The Antiviral Landscape: Progress and Peril

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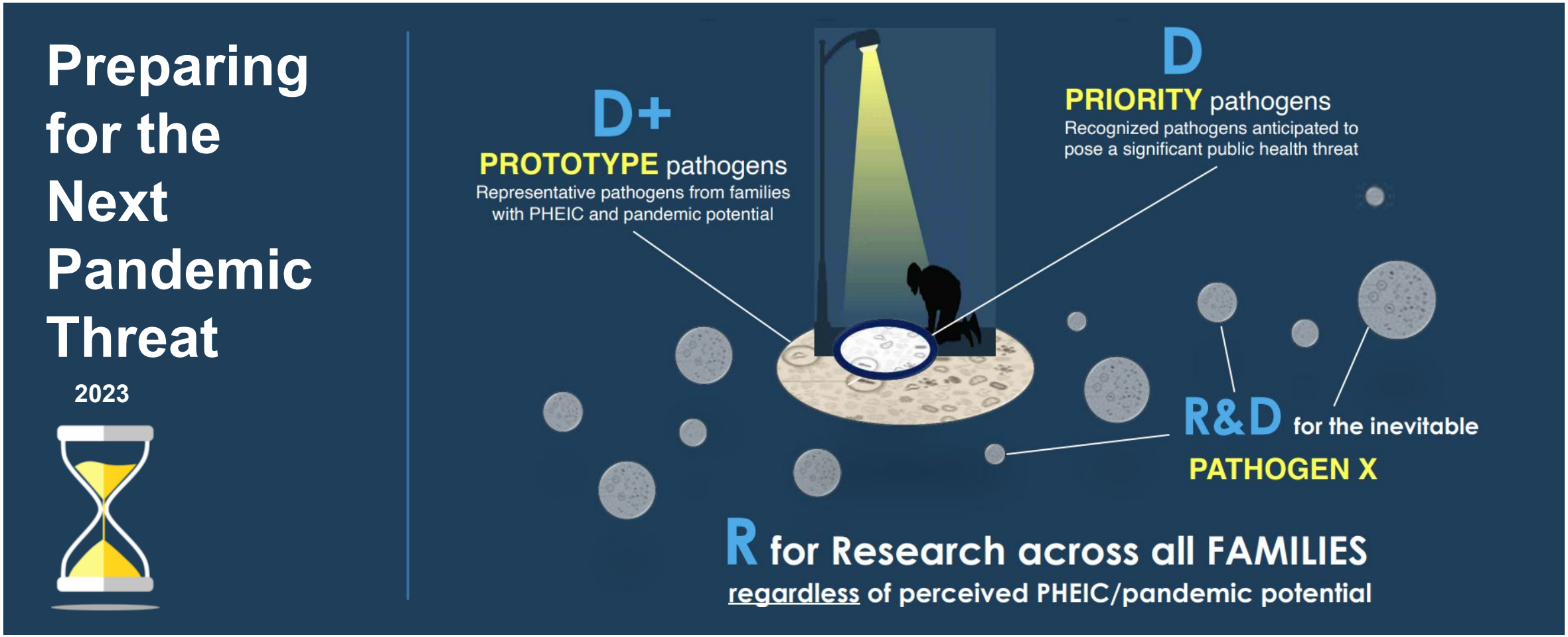
Chair INTREPID Alliance, Scientific Advisory Board

April 28, 2026

Model shows a nearly 30% chance of a pandemic similar to COVID-19 in next 10 Years*



* Airfinity 2023.

Image Source: https://www.who.int/publications/m/item/pathogens-prioritization-a-scientific-framework-for-epidemic-and-pandemic-research-preparedness

