Science and Faith in the Second City Study Series
Session 6: Do scientists have the right to change our genes?

Some people are born with inherent genetic advantages – they are stronger, cleverer, more beautiful than others. Others have disabilities, some of which have tragic consequences which are genetic in origin. Since science now has the ability to modify our genes should we be using these techniques to 'level the playing field' and make the world a more equal place? In this talk Professor Keith Fox illustrates the power of modern genetic engineering and raises some of the moral, ethical and religious questions that arise from the use of this technology. Almost as an aside he also raises the question of the extent to which our lives are predetermined by our genes and whether we are truly free agents. He seeks to provide some answers to these questions from within the Christian worldview.

There are several thousand diagnosed genetic disorders, often the product of a single mutation within the human genome. In some cases a cure can be brought about by targeted editing of the faulty gene in the individual person and replacing it with a normal one, so healing that person. More complex ethically, is the process of editing an embryo (human genome editing), for this has the capacity to influence all the cells in the body of the individual and all their future generations. Currently this latter practice is illegal, although there is an instance from China where in 2018 a scientist broke the rules and made the first gene-edited twins.

Keith Fox offers three contrasting views on editing the human embryo:

1. Don't do it '*the strong arguments against engaging in this activity remain. These include serious safety issues, ethical issues that affect the next generation without their consent, and a current lack of compelling medical applications*' Francis Collins, director of the US National Institutes of Health
2. Do it '*the primary moral goal for today's bioethics can be summarised in a single sentence. Get out of the way. A truly ethical bioethics should not bog down research on the basis of principles such as dignity, sacredness or social justice'* Psychologist, Stephen Pinker
3. Do it with care '*I am not willing to write this work off as an attempt at playing God. We each play God every time we decide to do things our way. Instead, this is an example of using technology to reduce suffering'* Theologian, Clayton Carlson

Finding a middle-way may provide a solution. Maybe we should modify the genome of an embryo that will otherwise die, or will suffer from a debilitating disease, or will develop cancer later in life. But what about changing athletic ability or eye colour? However, there is the risk of unintended consequences and the tricky issue of consent. We should also consider 'What is a normal person?' for what seems like a disease and weakness to some is a strength to others. It is also important to understand that there are limitations to what genome editing can do. For example, a trait such as intelligence is not determined by a single gene but rather the product of a very large number of genes.

In the final section of the talk Keith Fox discusses the possibilities of genetic enhancement and eugenics (attempts at improving the human stock). Although we might shy away from such ideas he quotes ethicist Arthur Caplan who has written in Time Magazine 'the most likely way for eugenics to enter our lives is through the front door as nervous parents – awash in marketing and hype – struggle to ensure that their little bundle of joy is not left behind'. In conclusion he takes us to Judaeo-Christian ideas from Genesis 1: 26-28 and Psalm 139: 13-16, that we are made in the image of God and argues that irrespective of our abilities we are all of worth in the eyes of God.

Professor Keith Fox is Emeritus Professor of Biochemistry at the University of Southampton and Emeritus Director of the Faraday Institute for Science and Religion in Cambridge. He is co-author of *Modifying our Genes,* SCM Press, 2021.

The main themes covered in this study are: genetic engineering to heal medical conditions related to faulty single genes, human genome editing, genetic enhancement and eugenics, the concept of a normal person, being made in the image of God. These notes are intended for private or small group study. Please watch each video clip and then consider the associated study questions. There are 30 minutes of video and so in order to give enough time for discussion it is intended that the session lasts between 60-75 minutes. The video material for this study can be found on our website at https://www.scienceandfaith.co.uk

Study Questions

Is there hope for a cure for genetic disorders

Watch the video

Currently human genome editing (the genetic modification of a human embryo) is illegal. It implies that scientists have the capacity to 'play God' and could lead to a breed of enhanced humans (transhumanism).

- Look at the three different views on editing the human embryo given in the notes above. Do you sympathise with any of these views?
- What does our interest in human genetic modification say about our approach to health and disease/ fulfilled lives/ people who suffer from disability/ people who do not match social norms?

Some questions that arise from human genome editing

Watch the next video

When do you think it would be good to intervene in the human embryo?

- What is a 'normal' person?

How much power does our DNA have over our lives

Watch the next video

Some would argue that much of what we do is predetermined by our genes. In other words we are not truly free. What do you think of this point of view?

Improving the human stock - genetic enhancement and eugenics

Watch the next video

To what extent should we seek to ‘level the genetic playing field?’ through genetic enhancement?

- What do you make of the idea of social (genetic) engineering, especially in the light of the Arthur Caplan quote in the introductory section above?

Made in the image of God

Watch the next video

Ponder on the Judaeo-Christian idea that humans are ‘made in the image of God’ and so all human beings have dignity and are of worth

The talk ‘Do scientists have the right to change our genes?’ was given in Birmingham in November 2022 as part of the Christian apologetics series ‘Science and faith in the Second City’. You can watch the talk in its entirety on our website. The project was funded by a Scientists in Congregations grant from ECLAS, in Durham, and organised by ChaplaincyPlus. This written material is free to copy.