

# Emerging Infectious Diseases: Implementing a One Health Approach

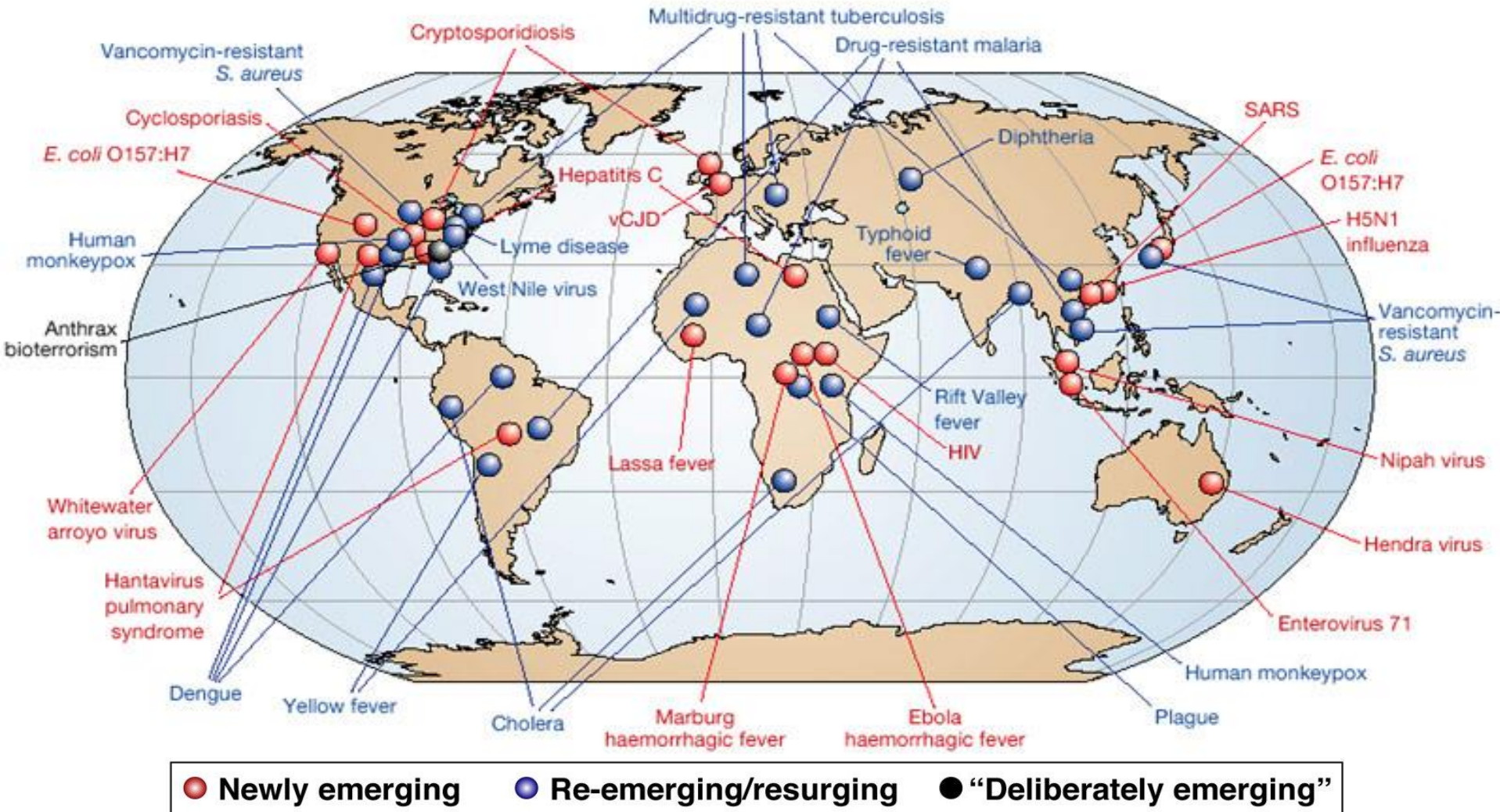
Benjamin Anderson, MPH, PhD, CPH