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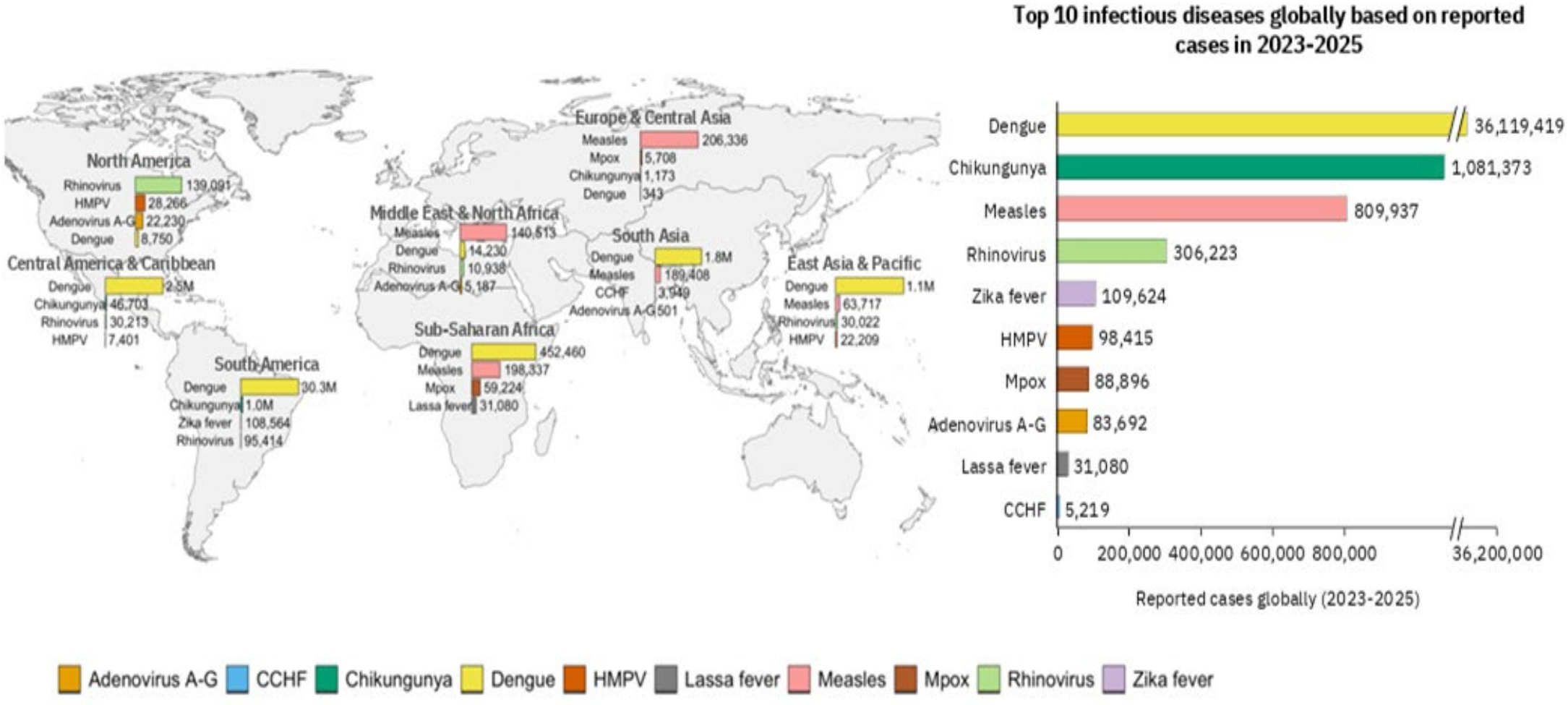
Emerging & endemic viruses continue to present a constant risk

Globally, dengue remains the dominant disease, reinforcing it as a high-priority for treatment development given the lack of approved therapies

Global overview of top viral infectious diseases by **total reported cases*** (2023-2025)

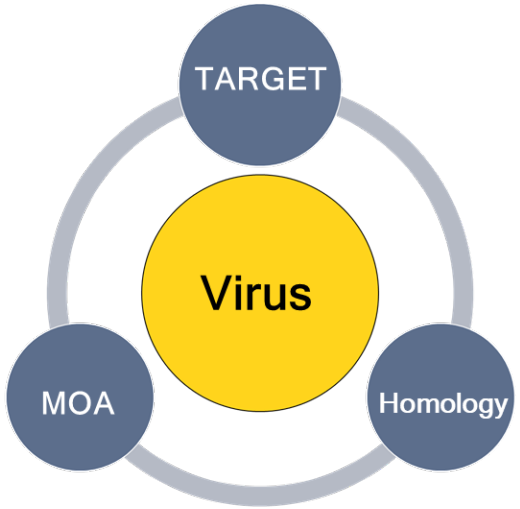


*Updated 2025 dengue and mpox reports have increased case counts versus previously sent figures.

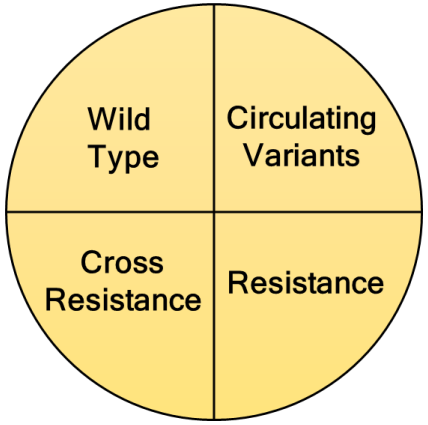
Abbreviations: CHF, Crimean-Congo hemorrhagic fever; HMPV, Human metapneumovirus

