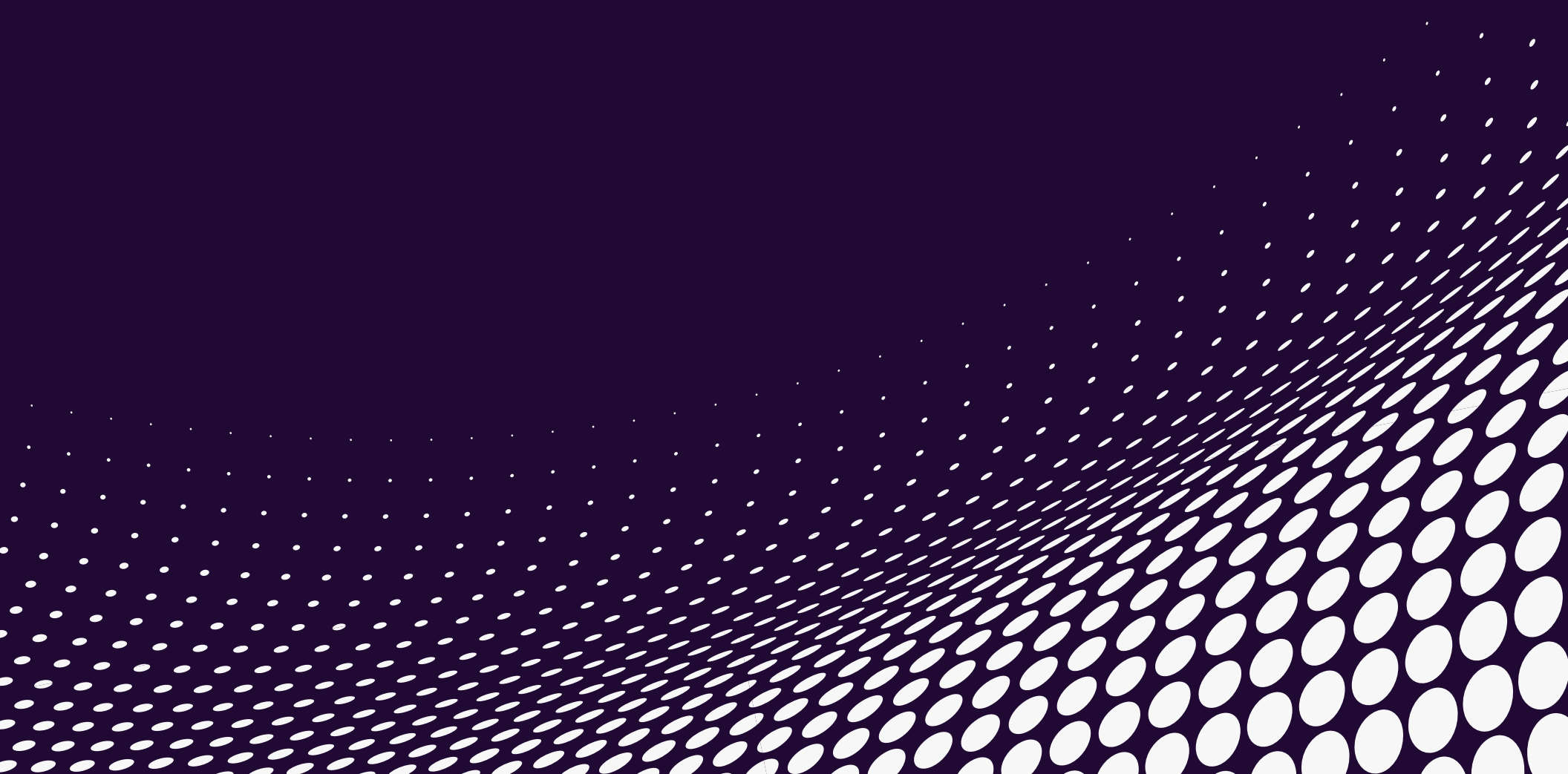


Center for Biosecurity of UPMC

ANNUAL REPORT 2011-2012





UPMC

SUPPORT

The Center's work would not have been possible without the leadership and generosity of UPMC.

UPMC's commitment to the Center has allowed us to be independent, innovative, and able to meet new and unexpected challenges with strength and expertise. We are deeply grateful for that support.

Our Mission

The Center for Biosecurity is an independent nonprofit organization of UPMC. Our mission is to strengthen US national security and resilience by reducing dangers posed by epidemics, biothreats, nuclear disasters, and other destabilizing events.

Our staff comprises experts in medicine, public health, national security, law, economics, the biological and social sciences, and global health.

We conduct original research and policy analysis, convene experts to solve difficult problems, and inform and engage national leaders.

“We must strengthen each country’s ability to detect and respond to outbreaks and improve international coordination. As President Obama said earlier this year at the UN, ‘We must come together to prevent and detect and fight every kind of biological danger, whether it’s a pandemic like H1N1, or a terrorist threat, or a terrible disease.’”

Hillary Rodham Clinton, US Secretary of State
Remarks at the 7th Biological and Toxin
Weapons Convention Review Conference,
Palais des Nations, Geneva,
Switzerland, December 7, 2011

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Helping Shape Health System Response to Disease and Disaster

Earlier this year, during National Preparedness Month, President Obama reminded the nation that “although we cannot always

know when and where a disaster will hit, we can ensure we are ready to respond.” I am struck by the number of important opportunities the Center had this past year to help our country get more ready to respond to public health emergencies and sudden shocks to our health system.

The Center’s work this year focused on protecting the public’s health from potential disasters and threats: influenza epidemics, serious foodborne diseases, nuclear power plant accidents, nuclear and biological terrorism, and outbreaks of emerging infectious diseases. Finding ways to improve the nation’s resilience to these kinds of tough problems takes a diverse range of expertise and backgrounds, as well as an understanding of science, professional practice, fiscal reality, and political feasibility, a mix that the Center has successfully built over the years. Our success depends as well on the independence and vision of an institution like UPMC.

In many cases, UPMC was the only organization outside of government last year that undertook initiatives that addressed complicated and high-stakes public health issues. This was the case with the Center’s Rad Resilient City project. Few emergency response professionals and almost no one in the public knows what

to do to save the most lives in the event of nuclear terrorism, one of the greatest potential dangers facing our country. With the goal of educating the public and saving lives, we launched the initiative to provide cities and communities with a set of pragmatic steps that could be taken to protect their residents from lethal radiation illness after a nuclear detonation. We were told by a number of federal and local officials that planning for this type of disaster had reached a political impasse in many places, but our work has helped them to navigate around those deadlocks and get life-saving tools directly to first responders and their communities.

The Center also broke new ground by engaging with Chinese scientists and health officials to help strengthen epidemic response. The US CDC and China CDC have a strong partnership, but outside of that relationship, both countries have little understanding of the other’s epidemic preparedness efforts. Moreover, there is not enough collaboration between the public health and healthcare sectors to address the common challenges that we would face in a serious epidemic. UPMC hosted an exchange in Washington between US and Chinese leaders and scientists to encourage new cooperation in public health preparedness, spur collaboration, and build ties between experts in both countries. We look forward to further productive exchanges with Chinese officials on epidemic preparedness and planning.

The creation of the new Emerging Leaders in Biosecurity program was another exciting effort for UPMC and the US biosecurity community. Last year, when the

US Department of Defense recognized the need to develop a program to identify and cultivate the next generation of professionals who can make a positive impact in the array of fields that constitute biosecurity, it turned to UPMC. We met that challenge by designing and launching the competitive Emerging Leaders in Biosecurity fellowship. In April, we selected the first class of 25 Fellows from fields including medicine, public health, science, academia, government, and private industry and have planned a year of rich experiences for the group. We are also planning expansion of the program to invite international fellows in the next year.

To build the nation's biosecurity, it is critical that we attract new emerging professionals to the field and that we understand future challenges and opportunities. The exciting advances happening now in the biological sciences, including the rapid industrialization of biotechnologies, offer vast opportunities and pose potential threats. We have to make wise investments and establish good policy to balance that risk-benefit equation. Toward that end, UPMC was asked by the Department of Defense, the Department of Homeland Security, and the UK Home Office to scan the horizon and identify the kinds of national benefits and challenges that will arise from the industrial transformation of biology. Our report, *The Industrialization of Biology and Its Impact on National Security*, provided policymakers with a cogent view of the potential technological innovations coming in the years ahead and their strategic consequences for public health and security.

In this project and the rest of the work the Center did during the past year, we were fortunate to be able to continue to conduct the independent research and policy analysis that we believe essential to increasing the country's ability to prevent disease, protect the public's health, and improve health system response to catastrophes. That has been our mission all along, and we remain committed to it. That commitment is apparent in the personal dedication, skills, and initiative that my Center colleagues bring to bear in all of their work. I am continually impressed by this extraordinary group of professionals.

In keeping with UPMC's broader mission, the Center will, in the coming year, explore and assess new models to strengthen public health systems and will work to identify smart technologies and innovative science that could further improve our readiness for a range of public health disasters.

I am grateful for the generous support of UPMC and of President and CEO Jeff Romoff, who has made our work possible.

A handwritten signature in black ink, appearing to read 'Tom Inglesby', is positioned above the printed name and title.

Thomas V. Inglesby, MD
CEO and Director



Staff of the Center for Biosecurity of UPMC, 2011-2012

The Center's success depends entirely on the many talented professionals who are dedicated to advancing our mission with their work throughout the year.

Executive Officers

Tom Inglesby, MD, Chief Executive Officer and Director

Anita Cicero, JD, Chief Operating Officer and Deputy Director

Distinguished Scholar

D. A. Henderson, MD, MPH, Distinguished Scholar

Senior Associates & Associates

Amesh Adalja, MD, Associate

Crystal Franco, MPH, Associate

Gigi Kwik Gronvall, PhD, Senior Associate

Ann Norwood, MD, COL, USA, MC (Ret), Senior Associate

Jennifer Nuzzo, SM, Senior Associate

Monica Schoch-Spana, PhD, Senior Associate

Eric Toner, MD, Senior Associate

Senior Analysts & Analysts

Nidhi Bouri, MPH, Senior Analyst

Ryan Morhard, JD, Legal Analyst

Kunal Rambhia, MS, Senior Analyst

Tara Kirk Sell, MA, Senior Analyst

Matt Watson, Senior Analyst

Sam Wollner, Analyst

Administrative Officers

Bruce Campbell, Chief Financial Officer and Senior Administrator

Mary Beth Hansen, MA, Chief Information and Administrative Officer

Tasha King, Administrator

Publications, Communications & Events Staff

Joanna Engstrom-Brown, Events Director

Molly D'Esopo, Senior Communications Specialist

Jackie Fox, Senior Science Writer; Director of Publications and Communications

Davia Lilly, Director of Design and Production

Richard Messick, Web, Print, and Multimedia Technician

Price Tyson, Information Technology Director

Administrative Staff

Kim Biasucci, Senior Administrative Assistant

Elaine Hughes, Senior Administrative Assistant

Maria Jasen, Executive Assistant

Tanna Liggins, Senior Administrative Assistant

Darcell Vinson, Senior Administrative Assistant

Contributing Scholars

Joseph Fitzgerald, MS, MPH

Dan Hanfling, MD

Randall J. Larsen, COL, USAF (Ret)

Fred Selck, MA

Richard E. Waldhorn, MD

Other Contributors

Yu-Ling Chen, MS, International Fellow

Lisa Goldberg, MPP, MPH, Consultant

Yuliya Seldina, MPH, Intern

Cameron Ward, MS, Intern



A microscopic view of various bacteria, including rod-shaped and spiral-shaped organisms, set against a dark blue background. The bacteria are illuminated with a bright blue light, highlighting their internal structures and outer membranes. A semi-transparent dark blue horizontal bar is positioned across the middle of the image, containing the title text.

Improving Response to Biological Threats





Charting the Future of Biosecurity: Ten Years After the Anthrax Attacks

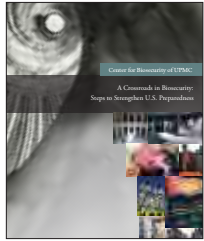
On October 4, 2011, the Center convened the largest senior level biosecurity meeting of the year in the United States. It was attended by federal leaders, top scientists, private sector executives, members of the press, and many of the leaders in the federal workforce who influence and manage our nation's biosecurity efforts. The purpose of this meeting was to take stock of the progress made in biosecurity since 2001, examine future challenges, and honor the achievements of the Alfred P. Sloan Foundation during that time.

Dr. Inglesby opened the day's discussion by highlighting reasons for optimism about the future of biosecurity, noting pressing problems still to be addressed, and underscoring the need to come to grips with the effects of budget austerity. Over the course of the day, many of the nation's leading experts spoke on major achievements and challenges of the past decade and signaled priorities for the years ahead.

