

The impacts on biodiversity of Synthetic Biology

The issue

The precise definition of synthetic biology remains contested. In essence, it is the use of engineering principles to design and build new biological parts, devices or systems. Synthetic biology is being used to address a longstanding set of problems in agriculture, human medicine and biomanufacturing. It also has potential uses for environmental and conservation challenges. However, people disagree on applying synthetic biology more broadly, because the impacts of genomic technologies on the natural world are yet unknown and the risks are estimated to be large.



A rapidly emerging field, synthetic biology is full of complex and controversial issues. The technology is unproven and the field is unknown to many people, including those within the nature conservation community. As a starting point, mapping and understanding the different values, knowledge and positions related to this field greatly contributes to conservation playing an informed role in the debate.

The response

Within and outside of the nature conservation sector, the IUCN (International Union for Conservation of Nature) is a global authority on biodiversity. In response to a resolution adopted by 1,300 member organisations in 2016, the IUCN formed a task force and technical subgroup to look at emerging synthetic biology technologies and their impact on biodiversity conservation and inform the 2020 global policy development process. In order to ensure that the policy is informed by different perspectives, values, disciplines and knowledge and so that the process is transparent and collaborative, the IUCN asked the Luc Hoffmann Institute to contribute expertise in convening and co-production methods.

As a result of the bespoke methods from its 'treasure chest' that the Luc Hoffmann Institute brought to the IUCN policy-making process, the task force and technical subgroup was more diverse and inclusive in finding consensus on difficult conservation issues. The Luc Hoffmann Institute facilitated, for example, the inclusion of people from the private sector and indigenous groups, leading to a global assessment based on a range of knowledge and a synthesis publication entitled 'Genetic Frontiers for conservation'. The synthesis publication forms the basis of an IUCN policy on synthetic biology to be adopted by the member states and organisations at the IUCN Congress in 2020. In the publication, the IUCN recognised the Luc Hoffmann Institute as having accelerated this work, based on which the IUCN was able to secure funding from the Swiss Government and successfully make a longer-term process toward the 2020 policy vote.

The Luc Hoffmann Institute's incubation methods for the IUCN's synthetic biology work aspire to contribute to minimizing the potential negative effects of synthetic biology.

For more information, please contact:

Melanie Ryan, Head of Programme (ad-interim), Luc Hoffmann Institute: melryan@wwfint.org