Early R&D principles for broad-spectrum antivirals

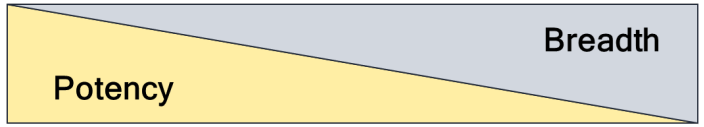
Discovery Strategy



Clinical Relevance



Med Chem Challenge



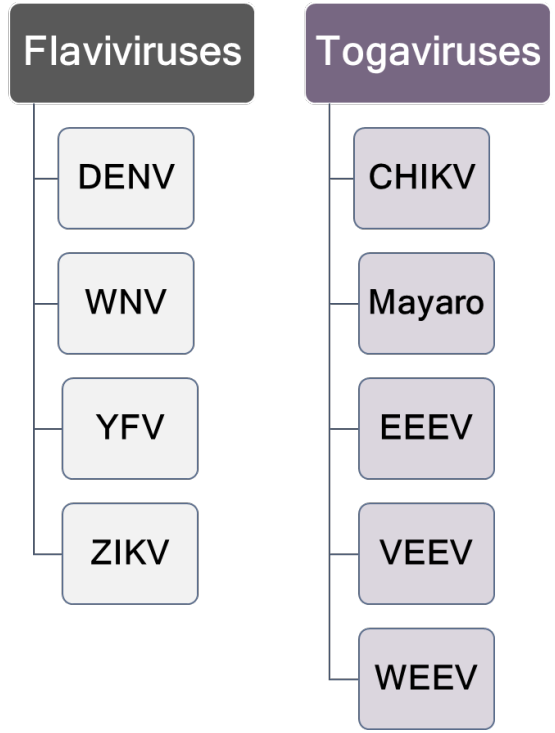
Virus Strains

Dengue:
DENV-1, DENV-2, DENV-3, DENV-4 serotypes and genotypes

COVID-19:
Alpha, Beta, Delta, Omicron, others

Influenza:
A(H1N1), A(H3N2), B/Yamagata, B/Victoria, Clades, Sub-Clades, others

Intra-/Inter-Family?



Foundation: Target Compound Profiles (TCP*) and Target Product Profiles (TPP) for emerging infections and pandemic preparedness

* Demarest et al., Nat Rev Drug Disc 2024; Draghia-Akli et al., Clin Inf Dis 2026.

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INTREPID Alliance Antiviral Landscape (5th Edition)*

Overview of ongoing preclinical and clinical phase antiviral evaluations across 14 viral families
Excludes approved or potential indication expansions.

Primarily Respiratory Transmission

Pillar	Disease Indication (n)** Preclinical (123)	Clinical (40)
Adenoviridae	X	X
Coronaviridae	• **COVID-19 (82)** • **MERS-CoV (7)** • SARS-CoV-1 (4) • Seasonal CoV (1)	• **COVID-19 (27)**
Orthomyxoviridae	• **Influenza (18)**	• Influenza (10)
Paramyxoviridae	• Hendra virus (1) • Measles (1) • **Nipah virus (4)** • Parainfluenza (1)	X
Picornaviridae	• **Enterovirus (2)** • **Rhinovirus (2)**	• Polio (2) • Rhinovirus (1)

Bold disease indications: increase or new addition since 4th edition

X = absence of preclinical or clinical phase antivirals

Primarily Vector/Contact-Mediated Transmission

Pillar	Disease Indication (n)** Preclinical (38)	Clinical (5)
Arenaviridae	• Junin virus (1) • Lassa fever (1)	• Lassa fever (2) • Chapare hem. fever (1)
Filoviridae	• Ebola (2)	X
Flaviviridae	• **Dengue (8)** • **West Nile (1)** • **Yellow fever (5)** • **Zika (4)** • **Pan-flavivirus (1)**	• Dengue (1)
Hantaviridae	X	X
Nairoviridae	• **Crimean Congo hem fever (1)**	X
Peribunyaviridae	X	X
Phenuiviridae	• **Heartland virus (1)** • **Rift Valley fever virus (1)** • **SFTSV (1)**	X
Poxviridae	• Mpox (7) • **Smallpox/Other (1)**	• Mpox (1)
Togaviridae	• Chikungunya (3)	X

* As of January 2026

** Number of compounds in ongoing development;

SFTSV: Severe fever with thrombocytopenia syndrome virus.

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Potential Indication Expansions: 5th Edition*

Approved compounds

		Potential Indication Expansions (n=35)		
Compound	**Current Approval**	**Preclinical Exploratory (n=22)**	**Clinical (n=13)**	**TOTAL**
Favipiravir	COVID-19; Influenza; SFTSV	Hendra virus; Marburg; Yellow fever (x2); Zika; Hantavirus; Heartland virus; Rift Valley fever	Lassa fever (Ph2); Ebola (Ph2); Crimean Congo hemorrhagic fever (Ph2x2)	**12**
Remdesivir	COVID-19	Lassa fever; MERS-CoV; SARS-CoV-1; Hendra virus; Marburg; Dengue; Yellow fever	Ebola (Ph3)	**8**
Adefovir	Hepatitis B	Mpox	-	**2**
Etravirine	HIV	West Nile; Chikungunya	-	**2**
Molnupiravir	COVID-19	-	Influenza (Ph2); Dengue (Ph2)	**2**
Brincidofovir (IV)	Smallpox	-	Human Adenovirus (Ph2)	**1**
Brincidofovir (Oral)	Smallpox	-	Mpox (Ph3)	**1**
Cidofovir	CMV	Smallpox/other pox	Mpox (Ph2)	**1**
Daclatasvir	Hepatitis C	COVID-19	-	**1**
Oseltamivir	Influenza	-	COVID-19 (Ph3)	**1**
Sofosbuvir	Hepatitis C	Zika	-	**1**
Tiratricol	THRS	Yellow fever	-	**1**
Trifluridine	HSV-1, HSV-2	-	Mpox (Ph2)	**1**
Zanamivir	Influenza	-	Dengue (Ph2)	**1**