Speakers included Heidi Avery, *Deputy Assistant to the President for Homeland Security, National Security Council, The White House*; Richard Besser, *Chief Health and Medical Editor, ABC News*; Thomas Countryman, *Assistant Secretary for International Security and Nonproliferation, Department of State*; Richard Danzig, *Chairman of the Board, Center for a New American Security*; Senator Tom Daschle, *Distinguished Senior Fellow, Center for American Progress*; Thomas Frieden, *Director, CDC*; Margaret Hamburg, *Commissioner, FDA*; Col. Randy Larsen, *CEO, The WMD Center*; Nicole Lurie, *Assistant Secretary for Preparedness and Response, HHS*; Jeanne Meserve, *Senior Fellow, George Washington University Homeland Security Policy Institute*; Tara O'Toole, *DHS Under Secretary for Science and Technology*; George Poste, *Chief Scientist, Complex Adaptive Systems Initiative*; Senator Jim Talent, *Vice Chairman, The WMD Center*; J. Craig Venter, *Founder, Chairman, and President, J. Craig Venter Institute*; and Andrew Weber, *Assistant Secretary of Defense for Nuclear, Chemical, and Biological Defense Programs in the Department of Defense*.

Project Team: Gigi Kwik Gronvall, Sam Wollner, and Joanna Engstrom-Brown





“At this crossroads of biosecurity on the tenth anniversary of the 2001 anthrax attacks, the biosecurity community should not accept the road of diminishing capacity, benign neglect, or gradually lowered expectations about the level of biosecurity that is achievable. We need to commit to tackling the nation’s biosecurity challenges in real and tangible ways during the decade ahead.”

Tom Inglesby and Anita Cicero,
A Crossroads in Biosecurity, October 2011

A Crossroads in Biosecurity: Steps to Strengthen US Preparedness

The Center marked the tenth anniversary of the 2001 anthrax letter attacks with publication of *A Crossroads in Biosecurity: Steps to Strengthen US Preparedness*. This bound collection of commentary by Center for Biosecurity experts addressed critical biosecurity needs in the years ahead.

Tom Inglesby and Anita Cicero provided a strategic view of US biosecurity and recommended major actions to move policy and preparedness forward. D. A. Henderson recalled the challenges and successes in managing the 2001 anthrax attacks and encouraged today’s leaders to take on serious continuing problems. Gigi Kwik Gronvall recommended an approach for improving laboratory security, while Jennifer Nuzzo called for improvements in US and international biosurveillance. Crystal Franco offered suggestions for reducing the cost of and time involved in anthrax decontamination. Monica Schoch-Spana detailed both progress and areas for continued improvement in community engagement. Eric Toner and Amesh Adalja identified ways to advance hospital preparedness for large-scale infectious disease emergencies, and Dan Hanfling explained the need for crisis standards of care to guide response to medical emergencies.



Congressional Testimony: Ten Years After 9/11

The US Senate Committee on Homeland Security and Governmental Affairs observed the tenth anniversary of the 2001 anthrax letter attacks with a number of Congressional hearings. Tom Inglesby was called to testify on October 11, 2011, for the hearing “Ten Years after 9/11 and the Anthrax Attacks: Protecting Against Biological Threats.”

Senators Joe Lieberman (I-CT) and Susan Collins (R-ME) offered opening statements that were followed by expert testimony from a panel of distinguished witnesses, including Tara O’Toole, *Under Secretary for Science and Technology, DHS*; Alexander G. Garza, *Assistant Secretary for Health Affairs and Chief Medical Officer, DHS*; Nicole Lurie, *Assistant Secretary for Preparedness and Response, HHS*; Vahid Majidi, *Assistant Director of the Weapons of Mass Destruction Directorate, FBI*; Robert P. Kadlec, *Former Special Assistant to the President for Homeland Security and Senior Director for Biological Defense Policy*; and Jeffrey Levi, *Executive Director, Trust for America’s Health*.

Dr. Inglesby’s testimony emphasized the country’s steady progress in the decade following the anthrax attacks and the important work needed in the years ahead to build resilience to biological threats. He called for rededicated effort in the realms of countermeasure development, public health preparedness, biosurveillance, hospital preparedness, and decontamination, noting that the impending reauthorization of the Pandemic and All-Hazards Preparedness Act (PAHPA) would be an important step toward dealing with these challenges.

United States Senate
Judicial and Business Committee
Hearings





Strengthening Federal Law for Preparedness

On March 1, 2012, in collaboration with the Biotechnology Industry Organization (BIO), the Center organized a meeting of US government officials, Congressional staff, biosecurity organizations, and other key stakeholders to discuss reauthorization of the Pandemic and All-Hazards Preparedness Act (PAHPA). This panel discussion came at a crucial juncture for the legislation, which was passed by the House of Representatives late last year, but had not been put to a vote in the Senate after being endorsed by the Senate Committee on Health, Education, Labor and Pensions. This event was attended by a standing room only audience of more than 100, with significant numbers of Congressional staff present, along with members of the biosecurity community at large.

Distinguished speakers and panelists included honorary co-host Senator Robert P. Casey, Jr. (D-PA), who, along with Congressman Mike Rogers (R-MI), opened the meeting after introductions by Scott Whitaker, COO, BIO. Their remarks were followed by a panel discussion of biological threats and current challenges with moderator Robert Kadlec, *Former Special Assistant to the President for Homeland Security and Senior Director for Biological Defense Policy*, and panelists Lynn Kidder, *President, The WMD Center*, and Philip K. Russell, *Former Senior Advisor, Office of the Assistant Secretary for Public Health Emergency Preparedness, HHS*. Tom Inglesby then moderated a discussion of the importance of reauthorizing PAHPA with panelists Jesse Goodman, *Chief Scientist, Office of the Chief Scientist, FDA*; Richard Hatchett, *Chief Medical Officer and Deputy Director for Strategic Sciences, BARDA*; Brian Kamoie, *Senior Director for Preparedness Policy, National Security Staff, Executive Office of the President*; and Ali Khan, *Director, Office of Public Health Preparedness and Response, CDC*.

Project Team: Crystal Franco and Ryan Morhard



New System for Treating Severe Acute Respiratory Distress Syndrome

Severe acute respiratory distress syndrome (ARDS) is a potentially lethal complication of flu that requires mechanical ventilation in an intensive care unit. During the 2009 H1N1 pandemic, thousands of flu victims developed ARDS; most of them were young and otherwise healthy. Evidence shows that patients who were treated at hospitals with expertise in managing severe ARDS had better outcomes. These hospitals are able to treat patients with highly sophisticated techniques, such as extracorporeal membrane oxygenation, or ECMO. This specialized technique takes over the main function of a severely damaged lung by allowing oxygen and carbon dioxide exchange to occur outside the body.

Dr. Amesh Adalja and Center colleagues analyzed the current approaches to providing ECMO in the United States and concluded that adoption of a regional model for providing advanced respiratory care would allow more patients to be treated and would save more lives during epidemics that cause severe respiratory illness. Care for trauma, cardiac arrest, and stroke is already provided in regional centers in many places in the United States. The Center's analysis indicates that ECMO and respiratory care could be similarly regionalized to great positive effect. The team's report argues that case and provides recommendations for moving toward a regional approach.

Project Team: Amesh Adalja, Eric Toner, Matthew Watson, and Richard Waldhorn



Healthcare Coalitions for Emergency Preparedness and Response

In *Hospitals Rising to the Challenge*, a 2009 report to HHS on the state of US healthcare preparedness, the Center identified the development of healthcare coalitions as a critical new underpinning of disaster response in the United States. Our research found that in many places, coalitions were starting to coordinate the resources and disaster preparation of hospitals and other related organizations across communities with valuable effect. Since that time, interest in and support for healthcare coalitions has taken hold and is fully supported by HHS through its Hospital Preparedness Program. Support is also evident in inclusion of coalitions in hospital accreditation standards, and practical experience during disasters has demonstrated the value of coalitions in emergency medical response.

Although support is growing, the extent to which hospital coalitions have been built into the nation's preparedness system was not known. To answer that question and to assess the strength and value of existing coalitions, Kunal Rambhia and Center colleagues surveyed a representative sample of acute care hospitals across the United States and found that 94% of the respondents were participating in healthcare coalitions. The team also found that coalitions vary widely in their structures, approaches to organization, and participating stakeholders; that 75% of coalitions had a formal role in responding to disasters; and that the majority had shared financial investments in the coalitions. The Center has been invited to present its report on this project to HHS officials and at a number of professional meetings.

Project Team: Kunal Rambhia, Richard Waldhorn, Eric Toner, Crystal Franco, and Fred Selck



Used with permission of the Program for Deliberative Democracy; photograph Greg Straub

Allocating Scarce Resources in Disasters

In a catastrophic disaster that overwhelms existing medical resources, such as a severe flu pandemic, there may be a shortage of ventilators and other critical life-saving resources. In such a situation, how should decisions be made about who receives those resources and who does not? Should the sickest and most vulnerable patients have priority? Should those most likely to survive be prioritized? Or should another ethical approach, such as first-come-first-served or a lottery, be used to determine who is prioritized when there are not enough medical resources for all? What would the public want decision makers to do in this situation?

Working in collaboration with Johns Hopkins University, the University of Pittsburgh, and Carnegie Mellon University, Eric Toner and Monica Schoch-Spana have engaged Maryland residents in a series of path-breaking focus group discussions to gauge community members' views on these issues.

Instead of asking members of the public to react to an already developed plan for allocating scarce resources—as has been done in other places in the country—this project is eliciting the views of community members at the start so those views can inform allocation plans as they are being formulated instead of after the fact. Plans created in this way will have a chance to reflect the public's values more clearly right from the start of planning for this difficult challenge. The results of these efforts will be published later this year.

Project Team: Eric Toner, Monica Schoch-Spana, Ann Norwood, Matt Watson, Nidhi Bouri, and Ryan Morhard

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Improving Detection and Response During a Foodborne Outbreak

Recent large-scale foodborne outbreaks, such as *E. coli* in Germany and listeria in the United States, are only the latest examples of dangerous events with potentially lethal consequences and major economic costs. The May 2011 *E. coli* outbreak in Germany infected thousands, killed dozens, and cost upwards of \$300 million in agricultural losses. In the United States, the autumn 2011 listeriosis outbreak associated with cantaloupe killed 30 people, and analysts anticipate that associated costs will exceed \$150 million.

Jennifer Nuzzo and Center colleagues examined a series of large-scale foodborne outbreaks to analyze strategies that could accelerate the discovery of such events in the future. The team's study found that although molecular fingerprinting performed during an outbreak is essential to a rapid and coherent response, it is an approach that may no longer be possible as new diagnostics come online that are no longer compatible with this older technique.

The research team also found that the number of people assigned to foodborne outbreak response in many health departments is minimal and grossly out of proportion to the local and national consequences of such events. Small demonstration projects and recent cost-effectiveness studies conducted around the country reveal that funding for foodborne surveillance programs delivers a big return on investment and that even small increases in funding at the state and local levels can have a significant impact on the way public health departments are able to respond to foodborne outbreaks. The research team will summarize its findings in an article to be submitted for publication in a peer-reviewed journal and in a longer, more comprehensive report.

Project Team: Jennifer Nuzzo, Sam Wollner, Tara Kirk Sell, and Ryan Morhard

PROFESSIONAL ACTIVITIES

Selected Publications

The Integration of Mental and Behavioral Health into Disaster Preparedness, Response, and Recovery. Pfefferbaum B, Flynn BW, Schonfeld D, Brown LM, Jacobs GA, Dodgen D, Donato D, Kaul RE, Stone B, Norwood AE, et al. *Disaster Medicine and Public Health Preparedness* 2012;6.

US Medical Countermeasure Development Since 2001: A Long Way Yet to Go. Russell PK, Gronvall GK. *Biosecurity and Bioterrorism* 2012;10(1).

Lessons Learned During Dengue Outbreaks in the United States, 2001–11. Adalja AA, Sell TK, Bouri N, Franco C. *Emerging Infectious Diseases* 2012;18(4).

Biosurveillance Where It Happens: State and Local Capabilities and Needs. Toner E, Nuzzo JB, Watson M, et al. *Biosecurity and Bioterrorism* 2011;9(4).

Commentary: Progress in Disaster Planning and Preparedness Since 2001. Inglesby TV. *JAMA* September 8, 2011;306(12).

Four Ways to Reduce the Time and Cost of Anthrax Cleanup. Franco C. In: *Crossroads in Biosecurity* September 2011.

Preparing Hospitals for Large-Scale Infectious Disease Emergencies. Toner E, Adalja A. In: *Crossroads in Biosecurity* September 2011.

Delivering Medical Care in a Catastrophe: Time for Crisis Standards. Hanfling D. In: *Crossroads in Biosecurity* September 2011.

Connecting the Dots: Creating a National Biosurveillance Capability. Nuzzo JB. In: *Crossroads in Biosecurity* September 2011.

Community Resilience: Beyond Wishful Thinking. Schoch-Spana M. In: *Crossroads in Biosecurity* September 2011.

Managing the Insider Threat in High-Containment Laboratories. Gronvall GK. In: *Crossroads in Biosecurity* September 2011.

A New Framework for Influenza—Rational Use of Antiviral Therapy and Vaccines. Adalja AA. *US Respiratory Disease* 2011;7(1).

