



ISSUE BRIEF

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Academia's Biological Studies in War Time

By Liz Walsh, SPUSA Education Program Coordinator

Academic scientists play a vital role in the development of technologies to protect national security. Following the tragic anthrax mailings last year, the nation turned to the science community to develop better safeguards and technologies to deal with biological threats. At the same time, policy makers implemented new legislation and regulations in an attempt to prevent the criminal activity involved in such attacks. As these laws and requirements have come into effect, faculty and students are facing unexpected challenges in defining their roles and responsibilities in the war on terrorism.

Since the 1950s, the US has developed policies and methods, such as the classified system, to control the spread of scientific information pertaining to national security. Historically, the concern over balancing scientific openness and national security has centered on the mathematical, engineering and physical sciences and their applications, such as nuclear weapons, optics, and advanced computer technology. Recently, biological research has reemerged as an area of concern because of its potential application in biological weapons of mass destruction. The nature of biological research, however, presents new challenges to developing regulation methods. Do the policies and methods developed to control the complex technologies required for nuclear weapons or cryptology effectively apply to the basic science of the biological fields? How can a naturally occurring substance, such as anthrax, be kept out of the "wrong" hands?

These unresolved questions presented by biological research are affecting universities around the US as academic scientists try to answer the call to develop new countermeasures. Normally considered as open and public institutions, universities decline to

conduct classified research, which requires controlled access to academic laboratories, materials, and findings. As much of biological research has not been traditionally classified, research has been easily and willingly conducted at US universities, where many of the most talented students and faculty come from around the world to study and teach. This openness has greatly contributed to the development of one of the strongest scientific communities in the world. How can this openness and the US leadership be maintained while protecting national security interests?

The Public Health Security and Bioterrorism Preparedness and Response Act of 2002, which restricts and monitors access to certain biological agents, was created as a response by lawmakers in an attempt to protect national security. Under this Act, researchers possessing any of the select agents are now required to register with the Department of Health and Human Services and keep their inventory under strict control. Will limiting the access to biological agents discourage needed research in these fields? How can substances, such as Ebola, which reproduce naturally, be controlled and monitored? How can the security concerns be balanced with the public health needs?

Other laws, such as the USA Patriot Act and the Enhanced Border Security and Visa Entry Reform Act of 2002, have been enacted to limit terrorists' access to research being conducted in the US. An unintended consequence of this new legislation has directly affected more than 30% of graduate students studying science—
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international students who are facing long delays in their visa requests to come to the US. These students are also now subject to new monitoring and regulations once they have arrived at their university. Will these new delays and restrictions dissuade international students and scholars from attending US universities? How will the US scientific community maintain its leadership if the best and the brightest go elsewhere? Will regulating student visas prevent the next terrorist from learning how to develop biological weapons?

Finally, though no law has been enacted, as of yet, the regulation of scientific publications is of great concern in the debate around balancing the needs of scientific openness and national security. The publication of research results, allowing for peer review and sharing of information, is key to the current scientific process. As the research conducted at universities is historically unclassified, no regulations have been placed on the publication of the findings resulting from such research. Security specialists and some scientists have now raised concerns that the unrestricted publication of such methods may provide a "cookbook" for terrorists. The scientific community is striving to address these concerns itself, before the government imposes outside restrictions. How can the need to publish scientific methods, necessary for peer review, be

balanced with security concerns? Would restricting the publication of results jeopardize public health interests by limiting the information available for researchers to develop the next vaccine? Does controlling this information, which may be available from other sources, protect national security?

"Traditional American values of openness in education and research must prevail. But this will be possible only if we in research universities contribute our talent to maintaining the security of our homeland, and if the Federal government and academia maintain a respectful, substantive, and effective dialogue between those who do science and those who are charged with protecting the nation." - Charles M Vest, President, MIT

Whatever solutions may result from the current debate around balancing scientific openness and national security in the biological sciences, many scientists and experts agree that, as Dr. Ronald Atlas, president of the American Society for Microbiology, said, "there must be international agreement and valuing of the incorporation of security considerations into the life sciences endeavor... And above all commitment to furthering science for the betterment of humankind."