*As of January 2026; SFTSV: Severe fever with thrombocytopenia syndrome virus; THRS: Thyroid Hormone Resistance Syndrome

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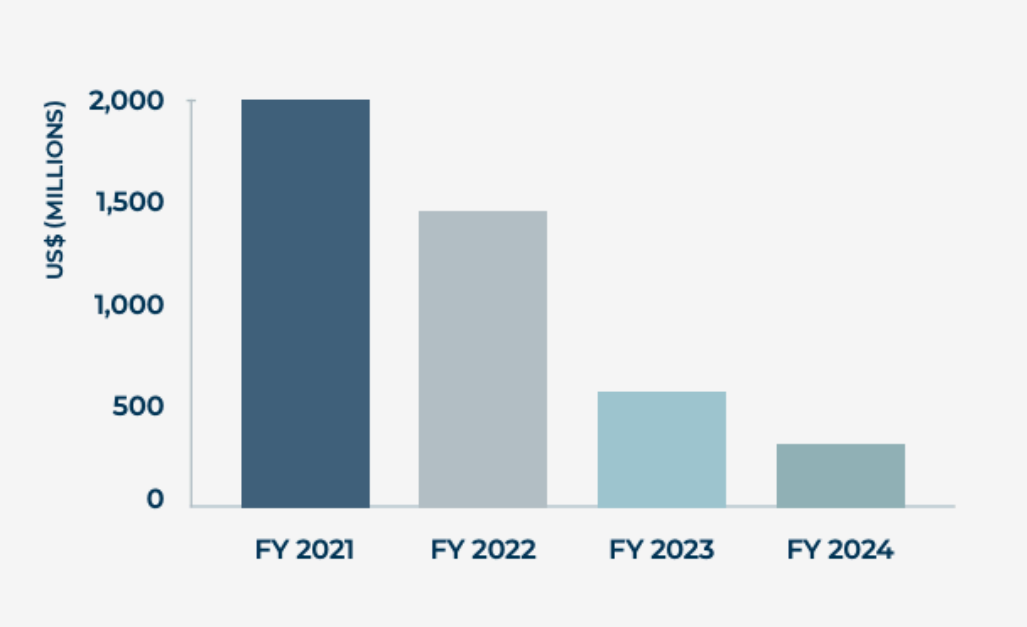
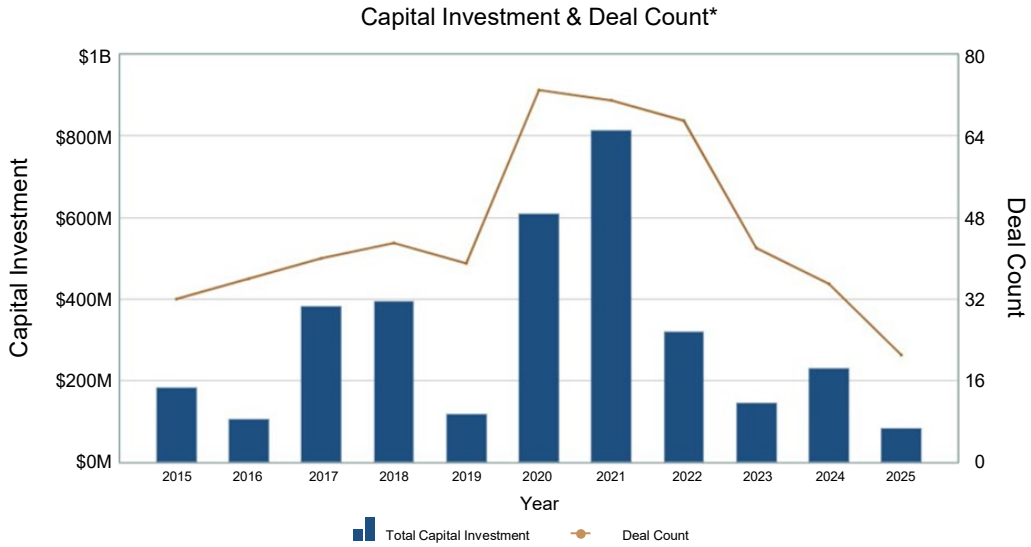
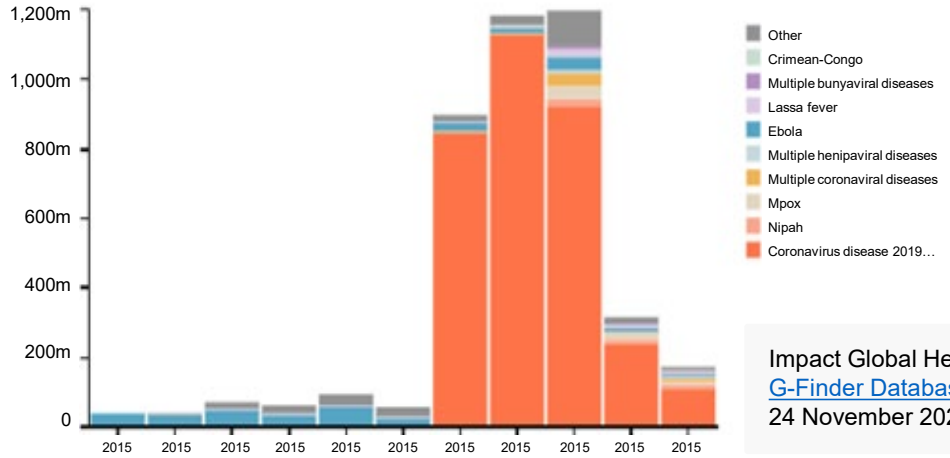
We face significant reduction in funding for pandemic preparedness ….