Selected Advisory Board, Scientific Community, and Task Force Memberships

Food and Drug Administration, Expert Advisory Committee, Antiviral Drugs Advisory Committee Meeting

Institute of Medicine, Forum on Medical and Public Health Preparedness for Catastrophic Events

Maryland Governor's Emergency Management Advisory Council

National Academy of Sciences, National Research Council Committee on Animal Models for Assessing Countermeasures to Bioterrorism Agents

National Institute of Allergy and Infectious Diseases, Southeast Regional Center for Excellence for Biodefense and Emerging Infections Policy, Ethics, and Law Core

National Research Council, Disaster Roundtable Steering Committee

US Centers for Disease Control and Prevention, National Health Security Preparedness Index Steering Committee

US Department of Defense, Threat Reduction Advisory Committee

US Department of Homeland Security, Biodefense Net Assessment Executive Review Panel

JAMA Commentary

Progress in Disaster Planning and Preparedness Since 2001

To mark the tenth anniversary of the 2001 terrorist attacks, *the Journal of the American Medical Association (JAMA)* invited Tom Inglesby to comment on disaster planning and preparedness since 2001.

In his commentary, “Progress in Disaster Planning and Preparedness Since 2001,” Dr. Inglesby called attention to 3 important developments of the past decade, noting first the entrenchment of medical and public health professionals in the disaster preparedness community. He described this change as important because it has sparked modernization of systems, increased cross-sector coordination, and greatly enhanced disaster planning, the benefits of which were evident in the response to Hurricane Irene. Next, he lauded increased US government investment in disaster preparedness and planning, to which he attributes a number of innovations and increased capacities across all levels of the national disaster preparedness and planning communities. Third, he noted the growing prioritization of community engagement, which undergirds FEMA’s new “whole community” approach to emergency management.

In closing, Dr. Inglesby cautioned that while the landscape of disaster planning and preparedness has changed greatly since 2001, progress is still needed. That progress, he argued, will be possible only with stable funding, without which both continued and past achievements may be imperiled.

Selected Presentations

American College of Chest Physicians. ACCP Consensus Statement: The Delivery of Mass Critical Care during a Disaster—2012. Chicago, IL. “Task Force for Mass Critical Care.”

Food and Drug Administration. Medical Countermeasures Lecture Series. Silver Spring, MD. “The Challenge of Smallpox.”

International Society for Infectious Diseases. Cambridge, MA. “The Role of Isolation, Self-Protection, and Mosquito Abatement in an Agent-Based Model of Dengue Fever Transmission.”

Johns Hopkins University, Department of International Health. Baltimore, MD. “Current Challenges in Vaccine Development.”

US Centers for Disease Control and Prevention. Collaboration Meeting and the Cross Cutting Meeting: Partners Sharing Initiatives and Priorities. Atlanta, GA. “Preparedness and Response Strategies for Smallpox and Anthrax.”

US Department of Homeland Security, Office of Health Affairs. Washington, DC. “National

Biosurveillance Integration: Challenges & Opportunities.”

Interviews and Background for Major Media Outlets

Los Angeles Times. “Cost, Need Questioned in \$433-Million Smallpox Drug Deal.” November 13, 2011.

FDA Week. “Senate PAHPA Reauthorization Would Expand EUA, Animal Model.” November 11, 2011.

Inside Health Reform. “Lieberman Expresses Interest in Using EHRS for Biosurveillance.” November 11, 2011.

Columbus Dispatch (OH). “Anthrax Labs Are Secure, Battelle Says.” October 27, 2011.

New York Times Magazine. “There’s Not Nearly Enough Vaccine to Go Around.” October 26, 2011.

Global Security Newswire. “US Better Prepared for Bioterror, Experts Say.” October 14, 2011.

Washington Post. “Army to Phase Out Animal Nerve-Agent Testing.” October 13, 2011.

Global Security Newswire. “US Biodefenses Improve, but New Threats Develop.” September 30, 2011.



A close-up photograph of a petri dish containing numerous yellow and red bacterial colonies. A gloved hand is holding a black marker, poised to write on the dish. An orange rectangular box is overlaid on the image, containing the text "Strengthening Global Health and Security".

Strengthening Global Health and Security





“I salute your Center and your leadership in bringing us together to discuss critical issues of public health and biosafety that already have had, and will have much more in the future, a profound impact on our well-being and the quality of our lives. . . . I count it a privilege to be able to support your efforts, and they’re highly valued, I know, by the global health community, US and Chinese governments, and others around the globe.”

Brent Scowcroft, President, The Scowcroft Group

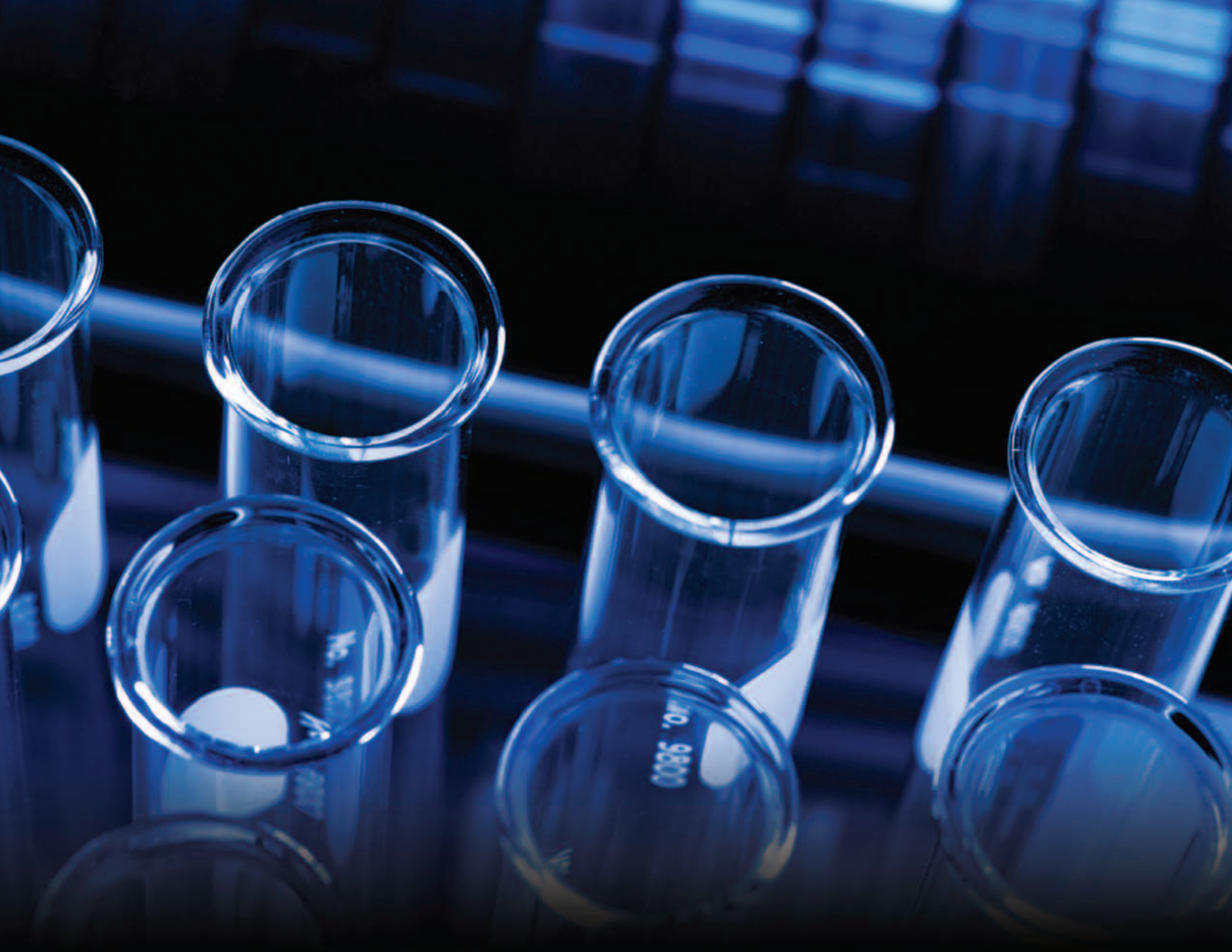
Improving Epidemic Response: Building Bridges Between the US and China

The Center hosted this international meeting on May 15, 2012, in Washington, DC. The conference had several purposes, the first of which was to increase mutual understanding of US and Chinese strategies for responding to major disease epidemics. We also sought to provide a venue for leaders, scientists, and officials from both countries to present their approaches to disease outbreak response and to consider the potential for future collaborations in epidemic preparedness and response.

Speakers from China included Zijian Feng, *Director, Health Emergency Center, China Center for Disease Control and Prevention; Executive Director, China-US Collaborative Program on Emerging Infectious Diseases*; Frank Liu, *Professor and Deputy Director, Chinese Academy of Sciences Key Laboratory of Pathogenic Microbiology*; Fan Wu, *Director, Shanghai Municipal Center for Disease Control*; and Lulu Zhang, *Director, Institute of Military Health Management, Second Military Medical University*.

Our colleagues from China were joined by keynote speaker, Brent Scowcroft, *President, The Scowcroft Group; Former National Security Advisor to Presidents Gerald Ford and George H. W. Bush*; Noel Chen, *Director of Scientific Collaboration, BGI Americas*; Melinda Frost, *Health Communications Expert, Global Disease Detection Program (Beijing), US Centers for Disease Control and Prevention*; Xing Gao, *Health Emergency Preparedness and Response Coordinator, Global Disease Detection Program (Beijing), US Centers for Disease Control and Prevention*; Edward J. Gabriel, *Principal Deputy Assistant Secretary for Preparedness and Response, HHS*; Jonathan Margolis, *Acting Deputy Assistant Secretary for Science, Space and Health, US Department of State*; Herminia Palacio, *Executive Director, Harris County Public Health and Environmental Services*; Daniel M. Sosin, *Deputy Director and Chief Medical Officer, Office of Public Health Preparedness and Response, CDC*; Jay Varma, *Deputy Commissioner for Disease Control, New York City Department of Health and Mental Hygiene*; Nathan Wolfe, *Director, Global Viral Forecasting Initiative*; and Dong Xie, *Founder and CEO, Frontier BioSciences, Inc., and Chengdu Frontier Biosciences Co., Ltd.*

Project Team: Jennifer Nuzzo, Kunal Rambhia, and Joanna Engstrom-Brown



The Industrialization of Biology and Its Impact on National Security

Gigi Kwik Gronvall and Center colleagues led this horizon-scanning project to provide senior leaders in the United States and the United Kingdom with insights into future biological dangers and related strategic concerns for homeland and national security. The project focused on identifying bioscience capabilities and their potential evolutionary courses for the next 5 to 10 years and on evaluating the drivers that could help shape their evolution.

Dr. Gronvall and team interviewed dozens of experts in a range of fields related to the life sciences and their industrial applications. The team also examined the accessibility of new technologies to states, small groups, and individuals—for entrepreneurship, or recreation (i.e., DIY Bio), or for malevolent purposes. Their analysis considered potential dangers and homeland security concerns that could emanate from emerging capabilities and ways in which these dangers could be mitigated. Finally, the researchers queried experts about the potential economic impact of bioscience capabilities and the effect on US competitiveness. A September 2011 workshop on synthetic biology organized by Imperial College and the UK Home Office provided valuable input as well.

In November 2011, the Center convened experts from US and UK academic institutions, private industry, the US government, and the UK Home Office for a meeting on the future of biotechnologies; the challenges and priorities for the US government and the UK Home Office in promoting positive uses of biotechnologies; and potential biosecurity needs that the US and UK should pursue, either collaboratively or separately.

Our final report, *The Industrialization of Biology and Its Impact on National Security*, was publicly released at a Washington, DC, meeting on June 8, 2012.

Project Team: Gigi Kwik Gronvall, Ryan Morhard, and Kunal Rambhia



Infectious Disease Cost Calculator

The ability to gauge economic losses associated with infectious disease outbreaks is critical to making informed decisions about investments in disease prevention and control at the local, national, and global levels. However, there is a surprising lack of data available to shed light on the economic burdens of infectious diseases. To provide just that type of data, the Center's Crystal Franco, Fred Selck, and colleagues developed the web-based Infectious Disease Cost Calculator (IDCC) to provide country-specific and global estimates of the economic costs of specific infectious diseases. The IDCC's cost models are derived from established economic assumptions and models combined with disease information from WHO and published expert assessments.

The IDCC now provides cost data associated with dengue and cholera, and the team plans to add data on other diseases in the future. IDCC estimates combine direct costs (i.e., cost of inpatient and outpatient treatment and costs attributable to deaths) with indirect costs (i.e., cost of decreased productivity due to illness, disability, and death) to deliver a total cost of an infectious disease for each country. The IDCC also aggregates country-level costs to produce a global estimate for dengue and cholera.

The IDCC was built to provide information to health officials, charitable organizations, and others who face decisions about investments in public health interventions.

Project Team: Crystal Franco, Fred Selck, Amesh Adalja, and Davia Lilly



D. A. Henderson Advises on Global Health and Security Concerns

Dr. D. A. Henderson's legendary career in global health spans well over half a century, predating the very notion of "health security." Since directing the global program to eradicate smallpox in the 1970s, he has been consulted regularly for his unique public health expertise. In 2011–2012, Dr. Henderson has served as an advisor for a number of global health and security efforts.

