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Forum on Microbial Threats: Annual Report 2024-2025 (2026)

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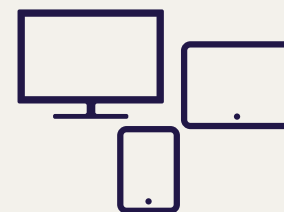
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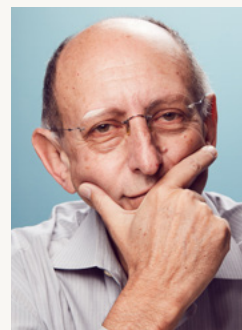
Annual Report 2024–2025





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Message from the Chairs

Since 1996, the Forum on Microbial Threats has served as a trusted neutral platform for leaders across disciplines and sectors to convene, exchange perspectives, and advance strategies to better understand, anticipate, and mitigate emerging and reemerging infectious diseases. Drawing on the expertise of its membership, the forum fosters interdisciplinary dialogue to strengthen public health preparedness, inform policy, and shape research priorities across basic, translational, and clinical science to protect human, animal, and plant health.

The microbial threat landscape continues to evolve rapidly, encompassing antimicrobial resistance (AMR), emerging pathogens, reemerging and neglected diseases, and the growing health impacts of environmental and societal change. Addressing these interconnected challenges requires sustained scientific leadership, policy coordination, and cross-sector collaboration—an essential role the forum continues to fulfill. Through public workshops, expert meetings, and collaborative activities, the forum advances understanding of infectious disease threats and supports preparedness efforts that strengthen global health security, economic resilience, and public trust.

“...the forum advances understanding of infectious disease threats and supports preparedness efforts that strengthen global health security, economic resilience, and public trust.”

During 2024–2025, forum activities focused on several pressing areas of concern. Convenings explored the growing burden of AMR and strategies to strengthen stewardship, diagnostics, and public health response capacity. Additional activities examined arboviral threats and vector-borne disease preparedness, including the expanding global impact of dengue and other mosquito-borne illnesses. The forum also advanced discussions

on pathogen genomics and metagenomics in public health, highlighting opportunities to strengthen surveillance and outbreak response through emerging technologies.

The forum continued to elevate attention to infection-associated chronic illnesses, including long COVID and other chronic conditions linked to infectious diseases, through activities focused on research coordination and gaps in clinical understanding. At the same time, ongoing discussions reinforced the importance of preparedness strategies, resilient health systems, and sustained investment in biomedical innovation.

“A central focus of the forum’s work remains the advancement of a One Health framework that recognizes the interconnectedness of human, animal, plant, and environmental health.”

A central focus of the forum’s work remains the advancement of a One Health framework that recognizes the interconnectedness of human, animal, plant, and environmental health. Through the One Health Action Collaborative and partnerships across the National Academies, the forum continued to support cross-sector coordination and broader adoption of integrated approaches to infectious disease prevention and response.

As microbial threats continue to evolve in scale and complexity—including outbreaks of high-consequence pathogens such as the current Ebola virus disease outbreak caused by Bundibugyo virus (BDBV)—the forum remains committed to convening people working across sectors to foster scientific exchange, clarify emerging policy issues, and identify innovative strategies to strengthen preparedness and global health security in an increasingly interconnected world.

We look forward to another productive and impactful year for the forum in 2026.

Reflections:

Forum Activities in 2024–2025

FORUM MEMBERSHIP MEETINGS

Forum members convene several times each year to identify emerging scientific, public health, and policy challenges related to infectious diseases and microbial threats, and to foster cross-sector dialogue and collaboration. During 2024 and 2025, forum members discussed strategies to address antimicrobial resistance (AMR) and strengthen antimicrobial stewardship, as well as emerging infectious diseases and priorities for pandemic preparedness and response. Discussions also explored advances in pathogen genomics, metagenomics, and infectious disease surveillance alongside the growing role of One Health approaches that connect human, animal, plant, and environmental health. In addition, members examined the increasing recognition and long-term impacts of infection-associated chronic illnesses, including long COVID.