SDGHI GH Seminar Series

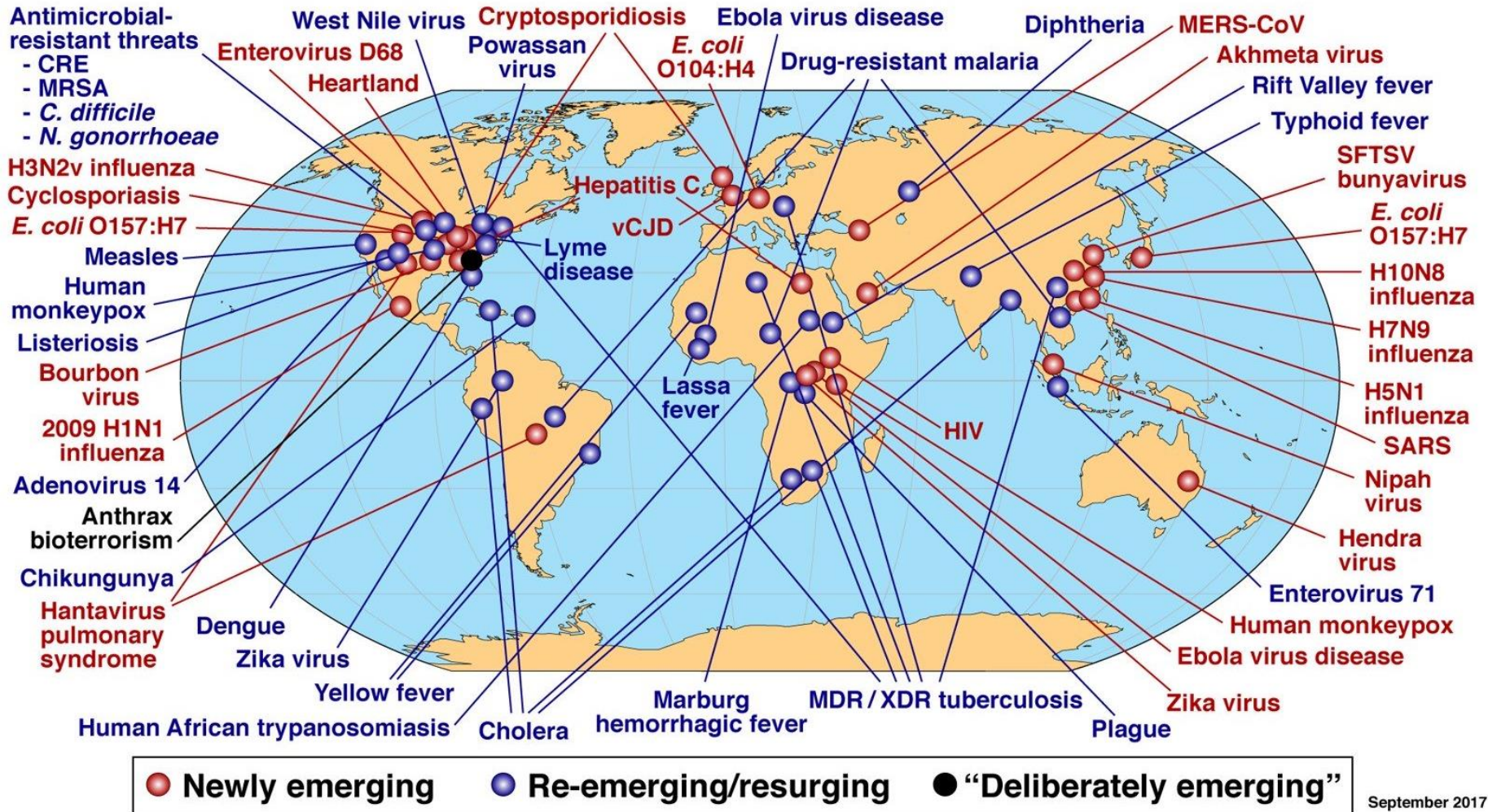
January 29, 2021



# 2004



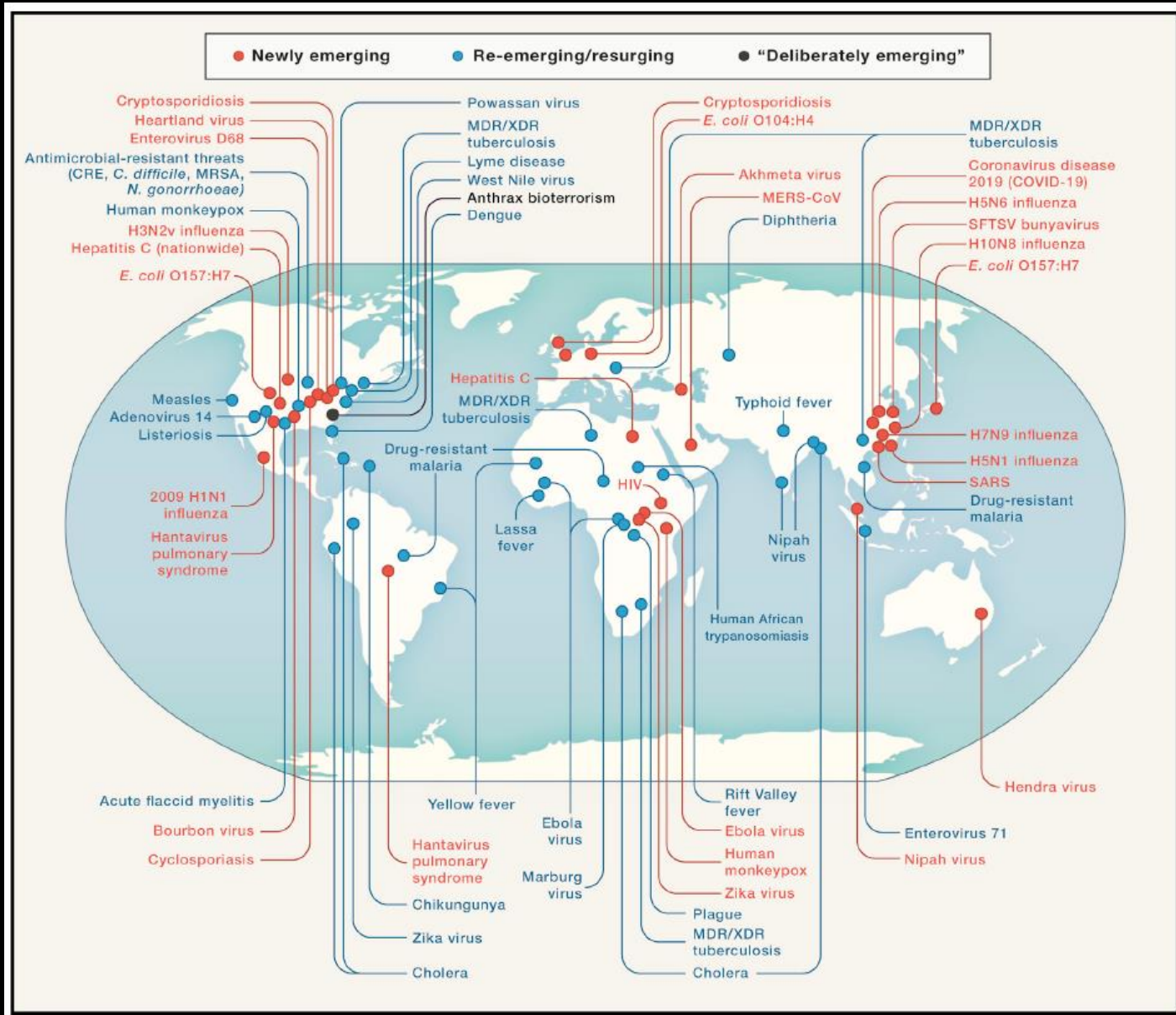
# 2017



September 2017

US NIH NIAID - <https://www.niaid.nih.gov/news-events/three-decades-responding-infectious-disease-outbreaks>