The World Health Organization's successful smallpox eradication effort has given rise to 2 other large-scale global eradication campaigns—one to rid the world of polio by the end of 2012 and the other, which is a longer term initiative, to eradicate malaria. Both are being generously funded by the Bill and Melinda Gates Foundation, which has called on Dr. Henderson's expertise to advise the foundation on relevant elements of both programs.

Dr. Henderson has also advised the US government on the material threat posed by smallpox and on issues in development and procurement of smallpox countermeasures. He is frequently asked to provide judgments and input into the US government processes related to infectious disease modeling, countermeasure development, and response planning at the federal and local levels.

PROFESSIONAL ACTIVITIES

Selected Publications

A History of Eradication—Successes, Failures, and Controversies. Henderson DA. *The Lancet* 2012;379(9819).

Ideas and Opinions: Engineered H5N1: A Rare Time for Restraint in Science. Inglesby TV. *Annals of Internal Medicine* 2012;156(6).

Preventing Pandemics: The Fight Over Flu. Henderson DA, et al. *Nature* 2012;481(7381).

Life Sciences at a Crossroads: Respiratory Transmissible H5N1. Osterholm MT, Henderson DA. *Science* Published online January 19, 2012.

Editorial: The Risk of Engineering a Highly Transmissible H5N1 Virus. Inglesby TV, Cicero A, Henderson DA. *Biosecurity and Bioterrorism* December 15, 2011.

Selected Advisory Board, Scientific Community, and Task Force Memberships

American Association for the Advancement of Science. Committee on Scientific Freedom and Responsibility

Council on Foreign Relations

Women in International Security

World Health Organization International Health Regulations Expert Panel

Selected Presentations

American Society for Microbiology. Biodefense and Emerging Diseases Research Meeting. Washington, DC. “Recapping the 2011 Biological Weapons Review Conference.”

Atlantic Council. Global Trends 2030: Pandemics and the End of Globalization. Washington, DC. “Pandemic Diseases . . . Future Risk.”

Bill & Melinda Gates Foundation. 2011 Malaria Forum. Seattle, WA. Panel Discussion: Lessons Learned from Disease Eradication Efforts.

European Union Visitors Program. The International Leader Program of the European Union. Brussels, Belgium. Invited Participation.

Global Futures Forum. Transformational Technologies I: Foundations for Understanding the Future of Human Security. Washington, DC. “Biotechnology Panel.”

National Academy of Sciences. Annual Meeting: Can We Continue to Eradicate Infectious Diseases? Washington, DC. “Eradication of Smallpox.”

The Royal Society. London, UK. “H5N1 Research: Biosafety, Biosecurity and Bioethics.”

University of Maryland, Center for Health and Homeland Security. Senior Crisis Management

Series – Pakistan Delegation. College Park, MD. “Infectious Disease Surveillance and Mitigation in Pakistan and Southern Asia.”

US Department of State. BWC Roundtable. Washington, DC. Invited Participation.

Interviews and Background for Major Media Outlets

Financial Times (London). “Technology: The Risks of Research.” April 10, 2012.

The Economist. “Out, but Far from Over.” April 7, 2012.

Washington Post. “Little Consensus at Scientific Meeting on Releasing Results of Risky Research.” April 4, 2012.

National Public Radio. “WHO Panel Supports Publication of Bird Flu Details, Eventually.” February 17, 2012.

Huffington Post. “D.A. Henderson, Scientist Who Helped Eradicate Smallpox, Says US Is Unprepared for Bioterrorism.” February 6, 2012.

New York Times. “Sunday Dialogue: Bird Flu Experiments.” January 29, 2012.

USA Today. “Has Bird Flu Biology Opened Bioterror Box?” January 26, 2012.



International Debate on H5N1 Transmissibility Research

Since late 2011, international attention has focused on experiments aimed at increasing mammalian transmissibility of the H5N1 avian influenza virus. Naturally occurring H5N1 viruses are extraordinarily lethal in most animals, but, so far, the viruses are not easily spread from person to person. The research that triggered the debate involved engineering of H5N1 viruses to make them transmissible among ferrets to study how H5N1 viruses might evolve to trigger a severe human pandemic. In both formal and informal gatherings, scientists, public health officials, and policymakers debated questions related to scientific freedom, the open sharing of methods to replicate the experiments, and the risks versus benefits of such research. A number of individuals at the Center were engaged in this dialogue via editorials in leading scientific and medical journals, media interaction, international scientific meetings, and Congressional testimony. Their contributions included assessments of the risk of accidents or misuse generated by the experiments, as compared with the potential benefits of the work; estimation of case fatality rates; and reviews of serology studies that sought evidence of mild H5N1 infection in the population.

- New York Times*. "Letter to the Editor: Invitation to a Dialogue: Research and Its Risks." January 24, 2012.
- The Atlantic*. "Hope or Fear: The Opposing Ideas of H5N1 Bird Flu Researchers." January 20, 2012.
- Milwaukee Journal Sentinel*. "Bird Flu Research Halted to Ensure Safety of Experiments." January 20, 2012.
- Wall Street Journal*. "Avian Flu Scientists Call for 60-Day 'Pause' on Controversial Research." January 20, 2012.
- National Public Radio. "Researchers Agree to Temporary Halt for Bird Flu Experiments." January 20, 2012.
- National Post* (Canada). "Balance Sought in Debate over 'Censorship' of Bird Flu Research." January 16, 2012.
- Milwaukee Journal Sentinel*. "Benefits of H5N1 Research Do Not Outweigh the Risks." January 14, 2012.
- Scientific American*. "Pain Relief: India on Track To Be Declared Polio-Free Next Month." January 9, 2012.
- Bulletin of the Atomic Scientists*. "Laurie Garrett: Reporting on Biosecurity from America to Zaire." January 6, 2012.
- Science Friday*, National Public Radio. "Debate Persists over Publishing Bird Flu Studies." January 6, 2012.
- Chronicle of Higher Education*. "Science and Security Clash on Bird-Flu Papers." January 1, 2012.
- Canadian Press/CTV. "Bird Flu Study Controversy Could Lead to Research Chill." December 27, 2011.
- CBS News/Associated Press. "Bird Flu Researchers Fear Gov't Block May Stall Scientific Progress." December 27, 2011.
- New York Times*. "Debate Persists on Deadly Flu Made Airborne." December 26, 2011.
- Wall Street Journal*. "Bird-Flu Data Spur Alarm; Federal Officials Ask Journals to Limit Studies' Details, Citing Bioterrorism Risk." December 22, 2011.
- Daily Mail* (UK). "Terror Fear as Scientists Deliberately Create 'Armageddon' Bird Flu Virus in Lab." December 21, 2011.
- NBC Nightly News with Brian Williams. "Scientists Told Not to Share Deadly Virus Info." December 20, 2011.
- Washington Post*. "Federal Panel Asks Journals to Censor Reports of Lab-Created 'Bird Flu.'" December 20, 2011.
- National Journal*. "Scientists Agree to 'Unprecedented' Withholding of Flu-Virus Research; US Voices National-Security Concerns over Bird-Flu Findings." December 20, 2011.
- NBC Nightly News with Brian Williams. "Deadly Flu Virus Created in the Lab." December 15, 2011.
- Forbes*. "Scientists Create Lethal Human Strain of Avian Flu in Test Tube—Now Seek to Publish Formula for How It's Done." November 29, 2011.
- Morning Edition*, National Public Radio. "Bird Flu Experiment Rattles Bioterrorism Experts." November 17, 2011.
- The Economist*. "Eradicating Polio: Late? Or Never?" July 21, 2011.
- Associated Press. "Health Officials Not on Track to Eradicate Polio." July 20, 2011.
- CNN. "Could bin Laden Hunt Lead to More Polio?" July 13, 2011.






Preparing for Nuclear and Radiological Disasters



“In World at Risk, we expressly recommended the development of ‘a publicly available checklist of actions each level of government should take to prevent or ameliorate the consequences of WMD terrorism. Such a checklist could be used by citizens to hold their governments accountable for action or inaction.’ The Rad Resilient City project has answered this call to action.”

Senator Bob Graham and Senator Jim Talent, The WMD Center



“The public plays a critical role on our nation’s emergency response team in every type of disaster, including an IND. Our goal is to empower Americans with information about the risks we face and the actions we can all take to protect ourselves, our families, and our communities. The release of your Rad Resilient City fallout preparedness checklist aims to do just that—empower Americans with clear, actionable steps they can take in their communities to protect themselves.”

Brian Kamoie, Senior Director for Preparedness Policy,
The White House National Security Staff

Rad Resilient City Initiative

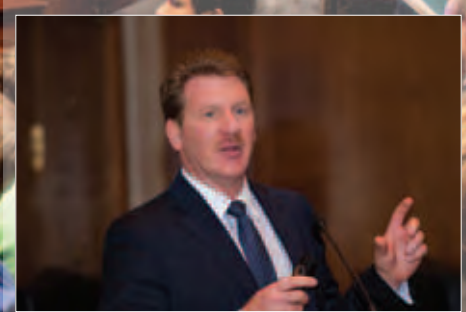
In March 2012, President Obama joined other world leaders at the Second Nuclear Security Summit in pledging further efforts to prevent nuclear materials from falling into the hands of terrorists. The nuclear threat is undeniable, he proclaimed: “There are still too many bad actors in search of these dangerous materials, and these dangerous materials are still vulnerable in too many places. It would not take much—just a handful or so of these materials—to kill hundreds of thousands of innocent people. And that’s not an exaggeration; that’s the reality that we face.”

If prevention should fail, then reducing exposure to radioactive fallout is the intervention that can save the greatest number of lives following a nuclear detonation. Inspired by this fact, the Center conceived the *Rad Resilient City* fallout preparedness checklist—a local planning tool that converts the latest federal guidance and technical reports into clear, actionable steps for communities to protect inhabitants from radioactive fallout. Doing so could save tens of thousands of lives. The checklist was created by a team of experts and leaders who comprised the Nuclear Resilience Expert Advisory Group. Led by the Center’s Monica Schoch-Spana, the group included government decision makers, top scientific experts, emergency responders, and leaders from the business, volunteer, and community sectors.

The Center released the *Rad Resilient City* checklist on September 27, 2011, at a standing room only event at the National Press Club in Washington, DC. To date, we have distributed the checklist and workbook at a dozen national meetings, reaching thousands of professionals in emergency management, public health, radiation safety, health care, law enforcement, and public safety, as well as officials from federal, state, and local government and representatives from the private sector.

Many state and local officials and leaders have embraced the checklist because it provides pragmatic recommendations, offers expert guidance from a trusted nongovernmental organization, and helps overcome the political barriers associated with discussing nuclear terrorism with the public.

Project Team: Monica Schoch-Spana, Ann Norwood, Tara Kirk Sell, and Ryan Morhard



Center Budget Analysis: Funding for Key Nuclear Related Programs, FY2012

This year, to quantify the total US resources committed to managing the consequences of nuclear terrorism, researchers Crystal Franco and Tara Kirk Sell assessed the funding for a number of key nuclear-related programs in the federal government. They found that the FY2012 appropriation for nuclear consequence management is \$601.9 million, funding for nuclear threat reduction and/or nonproliferation is \$4.5 billion, and funding for missile defense is \$8.4 billion.

Those figures represent significant reductions from amounts reported in an analysis of the FY2008 budget published by the Carnegie Endowment. For FY2012, funding for nuclear consequence management is nearly \$100 million (14%) less than in FY2008, and threat reduction/nonproliferation appropriation has been reduced by 13%.

Funding for Key Nuclear-Related Programs, FY2012



Congressional Seminar on Nuclear Preparedness

On October 17, 2011, the Center held a meeting to brief Congressional staff on US preparedness for a nuclear detonation. This meeting was part of the Center's standing Congressional Seminar Series on Biological and Nuclear Security, with the US Senate Caucus on WMD Terrorism as honorary co-host.

Briefing issues included US government response preparations for nuclear disaster, the latest scientific findings regarding the effects of nuclear detonation, and the Center's *Rad Resilient City* planning checklist. The key speakers were Donald Daigler, *Director, Planning Division, Response, FEMA*; Brooke Buddemeier, *Global Security Directorate, Lawrence Livermore National Laboratory*; and Monica Schoch-Spana, *Senior Associate, Center for Biosecurity of UPMC*.

The event was attended by Congressional staff members and representatives of a number of federal agencies, including HHS, FDA, DHS, GAO, CRS, and FEMA.

Project Team: Crystal Franco, Ryan Morhard, Monica Schoch-Spana, and Tara Kirk Sell



After Fukushima: Managing the Consequences of a Radiological Release

As the number of nuclear reactors worldwide increases, so does the risk of large-scale nuclear disasters and radiological releases, such as the one that occurred at the Fukushima Daiichi nuclear power plant in 2011 following the earthquake and tsunami in Japan.

