

Rethinking biosecurity governance

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Perhaps the most important lesson we can learn from the current coronavirus pandemic is how to learn future lessons without having to experience a pandemic, whether natural in origin or made by humans. To do so, we need to change how we think about the governance of biology.

In a Policy Forum article in this week's issue of *Science*, lead author Dr. Sam Weiss Evans, a Fellow at Harvard Kennedy School's Program on Science, Technology and Society, joins more than a dozen stakeholders in calling for a new approach to [biosecurity](#) governance, grounded in experimentation.

The authors argue that no capability exists today for systematic learning about the effectiveness and limitations of governing biosecurity. The current approach usually relies on traditional risk management aimed at what we already know we should worry about, such as risks from pathogens. Instead, we need to learn to experiment with new sets of assumptions about biology, security and governance. As our current crisis is demonstrating with deadly efficiency, the sooner we recognize that governance requires experiment-based learning, the better our ability to learn what works and doesn't work, and to move past sporadic ad-hoc changes implemented after major events occur.

The stakes are particularly high in biosecurity governance, which must prevent or deter the misuse of biological science and technology.

"It should not take hundreds of thousands of corpses around the world and a recession to get us to assess and address the limitations of our current systems of governing health security and biosecurity," Evans said. "We can do that by taking a more experimental approach to biosecurity and health security governance, periodically testing and reassessing basic assumptions we are making about science, security, and society."

An experimental approach to governance recognizes that that we don't have perfect knowledge about how biology will be used to harm; the more we can test the assumptions we are basing security governance on, the more likely we are to understand the shortcomings and strengths of the system prior to catastrophic events. Experimentation promotes an

open discussion about the reasons behind decisions to govern one way and not another.

Evans et al represent a wide range of stakeholders in biosecurity governance, from laboratory scientists and biosafety officers to coordinators and analysts of national and international biosecurity efforts. All of them agree that thinking of biosecurity as an experiment can enable systematic learning about the effectiveness and limitations of current approaches. They point out three initial lessons that are not routinely taken into account in biosecurity governance:

1. In designing a governance experiment, consideration should be given to framing the proposed set of actions in terms of hypotheses, which in turn are based on a set of assumptions about the science, security concerns, and the governing authorities.
2. Developing greater capacity to quickly identify difficult or unanticipated cases allows for governing processes to adapt and account for them. Sharing near misses and failures in a timely manner can aid future biosecurity efforts since similar attack strategies are likely to be applied across disparate sites.
3. Experimental learning needs to take place across biology communities, from commercial and industrial firms to philanthropies and governments. This learning requires a new willingness to think beyond the current crisis, to rethink basic assumptions about the origin of threats, and to embrace an iterative approach to improving systems of [governance](#).

More information: S.W. Evans at Harvard University in Cambridge, MA et al., "Embrace experimentation in biosecurity governance," *Science* (2020). [science.sciencemag.org/cgi/doi ... 1126/science.aba2932](https://doi.org/10.1126/science.aba2932)

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