



ICAR2026



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International Society for Antiviral Research (ISAR)

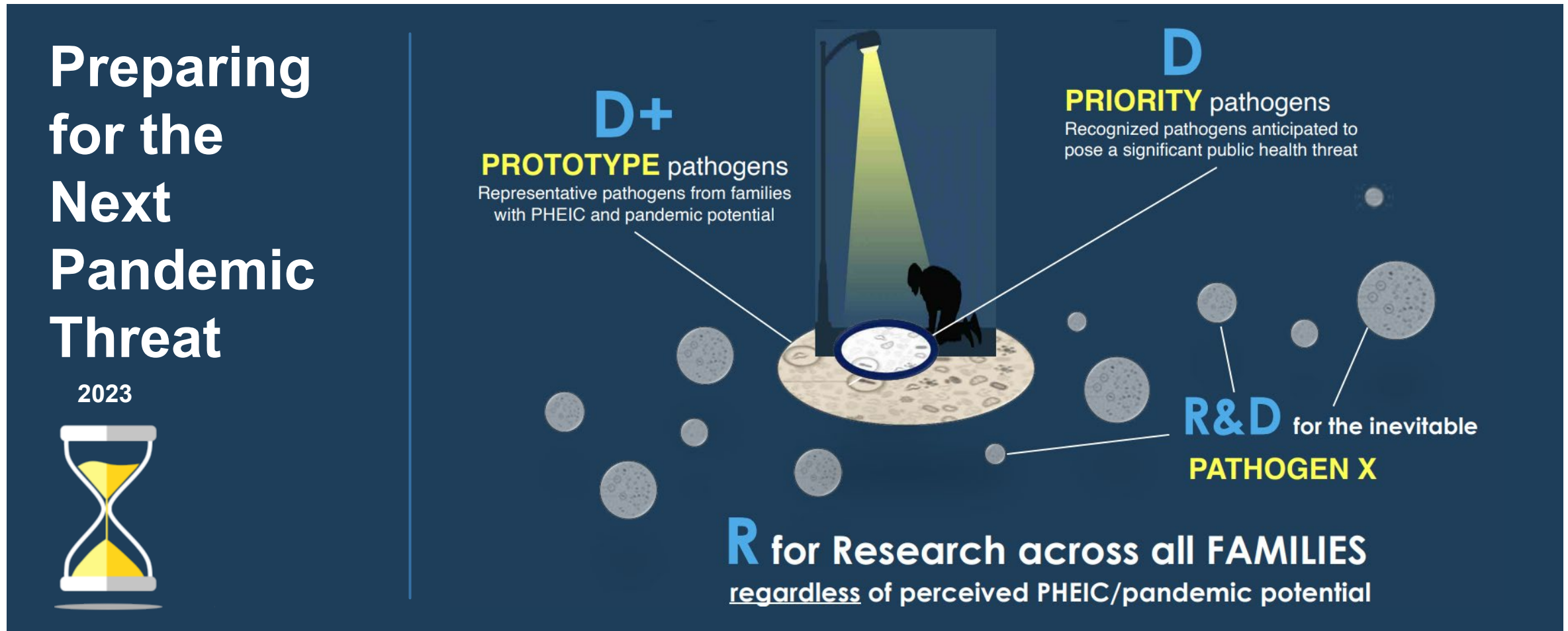
The Antiviral Landscape: Progress and Peril

RUXANDRA DRAGHIA-AKLI, M.D., Ph.D.

