

Background report on Synthetic Biology¹

Prepared by the Quaker Peace and Sustainable Communities program committee (QPASCC) of
the
Canadian Friends Service Committee (CFSC)
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From “The Kabarak Call”, approved at the 6th World Conference of Friends, Kenya, April 2012:

...We must change, we must become careful stewards of all life. Earthcare unites traditional Quaker testimonies: peace, equality, simplicity, love, integrity, and justice.

...We are called to work for the peaceable Kingdom of God on the whole earth, in right sharing with all peoples.

...We are called to be patterns and examples, in a 21st century campaign for peace and ecojustice, as difficult and decisive as the 19th century abolition of slavery...²

From “Synthetic Biology”, issued by the Church and Society Council of the Church of Scotland, May, 2010:

7.7.5 Why is the Church interested in Synthetic Biology?

7.7.5.1 What is the right relationship between humanity and nature? Does God give us authority to unpick and reconstruct nature in the fundamental way which seems to be at the core of synthetic biology? While many focus on the call early in Scripture for humanity to subdue creation (Genesis 1:28), our relationship with our environment as Scripture unfolds is of course much richer and more complex than simply one of master and servant.³

The health of creation on earth has long been of concern to Quakers. In August 2001, Canadian Yearly Meeting (CYM) developed and approved a minute on sustainability. This minute included the following paragraph:

“Given the implications of Friends' testimonies on peace, on simplicity, on equality and on respect for the integrity of Creation, we pledge ourselves to the Precautionary Principle, by which new technology is embraced with great caution. Holistic accounting of impacts, including scientific, moral and ethical accounts may or may not confirm technology's benefits. These things may only be known in the fullness of time.”⁴

¹ Drafted by Eve Schmitz-Hertzberg and Fred Bass (and reviewed by Anne Mitchell) for QPASCC at March 2014 CFSC meeting.

² Religious Society of Friends: Minutes of the Canadian Yearly Meeting 2012, pp. 206-207, #63. Kabarak Call for Peace and Ecojustice (approved 24 April 2012, 6th World Conference of Friends, Kabarak University, Nakuru, Kenya).

³ http://www.churchofscotland.org.uk/_data/assets/pdf_file/0004/3793/synthetic_biology_report.pdf

⁴ <http://quakerservice.ca/wp-content/uploads/2011/05/CYM-Minutes-on-Sustainability.pdf> (pg 1, Aug 11)

In 2012, CYM judged that the new field of synthetic biology warrants the attention of Friends. CYM invited monthly meetings across Canada to address ethical and spiritual issues of synthetic biology during 2013. Information and support to do this was offered by the Canadian Friends Service Committee's Quaker Peace and Sustainable Communities program committee. CYM will revisit the subject in 2014.

Ten monthly meetings in Canada,⁵ using the information kit provided by CFSC,⁶ formed Study Groups on synthetic biology and applied Quaker testimonies in their discernment.

Synthetic biology goes beyond genetic engineering by using DNA⁷ and DNA-sequencing to fabricate new genes and new creatures. By combining biology, computer technology and engineering, one can manufacture DNA, insert the DNA into a living cell and have that cell create new life forms, forms untested by the challenges of evolution. Synthetic biology's proponents intend to produce new sources of energy, medicines, body components, food, computing capacity, pollution detection, and (some advocates) genetically enhanced humans.

In recent years, synthetic biology has seen intense development but little oversight or regulation, despite potentially large-scale risks. The field's uncertainties are many: the new life forms (microbes, plants, animals) could impact people directly, e.g., causing illness or impairment; or indirectly through social and ecological impacts, e.g., the buying up of agricultural lands traditionally used in the Third World to grow food. Harm to people and/or ecosystems could occur, either deliberately (war, terrorism, revenge) or accidentally (laboratory, storage, transporting). Thus, in 2012, many civil society organizations joined internationally to endorse *Principles for the Oversight of Synthetic Biology*.⁸ This statement called for employment of the precautionary principle. That is, before launching any new action or policy that may cause severe or irreversible harm to an individual, a community or the general public, the burden of proof that harm would not ensue falls on those who advocate taking the action. In other words, it is up to those who are working in and/or governing the field to show that the activity would not cause harm.

Quaker testimonies: Quakers have long relied on spiritual testimonies to guide our relationship to each other and to the world in which we live. Our testimonies are living expressions of witness that emerged from Quakers' spiritual experience. The testimonies live through action. To quote George Fox, "So let your lives preach, let your light shine, that your works may be seen..."⁹

⁵ Reports have been received from Annapolis Valley, Hamilton, New Brunswick, Ottawa, Montreal, Peterborough, Thousand Islands, Toronto, Vancouver, and Yarmouth

⁶ see: <http://quakerservice.ca/wp-content/uploads/2013/04/2013-CFSC-Synthetic-Biology-Kit.pdf>

⁷ DNA is the chemical structure of the genes that pattern the structure of microbial, plant and animal cells.