Funding dedicated to pandemic & epidemic response has decreased to lowest levels in 10 years.



International Pandemic Preparedness Secretariat (IPPS). 100 Days Mission, Fifth Implementation Report. 27 January 2026.





Impact Global Health. G-Finder Database. 24 November 2025.

* Created on 07-Nov-2025. |. Source PitchBook Data

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…with some signs of hope

SMART ANTIVIRAL PRIZE

$100M to identify novel therapeutic solutions with broad-spectrum activity against *Togaviridae* and/or *Flaviviridae* families.

The Pandemic Fund FOR A RESILIENT WORLD

$244M to support countries facing the highest pandemic risks & the greatest gaps in preparedness (15 countries).

astho™

U.S.-regional funding through the Association of State and Territorial Health Officials.

novo nordisk foundation

Pandemic Antiviral Discovery (PAD) commitment of up to $90M in coordinated funding together with Open Philanthropy and the Bill & Melinda Gates Foundation (2022).

European Commission

HORIZON Europe to fund development of SMAV for pathogens of epidemic potential.

European Commission

DG HERA will invest EUR 20 million, to advance the development of at least two new medicines to treat dengue.

BE READY

Joint Transnational Call (JTC 2026) to fund translational, interdisciplinary research with the aim to better understand the pandemic potential of emerging pathogens & the development medical countermeasures.

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The Levers of Change: Science, Collaboration, Policy

Scientific resources to accelerate antiviral discovery & development

Registry of Antiviral Compound Libraries

Curated, publicly disclosed libraries for antiviral screening

Antiviral Development Landscape

Bi-annual reports and interactive pipeline analysis

Drug Development Tools

Target profile, models, and data across viral families

Pro-Bono Advisory Services

Expert guidance to support development decisions

Explore the Antiviral Toolbox

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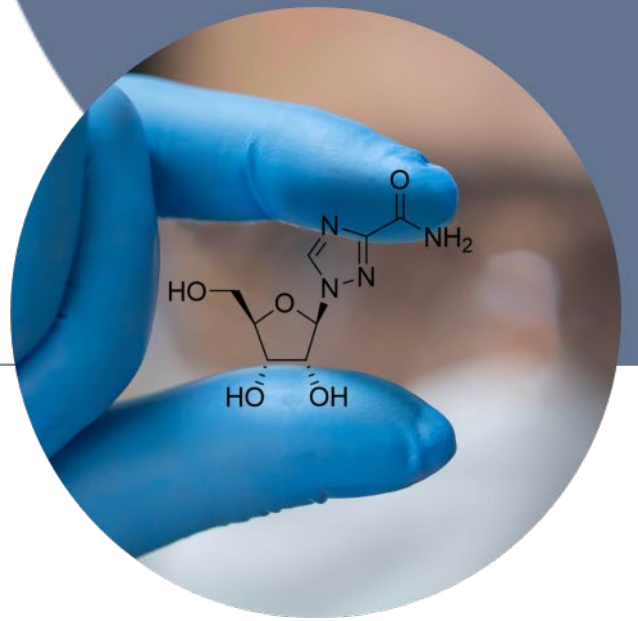
INTERNATIONAL READINESS FOR PREVENTING INFECTIOUS VIRAL DISEASE

The INTREPID Alliance Antiviral Toolbox

Open access. Global reach. Shared science.



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Continue to enhance & share drug development tools