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*



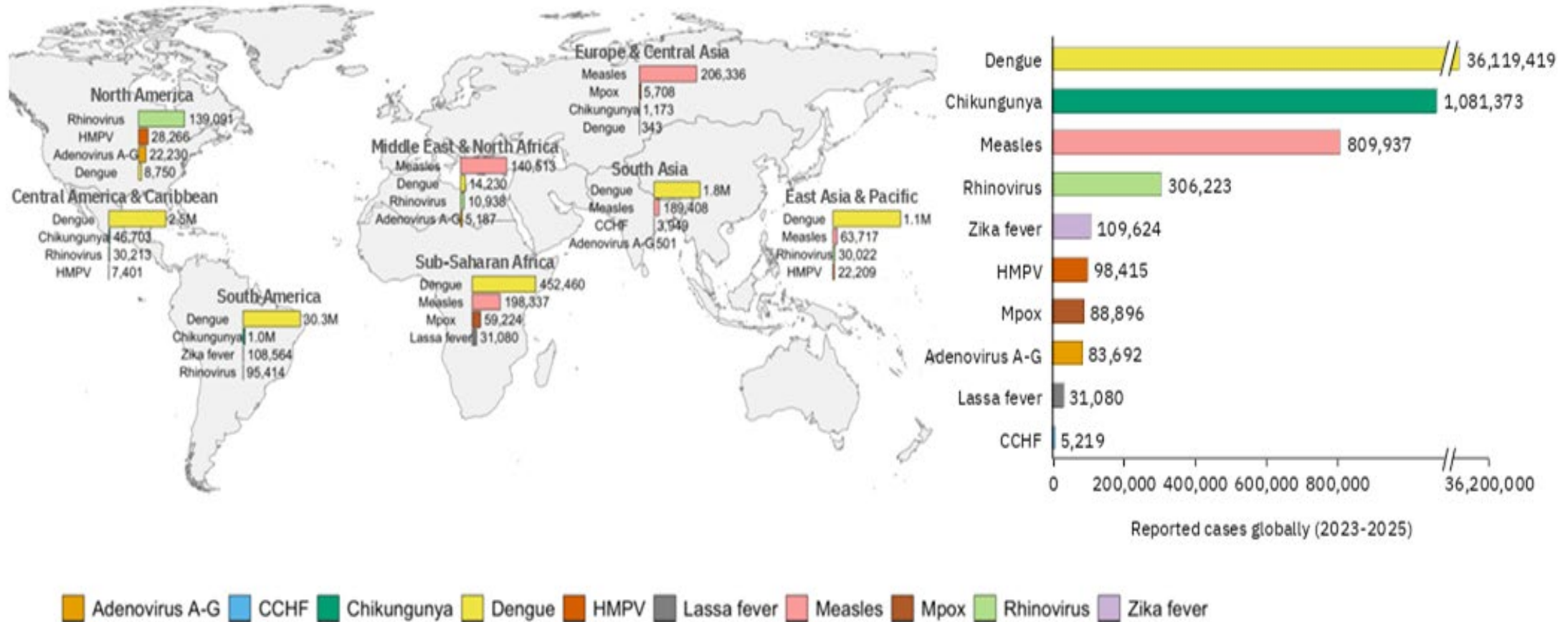
* Airfinity 2023.

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

Emerging & endemic viruses continue to present a constant risk

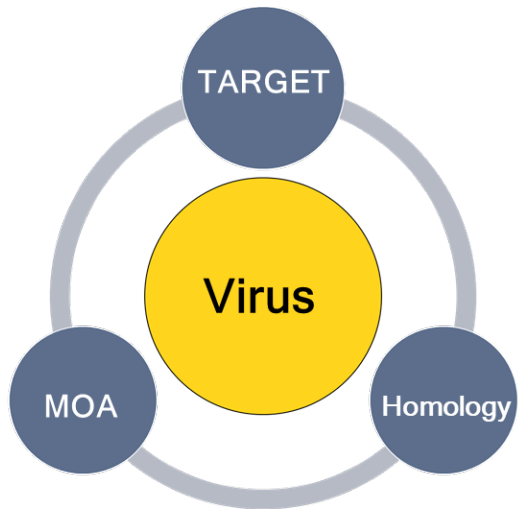
Globally, dengue remains the dominant disease, reinforcing it as a high-priority for treatment development given the lack of approved therapies