# 2020



# Emerging Infectious Diseases in History

Year	Name	Deaths	Comments
430 BCE	“Plague of Athens”	~100,000	First identified trans-regional pandemic
541	Justinian plague ( <i>Yersinia pestis</i> )	30–50 million	Pandemic; killed half of world population
1340s	“Black Death” ( <i>Yersinia pestis</i> )	~50 million	Pandemic; killed at least a quarter of world population
1494	Syphilis ( <i>Treponema pallidum</i> )	>50,000	Pandemic brought to Europe from the Americas
c. 1500	Tuberculosis	High millions	Ancient disease; became pandemic in Middle Ages
1520	Hueyztahuatl ( <i>Variola major</i> )	3.5 million	Pandemic brought to New World by Europeans
1793–1798	“The American plague”	~25,000	Yellow fever terrorized colonial America
1832	2nd cholera pandemic (Paris)	18,402	Spread from India to Europe/Western Hemisphere
1918	“Spanish” influenza	~50 million	Led to additional pandemics in 1957, 1968, 2009
1976–2020	Ebola	15,258	First recognized in 1976; 29 regional epidemics to 2020
1981	Acute hemorrhagic conjunctivitis	rare deaths	First recognized in 1969; pandemic in 1981
1981	HIV/AIDS	~37 million	First recognized 1981; ongoing pandemic
2002	SARS	813	Near-pandemic
2009	H1N1 “swine flu”	284,000	5th influenza pandemic of century
2014	Chikungunya	uncommon	Pandemic, mosquito-borne
2015	Zika	~1,000?*	Pandemic, mosquito-borne

Selected important emerging and re-emerging infectious diseases of the past and present, 430 BCE–2020 CE. Mortality estimates are in most cases imprecise; see text.

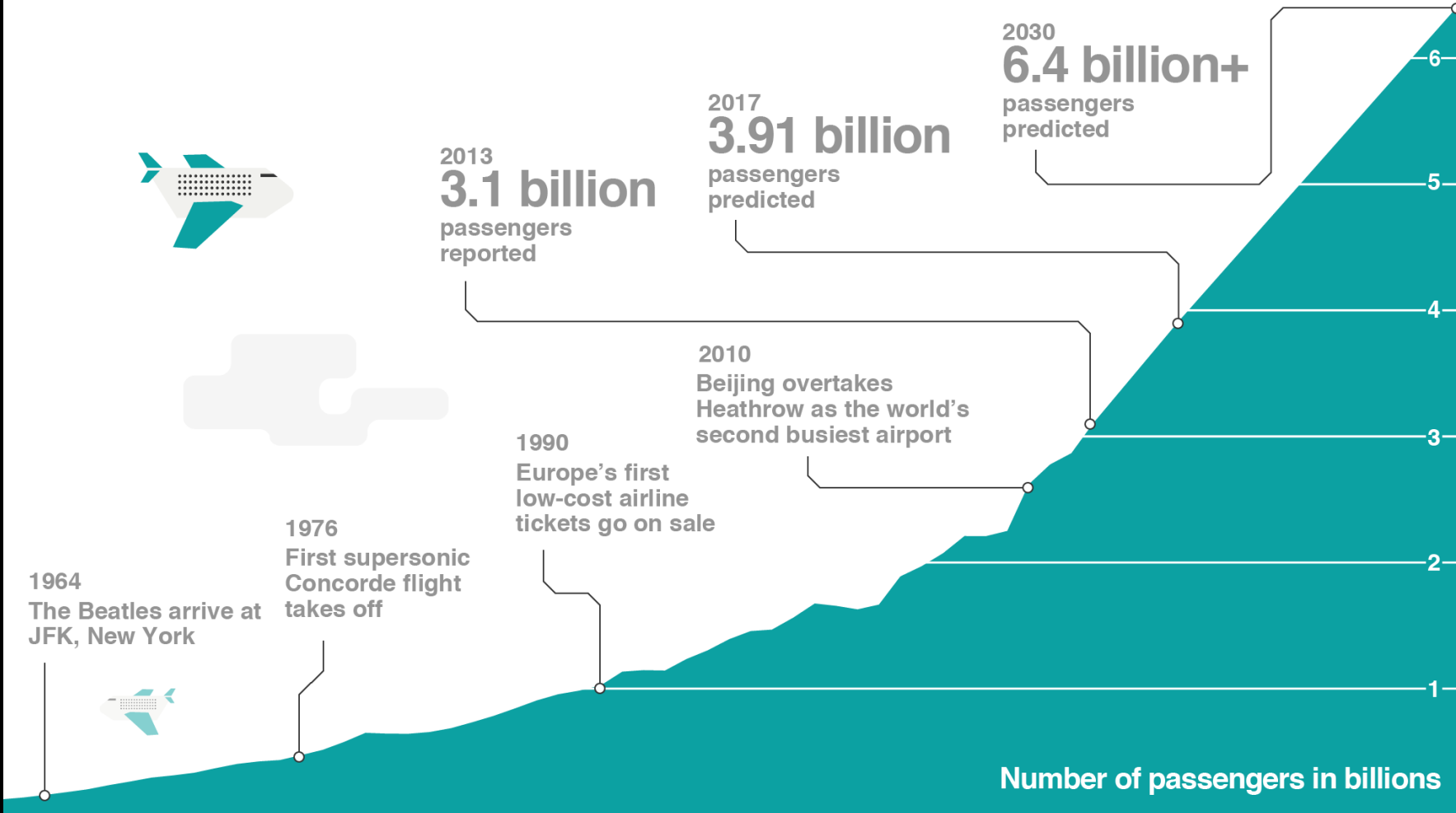
\*Zika mortality has not been fully established. Most deaths are fetal or related to outcomes of severe congenital infections.

