

Introduction

Finding a Sustainable Approach to Biosecurity

Sloan Foundation initiatives called attention to the threat of bioterrorism, paved the way for new directions in research, led to new and practical response capabilities, and helped point the US government in the right policy direction.

In October 2000, the Alfred P. Sloan Foundation took on the mission of reducing the threat of bioterrorism. Over the ten years that followed, the foundation triggered fundamental improvements in US preparedness for bioterrorism and naturally occurring diseases. The investments in preparedness were prescient, as the first were made before the anthrax letter attacks in October 2001, and over time, they established the Sloan Foundation

as the primary US and international catalyst for innovative thinking and action in biosecurity. This book describes key projects, campaigns, and organizations underwritten by Sloan during its decade in biosecurity and shows how the foundation influenced and shaped the field. The individual projects recounted illustrate how Sloan's work helped to shift thinking about biosecurity by affirming it as a societal responsibility that extended beyond the bounds of the military alone. The project descriptions also illustrate how the foundation's work led to creation of a multidisciplinary professional field of research and practice in biosecurity. In all, this book shows how the nation is more prepared now than it was in 2000 to face natural or deliberate infectious disease threats, an achievement that the Sloan Foundation's support helped bring about.

In 2000, when the Sloan Foundation started its work in biosecurity, civilian biodefense was a nascent concept. Though the consequences of bioterrorism could be terrible—numerous deaths, widespread illness, societal and economic disruption, loss of trust in the government—community, state, and local preparedness planning was minimal. Most US government biodefense expertise resided in the military and was focused on defending troops from biological warfare because the threat to civilians had not yet been recognized. Relatively few people in the government were thinking about what would happen if a terrorist used anthrax to attack a US city or if smallpox re-emerged as a weapon after having been eradicated from the natural world.

Lack of US government preparedness was the prime motivator that moved Ralph E. Gomory, president of the Sloan Foundation from 1989 to 2007, to adopt biosecurity as a mission. In fall 2000, Gomory heard a US government

official describe the national strategy to defend against a bioterrorist attack, the centerpiece of which was developing a vaccine from scratch, and then mobilizing rapidly to vaccinate the threatened population. Gomory had no experience in developing or delivering vaccines—he came to the Sloan Foundation from IBM, where he had been director of research and then senior vice president for science and technology, but his long experience with a large research organization told him that the government strategy was wishful thinking. He decided that the Sloan Foundation had to act to reduce the threat of bioterrorism.¹ He was already convinced that biological weapons would be a problem in the future because this threat was the result of technological change, and biotechnologies were getting increasingly easier to misuse: “This new technology, widely diffused, will get into the hands of extremist groups.”²

Gomory tapped Paula Olsiewski, a biochemist and president of a technology consulting company, to direct Sloan’s new biosecurity initiative. Olsiewski saw herself as a connector who could “engage as many people as possible to work on different parts of the problem.”³ As such, she reached across institutional boundaries to convene experts who had never met but were natural allies because their work had the common goal of protecting citizens. She introduced building engineers to police officials, legal scholars to public health officials, and business owners to laboratory scientists. She organized working dinners where people discovered they had common cause with experts from diverse fields and ended up as close collaborators.

Gomory’s approach to biosecurity was to “try everything” that could address the problem.¹ Unlike government funders, Sloan did not issue requests for proposals and then wait for good ideas to come to them.

Olsiewski searched for people to pursue projects in the areas that she and Gomory decided were important. The foundation did not dictate projects for grantees or require adherence to specific project deliverables. Instead, Gomory and Olsiewski found people who were passionate about their work, shared Sloan's goal of reducing the threat of bioterrorism, understood the changing conditions of the field and the political landscape, and were nimble enough to adjust projects as needed. The foundation's review process was swift and efficient, and numerous projects were funded to see what could work. Gomory and Olsiewski believed that even if an approach was not successful, important lessons could be learned from the experience and applied to other efforts.

From the beginning, it was clear that civilian resilience to bioterrorism would improve only if established institutions and professional communities came to understand and accept new roles in national security.¹ Through targeted grants, Sloan raised awareness of the consequences of bioterrorism for many professional communities and brought experts from multiple disciplines into the field. This was particularly important for healthcare and public health practitioners on the front lines, who would be the first to see victims who were sick with unusual infectious diseases.

Other professions also had to take on new roles to meet the challenges of biosecurity. Sloan funded education programs for scientists and scholarly analyses to encourage life scientists to examine how their training and work could be misused to create biological weapons. Business leaders and building owners were engaged in discussions of ways to protect building occupants from biological agents by improving HVAC systems, planning for pandemic flu, or devising systems to deliver vaccines to employees. Recognizing that law

enforcement organizations had limited knowledge about bioterrorism, Sloan funded education programs that encouraged scientists and law enforcement officials to work together, which built trust between the two groups. Finally, Sloan supported many projects designed to reach and engage those policymakers well positioned to influence civilian biodefense policy and make badly needed reforms to public health law and public health preparedness.

