Regulatory (Mouse) Traps: Social, Cultural and Ethical Issues in Classifying Genetically Modified Organisms

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Science and Technologies Studies scholars have explored how genetic engineering prompts the rethinking of classifications from biological phyla to the structures of governance (Hedgecoe & Martin, 2008). Jasanoff (2011) argues that at "constitutional moments" in time, regulatory deliberations combine with other modes of classification to produce new ways of understanding how things are, and how things should be. The current presentation looks ahead to a future "constitutional moment" in the governance of genetically engineered organisms. We draw on an organism currently in development—a mouse that is unable to produce female offspring—to consider the consequences that different regulatory classifications might have, suggesting questions to help guide future deliberations.

To demonstrate the power of legal and regulatory classifications, we trace the 1988 patenting of another genetically modified rodent, the oncogene mouse, to the landmark US Supreme Court case *Diamond v. Chakrabarty*, 447 U.S. 303 (1980). In this case, the Court affirmed an earlier ruling that bacteria should be seen as "much more akin to inanimate chemical compositions such as reactants, reagents and catalysts than. . .to horses and honeybees or raspberries and roses" (Kevles, 1994, p. 120). Eight years later, in the absence of a threshold to define where microbial life ends and other types of life begin, this classification lent precedent to the patenting of the oncogene mouse (Hurlbut, 2005, p. 22).

With this background in mind, we turn to a mouse now in development, which was partially inspired by genetic methods of eradicating species of mosquitoes that spread malaria and dengue fever. Controlling diseases by treating the disease vector itself, rather than the humans affected by the disease, transforms the mosquito from an unwanted pest into a benevolent tool for public health, suggesting radically new ways of thinking about disease control (Beisel & Boëte, 2013), and governance. Much like its predecessor the mosquito, the mouse we consider is poised to be transformed genetically, biologically, socially and culturally: from pest to tool, from target to weapon, from "natural" to problematic.

To consider the ethics of such transformations, we review current US policies that relate to the mouse, including the Coordinated Framework for the Regulation of Biotechnology and the Animal Welfare Act. These policies suggest that the mouse could potentially be regulated as an animal bred for research, a "wild" animal, or less probably, as a rodenticide. Each of these frameworks oversimplifies scientific complexities (Stirling, 2010), posing dramatically different consequences for the mouse. But even layering them all together would render important questions invisible. For example, what would it mean to make genomics a science of extermination, and to create a mammal that functions as its own extermination device? What, if any, obligations would humans owe to such a creature? Where, when, and why would modifications be considered acceptable or unacceptable? In conclusion, we argue that regulations pertaining to this type of life form should include explicit thresholds that define how far policymakers and citizens would want their decisions to extend. The reaching of such limits should trigger further deliberation.

Works Cited

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