“One can conclude...that we have entered a pandemic era”.

# What are some determinants of Emerging Infectious Diseases?

<b>Microbial adaptation and change</b>	<b>Technology and industry</b>
<b>Human susceptibility to infection</b>	<b>Breakdown of public health measures</b>
<b>Climate and weather</b>	<b>Poverty and social inequality</b>
<b>Changing ecosystems</b>	<b>War and famine</b>
<b>Human demographics and behavior</b>	<b>Lack of political will</b>
<b>Economic development and land use</b>	<b>Intent to harm</b>
<b>International travel and commerce</b>	

# Global Travel - 8x increase and rising



# Food Safety



## LETTUCE

Canada, Chile, Dominican Republic, Mexico, Peru, USA



## CUCUMBERS

Canada, Honduras, India, Mexico, Spain, USA



## FETA CHEESE

Canada, Denmark, Egypt, Germany, Greece, Israel, Italy, Turkey, UK, USA



## VINAIGRETTE

Argentina, Brazil, Canada, Chile, China, France, Germany, Greece, India, Indonesia, Italy, Mexico, Morocco, Peru, Portugal, Spain, Thailand, Tunisia, Turkey, USA, Vietnam



## OLIVES

Greece, Israel, Mexico, Spain, USA



## SPROUTS

Argentina, Australia, Bangladesh, Canada, China, Egypt, France, India, Morocco, Nepal, Pakistan, South Africa, Spain, Turkey, USA



## CROUTONS

Argentina, Australia, Brazil, Canada, China, France, India, Mexico, Netherlands, Poland, Russia, Switzerland, Uruguay, USA, Vietnam



## TOMATOES

Canada, Dominican Republic, Holland, Israel, Italy, Mexico, USA



## ONIONS

Canada, China, Germany, India, USA



## MANDARIN ORANGES

Israel, Mexico, Morocco, South Africa, Spain



## The Well-Traveled Salad.

### Do You Know Where Your Food Has Been?

As consumers, many of us fail to recognize that even our domestic and local food supplies are part of a global network. The daily activity of consuming food directly links our health as humans to the health of crops and produce, food animals, and the environments in which they are produced.



A "One Health" approach to food safety—bringing together expertise and resources from the clinical, veterinary, wildlife health, and ecology communities—has the potential to reveal the sources, pathways, and factors driving the outbreaks of foodborne illness and possibly prevent them from occurring in the first place.

