

Baylor
College of
Medicine



Texas Children's
Hospital®

RICE UNIVERSITY'S
BAKER INSTITUTE
FOR PUBLIC POLICY

The Arbovirus Tsunami: Preparing for the Next Pandemic

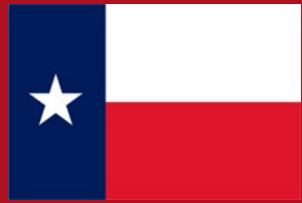
@PeterHotez

Peter Hotez MD PhD

Texas Children's Hospital Endowed
Chair in Tropical Pediatrics

Dean, National School of Tropical Medicine
at Baylor College of Medicine

Senior Fellow, James A Baker III
Institute for Public Policy, Rice University



National School of Tropical Medicine Baylor College of Medicine Texas Children's Hospital

Baylor
College of
Medicine®

NATIONAL SCHOOL OF
TROPICAL
MEDICINE

Texas Medical Center – World's
Largest Life Science Hub

NSTM – Unique research/training
facility for emerging tropical
infections in Texas, W Hemisphere

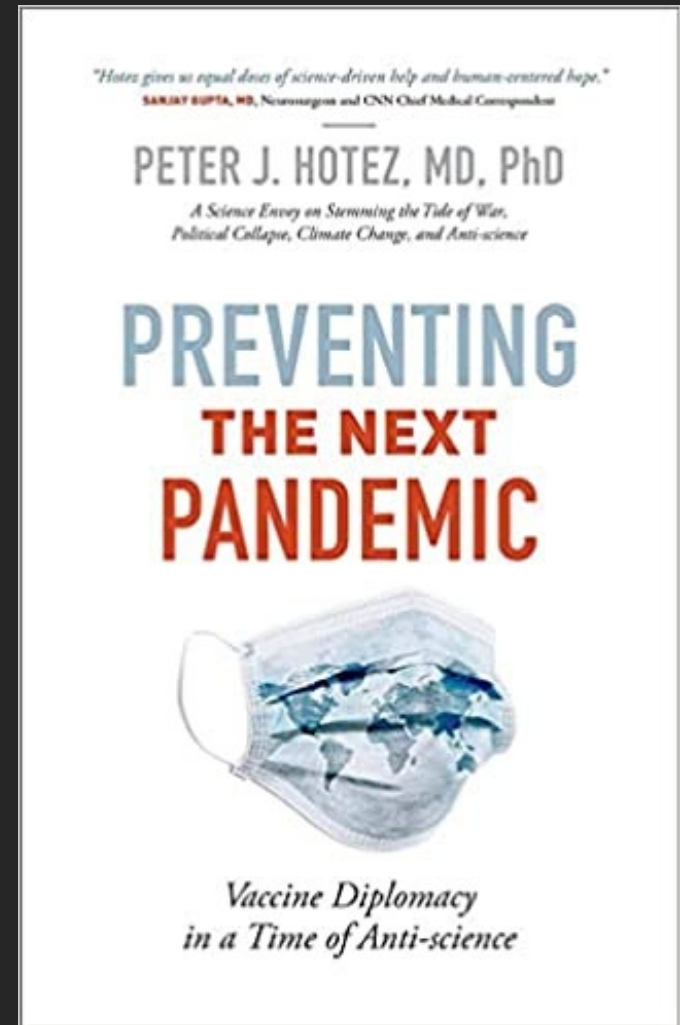


5 Relevant Lessons from COVID Pandemic of 2019-23

1. Key 21st Century drivers leading to emergence of viral and arbovirus infections
2. The role of NCD co-morbidities such as diabetes and hypertension
3. Fragmentation in health systems
4. “The Antipoverty Vaccines, Medicines, Diagnostics, Vector Technologies : Urgency to accelerate countermeasures that can be produced locally (in LMICs)
5. The coming age of anti-science and hesitancy

1. New 21st Century Drivers

- Poverty
- War
- Political Instability
- Urbanization
- Deforestation
- Human/Animal Migrations
- Climate Change



The “Era of Global Boiling”

