a matter of degree, but not essence or principle. And we can move from an eye to a human heart transplant. We have done blood transfusions for years. That is an other example of using material from another human being to save life.

6. *Do you not feel that God gives doctors the knowledge to do these things and so we can use in vitro fertilization? If we are not supposed to have children from the Lord, then it won't work.*

Another related question: Dr. Jelsma mentioned the motive for adopting a child. Is it to have your own children or to increase Christ's church? But is this not a false dilemma? May the desire to be father and mother not be part of the motive to adopt a child and is it not too idealistic to adopt a child simply to preserve and increase God's church?

Another question: Is not God making the decision for childless couples by not giving them children in the normal way? Is any intervention not therefore wrong?

A final question on this area: What are your thoughts on fertility pills? Are we taking matters in our own hands and so undermining God's sovereignty?

Dr. Jelsma: To address the first question, there needs to be a distinction between what we *can* do and what we *may* do. We have a responsibility to act in accordance with God's Word. This distinction is often ignored by the scientific community, but we as Christians may not ignore it. The second question that was specifically addressed to me referred to adopting; whether the desire to be mother and father can be part of the motive to adopt a child. Yes it can. I have no problems with that. When I mentioned increasing Christ's church, I was putting this matter in the context of the creation mandate to be fruitful and multiply. But I am not denying that the desire to be a mother and father can be a legitimate motive to adopt a child.

Dr. Kloosterman: These questions have as a common theme, the notion of divine sovereignty and providence and how far we may go in trying to remedy, or to repair what we have received or have not received from the Lord.

I find that this question is legitimate and appropriate in almost every area of health care. Take, for example cataract surgery. Some of you may have had cataract surgery. Were you thereby denying God's sovereignty and taking things into your own hand? Are we violating the laws of nature in any way? I do not think so!

With regard to matters of procreation it becomes intimate and very personal. We are dealing here not merely with the function of an organ, but we are dealing here with the very beginning of human life. And because of that I do believe that there are certain restrictions. Somebody asked the question about "choices." Are childless couples limited in choices regarding artificial means. My answer to that is "yes."

I believe that because of the nature of procreation,

marriage, and sexuality, artificial insemination by a *donor* is illicit. It is unacceptable because that introduces into the marriage relationship a third party. And so, that is excluded as an option. I am persuaded, but not every ethicist is persuaded, that in vitro fertilization needs to be halted until such a time as we can guarantee a limited number of fertilizations, such that all of them will be implanted. The rules are there in Austria and Germany, but I am not sure that the technology is there. Moreover, I believe that with in vitro fertilization, we have the potential of introducing a third party into the procreation relationship anyway, that being the lab technician. I am generally unhappy, generally uncomfortable with in vitro fertilization. This "bioticizing" of life, this taking procreation and putting it in a dish and having a lab technician, who earns $ 40.00 an hour, make our babies for us, this process does something to human experience and human identity.

With regard to fertility pills, they can serve to overcome hormonal deficiencies and other medical conditions that make becoming pregnant currently impossible. I believe that it is permissible to consider using fertility pills under doctor's care and supervision for the purpose of becoming pregnant. We do many things to repair defects. We repair fallopian tubes. We have ovarian surgery. We have all kinds of techniques that enable women or men who were hitherto infertile to become fertile. At what point, you may be asking, do we stop? I can't answer that question for everybody. I respect people who after trying to get children and who are unsuccessful, don't go any further. They don't go to a fertility specialist or a gynecologist or a fertility clinic. They stop! And they declare to each other, we will take this as the Lord's answer to our prayer regarding children, and we will turn our attention, for example, to adoption.

But if I respect people who do that I am not obligated

thereby to disrespect people who go the next step and visit a fertility doctor. I do not think we need to do that. That is to disrespect them. It is an individual decision. We are responsible before God. But what we need to do is to help each other and to show each other the edge of the cliff. Look, we are all hiking together in this mountainous terrain. And some of us who are a little taller and some of us who have binoculars are prepared to say: "Watch out! Over there is a cliff! Don't go too close over there! As for the rest, enjoy the hike!"

