Synthetic Biology: A State of Affairs

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Synthetic biology is a field characterized by rapid rates of change and by the novelty, and breadth of applications. It is poised to make non-incremental, transformative advances in basic and applied areas of research. Simultaneously the global Do-It-Yourself Biology (DIYbio) movement and International Genetically Engineered Machines (iGEM) competition is spreading the use of biotechnology beyond traditional academic and industrial institutions and into the lay public. The most significant, and publically visible, test of the U.S. regulatory system came from a small research startup grown from a community laboratory that received almost a half million dollars in funding from the crowdsourcing platform KickStarter to develop a glowing plant. Internationally the Nagoya Protocol (NP) entered into force on October 12, 2014. How synthetic biology will be interpreted under the NP and whether the Convention on Biological Diversity will treat synthetic biology separate from current protocols like the International Treaty on Plant Genetic Resources for Food and Agriculture is an open question.

Rapidly decreasing barriers to entry (involving price, technology, and open source access) have allowed ever more sophisticated practices to occur outside of the normal institutional boundaries creating an asymmetrical situation where technology can outpace and challenge governance regulations and capacity. The rapid pace of synthetic biology research, product development, potential environmental release of numerous applications, and the diffuse and diverse nature of the research community is prompting renewed attention on how to design robust ecological risk research programs, governance strategies and public engagement activities. This talk will examine the current state of affairs and governance issues of synthetic biology through a series of recently released projects conducted by the Woodrow Wilson Center's Synthetic Biology Project including: federal investments in synthetic biology research, new maps and inventories showing the current landscape of synthetic biology actors and products on the market, governance and regulatory issues around the release of synthetic biology applications, biosafety/biosecurity aspects of iGEM and the DIYbio community, and the negotiations around the Nagoya Protocol and the Convention on Biological Diversity within the United Nations.