Hello everyone; I am Jim Louter from Canada. First of all, thank you Caspar for taking on the task of leading this discussion and for providing guidance to keep it on track (and which you have repeated in post #8442)! We all need to keep your guidance in mind when replying in this discussion in order to have a logical, progressive and focused session. Like you, I was also a member of the Synthetic Biology AHTEG and participated in the discussions since then; I am also an active regulator (for nearly 25 years) of the products of biotechnology in Canada conducting many environmental risk assessments in that period. Your suggestion for three points to keep the matter in focus when replying is worth repeating here:

“1) What are the potential negative impacts, including unexpected and significant adverse effects, of the most recent technological developments in synthetic biology on biodiversity and the three objectives of the Convention?

2) What research and cooperation activities are being conducted on the possible benefits and potential adverse effects of organisms, components and products of synthetic biology on biodiversity to fill knowledge gaps and identify how those effects relate to the objectives of the Convention and its Protocols?

3) Are there other recent technological developments that have taken place within the field of synthetic biology that need to be considered in this discussion?”

Regarding the 1st, as Caspar indicated in his opening remarks in [post #3865](https://bch.cbd.int/synbio/open-ended/discussion/?threadid=8365), [there have been submissions made regarding these questions](http://bch.cbd.int/synbio/submissions/2017-2018.shtml) including [comments from Canada](http://bch.cbd.int/database/record.shtml?documentid=112137) in which we indicated that, to date, there is no evidence of any adverse effect on biodiversity that was identified in a risk assessment that one could attribute to a living organism product of ‘synthetic biology’. For the one example I am aware of that involved multiple biochemical pathway manipulations for a microorganism to be used in containment, we concluded there would be no impact on biodiversity. If we want to speculate about potential negative impacts, I’m not sure where that speculation would end or what utility such speculation would serve. As a risk assessor in Canada, we would be alarmed and would take action where the science told us that an adverse impact of any product of biotechnology, including those that are naturally occurring, was reasonably foreseeable. In Canada, we are not overly concerned whether or not something is labeled as ‘synthetic biology’ but if it is ‘new’ or it is ‘novel’, that is enough of a trigger for us to begin the risk assessment process. We have a review process that is essentially technology independent. We are however in the process of re-looking at our regulations from the point of view of ensuring that they are up to date – not to redefine the approach (focus on product, and not the process) but, if needed, to refine the information requirements needed to conduct the risk assessment.

Regarding the 2nd, we tried to answer this question with the submission from Canada referenced above but it is difficult to capture all of the research being conducted in one country for the simple reason that ‘synthetic biology’ may not be the correct term used by researcher’s to characterize their activity. Nevertheless, even a simple search would reveal that the Federal Government’s ‘[Genomics Research and Development Initiative](http://grdi-irdg.collaboration.gc.ca/eng/)’ includes many examples of research, some of which could involve synthetic biology and for which the objective is to better understand biodiversity. Canada’s Concordia University has a [Centre for Applied Synthetic Biology](https://www.concordia.ca/cunews/main/stories/2017/04/25/meet-the-next-generation-of-synthetic-biology-experts.html?c=research/casb) in which both potential benefits and risks of the technology are being explored. Both [Genome Canada](https://www.genomecanada.ca/) and [Ontario Genomics](http://www.ontariogenomics.ca/) also contain much information on the current state of related research in Canada.

Lastly, regarding your 3rd point, in such a field where technological developments may be fast moving, (and disregarding whether they are labelled ‘synthetic biology’ or not), one would have to look at the research links above to determine whether there was something recent that warranted further attention. It is in our human nature to innovate. However, there is the danger inherent in focusing only on a few select ‘buzz words’ like synthetic biology – i.e. that a new technology will come along that does not fit the operational definition and we will have to begin this debate again. Isn’t it better to have a technology independent regime if possible?

Others have made similar comments and I want to support views expressed in posts 8449, 8454, 8448, 8427 and 8410.