7. *It is clear discarding an embryo is wrong, as abortion is wrong! However, how is eugenics different than people using slimming products or athletes using chemicals to be stronger or faster?*

Jelsma: I think the point that Dr. Kloosterman made in his talk is that a human being is one who is created by God. Human nature is not something he himself fashions but receives. That is an important thing to note here because eugenics involves genetic modification and altering what God has given us. On the other hand, when people go on a special diet or train their bodies by exercise, that is a way of developing the bodies that God has given us. As long as the motive for this is correct, that's good. In other words, we can serve God in exercising and maintaining good health.

Kloosterman: Let me sharpen that question a bit and make it harder for us. What is the difference between eugenics and having implants or cosmetic surgery to remove that mole on your face or to shorten your nose or whatever! Here I think we are closer to the real problem, namely, the distinction between therapeutic,

curative, and remedial versus positive eugenics of improving the breed. I think the questions lie very close with regard to cosmetic surgery. I would, however, distinguish them in terms of the fundamental character of eugenics which is dealing with the very cells and genes and the biological structure. I think that is qualitatively different than removing a mole or cosmetic surgery, which may help you in terms of your self image.

I don't think there is anything wrong with having a self-image, by the way. I think that is a good thing to have, because God gave it to us and I think we serve him with it. And if there are some things about our looks that impede that self-image, I think we are free, not obligated, but free to repair those. Again the question of motivation plays a large role here, I think. We cannot be absolute! This is a matter of degrees. But when we come to eugenics, we are dealing with the *structure* of the human being. And when we deal with cosmetic surgery we are dealing with outward form, not structure.

8. *I have read that philosophers are now suggesting that human life only exists when one has an awareness of it. Please comment!*

Kloosterman: The suggestion is made that human life exists only when one has an awareness of it. That is also known as the philosophy of the senses, of awareness and ability to feel. As Christians we have to consider this philosophy to be mistaken.

First of all, the Bible does not indicate that a person becomes human at the point of awareness. The Bible tells us that one becomes human when one is formed, fashioned, made, created. As you well know, our answer to this question has implications both for the beginning of life and the end of life. And if a person's

"being aware" is a pre-condition for being considered human, well then we are going to have to start asking whether people with Alzheimer's disease or with advanced senility are indeed human, if they are unaware of their surroundings, of their relationships and so on. And I don't think we want to go into that direction as Christians or as a society. You see, that kind of definition gets turned around against us. I would like to talk to this philosopher when senility begins to set in his mind and ask if he still believes the same thing.

Let me alert you to something in this context that is a major undiscussed phenomenon in medical technology today, and that is the current criterion being used to establish death. Do you know that it is acceptable today to pronounce a person clinically dead on the basis of brain activity or absence thereof? Do you know that there is growing opposition to that criterion of death? Formerly, it was pulse rate, heart rate. There is growing awareness among people who educate themselves about this, including people within the Roman Catholic tradition, who are becoming uncomfortable with declaring a person dead on the basis of the absence of brain waves. Do you know the significance of that criterion for declaring someone dead? If their brain is dead so to speak, their body can still be living and organs can be harvested. This is part of the debate. Is the entire organ transplant industry predicated on this new criterion of death? I think it is time to ask some questions about this and press the medical community to validate its clinical procedures here. I think we have been far too trusting and accepting of the claims of medical science.

Jelsma: Interestingly, when the first transplant was done by Christiaan Barnard, the criterion for death was not the absence of brain activity but when the heart stopped beating. Barnard didn't

like this because the heart would be starved of oxygen. It was Barnard who was one of the people who transplanted the heart sooner, at "brain death," so that the heart would be in a better condition to transplant.

9. *As a person interested in science, what areas of study can we get into without risk to our faith and what courses do you recommend? Are there Christian support groups for students at secular universities?*

Jelsma: I am glad to hear that you realize that one's faith does interact with science. I would say *every* area of science is one that we can get into. Without risk to our faith? Maybe every area of science will be a risk to our faith. But do we want to be safe or do we want to be challenged? Do we not want to work out how our faith interacts with our life? If I can give a plug for Dordt College, that is exactly what we try do. So, whoever this person is who submitted this written question, I have some information for you. Please come and talk to me! Seriously, if you are going to choose a secular university you will have no spiritual guidance and your worldview will be different from the one who is teaching you. There is a lot of difficulty in that.