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

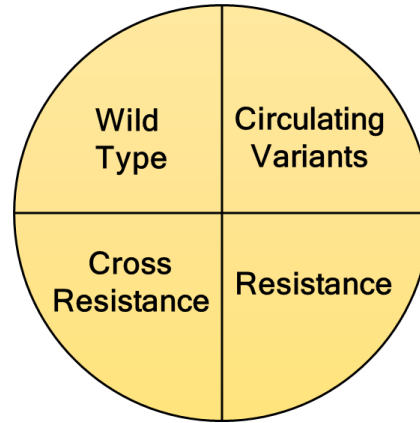


Early R&D principles for broad-spectrum antivirals

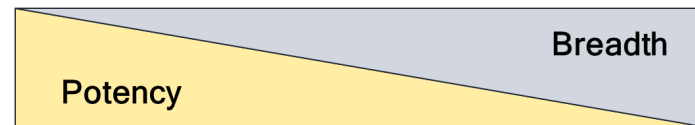
Discovery Strategy



Clinical Relevance



Med Chem Challenge



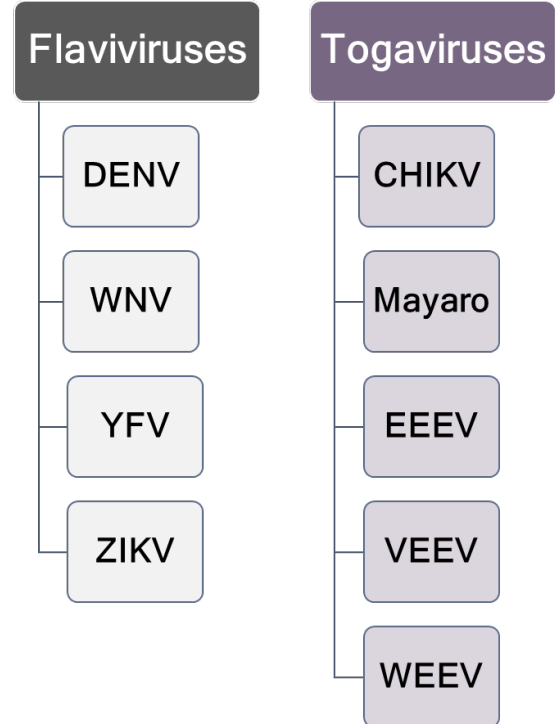
Virus Strains

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

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	<ul style="list-style-type: none"> • COVID-19 (82) • MERS-CoV (7) • SARS-CoV-1 (4) • Seasonal CoV (1) 	<ul style="list-style-type: none"> • COVID-19 (27)
Orthomyxoviridae	<ul style="list-style-type: none"> • Influenza (18) 	<ul style="list-style-type: none"> • Influenza (10)
Paramyxoviridae	<ul style="list-style-type: none"> • Hendra virus (1) • Measles (1) • Nipah virus (4) • Parainfluenza (1) 	X
Picornaviridae	<ul style="list-style-type: none"> • Enterovirus (2) • Rhinovirus (2) 	<ul style="list-style-type: none"> • Polio (2) • Rhinovirus (1)

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

X = absence of preclinical or clinical phase antivirals

* As of January 2026

** Number of compounds in ongoing development;

SFTSV: Severe fever with thrombocytopenia syndrome virus.

Primarily Vector/Contact-Mediated Transmission

Pillar	Disease Indication (n)**	
	Preclinical (38)	Clinical (5)
Arenaviridae	<ul style="list-style-type: none"> • Junin virus (1) • Lassa fever (1) 	<ul style="list-style-type: none"> • Lassa fever (2) • Chapare hem. fever (1)
Filoviridae	<ul style="list-style-type: none"> • Ebola (2) 	X
Flaviviridae	<ul style="list-style-type: none"> • Dengue (8) • West Nile (1) • Yellow fever (5) • Zika (4) • Pan-flavivirus (1) 	<ul style="list-style-type: none"> • Dengue (1)
Hantaviridae	X	X
Nairoviridae	<ul style="list-style-type: none"> • Crimean Congo hem fever (1) 	X
Peribunyaviridae	X	X
Phenuiviridae	<ul style="list-style-type: none"> • Heartland virus (1) • Rift Valley fever virus (1) • SFTSV (1) 	X
Poxviridae	<ul style="list-style-type: none"> • Mpox (7) • Smallpox/Other (1) 	<ul style="list-style-type: none"> • Mpox (1)
Togaviridae	<ul style="list-style-type: none"> • Chikungunya (3) 	X