CONVENINGS

Forum public workshops and expert meetings bring together thought leaders from across sectors and disciplines to examine complex scientific, technical, workforce, and policy issues related to microbial threats and infectious diseases. These convenings provide neutral spaces for open dialogue, shared learning, and the exchange of diverse perspectives. Through presentations, panel discussions, breakout sessions, and interactive conversations, participants consider emerging challenges, share real-world experiences, identify research and policy gaps, and explore promising strategies and solutions. Summaries and proceedings from these discussions are made freely available to the public to help inform ongoing research, practice, and decision-making.

Assessing the Burden and Potential Strategies to Address Antimicrobial Resistance¹

AMR is a growing global health threat, contributing to an estimated 1.27–4.95 million deaths annually and emerging as a leading cause of neonatal mortality worldwide. Yet significant questions remain about whether the full clinical, economic, and societal impacts of AMR are adequately understood across healthcare, public health, and food systems. To examine these challenges, the forum hosted a public workshop on **March 4–5, 2024**, exploring advances and gaps in data and analytical methods; the role of antimicrobials as a foundation of modern medicine and health emergency preparedness; progress and challenges in developing new therapeutics; and innovative policy and incentive models to support antimicrobial development, implementation, and sustainable access.

Advancing Research Priorities for Highly Pathogenic Avian Influenza H5N1 Through International Collaboration²

On **June 27, 2025**, the Forum on Microbial Threats co-hosted an expert meeting with the Royal Society of Canada in St. John's, Newfoundland, alongside the 11th International Symposium on Avian Influenza. The meeting convened international experts from academia, government, industry, philanthropy, and public

¹ To access workshop materials, see <https://www.nationalacademies.org/projects/HMD-BGH-23-07>.

² To access meeting materials, see <https://www.nationalacademies.org/units/HMD-BGH-18-P-16/event/46874>.

health organizations to identify research gaps and opportunities related to highly pathogenic avian influenza (H5N1) that could benefit from strengthened international collaboration. Discussions focused on advancing the understanding of interspecies transmission, surveillance, preparedness, and response; identifying priorities for coordinated research agendas; and exploring approaches to strengthen collaboration across sectors and countries through a One Health framework. The meeting also built on ongoing National Academies activities related to H5N1 preparedness, including workshops and webinars examining research priorities, public trust, and occupational safety in high-risk settings.

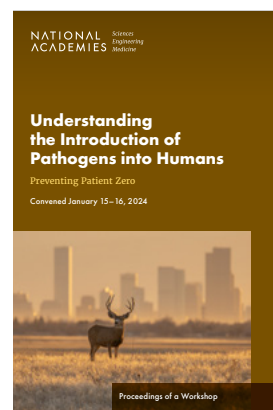
Accelerating the Use of Pathogen Genomics and Metagenomics in Public Health³

Advances in high-throughput and genome sequencing technologies have established pathogen genomics and metagenomics as powerful tools for disease surveillance and outbreak response, playing a critical role in addressing threats ranging from foodborne infections to SARS-CoV-2. To examine opportunities and challenges related to broader adoption of these technologies across the public health system, the forum hosted a public workshop on **July 22–23, 2024**, which explored approaches to strengthen pathogen genomics surveillance and response in the United States. Participants discussed gaps in public health infrastructure; strategies to strengthen computing resources, workforce training, and data integration capabilities; considerations for data stewardship, sharing, privacy, and international coordination; and opportunities to support sustained adoption of genomics technologies during outbreak and non-outbreak periods through strategic investments and multisector partnerships.



Understanding the Introduction of Pathogens into Humans: Preventing Patient Zero⁴

The past several decades have seen the emergence of infectious diseases with profound public health and economic consequences, underscoring the importance of understanding how pathogens emerge and spread between animals and humans. To examine current knowledge and evidence gaps related to diseases with pandemic potential, the forum hosted a public workshop on **January 15–16, 2025**, exploring opportunities to strengthen prevention, preparedness, and rapid response efforts at the animal–human interface while safeguarding laboratory biosafety and biosecurity. Discussions examined the drivers and mechanisms of zoonotic disease spillover; scientific uncertainties limiting public health decision-making and outbreak response; risks associated with field and laboratory research on high-consequence pathogens; and potential policy, research, and biosafety approaches to address these challenges. Participants also considered opportunities to better align public health priorities, research goals, and stakeholder engagement to improve understanding of disease emergence and reduce future spillover risks.