Another answer, perhaps the answer you were expecting, is that some fields challenge your faith more directly than others. In Biology you have evolutionary theory to deal with, but I as a biochemistry major had little exposure to it. The social sciences like psychology and sociology can be more "risky" because human interpretations become more prominent. However, even an area like physics has questions that relate to our faith when we deal with the origin of the universe and the relationship between God's providence and events that happen on the atomic scale.

Are there Christian support groups for students in secular universities? I don't know whether the Fellowship of Canadian Reformed College and University Students is still around. It was when I was an undergraduate. Another way to go is to attend a Christian college. I think every area of study is going to be risky and we need to be challenged. That is part of what we are doing tonight as well. There are not always easy answers. But part of it is struggling to see how we can work out our faith in what we do.

10. *Dr. Jelsma, is it medically possible to remove a few stem cells from the blastocyst while being able to keep the blastocyst alive, recover and develop a healthy child? If not why not?*

Jelsma: No, it is not possible to do that. Even getting a few stem cells from a blastocyst is an inefficient process, and the only way to do this is to destroy the embryo.

11. *Two comments: After World War II, the Declaration of Helsinki was drawn up by the World Medical Association. One of the articles reads: "Medical research involving human subjects must conform to generally accepted scientific principles being based on thorough knowledge of the scientific literature". And in Article 10 it says: "It is the duty of a physician in medical research to protect the life, health, privacy and dignity of the human subject". This comes from the time of the second world war. I think as Christians we should use some of the tools that are available to us, such as these declarations which make important points with which we can agree.*

The other thing I would like to say is that in the past lawyers and other people in Canada, particularly in Saskatchewan, argued that the government should recognize a human being as a

person from the point of conception. We should revive this discussion and ask that government committees tour the country and get input from the people on these points, as they do with other health issues.

Jelsma: I have one comment to make about the first point you made. Nigel Cameron has written a book entitled *The New Medicine: Life and Death After Hippocrates.* He talks about going back to the Hippocratic tradition of practising medicine which arose before 300 BC and which was incorporated into Christian practice of medicine. Indeed, since World War II, the rules have been watered down. For instance, instead of speaking of "the sanctity of life," a watered down version of the Hippocratic oath talks about "a respect for life".

Whenever there are ways and means to fight the negative trends, let us indeed by all means do that, as you indicated.

12. *Is it really wrong to use a donor sperm thereby introducing a third party in a marriage relationship. If adoption is not wrong, where neither parents' DNA is involved, is it wrong to use a donor since half of the baby's DNA is still of one of the parents' DNA?*

Kloosterman: That is a very perceptive question! Here is the set-up of the problem. You have a couple, husband and wife, who adopt a child. Next and alongside there is a husband and wife, who have a child via artificial fertilization *by donor.*

In situation number one, the husband and wife sustain the same relationship to that child. Neither contributed any genetic material to the make up of that child. And thus they have from that point of view the same distance.

In situation number two, that is not the case! You have the

genetic material from the mother in the child., However, because it is artificial insemination *by donor*, the husband in this situation sustains a different genetic relationship to that child than the wife. From a genetic point of view these situations are dissimilar.

From a moral point of view, I would suggest that there has been the introduction of a third party into that marriage, into the procreative process, so that the child in situation number two is not the result of marital love on the part of this husband and this wife. Yet the child is the product genetically of the wife. And that disconnectedness, between procreation and child is fraught with moral, emotional and psychological problems. I would say that adoption is morally and psychologically and emotionally superior to artificial insemination by donor. I believe the latter is to introduce a third party into the marriage relationship.

13. *What guidelines should we use when dealing with the commercialization of these techniques? Can we do anything we want with embryo transfer and cloning ,with animals?*

Kloosterman: Again I would appeal to the distinction between people as image bearers of God, and animals and plants. That distinction legitimizes and makes permissible doing certain things in the animal and plant kingdom that we may not do to human beings. I think, therefore, that artificial insemination techniques and embryo transfer employed in animal agriculture are permissible with respect to some of the conditions I laid out last night in terms of cultivating, restoration and conservation. We have to be clear with regard to long term consequences.

