

**Excerpts of monthly meeting study group reports on synthetic biology  
compiled by Fred Bass April, 2014**

**Abbreviations**

AV = Annapolis Valley, H = Hamilton, NB = New Brunswick, O = Ottawa, P = Peterborough, TI = Thousand Islands, TO = Toronto, V = Vancouver, Y = Yarmouth

**Specific recommendations**

The agenda Annapolis Valley Quakers developed might be of use to other meetings (AV)

A useful video: <http://www.youtube.com/watch?v=rD5uNAMbDaQ> (AV)

To contribute to this conversation in an ongoing way, we need someone to continue to provide information, possibly CFSC. (AV)

Once in our hands, the amount and complexity of required and suggested reading was daunting and we felt inadequate to the task. (AV)

The issue is of very great importance, its implications almost overwhelmingly vast and, inadequate as we may feel, we must grapple with it and respond. (H)

We feel that the parameters set by CFSC are useful discipline but too rigid to permit small meetings to participate. (H)

...the ethical framework that needs to be in place when we make decisions about technology. Scientific work could be a way of honouring the world and having reverence for biodiversity. (P)

To facilitate what Quakers might offer on synthetic biology, it would help to see the issue simplified, so it is more accessible to more people. (V)

We should adopt a holistic, fundamental approach to synthetic biology such that its consideration is joined with related ethical, spiritual, social and ecological issues. (V)

We might consider adding “creation” to “community” as part of the informal Quaker SPICE principles. (V)

We must thoroughly thresh Canadian Quakers' position on synthetic biology and then share our discernment with the international Quaker community. (V)

We might consider convening an international conference of Quaker and other spiritual groups to address the spiritual implications of this developing technology. (V)

We can join with other groups who are taking actions consistent with Quaker discernment. Early on we should identify organizations appropriate for interested Quakers to assist. (V)

We should work with KAIROS, possibly the Quaker United Nations Office and other appropriate groups to develop a position statement that would lead to an international treaty on synthetic biology. (V)

Quakers should link their efforts regarding synthetic biology to a broad range of faith groups in order to:

- a) counter unethical control of the commons and of other public resources;
- b) help people overcome feelings of despair and isolation;
- c) respond to the higher calling to act in the face of potential catastrophe;
- d) educate people about the complexities of synthetic biology; and
- e) address the enslaving of nature as a spiritual matter. (V)

Given the failure of representative democracies to govern the development of synthetic biology, we support the exploration and adoption of participatory democracy as a means of promoting the ethical development of synthetic biology. (V)

Precautionary Principles are not being followed in the development of synthetic biology. Just as opposition to war has been a spiritual matter for Quakers, so should be the risks of incautious synthetic biology, which may turn out to be more damaging than war. (V)

We (need to appeal) to world authorities, and to link to churches and other bodies internationally. (O)

There are benefits of synthetic biology for scientific research, and the work is very strictly controlled. The benefits need to be recognised. (O)

It is up to us to understand what is the potential for good (of synthetic biology), what is the potential for bad, who is going to make the rules for this and who is going to enforce them, who is going to benefit and who is going to pay the price. (O)

We need regulatory oversight on everything (in synthetic biology). (O)

Life forms should stay in the commons and not be taken into the private sector. Quakers should (advocate) that (synthetic biology) stay in the commons and not be privatized... we (should) be informed and governments demand that we be informed. (O)

We need to put discussion of synthetic biology in the proper perspective, namely that (we have) a system that is unequal, which creates poverty, hunger and disease. Arguments (for synthetic biology) say it will help deal with (what are) the consequences of our system... If we jump to discussing the pros and cons of synthetic biology, we jump over discussion of inequality and social justice, and what needs to change to stop them. (O)

Implicit in query #1 [*How can Quakers use their spiritual insight to appraise the consequences, actual and potential, of synthetic biology and then, as thoughtful citizens, contribute to its development?*] is the acceptance of the development of synthetic biology, so we'd only discuss how we contribute to that development. We should first discuss what's off limits and what (is) not, then discuss what synthetic biology we want to contribute to the development of and how. (O)

The queries suggested seem to imply that all we can do is put a bandage on synthetic biology, and maybe that's all we can do, but we should be explicit about it if that's our starting point/intention around this large issue. (O)