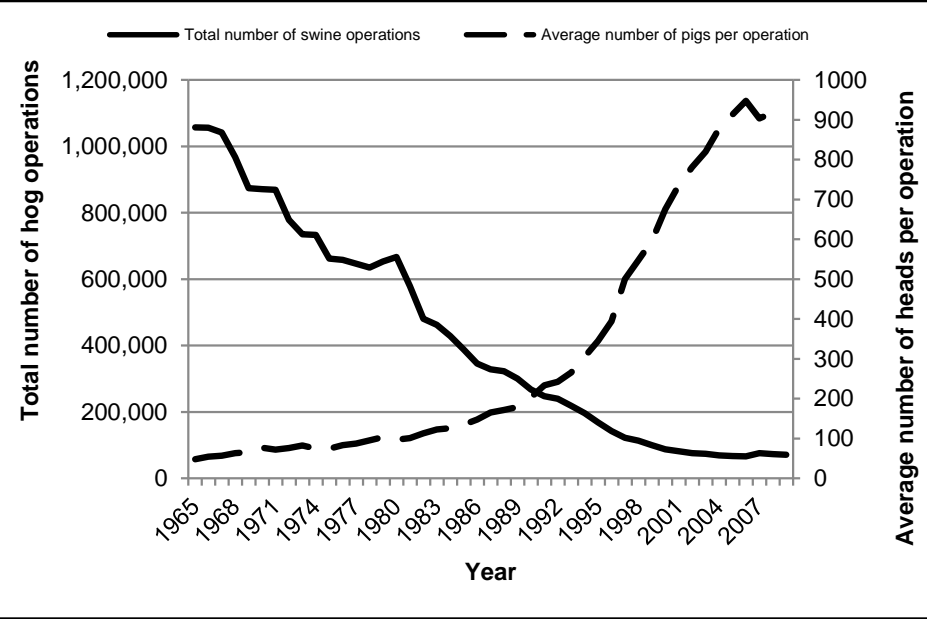
NOTE: Countries are listed in alphabetical order and not by volume of export.



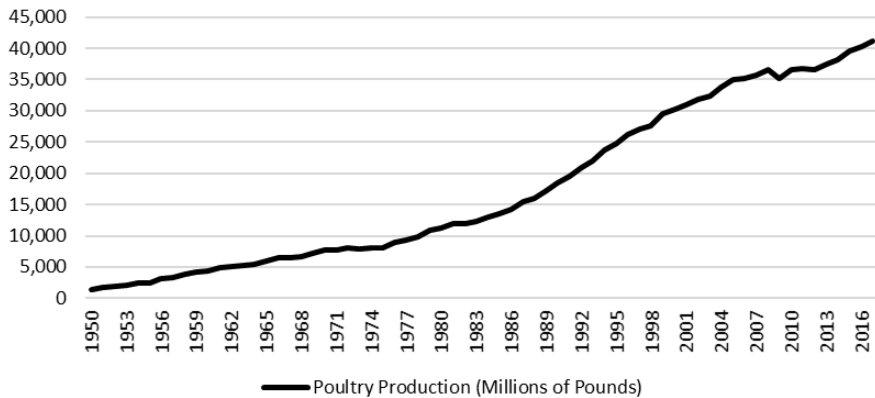
# Modern Food Production



Pork



U.S. Poultry Production, 1950-2016  
(Millions of Pounds)



