

# Social challenges of synthetic biology examined

August 1 2011

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In the wake of last year's creation of the first self-replicating cell with a synthetic genome – which was quickly followed by a request from President Barack Obama for a report by the Presidential Commission for the Study of Bioethical Issues – a series of essays in the Hastings Center Report examines the social challenges that synthetic biology presents. Among the authors is the chair of the Presidential Commission for the Study of Bioethical Issues, who discusses its report on synthetic biology, and participants in The Hastings Center's project on ethical issues in synthetic biology.

This recently completed project was funded by the Alfred P. Sloan Foundation. The Center has embarked on a second research project on synthetic biology, also funded by the Sloan Foundation.

- "The Ethics of Synthetic Biology: Guiding Principles for Emerging Technologies." Amy Gutmann, chair of the presidential commission, explains the commission's unanimous conclusion that the federal government should adopt a strategy of "prudent vigilance" with regard to synthetic biology. The commission decided that no new regulations or oversight bodies are needed at this time, but that "responsible stewardship requires that existing federal agencies conduct an ongoing and coordinated review of the field's risks, benefits, and moral objections as it matures."
- "Staying Sober about Science." Microbiologist Rob Carlson, principal of Biodesic and a participant in The Hastings Center's project, explains

why he thinks the presidential commission's report is well considered. "The commission avoided the trap of proscribing from on high the future course of a technology still emerging from the muck," he writes, adding the both proponents and opponents of synthetic biology "would benefit from implementing the commission's recommendation to construct a mechanism for providing balanced, 'hype-free' analysis of advances in the science and technology."

- "Of Microbes and Men." Gregory E. Kaebnick, editor of the Hastings Center Report and a principal investigator in the synthetic biology project, examines the moral concern about the human alteration of nature. Although that concern is legitimate, Kaebnick finds that some instances of altering nature are to be tolerated, and that altering microbes to make medicine or fuel – as synthetic biologists aim to do – might be among them. Kaebnick is also editor of the new book, [The Ideal of Nature](#).

- "The Intrinsic Scientific Value of Reprogramming Life." Mark A. Bedau, a professor of philosophy and humanities at Reed College and a participant in the synthetic biology project, contrasts the idea that synthetic biology might be intrinsically dangerous with the prospect that it might have intrinsic value. By this he means that reprogramming cells may reveal insights into the nature of life, which "remains one of the deepest fundamental mysteries about our world."

- "Interests, Identifies, and Synthetic Biology." Thomas H. Murray, president of The Hastings Center and a principal investigator in its synthetic biology project, envisions how the most important policy disputes over synthetic biology will be framed as the technology progresses. They may be battles over interests – such as the risks of biosafety versus the benefits of scientific progress – in which case tradeoffs are possible. But they may be debates over identity – about the proper place of humans in the cosmos and the proper relationship of

humans to the world around them. In debates over identity, compromises are elusive and people with different viewpoints are unintelligible to one another. "My concern," Murray concludes, "is that this last feature, mutual unintelligibility, may have already appeared."

Provided by The Hastings Center

Citation: Social challenges of synthetic biology examined (2011, August 1) retrieved 2 July 2024 from <https://phys.org/news/2011-08-social-synthetic-biology.html>

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