(We) need tighter government control on research, including (that in) universities, and steep regulation of private research (in synthetic biology), to include strong evaluation of the benefits for the public. (O)

Our position as Quakers is against this whole move towards privatization of life and life sciences. (O)

We are not comfortable with contributing to the development of synthetic biology without a lot of breaks, checks and balances to its development, and that comes back to ethical values. (O)

We stand against the increased commodification of every aspect of life, against the continued and intentional destruction of the public sphere/commons and the use of this destruction to justify increased privatization of our lives. If synthetic biology and its development rise out of these trends, then we do not wish to contribute to its development. (O)

### **General themes, observations, and issues that relate to synthetic biology**

Quaker spiritual insight, as opposed to individual spiritual insight, is seasoning those insights through collective worship. (AV)

There is sacredness that relates to things beyond our humanness...an inherent intelligence, and we don't have the right to mess with that. (AV)

“A thing is right when it tends to preserve the integrity, resilience, and beauty of life.”  
[quote from Aldo Leopold] (AV)

Synthetic biology has great power for good or ill...no controls over developments... (H)

(Synthetic biology development is) failing to consider limits on use of resources. (H)

Meddling with evolved organisms at the molecular level is dangerous, outside all natural limits, and immoral. (H)

I applaud ... genetically modified rice, producing food for the hungry...(but there are) dangers of using genetics to produce a super race of humans. Unintended consequences the biggest concern. Can we test for the long-term consequences? (H)

How to get public education on this topic? ... some good investigative reporting but not enough. (H)

The 'Precautionary Principle' should be followed; burden of proof on those who want to introduce a new... synthetic biology intervention, rather than on those who oppose it. (H)

Science and mind are expressions of spirit. They could create more equitable world. (H)

Using the Quaker testimonies of simplicity, equality and integrity we see dangers in the way synthetic biology is being developed. (H)

Anne Mitchell captured the problem, "Biotechnology ... is committed...to the manipulation of integrity...for the enclosure, monopolistic control, and commercialization of integral biotic components, for their excavation and transplantation into redesigned organisms that yield market value." (H)

Off limits to synthetic biology: Manufacture and invention of new genes, interspecies transfer of genes, human genetic (modification), an end to aging, designer genes. (H)

First do no harm; don't do irreparable harm to Gaia...Honour the integrity of creation, and the interdependence of humans and other beings. (H)

We were puzzled by QPASC committee of CFSC feeling that, in the precautionary principle, "spiritual aspects of our concern about synthetic biology were absent"... protection of the natural world IS a spiritual concern, precautionary principle is essential. (H)

*"...much more weight has to be placed on maintaining the non-negotiable ties of all people to the biosphere."* - Ursula Franklin (NB)

The social dimension of religious life rests in commitment to the common good. (NB)

...applications of scientific research have created extraordinary risk...nuclear, fossil fuel, chemical, genetic, and nano-technologies create potential harm on a scale beyond anything previously. (NB)

...often driven by economic growth and wealth accumulation for just a few people. (NB)

Monoclonal industry leads to maximum yield, which is minimum diversity. It is very vulnerable. (P)

We are presented with claims such as "We have to feed the world," ...But these projects take power away from organic farming that already works. (P)

...much of technology is overlaid with *power* and *greed*...issues get pushed aside - such as: how people will be affected; how flora and fauna will be affected. (P)

Just because you can doesn't mean that you should...The church (faith) sector has weakened, and the state has abdicated any ethical basis. (P)

Accountability: Because the research and development is privately owned and patented, it will be difficult to find out who is accountable for the results. ...Without transparency, we don't know what is being developed and what precautions are being taken to prevent premature or reckless release into the biosphere. (P)

Will the benefits be equally available to people who are privileged and people who are marginalized? (P)

(We are) uneasy about the creation of living matter that never existed before... Not because we are usurping the role of a divine Creator, but because we so far can't do it nearly as well as the existing genetic structures. (P)

There is no underlying ethos about our relationship to the Earth, and to our culture. If it doesn't make money, it doesn't exist. (P)

With this technology, it is not *if* there is a problem, but *when* there is a problem. (P)

I have reservations about the precautionary principle. We are getting too many constraints and restrictions on our freedom... I (don't) like that kind of world and I imagine that the scientists feel (the same) way about this technology - it is exciting and they want to explore it, not be constrained. (P)

