

**Breeding Bio Insecurity: How U.S. Biodefense is Exporting Fear, Globalizing Risk, and Making Us All Less Secure**

Author: Gerald L. Epstein

Source: BioScience, 60(9) : 759-760

Published By: American Institute of Biological Sciences

URL: <https://doi.org/10.1525/bio.2010.60.9.13>

---

BioOne Complete ([complete.BioOne.org](http://complete.BioOne.org)) is a full-text database of 200 subscribed and open-access titles in the biological, ecological, and environmental sciences published by nonprofit societies, associations, museums, institutions, and presses.

Your use of this PDF, the BioOne Complete website, and all posted and associated content indicates your acceptance of BioOne's Terms of Use, available at [www.bioone.org/terms-of-use](http://www.bioone.org/terms-of-use).

Usage of BioOne Complete content is strictly limited to personal, educational, and non-commercial use. Commercial inquiries or rights and permissions requests should be directed to the individual publisher as copyright holder.

---

BioOne sees sustainable scholarly publishing as an inherently collaborative enterprise connecting authors, nonprofit publishers, academic institutions, research libraries, and research funders in the common goal of maximizing access to critical research.

## Are Microorganisms Macrothreats?

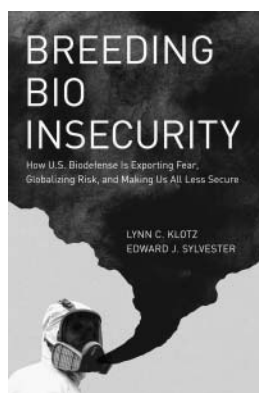
**Breeding Bio Insecurity: How U.S. Biodefense Is Exporting Fear, Globalizing Risk, and Making Us All Less Secure.** Lynn C. Klotz and Edward J. Sylvester. University of Chicago Press, 2009. 260 pages, \$27.50 (ISBN 978-0-226-44405-5 or 0-226-44405-8)

It is impossible for national security planners to know the real threat of bioterrorism, much less what it will become in the years ahead: There is little precedent for killing on a mass scale using biology. Nation-states demonstrated their ability to do so many decades ago, but whether nonstate groups will follow suit is—fortunately—harder to determine. It is certainly not easy to acquire deadly agents, produce them on the required scale, prepare them for dissemination in a way that will generate mass casualties, and get them successfully to their targets. There are numerous opportunities along the way for would-be bioterrorists to fail, be discovered, or accidentally kill themselves.

But in an era when relevant technologies are becoming more powerful, prevalent, and easier to use; when more people around the planet have been trained in and are comfortable with the relevant disciplines; when every activity a bioterrorist would have to perform (and the associated expertise, materials, and equipment) has some legitimate application in research or commerce; and when motivated people with sufficient dedication and resources will work to identify and solve problems as they arise, how sure can we be that no such group will ever succeed?

On this question hinges *Breeding Bio Insecurity*. Lynn C. Klotz, a senior science fellow with the Center for Arms Control and Nonproliferation, and Edward J. Sylvester, a science journalist,

believe that nationally significant bioterrorism is so implausible that it should not be the basis for security planning, and that the current US biodefense effort is unjustifiable, unnecessary, and dangerous. They claim “the United States is building a biodefense empire that is putting us at greater risk than we face from an attack from terrorists or foreign powers in the foreseeable future” (p. 89). If they’re right about the threat, that’s correct; if they’re wrong, however, their recommendations would leave the country at greater risk.



Klotz and Sylvester describe the difficulties a nonstate group would face in conducting a catastrophic biological attack, and conclude that “whatever the large-scale threat we face from bioweapons, it is a threat from nations” (p. 80). They dismiss the basic argument on the other side—that there are no technical barriers to prevent groups or even individuals from conducting such an attack—as “over the top” fearmongering (p. 214). (The “no technical barriers” argument was made by Tara O’Toole and Thomas Inglesby in an article that is cited in *Breeding Bio Insecurity* [O’Toole and Inglesby 2009]; other arguments cited and countered in this book include some of those made by the author of this review [Epstein 2007].) However, unlike the production of nuclear weapon

materials, which require industrial facilities that are clearly beyond the technical capabilities of a nonstate group or individual, none of the problems a bioterrorist group would face is insurmountable.

At least, so says the US intelligence community. The director of national intelligence has testified (in the *Annual Threat Assessment of the Intelligence Community for the Senate Armed Services Committee* of March 2009) that “over the coming years, we will continue to face a substantial threat, including in the US Homeland, from terrorists attempting to acquire biological, chemical, and possibly nuclear weapons and use them to conduct large-scale attacks.” Looking ahead to 2025, the National Intelligence Council states (in *Global Trends 2025: A Transformed World*) that “one of our greatest concerns continues to be that terrorist or other malevolent groups might acquire and employ biological agents, or less likely, a nuclear device, to create mass casualties.” Given that some terrorist groups have a stated ambition to inflict mass casualties, that biological weapons can kill on a mass scale, that some terrorist groups have made efforts to pursue such weapons, and that (contrary to the argument of this book) there are no insurmountable technical barriers to developing biological weapons, these statements are timely and appropriate, not paranoid.