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INTERNATIONAL READINESS FOR PREVENTING INFECTIOUS VIRAL DISEASE

MAY 2026

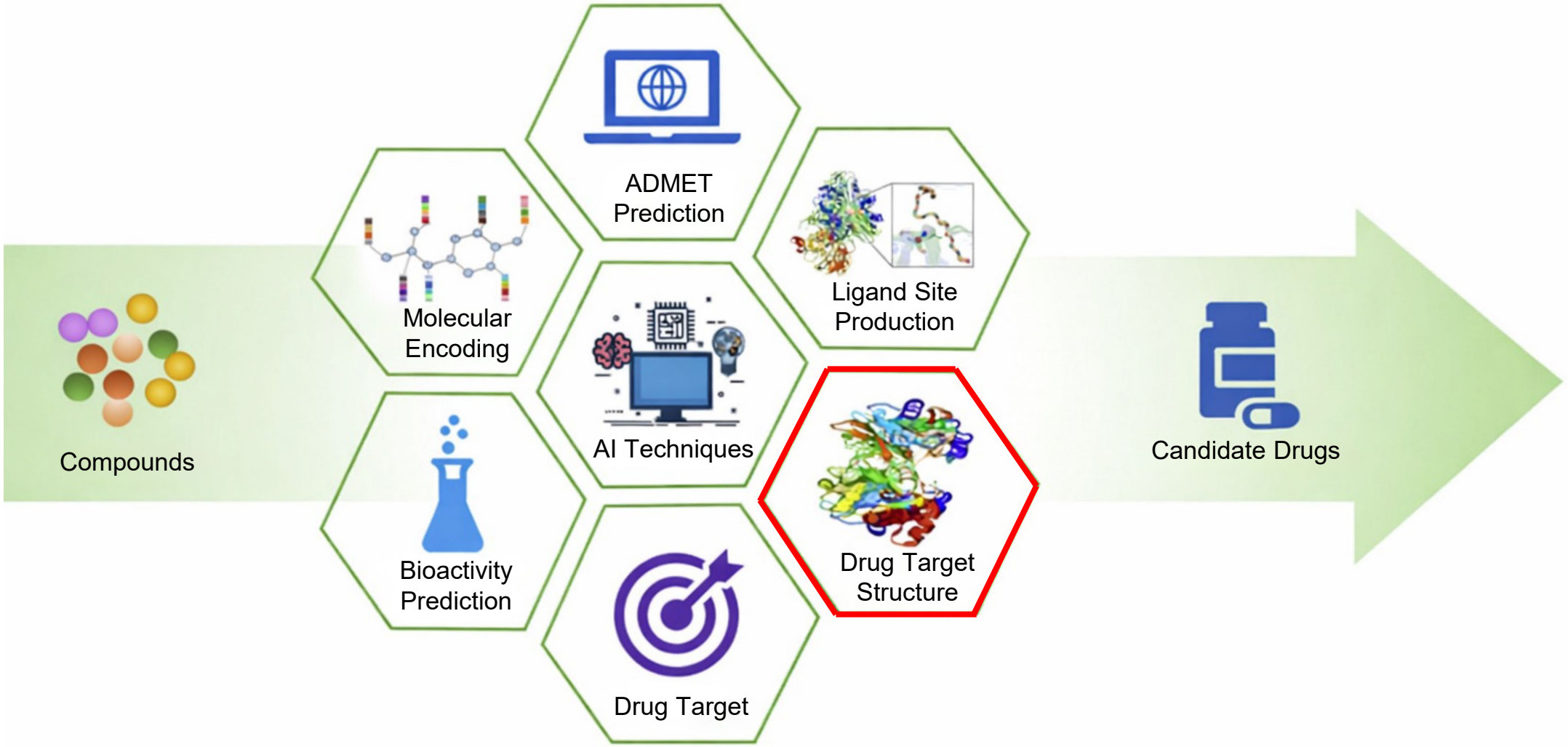
Overview of *In Vitro* Assays and Animal Efficacy Models: *Orthoflaviviruses*

TIM TELLINGHUISEN (*IN VITRO*) & TOBIAS NILSSON (ANIMAL MODELS) FROM ROCHE

JIM DEMAREST, MARNIX VAN LOOCK & RUXANDRA DRAGHIA-AKLI FROM INTREPID ALLIANCE

INTREPID Alliance. Overview of *In Vitro* Assays and Animal Efficacy Models: *Orthoflaviviruses*. May 2026. Available at intrepidalliance.org.

New AI/ML tools accelerate the process of drug discovery



Chen W, Liu X, Zhang S, *et al*. Artificial intelligence for drug discovery: Resources, methods, and applications. *Molecular Therapy Nucleic Acids*, 2023; 31, 691-702. Figure used with permission; Jason Perry, Gilead Sciences.

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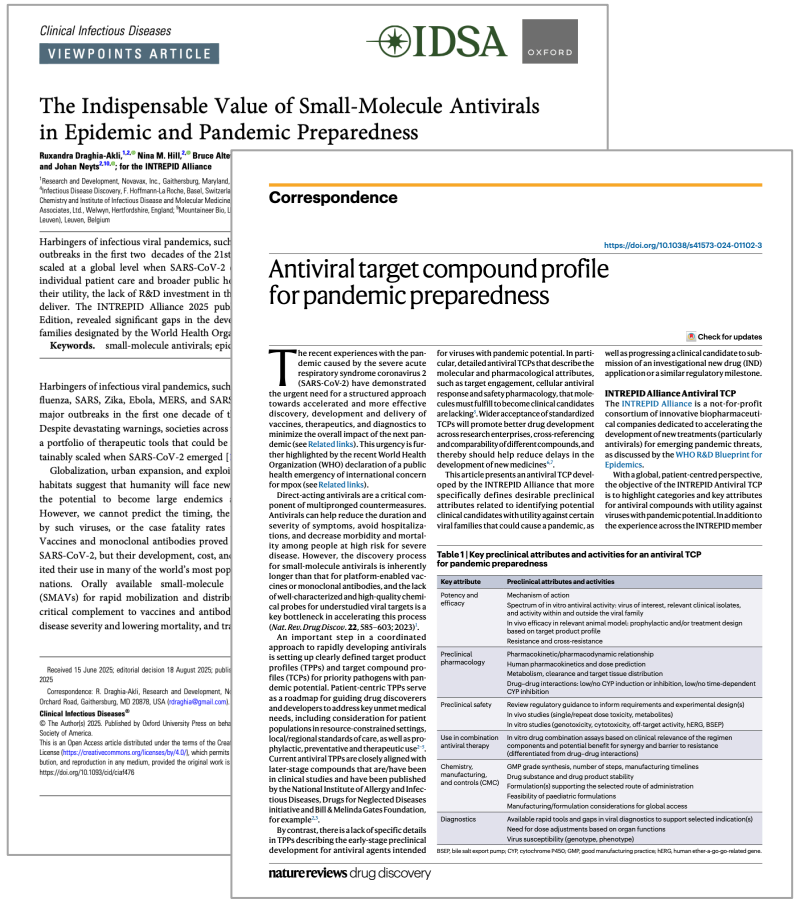
Collaboration is key to achieving the goal of 2 phase 2 ready compounds per viral family