Potential Indication Expansions: 5th Edition*

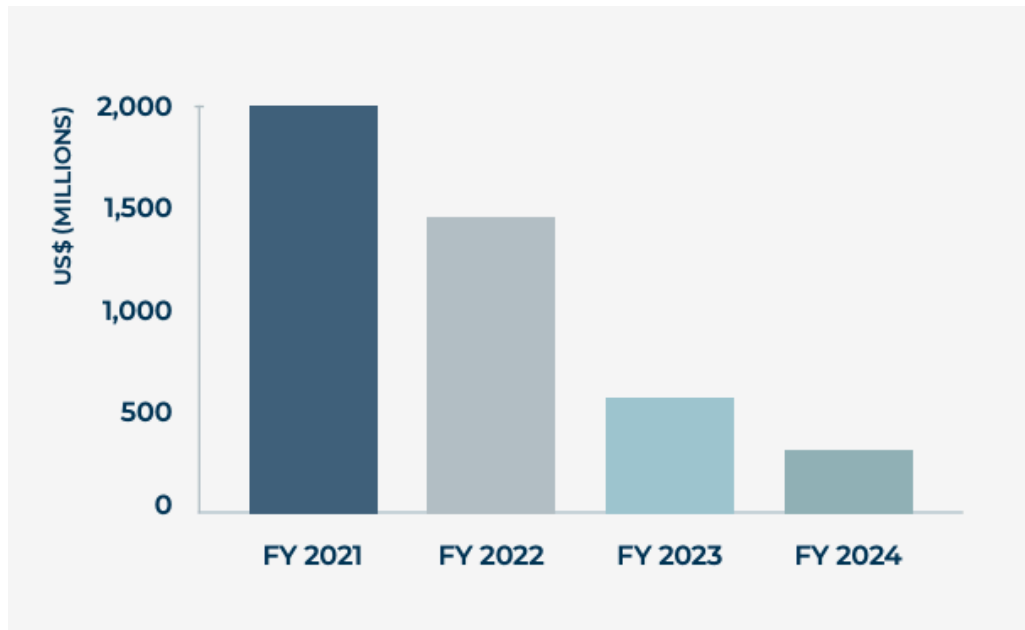
Approved compounds

		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

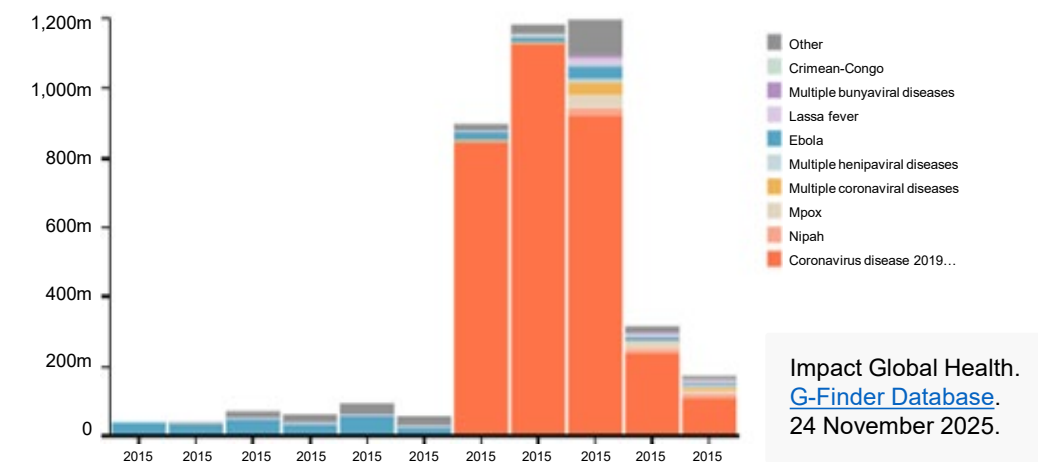
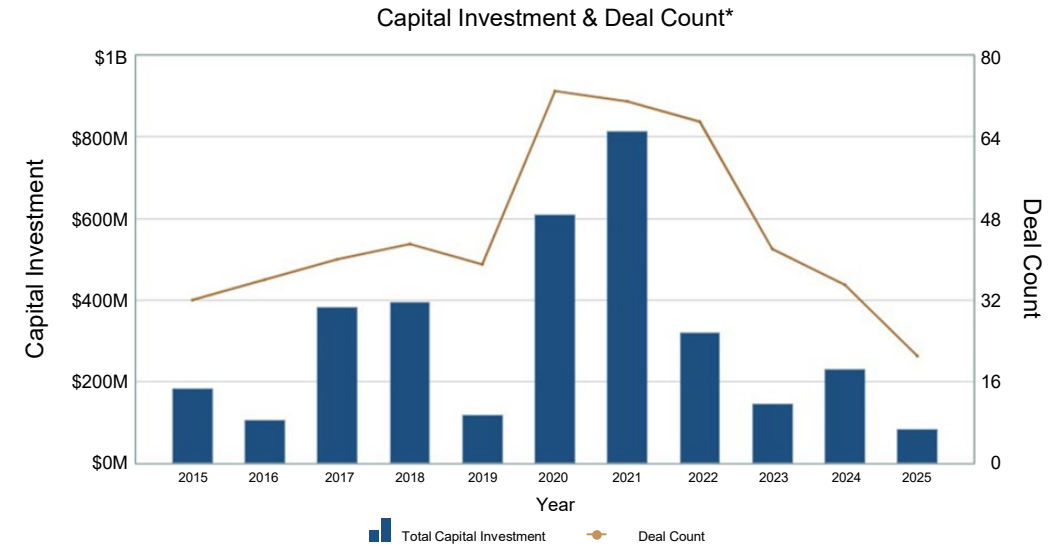
*As of January 2026; SFTSV: Severe fever with thrombocytopenia syndrome virus; THRS: Thyroid Hormone Resistance Syndrome

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.