³ To access workshop materials, see <https://www.nationalacademies.org/projects/HMD-BGH-23-10>.

⁴ To access workshop materials, see <https://www.nationalacademies.org/projects/HMD-BGH-24-08>.

ONE HEALTH ACTION COLLABORATIVE

Action collaboratives are ad hoc, participant-driven activities associated with the forum that foster collaboration and information sharing among forum members and external thought leaders and stakeholders. Action collaboratives engage experts with similar interests and responsibilities to analyze in-depth, high-priority issues and to advance the identified goals of the forum and recommendations highlighted in National Academies' Consensus Study Reports.

The One Health Action Collaborative (OHAC) brings together experts from human, animal, plant, and environmental health to advance integrated approaches across health care systems, disease surveillance networks, and public engagement. OHAC members collaborate to generate and disseminate ideas that strengthen understanding and implementation of One Health principles in policy and practice. During 2024 and 2025, OHAC hosted the Advancing Data Sharing to Strengthen One Health Effectiveness webinar series⁵, which explored barriers, success stories, and future opportunities for improving cross-sector data sharing and interoperability through a One Health lens. Speakers highlighted the role of data sharing in addressing environmental and ecosystem health challenges, strengthening resilient public health data systems, and building trust and collaboration across sectors and disciplines.

⁵ To access webinar materials, see <https://www.nationalacademies.org/units/HMD-BGH-24-P-600>.

Looking Forward: Forum Activities in 2026

FORUM MEMBERSHIP MEETINGS

Forum members will convene in March, June, and October 2026 to continue discussions on priority issues related to microbial threats and infectious disease preparedness, prevention, and response. Working groups and action collaboratives will also meet throughout the year to advance ongoing activities and explore emerging scientific, policy, and public health challenges in areas identified as priorities by the forum.

CONVENINGS

Advancing Interprofessional Education for Antimicrobial Resistance Through a One Health Lens

On **February 19, 2026**, in collaboration with the National Academy of Medicine, the forum will convene an expert meeting focused on strengthening interprofessional education related to antimicrobial resistance (AMR) through a One Health framework. The meeting will bring together experts from medicine, veterinary medicine, agriculture, environmental health, academia, industry, public health, and civil society to explore practical strategies for integrating AMR education across disciplines and career stages. Discussions will examine barriers to implementation, opportunities for scaling cross-sector educational approaches, and potential next steps for advancing collaborative training models and shared competencies across health professions.

The Future Workforce for Combating Microbial Threats

On **June 5, 2026**, the Forum on Microbial Threats will co-convene a workforce-focused event with the American Society for Microbiology (ASM) during ASM Microbe 2026 in Washington, D.C., with support from the Burroughs Wellcome Fund. The event will feature a fireside chat with leaders from scientific societies, government, industry, clinical practice, and global health who will discuss the future of the microbiology and infectious disease workforce, including workforce shortages, training pathways, and opportunities to strengthen and sustain the next generation of researchers and practitioners. The discussion will be followed by a networking reception for invited participants.

ONE HEALTH ACTION COLLABORATIVE

The One Health Action Collaborative (OHAC) will continue convening experts from human, animal, plant, and environmental health to advance integrated approaches to disease prevention, surveillance, and response. In 2026, OHAC will host the webinar series *Meeting the Moment: Practical Solutions for Arboviral Disease Prevention and Response*, which will examine the growing challenges posed by arboviral diseases in the context of shifting vector habitats, environmental change, evolving human behaviors, and constraints on public health preparedness resources. The series will bring together researchers, practitioners, policymakers, public health authorities, and community-based organizations to discuss practical and evidence-based approaches for preventing, detecting, and responding to arboviral diseases. Discussions will explore social and behavioral science perspectives; state, local, and community-led intervention strategies; lessons learned from implementation efforts; and opportunities to strengthen coordination, communication, and action across sectors through a One Health framework.