United Nations

"The era of global boiling has arrived" warns the UN - video

Source: AP

Thu 27 Jul 2023
12.06 EDT



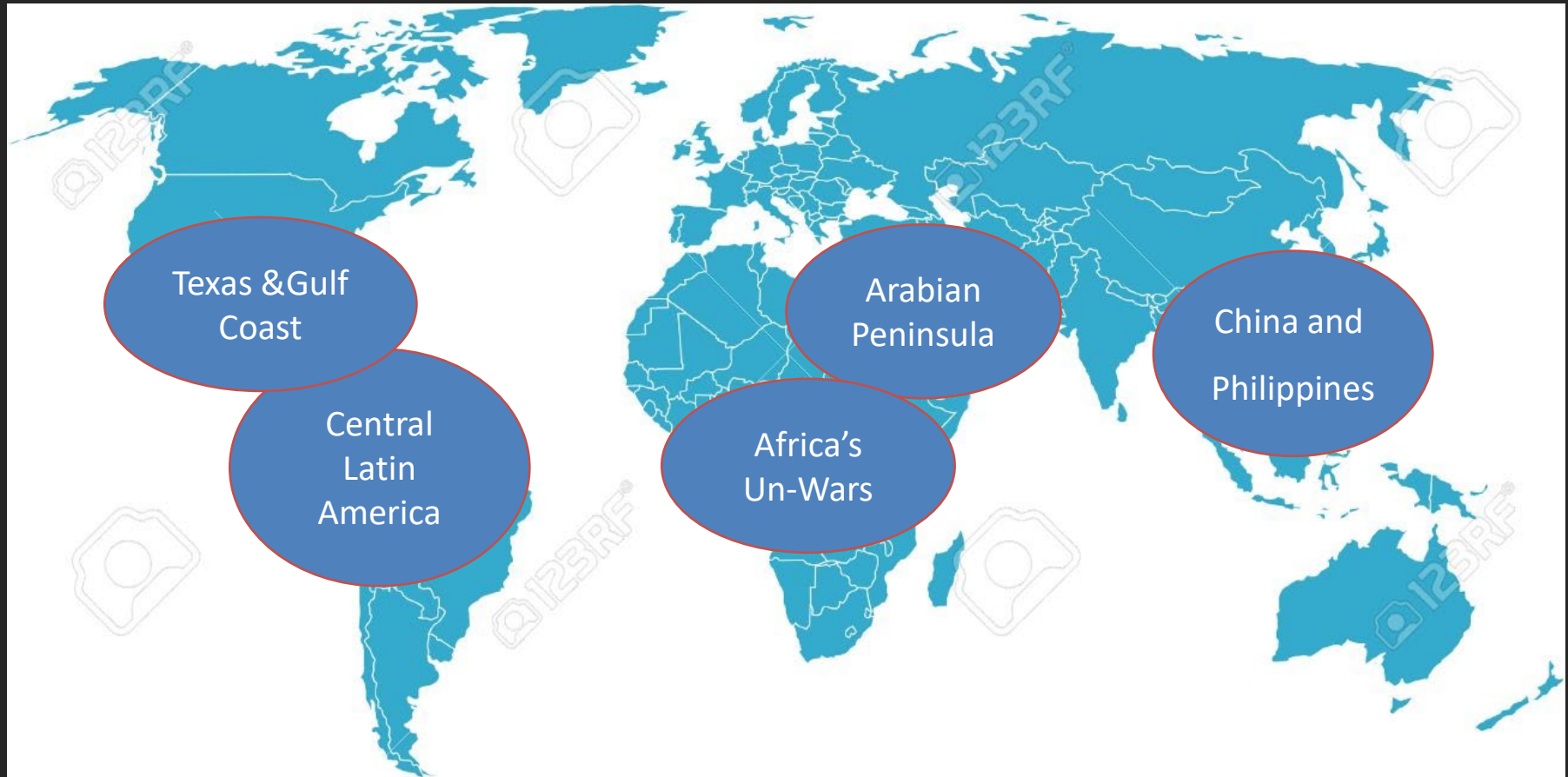
The UN secretary general, António Guterres, said scientists have confirmed July was on track to be the world's hottest month on record. Guterres warned