Much of Klotz and Sylvester’s subsequent analysis is shaped by their view of the bioterrorist threat. They argue that the expansion of biodefense research labs increases risks to society. As the number of these labs grows, they claim, so does the risk of the accidental release or intentional diversion of pathogens from a laboratory. These facilities were designed to address a specific threat, and if that threat has been vastly inflated, these additional risks are not worth taking. But if there

is a significant risk of bioterrorism—or if there will be by the time the medical countermeasures these labs are researching make it through development, testing, and regulatory approval, many years from now—the risks these laboratories generate must be weighed against the greater risk of remaining defenseless. After all, we face a similar threat every time we give a police officer a gun. Most citizens willingly accept the possibility of unauthorized police shootings because the alternative, not having anyone between them and dangerous criminals, is unacceptable. In the case of the police, as with biodefense researchers, risks can be minimized by careful attention to personnel screening and training, job performance monitoring, oversight, and systems design.

These factors are the subject of considerable discussion in this book, with the authors suggesting how biodefense research programs should be structured, what kind of oversight they should receive, and what kind of protections should be put in place to secure dangerous pathogens and vet the personnel who have access to them. In some cases, the authors' recommendations will win the agreement even of those who may disagree with their view of the threat. Both biodefense critics and supporters, for example, would support searching for "broad-spectrum" medical countermeasures that can deal with a wide variety of naturally occurring diseases as well as with those more specifically associated with potential acts of bioterrorism. Similarly, many readers will agree that security measures applied to the so-called select agents—pathogens deemed to pose particular security risks—are counterproductive if they force researchers to abandon their studies.

Unfortunately, the book has a major error in its discussion of secrecy. Klotz and Sylvester decry "our massive and mostly secret biodefense program" (p. 157), which they assert induces suspicion among our allies, defies citizen oversight, and frustrates the ability of scientists to learn from their peers and

contribute to the literature. In reality, almost none of our biodefense program is secret. The vast majority of the government's biodefense research is funded through the National Institutes of Health (NIH), which does no classified work at all; very little of the non-NIH program is classified, either. But this is not to say that all of Klotz and Sylvester's concerns in this area are unwarranted. For example, they appropriately flag the Department of Homeland Security's (DHS's) National Biodefense Analysis and Countermeasures Center (NBACC), which has the mission of resolving scientific uncertainty regarding our ability to anticipate future biological threats. This lab's work plan must navigate the boundary between protective or prophylactic activities, which are explicitly permitted under the international Biological Weapons Convention, and the development of biological weapons agents, which is banned. Klotz and Sylvester appear satisfied with a statement by the NBACC's director that the lab will not dream up and build hypothetical genetically engineered threat organisms just to find out whether such threats are possible. However, this discussion would have been improved had it referred to the DHS compliance review process, which is applied to all the department's biodefense activities to ensure they comply with applicable treaty commitments, laws, regulations, and policies.

One of the book's later chapter headings—"All Roads Must Lead to Public Health"—reveals a bias by Klotz and Sylvester that colors much of their analysis. If, as they argue, "our biggest need is for a large increase in funding for annual and emerging infectious disease" (p. 167), biodefense spending is not the cause and should not be the remedy. Rather than raiding the public health budget, biodefense has supported it by raising its visibility to senior policymakers and by contributing directly relevant capabilities and tools. Moreover, it is worth remembering that the more than \$1-billion increase in 2002 in annual biodefense research and development was an addition to the NIH budget, not a carve-out from it.

Klotz and Sylvester are not the first to argue that national security spending should be redirected toward social objectives. However, the similarity between some aspects of biodefense and some aspects of public health does not make their funding fungible.

GERALD L. EPSTEIN

*Gerald L. Epstein (gepstein@aaas.org) is with the American Association for the Advancement of Science in Washington, DC.*

### References cited

- Epstein GL. 2007. Security is more than public health: Commentary on "Casting a Wider Net for Countermeasures R&D Funding Decisions." *Biosecurity and Bioterrorism: Biodefense Strategy, Practice, and Science* 5: 353–357.
- O'Toole T, Inglesby T. 2009. Biosecurity memos to the Obama administration. *Biosecurity and Bioterrorism: Biodefense Strategy, Practice, and Science* 7: 25–28.

## VALUING AND PRESERVING NATURE'S BOUNTY

**Conserving and Valuing Ecosystem Services and Biodiversity: Economic, Institutional and Social Challenges.** Edited by K. N. Ninan. Earthscan, 2009. 402 pp. (ISBN 9781844076512 hardcover).

Societies around the world are increasingly reminded of the links among ecosystem function, ecosystem health, and social welfare. In the Central Valley of California, almond farmers are exploring ways to revitalize local populations of native honeybees to ensure pollination in the face of widespread colony collapse disorder among managed bees. Along the Yellow River in China, issues of nutrient loading and sedimentation confront rural and urban populations regularly. Payments for ecosystem services (PES) programs, including the Grain-to-Green program,

doi:10.1525/bio.2010.60.9.14