Clinical Infectious Diseases

VIEWPOINTS ARTICLE

IDSA OXFORD

The Indispensable Value of Small-Molecule Antivirals in Epidemic and Pandemic Preparedness

Ruxandra Draghia-Akli, Nina M. Hill, Bruce Alte and Johan Neyts, for the INTREPID Alliance

Correspondence

https://doi.org/10.1038/s41573-024-01102-3

Antiviral target compound profile for pandemic preparedness

Check for updates

nature reviews drug discovery

INTREPID Alliance

International Pandemic Preparedness Secretariat

World Health Organization

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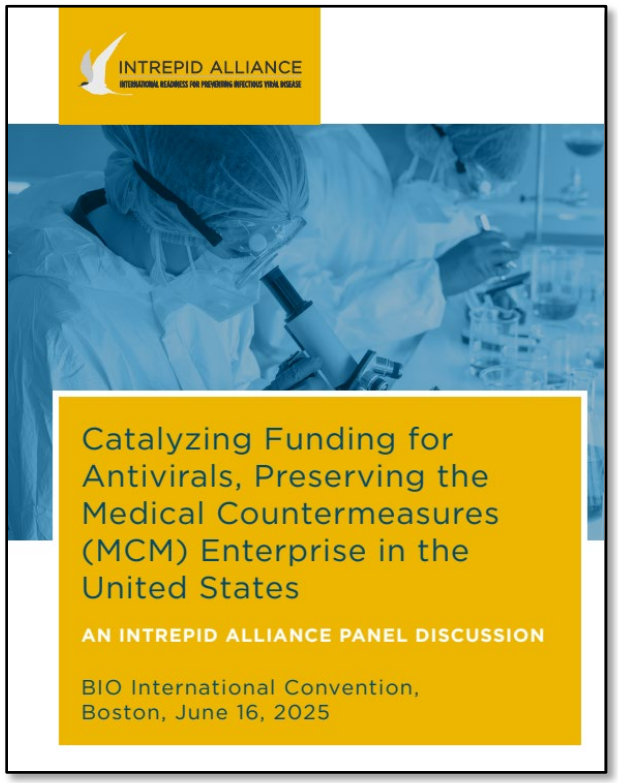
Shaping a supportive policy environment to catalyze funding for antivirals

INTREPID and stakeholder key takeaways:

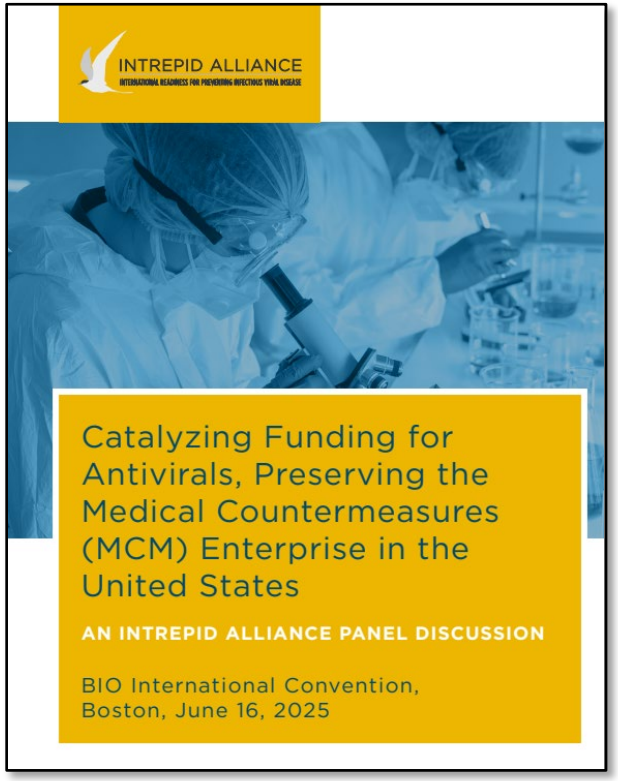


1. Value of antivirals in pandemic & endemic preparedness
2. Current gaps in antiviral R&D
3. Barriers to investment
4. Role of partnerships & ecosystem thinking
5. Policy & funding solutions
6. Call to action from panelists