Disease and Poverty in a New Generation of Sweltering Megacities



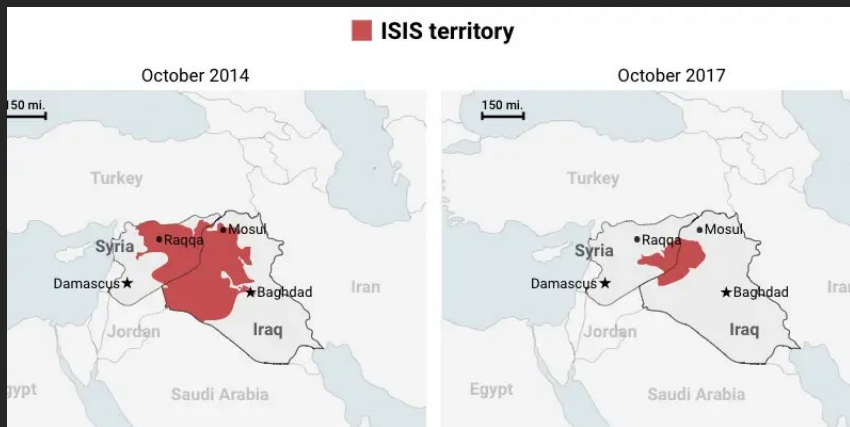
New Global “Hot Zones” of Arboviruses & NTDs

Where political instability combines with climate change, urbanization, and deforestation



Case Study: The Arabian Peninsula

2010s-2020s



Case Study: Venezuela & Central Latin America

2010s-2020s



Malaria in Venezuela

1262%

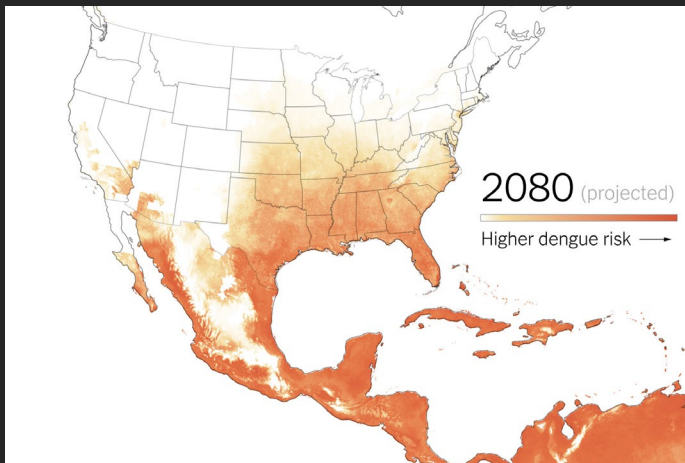
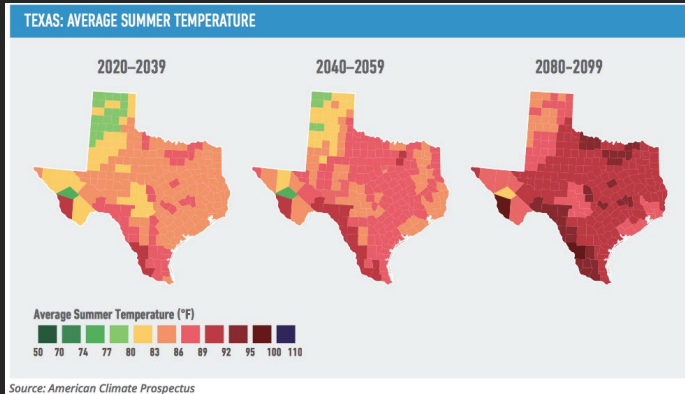
**INCREASE OF
MALARIA CASES
BETWEEN
2000 AND 2018**

Data Ministry of Health



Case Study: Texas and US Gulf Coast

2010s-2020s



The NEW ENGLAND JOURNAL of MEDICINE

Perspective
OCTOBER 19, 2023

Yellow Jack's Potential Return to the American South

Peter J. Hotez, M.D., Ph.D., and Angelle Desiree LaBeaud, M.D.