For more in-depth information on this topic, including statistics and articles, which present the differing perspectives on this issue, visit www.spusa.org/issue.

From the Field

To learn more about the personal satisfactions of being a science writer, or what a typical week is like for an international program officer at the NIH, visit www.spusa.org/issue.

Featuring interviews with:

Dr. Luis Salicrup, International Health Science Officer, *Fogarty International Center, National Institute of Health*

Dr. Myrna Watanabe, Freelance Science Writer and Consultant

Exploring Ethical Questions

Hypothetical Scenario: Do you begin your research in the US on the Ebola virus while understanding that the new legislation may increase the likelihood of you being closely monitored by the government?

You are an international student who has just started your doctoral research at a US university. Back home, you have spent your academic career, thus far, studying the Ebola virus in hopes of discovering a vaccine for the deadly virus.

Since being accepted to the PhD program at your

the research and activities of students and scientists from your country to be under more scrutiny by the US State Department and Department of Homeland Security.

Do you begin your research in the US on the Ebola virus while understanding that the new legislation may increase the likelihood of you being closely monitored by the government? Do you change your research to a non-select agent, discarding your invested time and efforts? Do you try and find a different virus to study that has enough of the Ebola

“Do you change your research to a non-select agent, discarding your invested time and efforts?”

university last year, the Public Health Security and Bioterrorism Preparedness Response Act of 2002 was enacted, requiring that all persons possessing select agents, biological agents or toxins deemed a threat to public health, including the Ebola virus, notify the Department of Health and Human Services of their possession. Other recent legislation, including the USA Patriot Act and the Enhanced Border Security and Visa Entry Reform Act, has led

virus characteristics and therefore may lead to advances in the understanding of Ebola, but may not be as significant as actually studying Ebola itself?

Visit www.spusa.org/issue to explore this and other ethical questions.

Point/Counterpoint

Dr. Ronald Atlas, President of the American Society for Microbiology (ASM), as well as, Dean of the Graduate School and faculty at the University of Louisville, discusses his viewpoint on how the biological sciences have been impacted by the needs of scientific openness and national security.

What, if any, changes to scientific openness within the biological sciences community have you witnessed since the start of the war on terrorism? What do you think about these changes? What is your organization’s policy/stance about these changes?

The major change is one of concern and uncertainty about how to conduct biological research in a secure manner and what constitutes dangerous information and how to conduct the increased biodefense effort safely. There is fear that government regulation could have a chilling impact on research and that the US scientific community could become isolated from international colleagues. The ASM has sought to ensure that regulations not have a chilling impact on science and that open communication of fundamental scientific findings continues to support the development of global defenses against infectious diseases—both naturally occurring and those that might represent acts of bioterrorism.

Read this and other expert opinions at www.spusa.org/issue.

Event Ideas

MOVIES

- Chain Reaction
- Outbreak
- Plague Fighters
- Virus

SUGGESTED SPEAKERS

- *Dr. Irving A. Lerch* – The American Physical Society
- *Dr. John H. Marburger* – Office of Science and Technology Policy, White House
- *Dr. Raymond Orbach* – Office of Science, Department of Energy
- *Dr. Sheila E. Widnall* – Massachusetts Institute of Technology

WEBSITES

- American Association for the Advancement of Science—
www.aaas.org
- Center for Disease Control and Prevention—www.cdc.gov
- Department of State (US)—exchanges.state.gov/education
- Federation of American Scientists—www.fas.org
- Johns Hopkins Center for Civilian Biodefense Studies—
www.hopkins-biodefense.org
- Office of Science & Technology Policy (US)—www.ostp.gov

BOOKS AND PUBLICATIONS

- *In the Public Interest* by MIT's Ad Hoc Faculty Committee on Access to and Disclosure of Scientific Information
- *Silencing science: national security controls and scientific communication* by Harold Relyea
- *The Demon in the Freezer: A True Story* by Richard Preston

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