Aiming to strengthen US resilience to large-scale nuclear accidents, Joe Fitzgerald and Center colleagues engaged the policymaking community, professional groups, and leading nuclear power experts and scientists to examine lessons learned from the Japan disaster and to consider the robustness of US policies and plans for off-site consequence management following a large-scale domestic nuclear power plant accident.

The team's analysis focused on off-site policies and plans intended to reduce the public's exposure to radiation and incorporated information gathered from more than 90 interviews with domestic and international experts in federal, state, and local governments, industry, and academia. The researchers also assessed emergency planning around US nuclear power plants, pre- and postevent communication, federal potassium iodide (KI) policy, and recovery and reentry after a large-scale accident.

The final report for this project made a series of specific recommendations, including: reassess the adequacy of US emergency planning zones, plan for recovery and reentry after a large-scale accident, reduce the role of KI in emergency planning, expand pre-event education, plan for post-event communication, and boost professional radiological expertise in the public sector. The project has been briefed on Capitol Hill and at federal agency planning meetings.

Project Team: Joe Fitzgerald, Sam Wollner, Amesh Adalja, and Ryan Morhard

PROFESSIONAL ACTIVITIES

Selected Publications

Use of Potassium Iodide (KI) in a Nuclear Emergency. Adalja AA. *Biosecurity and Bioterrorism* 2011;9(4).

A Possible Approach to Large-Scale Laboratory Testing for Acute Radiation Sickness after a Nuclear Detonation. Adalja AA, Watson M, Wollner S, Toner E. *Biosecurity and Bioterrorism* 2011;9(4).

Selected Presentations

2012 Public Health Preparedness Summit. Anaheim, CA. “How Your City Can Survive a Nuclear Terrorist Attack.”

Big City Emergency Managers Meeting. New York, NY. “*Rad Resilient City* Checklist Briefing.”

Building Owners and Managers Association, Winter Business Meeting and National Issues Conference. Washington, DC. “*Rad Resilient City* Project.”

Center for Biosecurity of UPMC, National Press Club Rollout. Washington, DC. “Introducing the *Rad Resilient City* Checklist.”

Conference of Radiation Control Program Directors Annual Meeting. Orlando, FL. “*Rad Resilient City*: A Preparedness Checklist to Diminish Lives Lost from Radiation after a Nuclear Detonation.”

Congressional Seminar Series on Biological and Nuclear Security. Washington, DC. “*Rad Resilient City*: A Preparedness Checklist to Diminish Lives Lost from Radiation after a Nuclear Detonation.”

International Association of Emergency Managers (USA Division). Las Vegas, NV. “*Rad Resilient City* Project.”

Johns Hopkins Public Health Preparedness Programs. Radiological Emergency Preparedness: Coordinating Efforts Between Public Health and Public Safety Agencies. Linthicum, MD. “*Rad Resilient City*: A Preparedness Checklist for Cities to Diminish Lives Lost from Radiation after a Nuclear Terrorist Attack.”

National Alliance for Radiation Readiness. Arlington, VA. “Population Screening for Acute Radiation Sickness After an IND.”

National Council on Radiation Protection and Measurements Annual Meeting. Bethesda, MD. “*Rad Resilient City*: A Preparedness Checklist to Save Lives Following a Nuclear Detonation.”

National Evacuation Conference. New Orleans, LA. “Saving 100,000 Lives After a Nuclear Detonation.”

National League of Cities, Congress of Cities and Exposition. Phoenix, AZ. “*Rad Resilient City* Project.”

National Radiological Emergency Preparedness Conference. St. Paul, MN. “*Rad Resilient City*: A Preparedness Checklist to Diminish Lives Lost from Radiation after a Nuclear Detonation.”

Interviews and Background for Major Media Outlets

The Reporter (PA). “Casey Not Sure 10-Mile Evacuation Zone Around Nuke Plants Is Enough.” March 17, 2012.

The Mercury (PA). “One Year Later, Japanese Nuclear Accident Draws Focus in the US” March 11, 2012.

Orlando Sentinel. “My Word: Take Charge Before Disaster Strikes: Op Ed by Bob Graham and Jim Talent.” October 3, 2011.

Global Security Newswire. “Experts Offer Measures to Save Lives After Nuclear Explosion.” September 28, 2011.

“Our nuclear power plants have undergone exhaustive study, and have been declared safe for any number of extreme contingencies. But when we see a crisis like the one in Japan, we have a responsibility to learn from this event, and to draw from those lessons to ensure the safety and security of our people.”

President Barack Obama, The White House, March 17, 2011





Building the Professional Community and Raising Awareness



Executive Steering Committee

Parney Albright, Director, Lawrence Livermore National Laboratory

Kenneth W. Bernard, Former Special Assistant to the President for Homeland Security, Health, Security and Biodefense Affairs

Luciana Borio, Assistant Commissioner for Counterterrorism Policy, FDA

Richard Danzig, Chairman of the Board, Center for a New American Security

David Franz, Former Commander, USAMRIID

John Grabenstein, Senior Director for Adult Vaccines, Merck

Jo L. Husbands, Scholar/Senior Project Director, Board on Life Sciences of the National Academy of Sciences

Ambassador Bonnie Jenkins, Coordinator for Threat Reduction Programs, Department of State

Robert Kadlec, Former Special Assistant to the President for Homeland Security and Senior Director for Biological Defense Policy, Homeland Security Council

Lawrence Kerr, Deputy Director of Global Biological Threats, Office of the Director of National Intelligence

Ali Khan, Director, Office of Public Health Preparedness and Response, CDC

Randall J. Larsen, Chief Executive Officer, WMD Center

Tara O'Toole, Under Secretary for Science and Technology, DHS

James B. Petro, Principal Director, Chemical and Biological Defense, OASD

Alan Rudolph, Director, Chemical and Biological Defense Directorate, DTRA

Andrew C. Weber, Assistant Secretary of Defense for Nuclear and Chemical and Biological Defense Programs, DOD

Emerging Leaders in Biosecurity Initiative

At the request of senior government leaders, the Center launched the Emerging Leaders in Biosecurity Initiative, a competitive fellowship program designed to identify and engage a cadre of rising professionals interested in careers in biosecurity. Each year, we will choose Fellows from a pool of applicants who are pursuing advanced degrees and/or working in academia, government, defense, private industry, science, public health, medicine, law, the social sciences, and other related fields. By participating in conferences, seminars, networking events, writing competitions, and educational webinars, Fellows will deepen their expertise, expand their professional contacts, and build their leadership skills. The program is run by Ann Norwood and Nidhi Bouri, and strategic guidance is provided by an Executive Steering Committee of established leaders in the field.

The first class of 25 Fellows was announced in early April. Chosen from more than 150 applicants, the class of 2012 is as diverse as the field itself, with members representing all regions of the country and Puerto Rico and a wide array of professional disciplines, educational backgrounds, and experience. The goal of this fellowship, over time, is to build an active network and community of career professionals and experts who are interested in and better prepared to join the field of biosecurity.

The first Emerging Leaders meeting, on May 14, 2012, included a series of presentations and discussions with distinguished experts in the field. Fellows also attended meetings in Congress and at the Pentagon, and they attended the Center's May 15 conference. In the year ahead, they will participate in a writing competition and a series of webinars, and they will attend a second biosecurity seminar in fall 2012.

Project Team: Ann Norwood, Nidhi Bouri, and Matthew Watson



Not Pictured: David Aaron, Patrick Ayscue, Carolyn Hall, and Brendan Thomason

2012 Emerging Leaders in Biosecurity Fellows

Top Row, L-R: Jessica Appler, Stefanie Bumpus, Hillary Carter, Sheana Cavitt, Angela Fowlkes, Ashley Grant, Haroun Habib

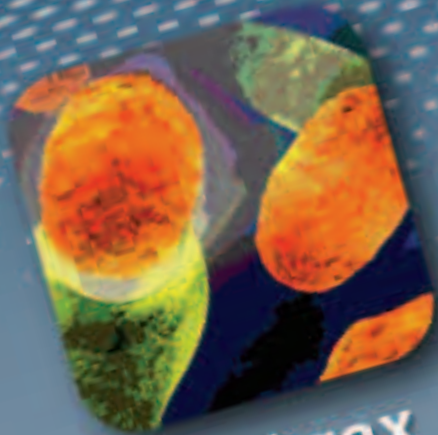
Row 2: Katharine Hagen, Nicholas Kelley, Luis Martinez, Michael Montague, Rakesh Raghuwanshi, Patrick Rose, Sara Rubin

Row 3: Yuliya Seldina, Calvin Siow, Halley Smith, Anthony Treubrodt, Renee D. Wegrzyn, Stephen White, Jaime Yassif

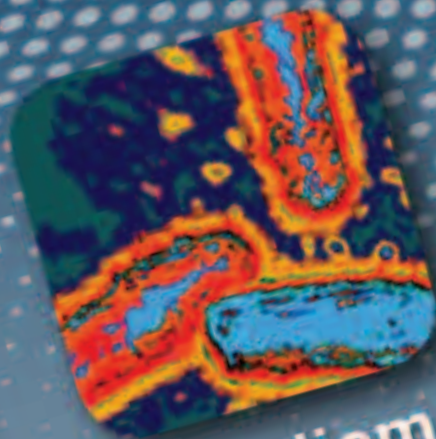


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BioAgent Facts



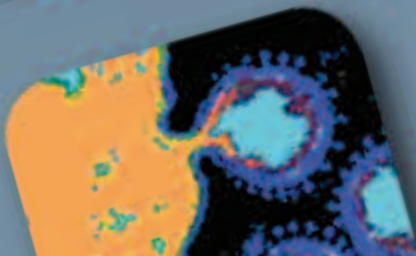
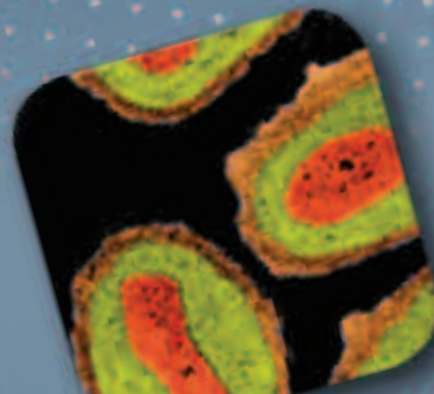
Anthrax



Botulism



Flu





Center for Biosecurity iPhone Apps

Tara Kirk Sell, Crystal Franco, Kunal Rambhia, and Matt Watson and Center colleagues developed 2 iPhone apps in the past year: Clinicians' Biosecurity Resource (CBR) for healthcare professionals and BioAgent Facts for a general, nonprofessional audience. The goal with both was to deliver essential information about dangerous pathogens in a format optimized for the iPhone.

CBR provides medical professionals with the information they need to recognize and manage care of patients who may have been exposed to pathogens considered highly dangerous if used as biological weapons: *Bacillus anthracis*, clostridium botulinum toxin, hemorrhagic fever viruses, *Yersinia pestis*, variola virus, and *Francisella tularensis*. For each pathogen, the CBR describes the naturally occurring disease caused by the pathogen, potential for use as a bioweapon, priority actions, clinical features, microbiological diagnosis, treatment, postexposure prophylaxis, prevention/vaccination, PPE/infection control, and links to additional clinical information. BioAgent Facts profiles pathogens with the most potential for use as bioweapons with background, general descriptions of symptoms of illness, and available treatments. Both apps are available from the iTunes App store and have been downloaded by users around the world.