Tasked with coordinating U.S. readiness for our next big global infection threats, the new White House Office of Pandemic Preparedness and Response will emphasize emerging corona-

virus infections, zoonotic influenza, and infections caused by filoviruses and other highly lethal pathogens. But mosquito-transmitted virus (arbovirus) infections are equally important,

bleak, suggesting that much of the southeastern United States will become widely suitable for dengue or other arbovirus infections.² An added critical factor is extreme poverty throughout Texas

times known as "yellow jack," from the name of a nautical flag hoisted from ships arriving from the Caribbean that were quarantined because of suspected cases of the disease. Yellow fever's most feared complication was *vomito negro* (black vomit), occurring in the end stages of lethal illness owing to hemorrhagic bleeding in the upper gastrointestinal tract.

For nearly 100 years begin-

TX/FL US Gulf Coast

Poverty

Climate Change

Human
Migrations

Urbanization

PLOS NEGLECTED TROPICAL DISEASES

OPEN ACCESS

VIEWPOINTS

The Gulf Coast: A New American Underbelly of Tropical Diseases and Poverty

Peter J. Hotez  , Kristy O. Murray  , Pierre Buekens  

Published: May 15, 2014 • <https://doi.org/10.1371/journal.pntd.0002760>

Article

Authors

Metrics

Comments

Media Coverage

References

Figures

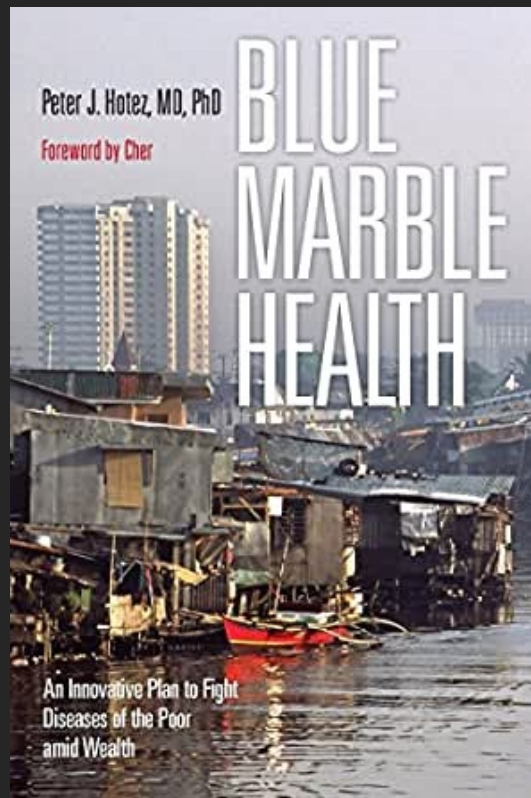
Reader Comments

Figures



State	Population	Area (sq mi)	Coastline (mi)	Major Cities
Texas	28,123,411	695,621	362	Houston, San Antonio, Austin, El Paso
Louisiana	4,657,773	52,433	343	New Orleans, Baton Rouge, Shreveport
Mississippi	2,967,297	47,912	344	Jackson, Biloxi, Gulfport
Alabama	5,012,216	52,423	54	Montgomery, Birmingham, Mobile
Florida	21,513,614	65,758	1,350	Miami, Orlando, Tampa, Jacksonville

Blue Marble Health and STOP Neglected Diseases of Poverty Act



[BROWSE](#) [PUBLISH](#) [ABOUT](#)

PLOS **NEGLECTED TROPICAL DISEASES**

OPEN ACCESS

EDITORIAL

STOP: Study, Treat, Observe, and Prevent Neglected Diseases of Poverty Act

Peter J. Hotez Cory Booker

Published: February 27, 2020 • <https://doi.org/10.1371/journal.pntd.0008064>

Article	Authors	Metrics	Comments	Media Coverage

References

Reader Comments

Citation: Hotez PJ, Booker C (2020) STOP: Study, Treat, Observe, and Prevent Neglected Diseases of Poverty Act. PLoS Negl Trop Dis 14(2): e0008064. <https://doi.org/10.1371/journal.pntd.0008064>

Editor: Shaden Kamhawi, National Institutes of Health, UNITED STATES

2. Non-Communicable Diseases, NCDs: Diabetes and HTN & Chronic Sequelae

- Diabetes/HTN
 - COVID
 - Dengue
- Chronic/persistent illness
 - COVID
 - West Nile Virus