We've lost all our connection with the land. (P)

...farmers in India have committed suicide out of shame at not being able to feed their families due to Monsanto having taken the seeds that they have used for millenia. There is a loss of empathy. (P)

The discoveries belong to those who put up the money. So will the profits... when things go wrong, the public will have to pay the costs of harm done. (TI)

Since the dawn of agriculture, farmers have selected the best and preferred variations to breed... variations occurred as natural mutations over which there was no control. No one could claim ownership of the available varieties. Now it is commonplace to insert genetic material from one species into the cells of another... Ownership (is) now protected by legal patents, and by the insertion of sterility genes, known as terminator genes. (TI)

... no one can predict how the modified or novel organisms will act... beyond the laboratory. New life forms could be monsters or angels. ...there can be no guarantee of safety. (TI)

...obviously some good news from the practice, but we are yet to learn the bad news. Parallels were drawn with the nuclear industry. ...reservations about public responsibility as well (nuclear power analogy again). (TI)

In conclusion, there were reservations all round regarding synthetic biology. (TI)

...broadly-worded patents on synthetic biology techniques. ...such patents could give to a small number of companies virtual monopoly control over entire sectors of the economy, affecting the rights of small producers, of ailing patients and of the public at large. (TO)

Such patents could open new avenues for Bio-piracy, analogous to a latter-day version of the Doctrine of Discovery. (TO)

...there are beneficial uses for synthetic biology. But there are also not-so-good uses, germ warfare, poison gases; and implications for ...developments imagined in science fiction (e.g., see Margaret Atwood's *Maddadam*). ...the problem of "dual-use research of concern," (w)ork that could have both beneficial and dangerous consequences. (TO)

But these were one-object dangers, for which there was incontrovertible evidence to support taking action. Synthetic biology encompasses neither a single focus nor can it be demonstrated to be incontrovertibly dangerous.... biology lagged behind, allowing many countries to pursue the development of biological weapons... Calamities were averted by the signing of international treaties. Treaties were signed against acid rain, against upper atmospheric testing of nuclear weapons, against use of chloro-fluoro-carbons.... Synthetic biological processes, techniques, and even products call for some kind of internationally-negotiated treaties. (TO)

Free-trade agreements, (protect) trade-related intellectual property rights... creating opportunities for free flow of goods, they prevent protection of bio-rights. (TO)

(Synthetic biology is) growing very rapidly, driven by investment from the world's largest chemical, agricultural, pharmaceutical, cosmetic and military corporations and by university research programs. The general public has little awareness of the field. (V)

(Synthetic biology is) a threat to food security: patenting of seeds, monoculture, bio-fuels diverting arable land to fuel production. (V)

Synthetic biology is characterized by unsupervised development, even "garage-based" production of new life forms and thus a "brand new age", with potential for good or bad results. (V)

The field's accelerated and ungoverned development has social justice implications, particularly on how the commons (public land, knowledge and other resources) are shared. (V)

Synthetic biology seems to some observers to pit human ingenuity, technology, science and means of governance against evolution and the wisdom of nature (creation). (V)

No effort, including *The Principles for the Oversight of Synthetic Biology...*, has fully addressed synthetic biology's spiritual, social and ethical aspects. Quakers' and others' spiritually-based values of simplicity, equality, integrity, community, peace and connection to all of life seem vitally appropriate. (V)

Creating new life forms that have intelligence raises serious ethical issues:

- a) Would synthetic hominids be spiritual beings? What rights would they have? Might there be an issue of slavery? ...or of their use in military operations?
- b) What represents life or spirit? Would synthetic hominids have "that of God" within them?
- c) How does Quaker simplicity relate to manipulating the human genome? (V)

How do we generate a comprehensive, holistic approach to address synthetic biology in the context of other spiritual and ethical problems, e.g., climate change, militarism, poverty? (V)

Some proponents of synthetic biology regard ecological and social aspects of biology as noise — messy and confounding. They deploy a reductionistic and simplifying approach to get rid of such noise. But in nature there is a wisdom that has unfolded beyond our capacity to grasp all its vital elements. (V)

Man's compulsive drive to dominate nature reveals itself in over-reaching assertions by some of synthetic biology's leaders, e.g., the 2012 book *Regenesis*. Humans' connection to nature is best governed by awe, reverence and cooperation, rather than mastery. (V)