...with some signs of hope



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



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



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



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



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



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.



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



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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

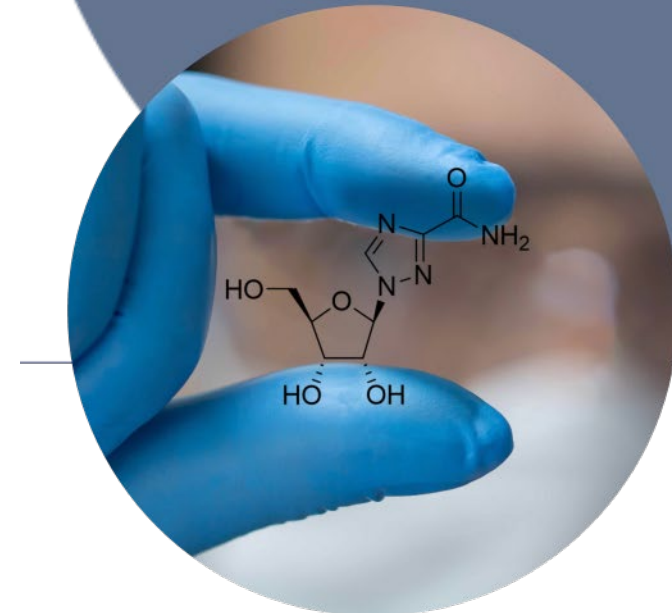
Expert guidance to support development decisions

Explore the Antiviral Toolbox



The INTREPID Alliance Antiviral Toolbox

*Open access. Global reach.
Shared science.*



Continue to enhance & share drug development tools



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.

