Inclusion of Environmental Justice Communities in Discussion on Governance of Synthetic Biology

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The field of synthetic biology (synbio) is a diverse field the covers many technological applications. Under the umbrella of synbio, there are many technologies that have environmental implications. These technologies include emerging developments such as engineered microbes for soil remediation (Wu et. al, 2006), nitrogen fixation in cereal crops using engineered microbes (Charpentier & Oldroyd, 2010), genetically modified corn for insect resistance (Hurley et. al, 2004), and biomining using engineered microbes (Moskvitch, 2012). Despite the diversity of synbio technological developments, one commonality shared by many of these is the need to think about potential environmental impacts that may occur, and how and when to use governance tools to address the potential risks and benefits of a given technology.

Currently there are many synbio applications in use and in the marketplace, as well as governance strategies in place to address potential risks that may come from these technologies. However, scholars have scrutinized the existing governance structure and questioned if the current systems are appropriate and able to fully address the challenges of synbio (Wiek et. al, 2012), (Marchant, 2013). Stakeholder feedback is needed from all potential affected parties, including environmental justice (EJ) members that may face implications from synbio technologies that have environmental applications. At this relatively early stage in both the development of synbio applications and relevant governance, scholars and policy makers have an opportunity to proactively seek input from EJ communities.

EJ communities have historically been marginalized and not had equal opportunity for meaningful input in governance strategies (Mohai et. al, 2009). At the same time, EJ communities have received a disproportionately high share of environmental burden from pollution and other environmental stressors. Known EJ burdens include hazardous waste facility sitting (Mohai et.al, 2009), cumulative pollutant exposure from multiple sources (Prochaska et. al, 2012), and mining waste disposal (Martinez-Alier, 2001); all of which have potential ties to emerging synbio applications.

There have been research efforts focused on public participation in synbio discussion, with some efforts seeking to gauge public opinion, while others have explored governance strategies (Pauwels, 2013) (Woodrow Wilson International Center for Scholars, 2014). These efforts have primarily focused on elicitation of governance strategy from the general public and/or field experts, and not specifically sought the opinions of EJ communities.

As an academic body, there does not appear to be much, if any, work being done to incorporate opinions of EJ communities on governance needs for synbio. A literature search for synthetic biology and environmental justice yields no results beyond broad discussions of 'social justice' (Reiss, 2014), (Hunter, 2014). Given the potential environmental impacts from some synbio technologies, and the potential disparities in access to the technologies, scholars are presented with an opportunity to encourage and promote early engagement of EJ communities in governance discussions for synbio.

The Genetic Engineering and Society Center at North Carolina State University is hosting a full day workshop designed to accomplish early inclusion of EJ communities in North Carolina in synbio governance discussions. This workshop is thought to be the first, or one of the first, of its kind. A goal of this workshop is to highlight governance needs and opinions that are specific to EJ communities, and to hopefully serve as a model that will be repeated in future studies. Given the priority of equal access to the decision making process as an EJ principle, it is important that these communities be able to take part in early discussions on governance needs for synthetic biology so that they can have input on these emerging technology.

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