Project Team: Crystal Franco, Kunal Rambhia, Tara Kirk Sell, Matthew Watson, Eric Toner, and Amesh Adalja



NO RE-ENTRY

Public Engagement in Disaster Planning and Response

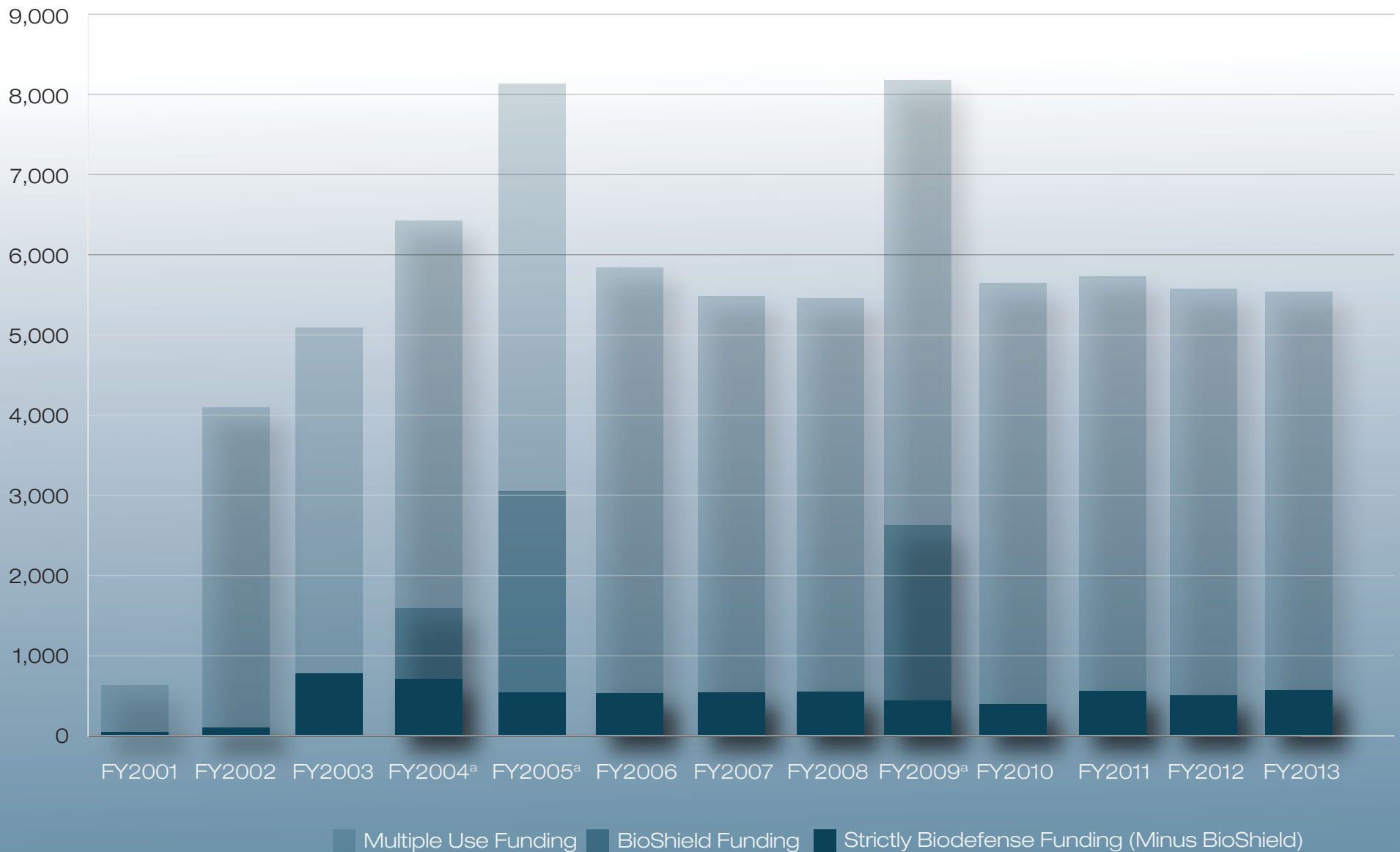
The US government's National Health Security Strategy and other influential planning documents have called for much greater efforts to inform, empower, and engage individuals and communities in the process of planning for disasters. When unveiling the country's first-ever preparedness goal in 2011, FEMA Administrator Craig Fugate argued, "As we work to build a more prepared nation, we must work with the entire community—the public and private sectors, faith-based and nonprofit organizations, and most importantly the public."

In an effort to push this effort forward, Senior Associate Monica Schoch-Spana and Center colleagues sought to measure the level of government commitment and support for this mandate by evaluating the capacity of local health departments across the country to involve constituents in disaster preparedness and response. Statistical analyses and case study interviews showed that local health departments for the most part do not have the staff to facilitate community dialogue around planning, and that additional resources are needed to build stronger connections to the public, businesses, and faith- and community-based organizations.

Although federal policy may highly value the public's role in health emergency management, the evidence suggests that only limited infrastructure exists to engage community groups and residents in preparedness and response. Based on the findings in this project, the Center concluded that making substantial progress will require a strong mandate, supportive leadership, and funding for more community engagement personnel in public health departments.

Project Team: Monica Schoch-Spana, Fred Selck, Tara Kirk Sell, Ryan Morhard, and Lisa Goldberg

Figure 2. Civilian Biodefense Funding by Fiscal Year, FY2001-FY2013 (in \$millions)



^a A total of \$5.6 billion was appropriated to a Project BioShield Special Reserve fund in FY2004. Of the \$5.6 billion fund, \$885 million and \$2.507 billion were allocated to DHS in FY2004 and FY2005, respectively, and were obligated for use through FY2008. \$2.175 billion in BioShield was allocated to DHS in the FY2009 budget and obligated for use through FY2013. In 2010, the balance of the SRF was transferred to HHS.

Annual Analysis of the Federal Civilian Biodefense Budget

Since 2004, the Center has published an annual analysis of the US biodefense budget, which spans 8 agencies across the federal government. As in past reports, this year's "Federal Agency Biodefense Funding FY2012–FY2013" identifies all major biodefense-related programs in the federal agencies, describes their objectives, details the president's FY2013 budget request, and compares the current request with previous years' budgets. This year's analysis, performed by Crystal Franco and Tara Kirk Sell, is likely to be used widely within the US government biodefense community as has been the case in years past. It has also become a standard reference for research institutions and members of the news media who report on biodefense.

As in previous years, our analysis indicates that the majority (>90%) of the "biodefense" programs included in the FY2013 budget have both biodefense and nonbiodefense goals and applications—that is, programs to improve infectious disease research, public health and hospital preparedness, and disaster response more broadly. Programs that focus solely on biodefense represent an increasingly smaller proportion of our analysis as the federal agencies continue to prioritize all-hazards preparedness.

At first blush, this year's analysis appears to indicate that proposed funding for overall civilian biodefense in FY2013 is flat compared with FY2012. However, further analysis shows that this is an artifact of a change in the budgeting process and that proposed funding for biodefense has actually been reduced. Many biodefense programs have been consolidated into larger line items with other programs (e.g., chemical programs) that had to be included as a whole in the analysis due to lack of transparency. So, despite large cuts to programs like public health and hospital preparedness grants and the Strategic National Stockpile, the overall proposed budget for biodefense falsely appears to be flat because non-biodefense-related monies could not be separated from other monies in this year's analysis.

Project Team: Crystal Franco and Tara Kirk Sell

BIOSECURITY AND BIOTERRORISM

BIODEFENSE STRATEGY, PRACTICE, AND SCIENCE

Tom Inglesby and D. A. Henderson are Coeditors-in-Chief of this peer-reviewed journal, the only one of its kind, which ranks among the top journals in international relations. The Journal, now celebrating its 10th year of publication, has steadily grown in the breadth of its authors and readers since it was launched in 2003, guided by Managing Editor Jackie Fox.

More than a third of the Journal's subscribers are from outside the US, with a wide international audience of individual and institutional subscribers in Europe, Asia, Canada, Australia, South America, Europe, and India and more than 650 libraries in China.

The majority of online users are from libraries of major United States and international academic institutions and government agencies, including Harvard, Johns Hopkins, the Mayo Clinic, CDC, FDA, USDA, USAMRIID, Los Alamos National Lab, the FBI, the British Library, the Max Planck Institute, Institut Pasteur, and the European Commission. Article downloads have increased 32% over last year in the first quarter of 2012.

Highlights from *Biosecurity and Bioterrorism*, 2011-2012

“Improving the Evidence Base for Decision Making During a Pandemic: The Example of 2009 Influenza A/H1N1”

Marc Lipsitch, Lyn Finelli, Richard T. Heffernan, Gabriel M. Leung, and Stephen C. Redd; for the 2009 H1N1 Surveillance Group

“Response to the Sudden Closure of St. Vincent’s Hospital: Learning from a Real, No-notice, Prolonged Surge Event”

Amesh A. Adalja, Matthew Watson, Samuel Wollner, Kunal J. Rambhia, and Eric S. Toner

“Modernizing Confidence-Building Measures for the Biological Weapons Convention”

Gregory D. Koblentz and Marie Isabelle Chevrier

“The Challenge of Determining the Need for Remediation Following a Wide-Area Biological Release”

Ellen Raber

“Balancing Our Approach to the Insider Threat”

David R. Franz and James W. Le Duc

“Biosurveillance Where It Happens: State and Local Capabilities and Needs”

Eric S. Toner, Jennifer B. Nuzzo, Matthew Watson, Crystal Franco, Tara Kirk Sell, Anita Cicero, and Thomas V. Inglesby

“A Possible Approach to Large-Scale Laboratory Testing for Acute Radiation Sickness after a Nuclear Detonation”

Amesh A. Adalja, Matthew Watson, Samuel Wollner, and Eric S. Toner

“Evaluation of Perceived Threat Differences Posed by Filovirus Variants”

Jens Kuhn, Lori E. Dodd, Victoria Wahl-Jensen, Sheli R. Radoshitzky, Sina Bavari, and Peter B. Jahrling

“Learning from the 2011 Great East Japan Disaster: Insights from a Special Radiological Emergency Assistance Mission”

Steven M. Becker

“Use of Potassium Iodide (KI) in a Nuclear Emergency”

Amesh A. Adalja

“The Role of Disease Surveillance in Achieving IHR Compliance by 2012”

Talia M. Quandelacy, Matthew C. Johns, Roberta Andraghetti, Ricardo Hora, Jean-Baptiste Meynard, Joel M. Montgomery, Vito G. Roque, Jr., and David L. Blazes

“Unfinished Business: Efforts to Define Dual-Use Research of Bioterrorism Concern”

Anna Zmorzynska, Jonathan E. Suk, Walter Biederbick, Heinrich Maidhof, Julia Sasse, Jan C. Semenza, and Iris Hunger

“State-of-the-Art Therapeutic Medical Countermeasures for Viral Threat Agents”

Aruna Sampath, Matthew Metz, Melissa Stundick, and Joseph C. Larsen

“Total Decontamination Cost of the Anthrax Letter Attacks”

Ketra Schmitt and Nicholas A. Zaccchia

“Perspectives of Immunization Program Managers on 2009-10 H1N1 Vaccination in the United States: A National Survey”

Allison T. Chamberlain, Katherine Seib, Katelyn Wells, Claire Hannan, Walter A. Orenstein, Ellen A. S. Whitney, Alan R. Hinman, Ruth L. Berkelman, and Saad B. Omer

“Genetically Engineered Transmissible Influenza A/H5N1: A Call for Laboratory Safety and Security”

James W. Le Duc and David R. Franz

Biosecurity News Today

For this daily electronic newsletter, the Center's team of analysts—Nidhi Bouri, Kunal Rambhia, Ryan Morhard, Tara Kirk Sell, Matt Watson, and Sam Wollner—identify and distill major biosecurity-related developments from national and international news outlets, peer-reviewed scientific literature, the US government, NGOs, and international agencies to keep readers current in a field that is broad, deep, and challenging to track.

This daily digest covers ongoing disease epidemics, emerging threats to national and homeland security, public health, and hospital preparedness and response, medical countermeasure development, advances in disease detection and diagnostics, and cutting-edge scientific research pertaining to biosecurity.

In the last year, we identified and delivered more than 1,400 news items from more than 300 global sources to a subscriber base representing international, national, and local leaders and practitioners.

Subscribe to *Biosecurity News Today*:

www.upmc-biosecurity.org/biosecuritynews

Clinicians' Biosecurity News

Clinicians' Biosecurity News (CBN) delivers timely and reliable analysis of advances and challenges in clinical biosecurity to approximately 2,500 subscribers in 60 countries and all 50 states in the United States. The great majority of subscribers are physicians, nurses, and other healthcare professionals. Our expert synopses, written and edited primarily by Amesh Adalja, Eric Toner, and Mary Beth Hansen, provide assessments of new developments in infectious diseases, drug development, public health preparedness, and public policy to highlight biosecurity implications of clinical issues, identify areas in need of research, and call attention to emerging outbreaks and unusual events.

Subscribe to *Clinicians' Biosecurity News*:

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CBN Titles, 2011–2012

- The Effect of Anti-lethal Toxin Antibodies on Anthrax Mortality
- IOM Issues New Report on Crisis Standards of Care
- Fatal Flu Cluster in Maryland Highlights Dangerous Complications of MRSA
- Rapid Influenza Antigen Tests: Specific But Not Sensitive
- Genetic Susceptibility to Anthrax
- Influenza B and Severe Disease
- Totally Drug Resistant Tuberculosis
- Clinicians' Biosecurity Resource App Now Available
- Statins and Influenza
- Transmission of 2009 Pandemic Influenza to Healthcare Workers
- Does Asymptomatic H5N1 Influenza Infection Occur?
- Analysis of 21 Years' Data on Melioidosis Pneumonia Patient Outcomes
- The Bio-Response Report Card
- Biosurveillance and Group A Streptococcal Pharyngitis
- Center for Biosecurity Launches Rad Resilient City Initiative
- CDC Releases Strategic Plan for Public Health Preparedness
- Anthrax-like Disease Caused by *Bacillus cereus*
- Chinese Herbal Therapy Efficacious Against Influenza
- Invasion of Red Blood Cells by *Francisella tularensis*
- Can Systems Biology Improve Influenza Immunization Practice?
- Does Antiviral Therapy Prevent Lower Respiratory Tract Complications in Influenza Patients?
- *E. coli* Infection and Hemolytic-uremic Syndrome
- Influenza-Associated Heart Attacks
- Redefining Influenza "Pandemic"

“We are almost certainly not going to face the thing that we’re preparing for. Therefore, what’s most important is that we increase our general ability to detect and respond. . . . There are 44,000 fewer people working at state and local health departments today than there were 2 years ago. . . . We should take the health threats that we face day in and day out as drills, free drills if you will, for preparedness.”