Source: https://www.intrepidalliance.org/wp-content/uploads/2025/12/INTREPID-Alliances-BIO-Panel-Proceedings-2025.pdf

Shaping a supportive policy environment to catalyze funding for antivirals

INTREPID and stakeholder key takeaways:



5. Policy & funding solutions

- ✓ Dedicated BARDA funding for naturally occurring threats/emerging infectious diseases
- ✓ Strategic National Stockpile (SNS) improvements
- ✓ Domestic manufacturing capacity
- ✓ Reauthorization the Pandemic and All-Hazards Preparedness Act (PAHPA)

6. Call to action from panelists

- ✓Continuity in funding and incentives for all phases of R&D
- ✓Focus from the U.S. Government on co-developing preclinical platforms
- ✓Strengthen ASPR's Public Health Emergency Medical Countermeasures Enterprise
- ✓Policy consistency across Administrations
- ✓Champions needed (policymakers, scientists, and private-sector leaders) to frame antivirals as a national security imperative, not a partisan issue

Source: https://www.intrepidalliance.org/wp-content/uploads/2025/12/INTREPID-Alliances-BIO-Panel-Proceedings-2025.pdf

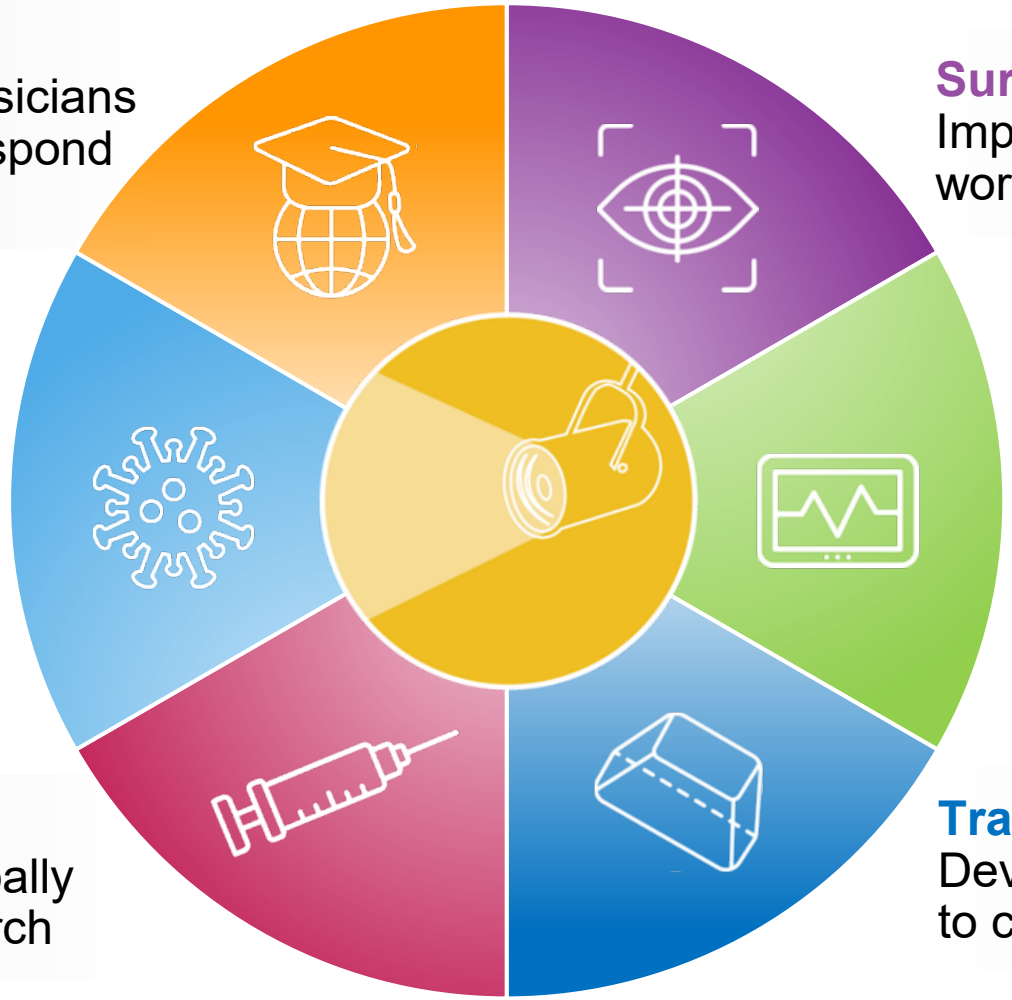
Call to Action

Holistic ecosystem approach: Just one part of the preparedness equation

Lack of attention & investment places the world at great risk

Education
Educate the public & physicians to rapidly & effectively respond to emerging threats

Surveillance
Implement surveillance worldwide & share learnings



Antiviral Agent
Invest and prioritize efforts focused on treatments, pre- & post-exposure prophylaxis, prevention

Diagnostics
Take action to address gaps in our ability to detect & diagnose disease outbreaks

Vaccines
Pursue innovative, globally adapted vaccine research

Transmission/Vector Control
Develop & implement better ways to control zoonotic transmission

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