**Genetic resources in the age of the Nagoya Protocol and gene/genome synthesis**

* When - mid November 2016
* Where - Cambridge (or perhaps Kew Gardens if financially manageable?)
* What - 1 day workshop. 3 panels, each with 4 speakers, who have 5 minutes to speak before we open it up to group discussion.
* Purpose - To provide an open forum for discussion on: the current range of practices of genetic resource collection, circulation, and use; the implementation of the Nagoya Protocol to date; and the possible changes or challenges that may arise as a result of gene and whole genome synthesis.

**Proposal Overview**

Biological resources are valued in numerous ways by multiple stakeholders, from local communities employing traditional uses, to research institutions navigating commercial and non-commercial spaces, to corporations prospecting for new products, to governments seeking to build a bioeconomy*.* The confluence of science, nation building, and geopolitics have always been subject to considerable tension, though in the case of biological resources, it was only in the late twentieth century that grievances with certain practices gained broad attention. Politicians, representatives of indigenous communities, civil society organisations, and academic actors identified problems with the collection, circulation, and use of historic and contemporary biological resources. They drew particular attention to bioprospecting, the pursuit ­by an individual, company, or national institution, of biomaterials located outside of their own state or immediate research context (for example, the pursuit of landraces in one’s own country). Some cases of bioprospecting involve unmediated collecting expeditions, but often a prospector relies upon local knowledge and expertise. These collecting activities are pursued with the intention of reaping multiple benefits, whether revenue from industrial processes, advancement in one’s research, or contributing to conservation campaigns. The most controversial cases have involved the imposition of intellectual property rights, which secure such benefits for a select few, without return to the communities or countries of origin.

These debates culminated in a number of international agreements, most notably the Convention on Biological Diversity (CBD, effective since 1993). The Convention’s objectives are the conservation of biodiversity, its sustainable use, and the fair and equitable sharing of benefits arising from the utilization of genetic resources. The CBD established that genetic resources were not a common heritage of humanity, but for the most part under the sovereign control of countries. The Convention established principles for “access and benefit-sharing” (ABS) of genetic resources, which were further developed in the Bonn Guidelines. The adoption of the Nagoya Protocol in 2010 provided a specific, binding legal framework for ABS of genetic resources and associated traditional knowledge. Parties to the Nagoya Protocol must take measures including clear access procedures (such as prior informed consent), that the benefits arising from the utilization of genetic resources are shared with the country of origin, and that Parties support compliance. In late 2015, the UK passed regulations to implement EU regulation 511/2014, providing measures for compliance with the Nagoya Protocol.

But do these legal frameworks reflect recent developments and trends in the utilization of genetic resources?Late twentieth and early twenty-first century debate seems to have often assumed that valuable biological material would always need to be *physically* transferred. The on-going improvement of gene and whole genome sequencing and synthesis technologies presents possibilities of new practices, and demands discussion and debate in light of the long history of global bioresource management. The proposed workshop acts as a venue for collecting information on current developments, sharing views, highlighting potential areas of concern, and establishing grounds upon which to build better understanding of the interactions between and implications of the Nagoya Protocol and gene synthesis for collection, circulation, and use of genetic resources.

**Research questions**

*Legal*

What are the underlying goals of the Nagoya Protocol, and the means of compliance in the UK and EU?

Some practices are not covered by the UK & EU’s implementing regulations (for instance, materials collected before the Nagoya Protocol came into effect are explicitly not included, while those stored digitally and used to reproduce the original sequences at a distance through DNA synthesis are not addressed). Does this lack of explicit legal coverage undermine the goals of ABS?

In what ways might achieving the ABS goals of the Nagoya Protocol also require attention to other areas of international law, such as intellectual property, trade, and the environment?

*Social*

What are the existing practices of collection, circulation, storing, and use of genetic resources?

What role, if any, is played by the digital transfer of genetic information in the collection and circulation of genetic resources?

How do practitioners anticipate sourcing of genetic resources will change (if at all) in the near future?

What range of practitioners have responded to the Nagoya Protocol, and how?

To what extent are those in the biosciences aware of ABS rules on bio-resource management and use, and how are they responding?

How are those working within the field of synthetic biology relating to, or distancing their work from, existing practices of international bio-resource management and use?

How do regulators and lawyers expect gene and genome synthesis to relate to the goals of the Nagoya Protocol?

*Historical*

How have international biomaterial collecting, sharing, and use practices developed over the course of the 20th and 21st centuries?

In what ways have these changes related to broader political and economic considerations?

How significant, or insignificant, are the possibilities of gene and genome synthesis within the course of this history?

**Panels: Collection, management, and use of biological resources**

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| **Genetic resources before and after Nagoya** | | | |
| China Williams (Kew) | Catherine Rhodes (Centre for existential risk) | Julian Jackson (DEFRA) (or Kate Beckett – BIS) | Elisa Morgera (Uni of Edinburgh – BENELEX project on benefit-sharing). |
| **Synthesis** | | | |
| Microbial collection group (maybe Belgian?) | Jim Haseloff (OpenPlant/Uni of Cambridge) | Twist / another commercial synthesis | UK synbio foundry representative |
| **Continuity and change** | | | |
| Anne Teller (DG Environment of EC) | Paul Oldham (has worked on UN) | Francois Meienberg (Berne Declaration) | Fridtjof Nansen Institute representative |

Direct notifications of the event to:

* Representatives of all UK foundries (London synbio Foundry; Liverpool GeneMill; Edinburgh Genome Foundry: TGAC foudary in Norwich).
* All Party Parliamentary Groups (Agriculture and food for development; Biodiversity: Life Sciences); Intellectual Property Office; UK delegates to CBD, WIPO, etc.
* Civil society groups (Testbiotech; ETC Group; EcoNexus; conservation groups)
* Academic researchers (Society of Biology, Royal Geographical Society, AsISST UK).

**Outputs**

Deborah Scott and Dominic Berry will lead authorship on a report to follow the event, with co-authors from OpenPlant should they wish. It will summarise the discussion for a wide audience, following Chatham House rules.

This workshop is not designed with the goal of feeding into policy processes. That said, the question of “digital DNA” under the Nagoya Protocol was recently flagged as a contentious point for negotiation at the upcoming CBD COP 13 negotiations (4-17 December 2016, in Cancun, Mexico). Deborah Scott is planning to attend these meetings, which raises a few possibilities. She could take reports for dispersal (this is very common at COPs), if we determine that an excerpt or the whole workshop report could be of interest to negotiators. She could also look into co-organizing a side event at the upcoming COP on this issue with other interested organizations (such as the Woodrow Wilson International Center for Scholars).