Thomas Frieden, Director, CDC

Remarks delivered at Charting the Future of Biosecurity conference,
Washington, DC, October 4, 2011

PROFESSIONAL ACTIVITIES

Selected Publications

The People's Role in US National Health Security: Past, Present, and Future. Schoch-Spana M. *Biosecurity and Bioterrorism* 2012;10(1).

A Crossroads in Biosecurity. Inglesby TV, Cicero A. In: *Crossroads in Biosecurity* September 2011.

Post-9/11 Challenges of a Crisis. Henderson DA. In: *Crossroads in Biosecurity* September 2011.

Selected Advisory Board, Scientific Community, and Task Force Memberships

National Academy of Sciences, Committee on Increasing National Resilience to Hazards and Disasters

National Consortium for the Study of Terrorism and Responses to Terrorism (START), Executive Steering Committee

Selected Presentations

2012 Public Health Preparedness Summit. Anaheim, CA. "Keynote Address: Public Health: Past Adventures and Future Expectations."

Harvard University School of Public Health. Boston, MA. "Public Health Since 2001."

Johns Hopkins Bloomberg School of Public Health, MPH Program, Summer Course. Baltimore, MD. "Making Change Through Policy."

National Council for Science and the Environment. Washington, DC. "National Resilience: Biological Terrorism and Environmental Security."

South Carolina 2011 HPP Grant Summit. Columbia, SC. "Hospital Preparedness a Decade after 9/11: Progress and Remaining Challenges."

University of Maryland School of Medicine. Baltimore, MD. "Bioterrorism and Critical Care."

University of Pittsburgh School of Medicine. Pittsburgh, PA. "Bioterrorism and the Agents Employed."

University of Pittsburgh School of Medicine. Pittsburgh, PA. "Bioterrorism."

Interviews and Background for Major Media Outlets

Scrip Intelligence. "Advocates Preach: Without PAHPA, US in Trouble, Deep." March 5, 2012.

Government Executive Magazine. "CDC Cuts Could Harm Biodefense Efforts." March 2, 2012.

Nature. "US Disease Agency in Fiscal Peril: Proposed Budget Changes Threaten Disease Prevention and Surveillance Programmes." February 28, 2012.

Nature. "Mixed News for Biodefense in President's Budget Request." February 15, 2012.

Huffington Post. "Bioterrorism Funding Withers as Death Germs Thrive in Labs, Nature." February 10, 2012.

Genetic Engineering and Biotechnology News. "Defense Authorization Measure Yields Less for Chem-Bio Defense, More for Cooperative Biodefense Engagement." January 26, 2012.

Federal News Service. "Senate Homeland Security and Governmental Affairs Committee Conducts Hearing on Ten Years After 9/11 and Anthrax Attacks." November 2, 2011.

Daily Mail (UK). "‘Everybody Just Sort of Froze’: Condoleezza Rice Reveals the Moment She Thought President Bush Had Been Poisoned." November 1, 2011.

The Gazette. "Questions Remain 10 Years After Anthrax Mailings." November 12, 2011.

Nature Medicine. "Ten Years On from Anthrax Scare, Analysis Lags Behind Sequencing." October 11, 2011.

St. Louis Beacon. “A Decade After the ‘Amerithrax’ Attacks, Is the Nation Better Prepared?” October 10, 2011.

Global Security Newswire. “Scientists Warn Melioidosis Bacteria Is Growing More Hardy.” October 4, 2011.

USA Today. “Strides in Biodefense Follow 2001 Anthrax Scare.” September 29, 2011.

Global Security Newswire. “Strategic National Stockpile Still Lacking Key Medical Treatments.” September 27, 2011.

Huffington Post/Associated Press. “Decade After Anthrax Attacks, Worry over Stockpile.” September 26, 2011.

Nature. “Pentagon Rethinks Bioterror Effort: Critics Say US \$1.5-Billion Initiative Has Not Delivered Results.” September 22, 2011.

Genetic Engineering News. “A Decade After 9/11 Spending Cuts Challenge Biodefense Effort Spawned by Attacks.” September 11, 2011.

Associated Press. “In Search of the Next Big Attack, Long After 9/11.” September 9, 2011.

Nature. “Biodefense Since 9/11: The Price of Protection.” September 7, 2011.

Associated Press. “Scientists Man Bioterror’s Front Lines Post-9/11 with Sensors to Warn of Deadly Germs.” August 26, 2011.

Global Security Newswire. “Bioagent Detection Web Covers Most of US Populace.” August 26, 2011.



Contagion Provides Chance to Spread the Word About Epidemics

Following the September 2011 release of the movie *Contagion*, the Center joined forces with The WMD Center, led by former Senators Bob Graham and Jim Talent, to sponsor a private showing of the film for 150 people in Washington, DC. The audience included Congressional staff and representatives of an array of federal agencies, committee offices, nonprofits, and some private companies; most who attended were involved in making policy or improving practice around public health preparedness. Dr. Ali Khan, *Director, Office of Public Health Preparedness, CDC*, introduced the film and compared its plot to real-life examples of the role of public health in epidemic response.

Recognizing the Alfred P. Sloan Foundation's Contributions to the Field

The Alfred P. Sloan Foundation awarded its first grant to the Center (then the Center for Civilian Biodefense Studies) in 2000, when the foundation began its work in biosecurity. Under the leadership of former Sloan president Ralph Gomory, current president Paul Jaskow, and the foundation's Biosecurity Program Director, Paula Olsiewski, the Sloan Foundation provided significant support for the Center's work for more than a decade. In that time, the Sloan Foundation also funded the work of just about every major player in the field and, in the process, helped to define the field of biosecurity.

On October 4, 2011, at the Center's conference, *Charting the Future of Biosecurity*, Tom Inglesby presented Dr. Olsiewski with an award to honor her leadership in, contributions to, and support of biosecurity, observing that she strengthened biosecurity both inside and outside of the US government. Drs. Inglesby and Olsiewski both noted the Foundation's longevity and dedication, thanked many of the key players past and present, and expressed hope that the work of the previous decade would be sustained and expanded on to ensure the continued biosecurity of the nation.

The Sloan Foundation also commissioned the Center to write a book that documents the Foundation's work in the field and highlights major accomplishments of key grant recipients. Based on extensive review of Sloan documentation, grantee publications, and interviews with principal

investigators, author Gigi Kwik Gronvall and editor Mary Beth Hansen will chronicle Sloan's biosecurity work over time, detail Sloan-funded work that helped to shape the field, and suggest ways to build on the strong foundation laid by Sloan and its grantees.

The October conference and the book are part of a Center project commissioned by the Sloan Foundation to document the state of biosecurity and the Foundation's contributions, while also identifying those biosecurity challenges most in need of future attention. The third part of that project was a commissioned series of 7 review articles published in the journal *Biosecurity and Bioterrorism*. As a whole, the articles describe the current state of the art of biosecurity. Each article provides an in-depth review of a key topic in the field.

The Journal's editors, in collaboration with the Sloan Foundation, identified critical issues in biosecurity public health preparedness, surveillance, governance, biodefense strategies, law, community engagement, and countermeasures and selected top experts and leaders to provide state-of-the-art reviews.

Project Team: Gigi Kwik Gronvall, Mary Beth Hansen, Jackie Fox, Sam Wollner, Davia Lilly, Molly D'Esopo, Crystal Franco, Tara Kirk Sell, Ryan Morhard, Kunal Rambhia, and Matt Watson



*Biosecurity and Bioterrorism:
Biodefense Strategy, Practice,
and Science* special issue,
March 2012

“A Decade in Biosecurity,” featuring
7 review articles by leaders in the field.

“Public Health Surveillance and Infectious
Disease Detection.” Stephen S. Morse.

“Preventing Biological Weapon Development
Through the Governance of Life Science
Research.” Gerald L. Epstein.

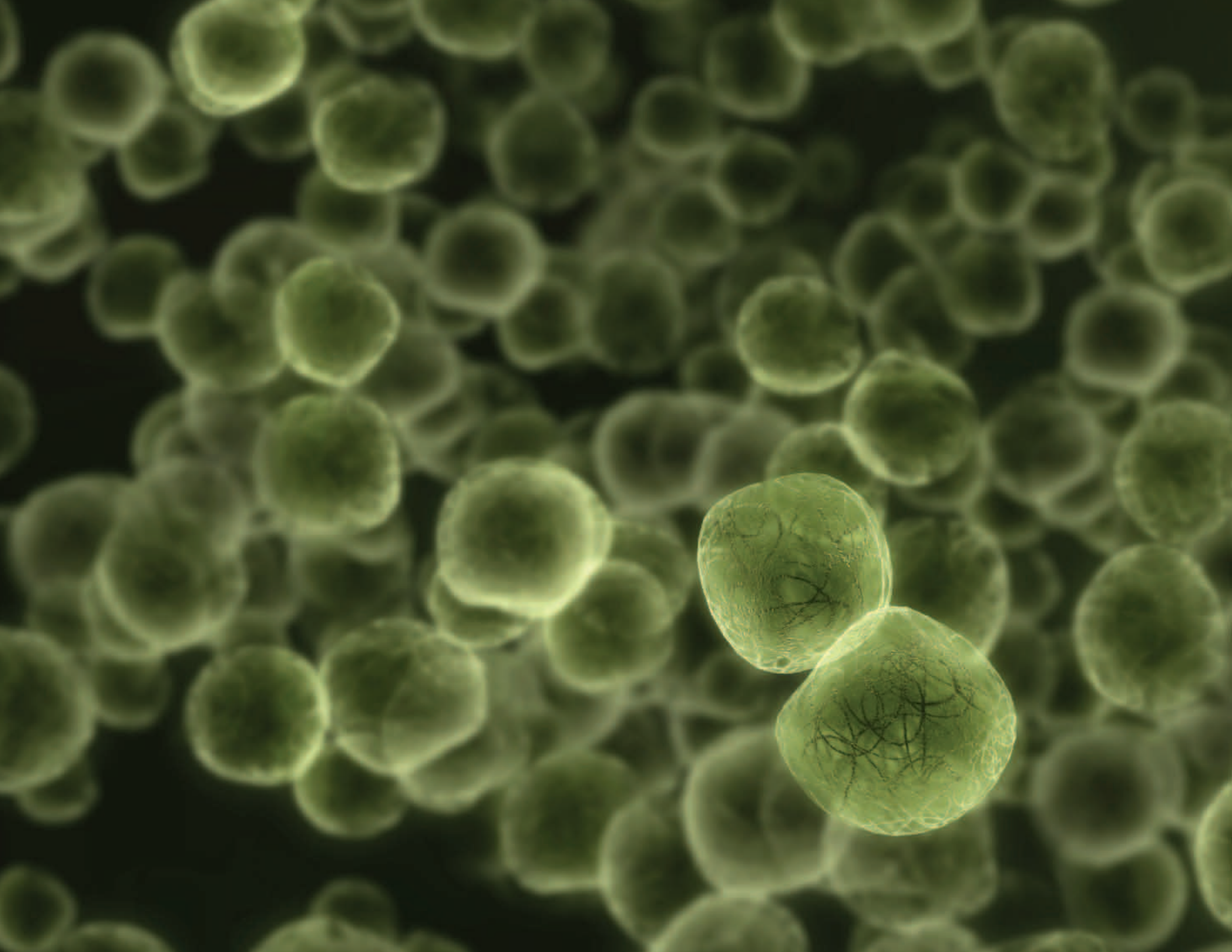
“The Evolution of Law in Biopreparedness.”
James G. Hodge, Jr.

“A Decade of Countering Bioterrorism:
Incremental Progress, Fundamental Failings.”
Richard Danzig.

“Assessing a Decade of Public Health
Preparedness: Progress on the Precipice?”
Elin Gursky and Gregory Bice.

“US Medical Countermeasure Development
Since 2001: A Long Way Yet to Go.”
Philip Russell and Gigi Kwik Gronvall.

“The People’s Role in US National Health
Security: Past, Present, and Future.”
Monica Schoch-Spana.



The background of the slide is a dark, textured surface. It is populated with numerous small, bright green, spherical particles that appear to be out of focus, giving them a soft, glowing appearance. In the upper center and lower right corners, there are two larger, more prominent spheres. These spheres have a distinct, cratered or textured surface, similar to the moon or a planet, and are also illuminated with a greenish light. A solid, dark green horizontal bar spans the width of the slide, positioned in the middle. Centered within this bar is the text "Center for Biosecurity Leaders and Staff" in a white, serif font.

Center for Biosecurity Leaders and Staff



Thomas V. Inglesby, MD, *Chief Executive Officer*

Since becoming Director in 2009, Dr. Inglesby has expanded and deepened the Center's expertise related to public health threats, while establishing new Center initiatives to build US preparedness for emerging infectious diseases, natural disasters, nuclear terrorism, and nuclear accidents.

Dr. Inglesby's work is internationally recognized in the fields of public health preparedness, pandemic flu planning, and biosecurity. He is currently Chair of the CDC's Board of Scientific Counselors in the Office of Public Health Preparedness and Response, and he has chaired or served on a number of National Academy of Sciences committees, including the expert committee that reviewed scientific approaches used in investigating the 2001 anthrax letters. Dr. Inglesby has also served as an advisor to the Defense Science Board, HHS, DHS, and NIH.