Forum Themes and Priorities

The Forum on Microbial Threats seeks to address critical scientific, policy, and public health challenges related to emerging and re-emerging infectious diseases affecting humans, animals, plants, and ecosystems. Through workshops, expert meetings, action collaboratives, and other convenings, the forum provides a neutral platform for advancing cross-sector dialogue, identifying evidence gaps, and exploring practical strategies to strengthen preparedness, surveillance, prevention, and response. Across its activities, the forum emphasizes interdisciplinary collaboration, translation of research into practice, and the integration of diverse perspectives to address complex microbial threats. Four thematic priorities guide the forum's focus areas and activities: (1) Emerging and Reemerging Infectious Diseases, (2) Antimicrobial Resistance, (3) One Health, and (4) Society and Global Health.

EMERGING AND REEMERGING INFECTIOUS DISEASES

Emerging infectious diseases continue to present evolving threats to global health, economic stability, and societal resilience. The forum examines scientific, operational, and policy challenges related to preparedness for outbreaks and pandemics, including surveillance systems, diagnostics, laboratory capacity, pathogen genomics, outbreak response, and lessons learned from recent public health emergencies. Activities also explore the long-term impacts of infectious diseases, innovation in preparedness and response, and opportunities to strengthen resilience at local, national, and global levels.

ANTIMICROBIAL RESISTANCE

Antimicrobial resistance (AMR) remains one of the most significant and complex microbial threats facing global health. The forum explores the clinical, economic, scientific, and policy dimensions of AMR, including antimicrobial stewardship, diagnostics, surveillance, therapeutics development, agricultural and environmental drivers, and the role of incentives and innovation in sustaining antimicrobial pipelines. Activities emphasize the importance of coordinated, multisector approaches to preserving the effectiveness of antimicrobial agents and strengthening preparedness for resistant pathogens.

ONE HEALTH

Recognizing the interconnectedness of human, animal, plant, and environmental health, the forum advances One Health approaches to addressing microbial threats. Activities examine zoonotic disease emergence, vector-borne diseases, biosafety and biosecurity, environmental drivers of disease transmission, and cross-sector surveillance and data sharing. Through the One Health Action Collaborative and related activities, the forum convenes experts across disciplines to strengthen coordination, foster collaboration, and explore integrated approaches to prevention, preparedness, and response.

SOCIETY AND GLOBAL HEALTH

Microbial threats are deeply influenced by social, behavioral, environmental, and economic factors that shape vulnerability, preparedness, and response. The forum explores the intersections of infectious diseases with society and global health, including risk communication, public trust, health inequities, global coordination, urbanization, environmental change, and the social dimensions of preparedness and response. Forum activities emphasize the importance of community engagement, interdisciplinary collaboration, and integrating diverse perspectives into public health decision-making.

Forum Strategies

Topics addressed by the forum span a broad range of issues in combating microbial threats. In providing a venue for independent, systematic discussions of these issues, the forum employs the following strategies.



SPONSORS

(AS OF DECEMBER 31, 2025)

Financial support for the forum is derived from government agencies, industry sponsors, private foundations, and nonprofit organizations.

American Society of Tropical Medicine and Hygiene

Infectious Diseases Society of America

Merck & Co., Inc.

National Institute of Allergy and Infectious Diseases, National Institutes of Health

Society of Infectious Diseases Pharmacists

U.S. Centers for Disease Control and Prevention

U.S. Department of Homeland Security

MEMBERS

(AS OF DECEMBER 31, 2025)

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Food and Agriculture Organization

MATTHEW ZAHN

Orange County Health Care Agency

Forum Timeline

1996–2003 | Establishing the Forum and Framing Microbial Threats

Established in 1996 following growing recognition of the threat posed by emerging infectious diseases, the Forum on Emerging Infections was created at the Institute of Medicine with support from the National Institutes of Health and the U.S. Centers for Disease Control and Prevention. Early activities focused on framing microbial threats and strengthening understanding of surveillance, bioterrorism, and public health preparedness, particularly in response to heightened national security concerns following the September 11, 2001, terrorist attacks and subsequent anthrax attacks in the United States.