The Sloan Foundation jump started interest in civilian biodefense among many previously uninvolved professions and brought those groups together to create a vibrant multidisciplinary field. After 9/11 and the anthrax letters, the fact that Sloan was already investing in biosecurity helped to propel initiatives forward on a nationwide scale and provided a community for those who were interested in contributing their expertise. The foundation funded numerous conferences and events where people shared ideas and learned from one another. Those exchanges led to cross pollination of ideas. In 2000, there were no national conversations about civilian biodefense; by 2003 there was a peer reviewed journal dedicated to biodefense and biosecurity,⁴ and now there are a variety of annual conferences and meetings.

Sloan's goal of reducing the threat of bioterrorism was ambitious, but the foundation's approach was pragmatic. Gomory and Olsiewski were interested in solutions that took advantage of existing systems and solutions that people could implement on their own. For example, for influenza preparedness, Sloan invested in studies to determine whether wearing masks or maintaining distance from social contacts could decrease the spread of flu. They funded projects that assessed whether HVAC filtering systems already installed in commercial buildings could be converted from potential pathogen distributors to pathogen filters. Sloan also wanted to harness information

already being collected about numbers of hospitalizations, over the counter drug purchases, and school absenteeism to find indications of a bioweapons attack. This commonsense approach guided the foundation to choose projects focused on developing sustainable, affordable ways to protect the US population.

Responsibility for biosecurity is now largely vested in the Department of Homeland Security (DHS), the Federal Bureau of Investigation (FBI), and the Department of Health and Human Services (HHS) and its internal agencies the Centers for Disease Control and Prevention (CDC), the National Institutes of Health (NIH), and the Food and Drug Administration (FDA) in addition to programs headed by the Department of Defense (DOD). These agencies are responsible for preparedness, response, and recovery, which entails planning response; detecting a biological attack; developing, procuring, stockpiling, and delivering medical countermeasures; communicating with the public; preparing hospitals; attributing an attack; and leading recovery after an event.

Change has occurred in officials' attitudes and beliefs about the public's response to terrorism and disasters. Fears of public panic have been replaced by confidence in the wisdom of giving people as much information as possible about the dangers they face and the actions they can take to protect themselves, their families, and their communities. That confidence is grounded in results of research sponsored by Sloan and others demonstrating that fears of public panic were unfounded. That research also made clear that giving the public as much information as possible is essential because people could be on their own for hours or even days after a disaster and would need to know what to do during the time before official responders arrive.⁵ This

attitudinal sea change has produced a widespread commitment to engaging the public in planning and response.

Sloan funding gave researchers the independence they needed to seek creative solutions to biosecurity problems and to criticize government decisions. Sloan funding made some projects easier, if not possible in the first place. The foundation funded projects that the government probably would not have funded during the decade of the foundation's involvement or now as budgets are shrinking across all levels of government. The foundation was more flexible and responsive than government funding agencies can be. And, importantly, Sloan funded work that called attention to areas neglected for many years by the US government.

The Sloan Foundation closed its biosecurity program in 2010 after many successes. During its decade in the field, Sloan awarded more than \$44 million in grants to individual researchers, organizations, universities, and government offices. Over that period, US government funding for biodefense grew from \$50 million in 2000 to more than \$1 billion in 2010.⁶ Many of the ideas and practices developed by Sloan grantees, such as civilian preparedness, have been institutionalized, and biosecurity as a multidisciplinary field has been firmly established.

The Sloan program ended during an economic downturn, when budget cuts began to threaten progress in biosecurity. The effects can be seen in cuts to the US public health system that are undermining preparedness systems set up after 9/11. When public health systems are working, they are largely invisible, but as political commitment to those systems wanes and funding is cut, the nation's ability to protect people from the consequences of any type of epidemic will be severely weakened. That will be noticed.

Sloan's legacy is impressive. Beyond all advances in preparedness, a field of practice and research exists that did not in 2000. A substantial body of knowledge has been created. Leaders emerged who are now mentoring and educating the next generation. Laws and public policy have been created or modernized. Many of the programs spearheaded with Sloan Foundation funding will endure and expand. The pursuit of this mission must continue.

In describing this mission, Gomory said that “reducing the threat from bioterrorism is difficult, expensive, and perhaps unruly. But it has to be done. Bioterrorism is something you cannot wish away.”¹ Sloan Foundation initiatives called attention to the threat of bioterrorism, paved the way for new directions in research, led to new and practical response capabilities, and helped point the US government in the right policy direction. As the threat of bioterrorism continues to evolve and change, pushed along by international politics and trends in the biological sciences, the field needs a new infusion of energy and support such as the Sloan Foundation provided for so long. The next chapter in this unruly endeavor remains to be written.