We assert that the privatization of the commons and its development in pursuit of greed and profit is spiritually unacceptable and is inconsistent with the Quaker values of simplicity, peace, integrity, community, equality and our honouring of creation. (V)

We encourage respectful discussion by Quakers and others of this often-polarized subject. (V)

Quakers urge that God, nature, ecological wisdom, particularly that of First Nations, and the evolutionary history of the earth and of human societies be regarded as essential elements in the discussion and spiritual development of synthetic biology. (V)

We could not bring ourselves to believe with any degree of confidence that human-created and manufactured forms of life can fit into a positive scenario for the future. (Y)

Friends brought up our belief that the planet is given to humans in stewardship. We must consider the common good of all life on this planet. (Y)

Human knowledge is insufficient when it comes to judging whether some heretofore unknown substance created in a laboratory should be unleashed upon the natural world. The effects cannot be discerned by our limited intelligence and understanding of how ecological systems work. (Y)

Our efforts would be better spent in learning how to take care of this bountiful, beautiful world we have been given. (Y)

That is, we call for an immediate moratorium on all such activity until adequate scientific research has been done by non-biased scientists. According to ETC Group, such a moratorium is entirely feasible and enforceable. (Y)

Some Friends from Yarmouth Monthly Meeting suggested an outright ban on synthetic biology activities. (Y)

What is not considered in the (CFSC) documents so far is the use of synthetic biology, genetically modified life, to further research. One example was work with a genetically modified mouse where the gene for a nerve receptor was knocked out, to better understand our relationship between one protein and metabolism, diet, stress for purposes of understanding diabetes. (O)

When science proves spirituality wrong, then spirituality should give way. Speaking as a social scientist and ecologist, (I would say) we want to approach this without hysteria. (O)

I disagree that (genetic modification) been happening for a long time. Farmers have been breeding selectively, but they were not crossing corn and fish, i.e., crossing species. And evolution has not provided us (the testing of these new forms of life). (O)

Synthetic biology is here and what are we going to do about it? We are not going to stop it. We need to know what is happening. They will not be including work on the human genome. Most important is we need a regulatory oversight on everything. (O)

Traditionally there are two spiritual approaches, one which gives us dominion over the earth, and another which calls us to be one with creation. These dimensions might be considered. (O)

The discussion around SB is presented as a debate, but are we able to fully engage in that discussion? The discussion at this point is not inclusive... The discourse says let's use these technologies to make more food, but that means we've stopped discussing why are there so many people without food! Synthetic biology then helps to deal with consequences of world injustice, does not change anything, but makes injustice possible to continue. (O)



I don't see scientists looking for ways to introduce new genes into things willy-nilly and foist them upon the world. I think there are means by which companies are permitted to introduce these things into the environment. These things are done in the laboratory to better understand life systems. These discoveries can be monetized... It is a large enough issue that trying to boil it down to two sentences is impossible. (O)

I am troubled by hearing that people are afraid of science. I hear the pronoun 'they'. The real problem is not scientists it is policy... Scientists are not going to destroy the world, it isn't science, it is policy. Science can make food but it is up to government to [share] it. (O)

Speaking of the government is another they – but all policies and research happen through all individual decisions of the people involved. We all have responsibility in this. Scientists are responsible for doing the research, government for using it or not in policies, and we here for getting informed, action or not. We need to stay involved. (O)

The manipulation of DNA and other genetic material by hobbyists (should be) off limits or very worrying. Equipment is easily available and not too expensive. Anyone can order genetic sequences online and put them together in a lab in the basement. Requires some expertise but it's within the reach of many people. (O)

There's something larger/encompassing missing from the queries (presented) – the fact that the main impetus or push behind synthetic biology is commodification, outright production of new living matter for profit. The research part of synthetic biology may be motivated by pure curiosity, but once the research is there, very quickly it ends up being commodified. (O)

We have much evidence of destruction or diminishing of public facilities and property, e.g. water treatment plant, experimental farm in Ottawa, etc. As the public sphere/commons is shrinking, then private input or way of doing things seems to be the right solution. People pushing for lower and lower taxes feeds into this trend, and is skillfully exploited in political rhetoric to justify the trend. (O)