EDITORIAL

NTD and NCD Co-morbidities: The Example of Dengue Fever

Priyanka Mehta¹, Peter J. Hotez^{2,3,4,5*}

¹ Rice University, Houston, Texas, United States of America, ² Sabin Vaccine Institute and Texas Children's Hospital Center for Vaccine Development, National School of Tropical Medicine at Baylor College of Medicine, Houston, Texas, United States of America, ³ Department of Biology, Baylor University, Waco, Texas, United States of America, ⁴ James A Baker III Institute for Public Policy, Rice University, Houston, Texas, United States of America, ⁵ Scowcroft Institute of International Affairs, Bush School of Government and Public Service at Texas A&M University, College Station, Texas, United States of America

* hotez@bcm.edu

Box 1. Major Co-morbidities Affecting Clinical Outcomes of Dengue Fever, DHF, and DHS

Underlying co-morbidities

Diabetes Mellitus

Hypertension

Allergies (possibly associated with steroid use)

Co-morbidities that complicate dengue

Renal failure

Myocarditis/Pericarditis

3. Fragmentation of Health Systems

- Tremendous variability in vector control or diagnostic surveillance from nation to nation or even county to county



4. The “Antipoverty” Vaccines, Medicine, Diagnostics, Vector Technologies

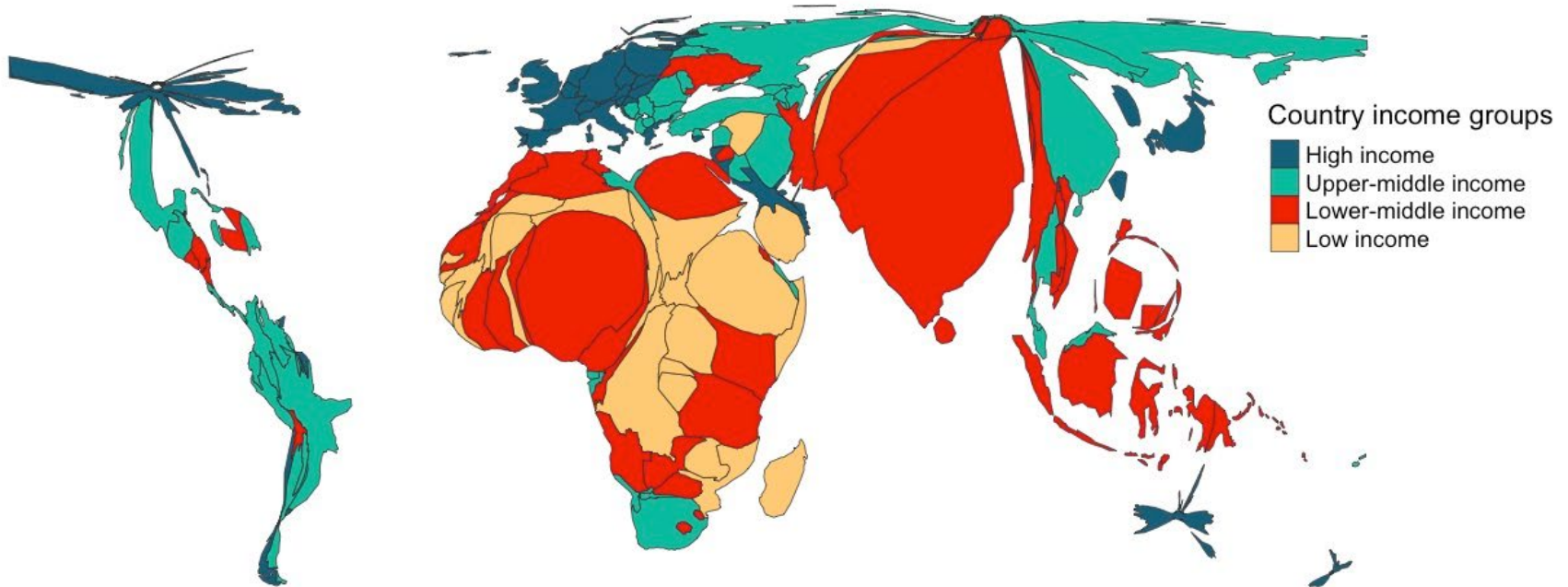


<https://agenciabrasil.ebc.com.br/en/saude/noticia/2022-12/about-30-population-were-poverty-2021>