2004–2013 | Globalization of Microbial Threats

Reflecting the increasingly interconnected nature of infectious disease threats, the forum evolved into the Forum on Microbial Threats and expanded its focus to international surveillance, coordination, food safety, and preparedness gaps, particularly in low- and middle-income countries. During this period, forum activities examined challenges related to emerging and reemerging diseases, global health governance, environmental drivers of disease emergence, and advances in data and surveillance capabilities.

2014–2020 | One Health, Antimicrobial Resistance, and Innovation

During this period, the forum increasingly emphasized antimicrobial resistance, One Health approaches, and the need for innovation in diagnostics, vaccines, and data sharing. Activities also reflected broader systems thinking around microbial threats, including attention to social and behavioral dimensions of infectious disease preparedness and response. Workshops and discussions explored topics such as vector-borne diseases, urbanization, vaccine confidence, environmental health, and the convergence of infectious and noncommunicable diseases.

2021–Present | Resilience, Trust, and Preparedness in a Post-Pandemic World

The COVID-19 pandemic amplified the forum's visibility and reinforced the importance of a dedicated cross-sector platform for dialogue and collaboration on microbial threats. Recent activities have focused on lessons from COVID-19; pathogen genomics and metagenomics; health inequities; antimicrobial resistance; global public goods such as vaccines and data sharing; and the long-term consequences of infections. The forum continues to examine strategies to strengthen resilience, preparedness, public trust, and coordinated responses to emerging infectious disease threats in an interconnected world.

Forum Staff

CAROLYN K. SHORE, PH.D.

Senior Program Officer and Forum Director (from August 2025)

JULIE LIAO, PH.D.

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ELIZABETH ASHBY GUO, M.S.

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Senior Program Assistant (until May 2025)

BIOMEDICAL AND HEALTH SCIENCES PROGRAM**CLARE STROUD, PH.D.**

Senior Program Director

CHRISTA NAIRN, M.P.H.

Program Coordinator

About the Forum

The **Forum on Microbial Threats** of the **National Academies of Sciences, Engineering, and Medicine** was established in 1996 by the National Academies' Health and Medicine Division to provide a neutral venue for dialogue and collaboration among leaders and stakeholders from government, academia, industry, nonprofit organizations, and the global health community. The forum focuses on improving understanding of emerging infectious diseases, antimicrobial resistance, pandemic preparedness, and other microbial threats affecting human, animal, and environmental health.

The forum brings together experts from federal agencies, academic institutions, the private sector, philanthropic organizations, and public health and international organizations to examine scientific, policy, and operational challenges related to microbial threats. Through these convenings, the forum helps inform research, policy, and practice at the intersection of science, public health, and global health security.

The forum convenes several times each year to identify and discuss key issues related to emerging infectious diseases and microbial threats. In addition to member meetings, the forum organizes public workshops and other activities that engage a broad range of experts, policymakers, and stakeholders to explore timely issues and promote collaboration across sectors. The forum also supports partnerships and collaborative activities among its members and constituencies. For more information about the Forum on Microbial Threats, please visit our website at www.nationalacademies.org/FMT.

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ABOUT THE NATIONAL ACADEMIES

The **National Academy of Sciences** was established in 1863 by an Act of Congress, signed by President Lincoln, as a private, nongovernmental institution to advise the nation on issues related to science and technology. Members are elected by their peers for outstanding contributions to research. Dr. Marcia McNutt is president.

The **National Academy of Engineering** was established in 1964 under the charter of the National Academy of Sciences to bring the practices of engineering to advising the nation. Members are elected by their peers for extraordinary contributions to engineering. Dr. Tsu-Jae Liu is president.

The **National Academy of Medicine** (formerly the Institute of Medicine) was established in 1970 under the charter of the National Academy of Sciences to advise the nation on medical and health issues. Members are elected by their peers for distinguished contributions to medicine and health. Dr. Victor J. Dzau is president.

The three Academies work together as the **National Academies of Sciences, Engineering, and Medicine** to provide independent, objective analysis and advice to the nation and conduct other activities to solve complex problems and inform public policy decisions. The National Academies also encourage education and research, recognize outstanding contributions to knowledge, and increase public understanding in matters of science, engineering, and medicine.

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