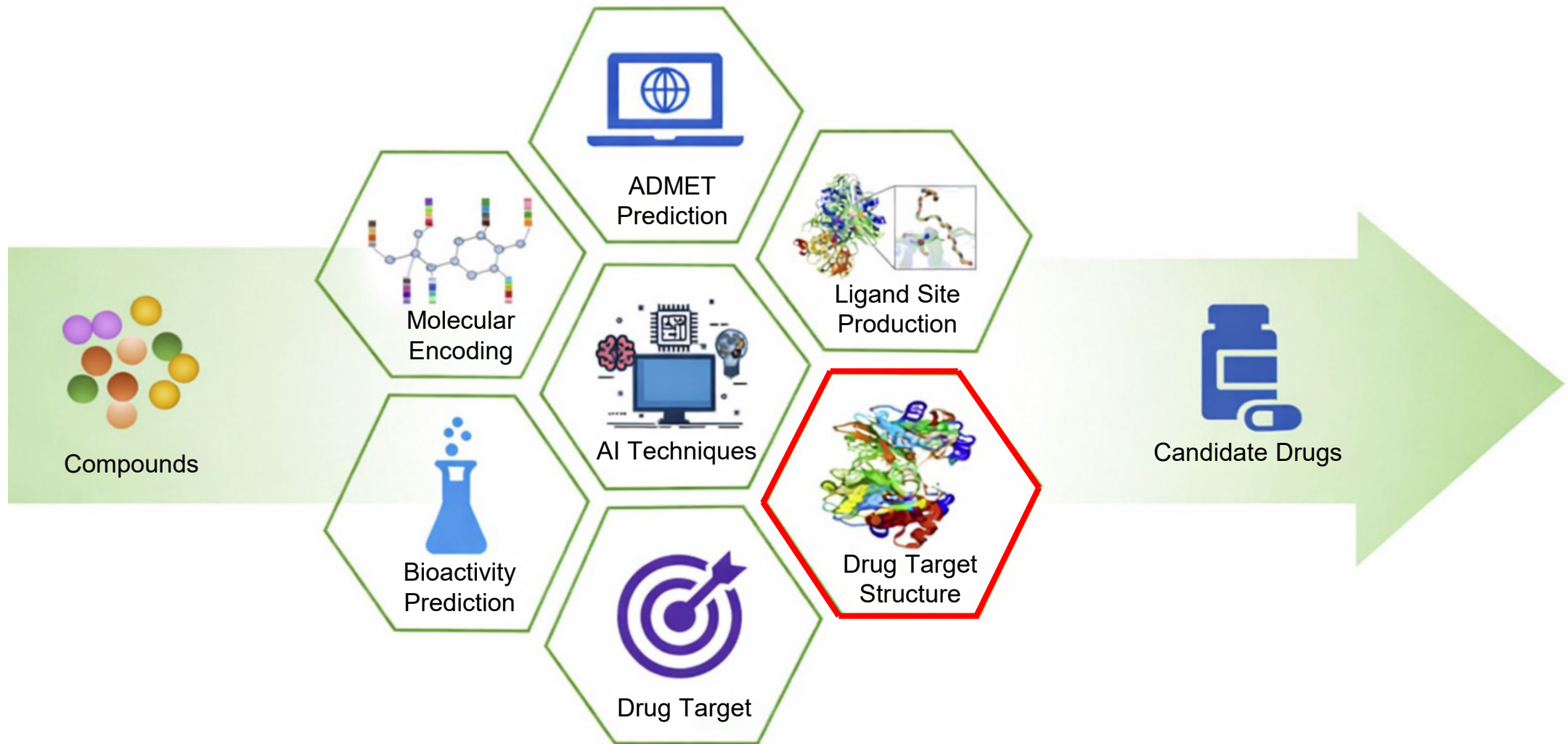


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New AI/ML tools accelerate the process of drug discovery



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

Clinical Infectious Diseases
VIEWPOINTS ARTICLE

IDS OXFORD

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

Roxandra Draghia-Akli,^{1,2,3,4} Nina M. Hill,⁵ Bruce Alie and John Neppel^{6,7}, for the INTREPID Alliance

Correspondence

Antiviral target compound profile for pandemic preparedness

<https://doi.org/10.1093/cid/cia41573-024-01102-3>

Check for updates

The recent experiences with the pandemic caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) have demonstrated the urgent need for a structured approach towards accelerated and more effective discovery, development and delivery of vaccines, therapeutics, and diagnostics to minimize the overall impact of the next pandemic (see related links). This urgency is further highlighted by the recent World Health Organization (WHO) declaration of a public health emergency of international concern for mpox (see related links).

Direct-acting antivirals are a critical component of multipronged countermeasures. Antivirals can help reduce the duration and severity of symptoms, avoid hospitalizations, and decrease morbidity and mortality among people at high risk for severe disease. However, the discovery process for small-molecule antivirals is inherently longer than that for platform-enabled vaccines or monoclonal antibodies, and the lack of well-characterized and high-quality chemical probes for understudied viral targets is a key bottleneck in accelerating this process (*Nat. Rev. Drug Discov.* 22, 585–603; 2023).

An important step in a coordinated approach to rapidly developing antivirals is setting up clearly defined target product profiles (TPPs) for priority pathogens with pandemic potential. Patient-centric TPPs serve as a roadmap for guiding drug discoverers and developers to address key unmet medical needs, including consideration for patient populations in resource-constrained settings, local/regional standards of care, as well as prophylactic, preventative and therapeutic use⁸.

Current antiviral TPPs are closely aligned with later-stage compounds that are/have been in clinical studies and have been published by the National Institute of Allergy and Infectious Diseases, Drugs for Neglected Diseases initiative and Bill & Melinda Gates Foundation, for example⁹.

By contrast, there is a lack of specific details in TPPs describing the early-stage preclinical development for antiviral agents intended

for viruses with pandemic potential. In particular, detailed antiviral TCPs that describe the molecular and pharmacological attributes, such as target engagement, cellular antiviral response and safety pharmacology, that molecules must fulfill to become clinical candidates are lacking. Wider acceptance of standardized TCPs will promote better drug development across research enterprises, cross-referencing and comparability of different compounds, and thereby should help reduce delays in the development of new medicines¹⁰.

This article presents an antiviral TCP developed by the INTREPID Alliance that more specifically defines desirable preclinical attributes related to identifying potential clinical candidates with utility against certain viral families that could cause a pandemic, as well as progressing a clinical candidate to submission of an investigational new drug (IND) application or a similar regulatory milestone.

INTREPID Alliance Antiviral TCP
The INTREPID Alliance is a not-for-profit consortium of innovative biopharmaceutical companies dedicated to accelerating the development of new treatments (particularly antivirals) for emerging pandemic threats, as discussed by the WHO R&D Blueprint for Epidemics.