Vaccine Access: COVID-19 Unvaccinations in 2021

The unvaccinated population

Land mass scaled to reflect absolute number of unvaccinated (transformed EPSG 3410 equal-area projection)

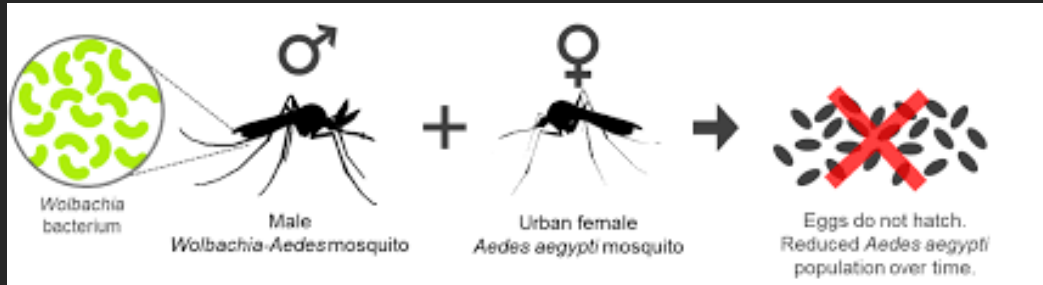


Source: Schellekens (2021); OWID; WPP. Updated: 2022-01-13. Latest: pandem-ic.com.

Developing Country Vaccine Manufacturers Network The Story of Corbevax



5. Globalization of American Anti-Science Vaccines, GM-Mosquitoes, Wolbachia Western Europe, Canada, African Nations



nature reviews immunology

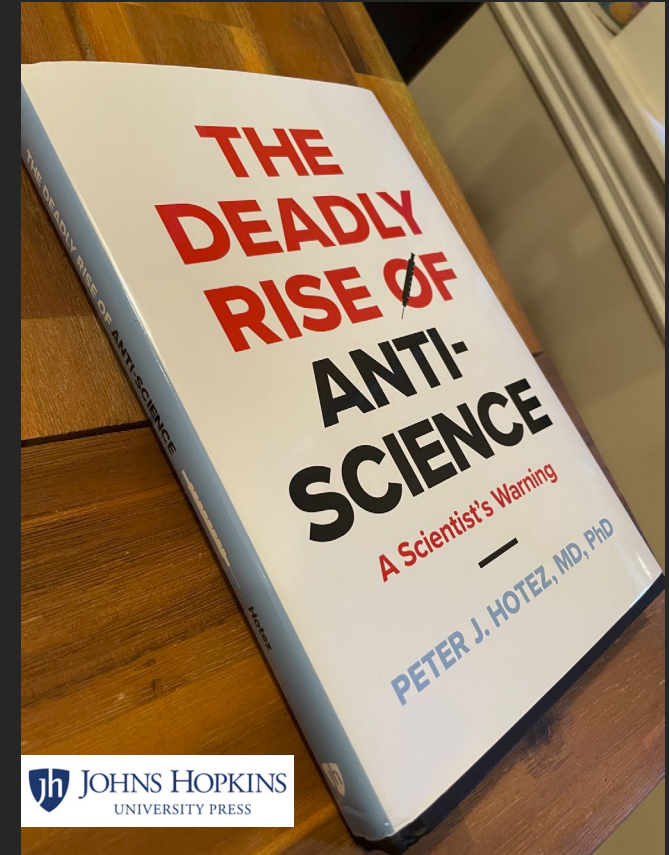
COMMENT

Check for updates

Will anti-vaccine activism in the USA reverse global goals?

Peter J. Hotez

In the time of the COVID-19 pandemic, anti-vaccine activism in the USA accelerated, amplified and formed an alliance with political groups and even extremists. An organized, well-funded and empowered anti-science movement now threatens to spill over and threaten all childhood immunizations in the USA and globally.



Summary Slide

The Arbovirus Tsunami: We're Not Ready

1. Climate change, urbanization and urban poverty: Hot & Sweltering Megacities
2. Arbovirus infections on a background of diabetes and hypertension
3. Fragmentation in health systems
4. Urgency to accelerate technologies locally in LMICs
5. Anti-science slowing uptake of new vector control technologies, vaccines, medicines, diagnostics