May we do *anything* we want with animals? The answer is: "No, we can't!" But that is not helpful. What may we not do with animals? Well, I think we ought to respect the diversity in the

animal kingdom that exists. We need to steward, husband, and cultivate animals there. To be sure, the fish of the sea and the birds of the air are under our command and dominion. We may eat the animals. I am so thankful for that permission in Genesis 9. But we may not do just anything with animals! We have to respect them as parts of God's creation as we respect, I trust, trees. That does not mean that we worship them! It does mean that we respect them. If we need trees to build a house, we cut them down and we use the bark and the sap and the leaves and the twigs. But we don't fall down and worship them!

14. *Dr. Kloosterman, you gave the impression I think, that all prenatal screening is wrong or did I misunderstand?*

Kloosterman: I am not surprised that this question is asked, for I suggested earlier in my speech that if parents do prenatal screening they should do it only for therapeutic purposes, for information, diagnosis and assessment, and not for purposes of eliminating the child. At the end of my speech I read a quote of Gilbert Meilander who said : "Just say no!" That may contradict what I had said earlier. I was trying to use Meilander's quote as an example to alert us to the permissibility of saying: "No!"

I think genetic prenatal screening, embryo screening is permissible as long as you remember that information will lead to choice! Once you know that the child already conceived has this or that genetic malady, you face a choice and the pressure will be on you, perhaps from your insurance company, to make that choice to abort.

15. *Dr. Kloosterman, you mentioned regarding the extending of the life of the elderly that just because we are able to do so,*

does not mean we must. Is there not a danger that we could extend that line of reasoning too far by suggesting that we not try too hard to save the life of someone who is mentally disabled, for example, through expensive operations. Where do we draw the line?

Kloosterman: It is not easy to give an answer to this valid question because it is a general one. I think much depends on the nature of the disease, the prognosis and medical advice given to us. All these considerations and perhaps others must be taken to the family and there we need to look at each other and say: "What does our loved one need at this point?" In discussing that together in dependence on the LORD for wisdom, we may trust that we will find a solution.

CLOSING REFLECTIONS

Cornelis Van Dam

Coming to the end of our series on *Promise and Perils of Genetic Engineering* I would like to conclude this series by summarizing very briefly a few things that stand out from the two evenings of speeches and discussions. There are five points which I would like to mention very briefly.

1. We have seen something of the awesomeness of God's creation. There is on the one hand, as our speakers have shown us, the simplicity and unity of creation in its basic building blocks, but there is also the tremendous diversity of life caused by microscopic genes. All this is mind boggling. Our gracious God lets his creatures push back the curtain and see more and more. We become party, as it were, to God's drafting room where he designed his creation, especially his creation of life in its simplest and at the same time enormously complex forms. Let us never lose our sense of awe when we speak of genetic modifications. God allows us to see quite a bit! In faith we see something of the greatness of God.

2. This fact drives home all the more the breathtaking nature of our human responsibility as we work with the insight and knowledge God gives us. For this task we need much wisdom. The only source for true wisdom is God's Word and it is our hope as Burlington Reformed Study Centre that we have made a contribution in trying to think through these issues from a biblical perspective. Before we know it, even as a faith community, we can

become dependent on secular perspectives for these issues as offered by the mainstream media. We should try to maintain a specific Christian approach.

Although there are scary aspects to the material we discussed, ultimately we know that God has placed us here as stewards of this world to act responsibly so that we can develop and cultivate the potential of creation. In doing so, we seek to push back the effects of sin in a fallen world and we try to preserve creation for posterity. With genetics we are dealing with the basic building blocks for creation. That needs to be dealt with very carefully - be it when we speak of food or when we deal with medicine and bringing relief to suffering human beings.

3. We can rejoice in the genuine progress that has been made in our diet and in medicine and embrace what God in his goodness gives us. However, we need to remain vigilant that genetic technology does not become an end in itself and become part of a sinful human drive for autonomy and self-sufficiency in the Babel culture of today. Modern technology is not what gives health and strength. God does. At the end of the day, our well-being is not in our hands, although we have our responsibilities. In faith we may know that God will give us the necessary wisdom and insight to know what to do when difficult choices need to be made. Often people who go through such difficult times remark that God made the choice obvious and so it could be made. We can take comfort in his daily care and guidance of our lives.