With a global, patient-centred perspective, the objective of the INTREPID Antiviral TCP is to highlight categories and key attributes for antiviral compounds with utility against viruses with pandemic potential. In addition to the experience across the INTREPID member

Harbingers of infectious viral pandemics, such outbreaks in the first two decades of the 21st scaled at a global level when SARS-CoV-2 individual patient care and broader public health utility, the lack of R&D investment in their deliver. The INTREPID Alliance 2025 pub Edition, revealed significant gaps in the dev families designated by the World Health Org

Keywords. small-molecule antivirals; epi

Harbingers of infectious viral pandemics, such fluza, SARS, Zika, Ebola, MERS, and SAR major outbreaks in the first one decade of t Despite devastating warnings, societies across a portfolio of therapeutic tools that could be tainably scaled when SARS-CoV-2 emerged [1 Globalization, urban expansion, and explo habitats suggest that humanity will face new the potential to become large endemic However, we cannot predict the timing, the by such viruses, or the case fatality rates Vaccines and monoclonal antibodies proved SARS-CoV-2, but their development, cost, an tied their use in many of the world's most pop nations. Orally available small-molecula (SMAVs) for rapid mobilization and distrib critical complement to vaccines and antibod disease severity and lowering mortality, and tr

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nature reviews drug discovery

100 Days Mission

IPPS International Pandemic Preparedness Secretariat

Implementation Report Progress in 2025 & Priorities for 2026

Reducing the impact of future pandemics by enabling access to diagnostics, therapeutics, and vaccines within 100 days

An independent report from the International Pandemic Preparedness Secretariat

27th JANUARY 2026

R&D Blueprint
Powering research to prevent epidemics

A scientific framework for epidemic and pandemic research preparedness

February 2024

World Health Organization

INTREPID Alliance

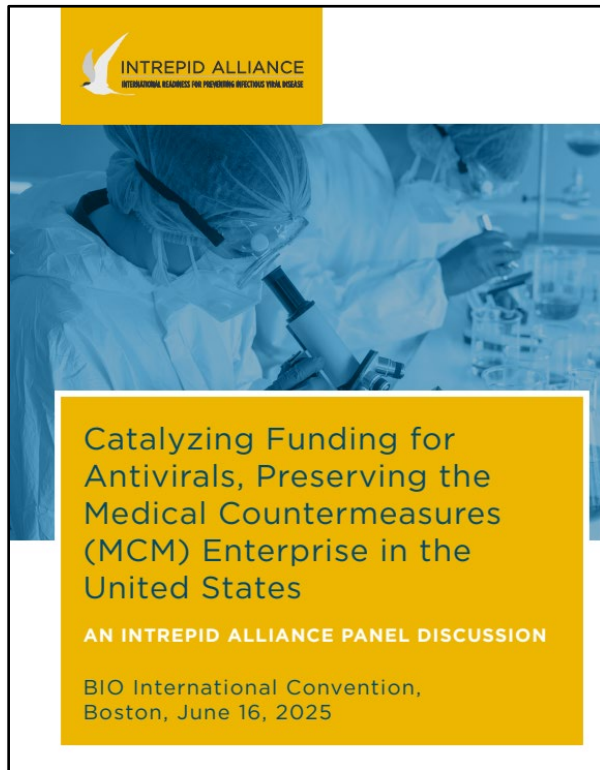
International Pandemic Preparedness Secretariat

World Health Organization

Shaping a supportive policy environment to catalyze funding for antivirals



INTREPID and stakeholder key takeaways:

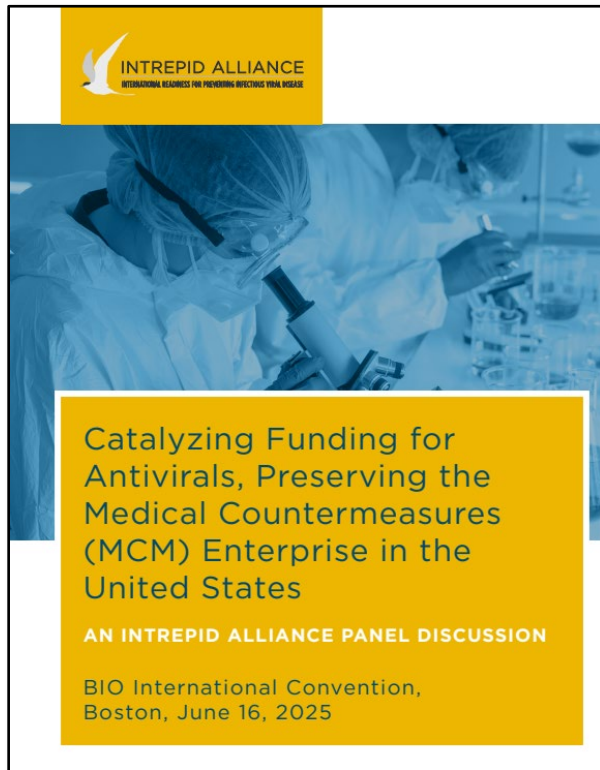


1. Value of antivirals in pandemic & endemic preparedness
2. Current gaps in antiviral R&D
3. Barriers to investment
4. Role of partnerships & ecosystem thinking
5. Policy & funding solutions
6. Call to action from panelists

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



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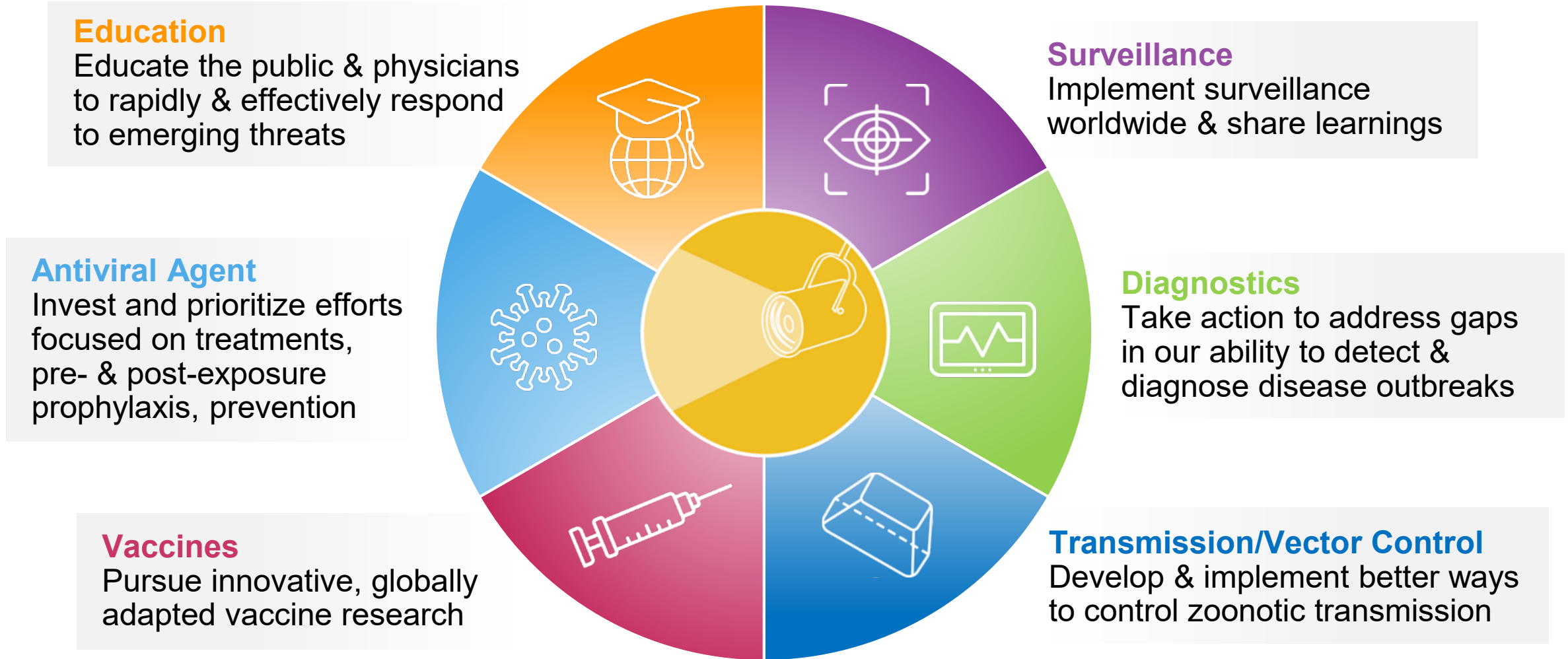


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Call to Action

Holistic ecosystem approach: Just one part of the preparedness equation

Lack of attention & investment places the world at great risk





INTREPID ALLIANCE

INTERNATIONAL READINESS FOR PREVENTING INFECTIOUS VIRAL DISEASE

 intrepidalliance.org

 linkedin.com/company/intrepid-alliance