Dr. Inglesby has briefed White House officials from the past 3 presidential administrations on national biosecurity challenges and priorities and delivered Congressional testimony on public health preparedness and biosecurity. In 2010, he coauthored "Necessary Progress in Biosecurity" with Senator Tom Daschle for the *Harvard Law and Policy Review*. He is Coeditor-in-Chief of the journal *Biosecurity and Bioterrorism: Biodefense Strategy, Practice, and Science*, which he helped to establish in 2003 as the only peer-reviewed journal in its field.

Dr. Inglesby is an Associate Professor of Medicine and Public Health at the University of Pittsburgh Schools of Medicine and Public Health. He completed his internal medicine and infectious diseases training at Johns Hopkins University School of Medicine and served as Assistant Chief of Service in 1996-97. Dr. Inglesby received his MD from Columbia University College of Physicians and Surgeons and his BA from Georgetown University. He continues to see patients weekly in an HIV clinic.

Anita Cicero, JD, *Chief Operating Officer*

Working with the CEO, Ms. Cicero directs operations, strategic and budget planning, and program development. Since joining the Center, she has expanded efforts in epidemic preparedness, nuclear resilience, and international programs.

Ms. Cicero has authored or coauthored a number of widely cited articles and reports on biosecurity policy, pandemic preparedness, nuclear and radiological consequence management, biosurveillance, international disease surveillance, and public health law.

In working to engage the Center in valuable new challenges, Ms. Cicero launched an initiative to improve mutual understanding and collaboration between US and Chinese scientists and public health officials working on epidemic preparedness. She also led the Center's effort to improve collaboration and sharing of expertise among international disease surveillance networks.

Before joining the Center, Ms. Cicero spent nearly 2 decades as a practicing attorney in both the US federal government and the private sector. She was Managing Partner in charge of the Washington, DC, office of Drinker, Biddle & Reath, LLP, where she was responsible for more than 300 lawyers and staff. In her legal work, she created and managed a number of pharmaceutical consortia, with a particular focus on clinical research and regulatory compliance. Ms. Cicero's work required constructive engagement with members of Congress, the World Health Organization, the European Commission, the US Food and Drug Administration, the US Departments of State, Defense, and Health and Human Services, and the Environmental Protection Agency.

She started her career as a trial attorney in the Honors Program at the US Department of Justice, Environmental Enforcement Section.

Ms. Cicero is a graduate of the Yale Law School and Oberlin College.





D. A. Henderson, MD, MPH, *Distinguished Scholar*

Dr. Henderson, Professor of Public Health and Medicine at the University of Pittsburgh, is Dean Emeritus and Professor, Johns Hopkins School of Public Health, and Founding Director (1998) of the Johns Hopkins Center for Civilian Biodefense Strategies. From November 2001 through April 2003, he served as the Director of the Office of Public Health Emergency Preparedness and, later, as a Principal Science Advisor in the Office of the Secretary of the Department of Health and Human Services.

Dr. Henderson's previous positions include: Associate Director, Office of Science and Technology Policy, Executive Office of the President (1990-93); Dean of Faculty, Johns Hopkins School of Public Health (1977-90); Director, WHO global smallpox eradication campaign (1966-77); and Chief of the Surveillance Section of the Epidemiology Branch, CDC (1961-66).

He is a recipient of numerous distinguished honors, including the Presidential Medal of Freedom, the National Medal of Science, the National Academy of Sciences' Public Welfare Medal, and the Japan Prize, shared with 2 colleagues. He has received honorary degrees from 17 universities and special awards from 19 countries. Dr. Henderson is an advisor to many organizations in the United States and abroad.

Dr. Henderson is Coeditor-in-Chief of the peer-reviewed journal *Biosecurity and Bioterrorism: Biodefense Strategy, Practice, and Science*. Additionally, he has authored more than 200 articles and scientific papers and 31 book chapters and is coauthor of the renowned *Smallpox and Its Eradication*, the authoritative history of the disease and its ultimate demise. His widely acclaimed 2009 book, *Smallpox: Death of a Disease*, is a personal account of the challenges, obstacles, and disasters faced by the intrepid international program credited with global eradication of smallpox.



D. A. Henderson Honored with National Institute of Social Sciences Gold Medal

On December 7, 2011, the National Institute of Social Sciences honored Dr. D. A. Henderson with its 2011 Gold Medal. The institute, founded in 1865, “is an honorary society of Americans, dedicated by service and philanthropy to the public weal and joined together to recognize and celebrate those whose lives have manifested the highest level of achievement.” Three individuals are recognized annually, and honorees represent the arts, law, science, social sciences, philanthropy, medicine, education, government, and industry.

New York Times medical correspondent Dr. Lawrence Altman introduced Dr. Henderson, who now joins the ranks of many esteemed previous medalists, among them: Alfred P. Sloan, Basil O’Connor, Marie Curie, Jonas Salk, George H.W. Bush, Charles Lindbergh, Golda Meir, Madeleine Albright, John Kenneth Galbraith, Kofi Annan, and Sandra Day O’Connor.



Senior Associates, Associates, Analysts

Top Row, L-R: Amesh Adalja, MD, *Associate*; Nidhi Bouri, MPH, *Senior Analyst*; Crystal Franco, MPH, *Associate*; Gigi Kwik Gronvall, PhD, *Senior Associate*; Ryan Morhard, JD, *Legal Analyst*; Ann Norwood, MD, COL, USA, MC (Ret), *Senior Associate*; Jennifer Nuzzo, SM, *Senior Associate* Bottom Row, L-R: Kunal Rambhia, MS, *Senior Analyst*; Tara Kirk Sell, MA, *Senior Analyst*; Monica Schoch-Spana, PhD, *Senior Associate*; Eric Toner, MD, *Senior Associate*; Matt Watson, *Senior Analyst*; Sam Wollner, *Analyst*





Contributing Scholars

Top Row, L-R: Joseph Fitzgerald, MS, MPH; Dan Hanfling, MD; Colonel Randall J. Larson (USAF Ret)
Bottom Row, L-R: Fred Selck, MA; Richard Waldhorn, MD



Senior Staff

Top Row, L-R: Joanna Engstrom-Brown, *Events Director*; Bruce Campbell, *Chief Financial Officer and Senior Administrator*; Molly D'Esopo, *Senior Communications Specialist*; Jackie Fox, *Senior Science Writer; Director, Publications and Communications*;
Bottom Row, L-R: Mary Beth Hansen, MA, *Chief Information Officer*; Tasha King, *Administrator*;
Davia Lilly, *Director of Design and Production*; Price Tyson, *Information Technology Director*



Administrative Support Team

Row 1, L to R: Tanna Liggins, Elaine Hughes, Maria Jasen

Row 2, L to R: Kim Biasucci, Darcell Vinson

The day-to-day operations of the Center are supported by a strong, dedicated, and professional administrative team, pictured above. We rely daily on their organization, attention to detail, good cheer, and professionalism.

Credits

Executive Editor: Mary Beth Hansen

Creative Director and Designer: Davia Lilly

Editors: Jackie Fox and Molly D'Esopo

Printer: Todd Allan

Photo credits: Photographs on the following pages were taken by Kaveh Sadari: 4, 6, 10, 14, 16, 17, 30, 39, 44, 50-55, 69, 72-80.

Thank you, Kaveh.

The Center for Biosecurity owes a special thank you to the Alfred P. Sloan Foundation for its support in the year past and in many years prior.

In 2011-2012 the Foundation's support was particularly valuable to our research efforts and in our work to convene leaders to address serious policy challenges.

We have deeply appreciated the foundation's support.



ALFRED P. SLOAN
FOUNDATION

*“It is important to recall what we are seeking to achieve
in biosecurity: the prevention of sudden large-scale
deliberate or natural disease threats and,
failing prevention, the capacity to save large
numbers of lives and diminish the
consequences of such events.”*

Tom Inglesby and Anita Cicero,
A Crossroads in Biosecurity, October 2011

The History of Life-Changing Medicine at UPMC

Over the past 20 years, UPMC has ushered in a new era of healthcare excellence in Pittsburgh, Pennsylvania, and locations around the world.

UPMC is one of the leading nonprofit health systems in the United States. It develops and delivers life-changing medicine by harnessing the power of technology, translating science into cures, and accelerating the pace of innovation worldwide. UPMC builds a culture of compassionate health care around an entrepreneurial business model. It pursues continual innovation, breakthrough ideas, and the swift, effective translation of research and development into practical products and services that benefit western Pennsylvanians and the global community.

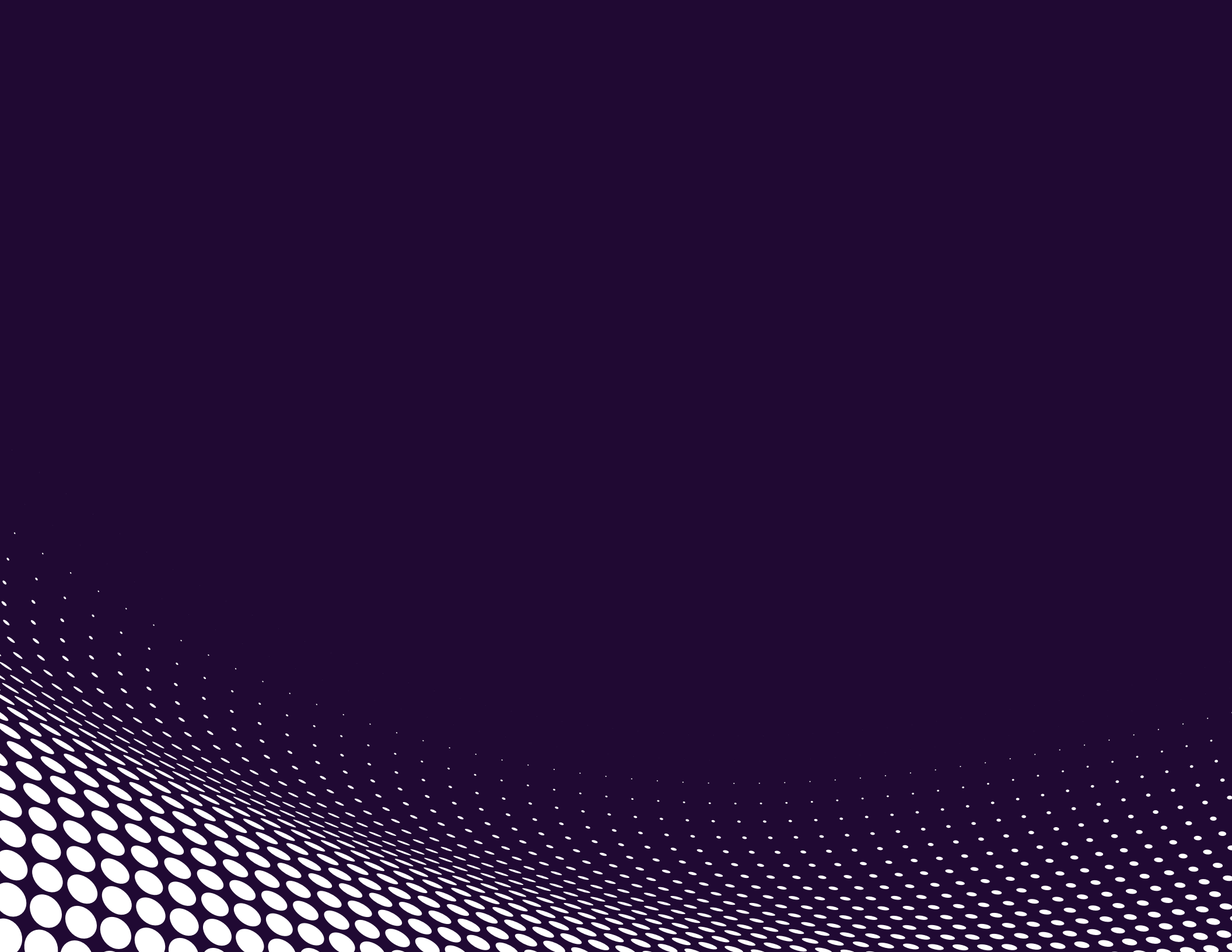
UPMC has diversified into a wide array of services that range from home health care and retirement communities to international and commercial operations. Driven by an unwavering focus on core values, these initiatives support the academic and nonprofit missions that fuel UPMC's continued development. As Pennsylvania's largest employer, with more than 55,000 employees, UPMC is composed of:

- More than 20 hospitals
- More than 400 clinical locations that encompass long-term care and senior living facilities
- A nearly 1.6 million-member health plan
- A growing international and commercial segment

In collaboration with business partners, UPMC is developing new models of connected medicine that integrate information technologies, electronic medical records, and devices to put patients at the center of health care.

The new businesses that UPMC launches, by itself or with multinational strategic partners, foster innovation and invention within UPMC and make healthcare improvements more quickly available to hospitals and physicians across the globe.





Center for Biosecurity of UPMC

621 E. Pratt Street, Suite 210

Baltimore, Maryland 21202

Tel (443) 573-3304

www.upmc-biosecurity.org

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