⁸ *Principles for the Oversight of Synthetic Biology*, drafted by more than 100 civil society groups; distributed by Friends of the Earth U.S. < International center for Technology Assessment, ETC Group; <http://www.foe.org/news/archives/2012-03-global-coalition-calls-oversight-synthetic-biology>

⁹ Fox G: Epistle 200

Quaker response to the field of synthetic biology should come from these testimonies. Keith Helmuth has written that our approach to genetic engineering is a challenge to our worldview of right relationship.¹⁰ The Quaker view of right relationship is experiential and pays close attention to the conditions and processes of life and the wellbeing of persons and place.¹¹

The newest expression of the Quaker testimonies is *Unity with Creation or Community*. We see the earth and its inhabitants as one creation (ecosystem) and we must steward this environment. The testimony of *Equality* leads us to express concerns that synthetic biology is not now moving equitably. In its acquisition of land, investment in synthetic biology often usurps the commons. Synthetic biology is funded mainly by multi-national corporations that seek profit for the few. Patenting new life forms and associated research is often done with little transparency and sharing of the knowledge gained. The testimony of *Integrity* underlies all the testimonies. If science is not for the common good and undertaken in an open manner, it undermines our relationship to each other and the planet. The testimony of *Simplicity* gives us concern about the growth dilemma, i.e., that economies which demand continued growth to function accelerate degradation of the planet and increase wealth disparity. Quakers urge that we live in harmony with the limited resources of the planet and what should motivate us is “not more, but enough.” Our testimony of *Peace* leads us to the concern that research capable of both positive and destructive use must be closely supervised and publically accountable.

Strengthening the precautionary principle: In 2012, Anne Mitchell represented Quakers at the Biotechnology Reference Group (BRG) of the Canadian Council of Churches. When the BRG requested member churches to sign on to *Principles for the Oversight of Synthetic Biology*¹² by March 2012, Anne brought that request for endorsement to CFSC. Thus, began Friends’ formal consideration of synthetic biology, though genetically-modified organisms had been a focus of Quaker interest for years.¹³ We urge precaution - that the unknown dangers of synthetic biology should be addressed by those advancing its continued development and that neither the public or the government should have to prove minimal risk while questionable research is being carried out.

We therefore bring forward these principles for CYM’s consideration and approval:

- 1 Employ the Precautionary Principle
- 2 Require mandatory synthetic biology-specific regulations
- 3 Protect public health and worker safety

¹⁰ Mitchell A, Rajagopal P, Helmuth K, Holtz S: *Genetically Modified Crops; Promises, Perils, and the Need for Public Policy*. Quaker Institute for the Future Pamphlet #3 2011

¹¹ See Brown PG, Garver G: *Right Relationship, Building a Whole Earth Economy* Berrett-Koehler Publ; San Francisco; 2009

¹² op cit Reference 3

¹³ op cit: Reference 5

- 4 Protect the environment
- 5 Guarantee the right-to-know and democratic participation
- 6 Require corporate accountability and manufacturer liability
- 7 Protect economic and environmental justice.

Queries for further discernment by Friends:¹⁴

- 1 How do we address ecological aspects of synthetic biology?
e.g., loss of biodiversity, synthetic organisms being untested by evolution and ecosystems
- 2 How do we address social aspects of synthetic biology?
e.g., equitable distribution of benefits, needs of the vulnerable, continuing consumption
- 3 How do we address the spiritual concerns regarding synthetic biology?
e.g., recognizing the sacred in living beings and nature and their relationship with synthetic biology; questioning the valuing of technology over human wisdom and inner truth

We conclude with the following thought:

*There is a spiritual tension between the old faith in technological progress and the growing sensitivity to the integrity of Creation. This tension is troubling not only to many Quakers, but to a wide community of people who are seeking a better way to be in relationship with the whole Earth and its commonwealth of life. We seek the guidance of continuing revelation, of ever new horizons of learning, as we cope with the practical changes that have begun to face us in day-to-day life. From an unconscious faith in technological progress we are moving to the conscious discipline of ecologically sound adaptation.*¹⁵

¹⁴ Drawn from Ethical Dilemmas in Synthetic Biology, Annapolis Valley Monthly Meeting, Sept 4, 2013; contact info@annapolisvalley.quaker.ca

¹⁵ Ciscel D, Day B, Helmuth K, Lewis S, Lumb J: How on Earth Do We Live Now? Quaker Institute for the Future Pamphlet #2 June 2011, p 73