4. There is in the topics of the past two evenings something very paradoxical. On the one hand we can rejoice in the tremendous progress that has been made and the many improvements to the quality of life that are now available for those

who need it.

But on the other hand, we have also been reminded of the truth of Ecclesiastes 1:18 "he who increases knowledge increases sorrow." Our discussions have also shown that. Probably never in the history of the world have people argued so much as to what constitutes healthy food and worried so much about it and yet in many respects we have better food available to us than the vast majority of those who preceded us on this planet had in the past.

It is the same with medical care and life expectancies. We experience tremendous blessings. And yet how many anguished decisions now need to be made by us. The root question becomes: "What is life?" Let's remember that life for a Christian is not and cannot be reduced to a biological existence. Life for a Christian is a life in communion with God. That is the bottom line and that will also affect the difficult decisions we may need to make.

5. Let us thank our God that he is in control and that he ultimately gives life and takes away life. Someone can be hooked up to a dozen machines and instruments, but when God says that enough is enough, he calls his child home.

May this series assist, be it in a small measure, in trying to bring also our thinking on these subjects in conformity to his Word. Let us also encourage the specialists in our midst to make their contributions. Let us let our elected representatives know our concerns when these matters are discussed in Parliament and participate in parliamentary hearings that sometimes go through our land.

The bottom line is that we live in Father's world! Let us rejoice and be glad in it! And let us use all the opportunities to acknowledge his glorious work in creation and seek to live according to his norms.

Suggestions for Further Reading

Alexander, Denis R. 2000. "Genetic Engineering" in Michael Schluter and the Cambridge Papers Group, *Christianity in a Changing World*. London: Marshall Pickering, 231-242.

Beckwith, Francis J. and Norman L. Geisler. 1991. *Matters of Life and Death: Calm Answers to Tough Questions about Abortion and Euthanasia*. Grand Rapids: Baker.

Cameron, Nigel M. De S. 1992. *The New Medicine: Life and Death After Hippocrates*. Wheaton, Ill.: Crossway Books.

Christopher, David A. 2000. "The Gene Genie's Progeny." *The World and I*. January: 172-179.

Davis, John Jefferson. 1985. *Evangelical Ethics: Issues Facing the Church Today*. Phillipsburg, NJ: Presbyterian and Reformed.

Douma, J. 1997. *Medische ethiek*. Kampen: J.H. Kok.

Eckhardt, Robert B. 2000. "Releasing the Gene Genie." *The World and I*. January: 164-171.

Evans, Debra. 2000. *Without Moral Limits: Women, Reproduction, and Medical Technology*. Updated edition. Wheaton, IL: Crossway.

Feinberg, John S. and Paul D. Feiberg. 1993. *Ethics for a Brave New World*. Wheaton, IL: Crossway.

Frame, John M. 1988. *Medical Ethics: Principles, Persons, and Problems*. Phillipsburg, NJ: Presbyterian and Reformed.

Geisler, Norman L. 1989. *Christian Ethics: Options and Issues*. Grand Rapids: Baker.

Helder, Margaret. 2000. "Human Gnome Project: No Cause for

Celebration," *Reformed Perspective* 19:11, 28-30.

Hollman, Jay, editor. 1995. *New Issues in Medical Ethics: Integrating Medical Advances and Biblical Truth*. Bristol, TN: Christian Medical and Dental Society.

Kilner, John F., Paige C. Cunningham, and W. David Hager, editors. 2000. *The Reproduction Revolution: A Christian Appraisal of Sexuality, Reproductive Technologies, and the Family*. Grand Rapids: Eerdmans.

Maienschein, Jane. 2000. "Who's in Charge of the Gene Genie." *The World and I*. January: 180-187.

Meilaender, Gilbert. 1996. *Bioethics: A Primer for Christians*. Grand Rapids: Eerdmans.

Payne, Franklin E., Jr. 1989. *Making Biblical Decisions*. Hosanna House Book Publishing.

Rifkin, Jeremy. 1998. *The Biotech Century: Harnessing the Gene and Remaking the World*. New York: Penguin Putnam.

www.stemcellresearch.org: Do No Harm: The Coalition of Americans for Research Ethics

www.chbd.org: The Center for Bioethics and Human Dignity