Poultry

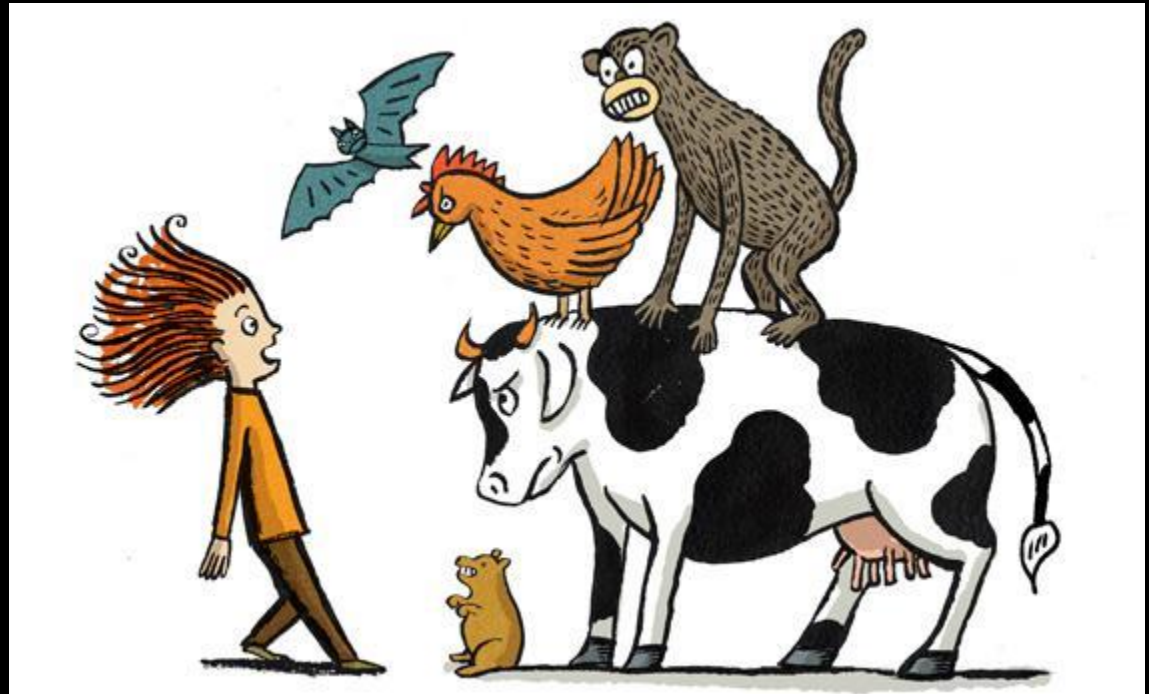
# Modern Food Production



**Aquaculture**

# Food Production and Pathogen Transmission

- Zoonoses
  - Influenza Viruses
  - *E. coli*
  - *S. aureus*
  - *S. suis*
  - *Campylobacter*
  - Mycoses
  - Parasites
  - Others



# Antimicrobial Resistance

## China



## Emergence of plasmid-mediated colistin resistance mechanism MCR-1 in animals and human beings in China: a microbiological and molecular biological study



Yi-Yun Liu\*, Yang Wang\*, Timothy R Walsh, Ling-Xian Yi, Rong Zhang, James Spencer, Yohei Doi, Guobao Tian, Baolei Dong, Xianhui Huang, Lin-Feng Yu, Danxia Gu, Hongwei Ren, Xiaojie Chen, Luchao Lv, Dandan He, Hongwei Zhou, Zisen Liang, Jian-Hua Liu, Jianzhong Shen

## USA



Antimicrobial Agents  
and Chemotherapy



LETTER TO THE EDITOR

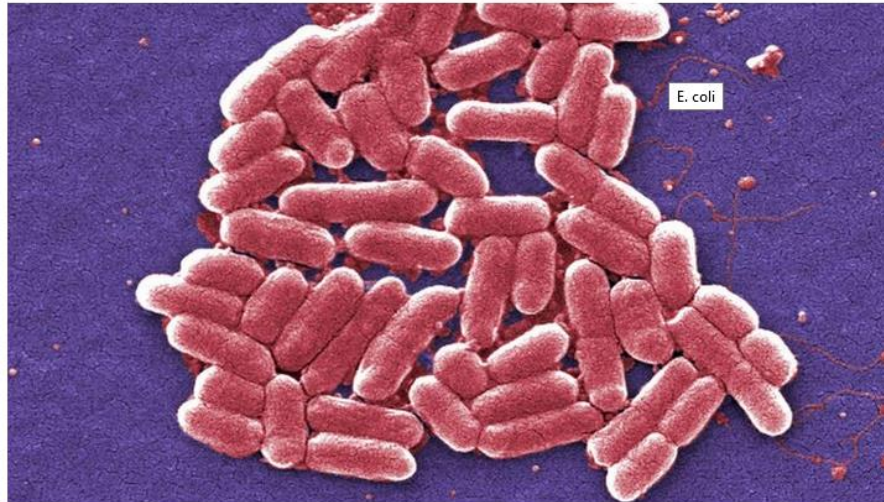
## *Escherichia coli* Harboring *mcr-1* and *bla*<sub>CTX-M</sub> on a Novel IncF Plasmid: First Report of *mcr-1* in the United States

Patrick McGann,<sup>a</sup> Erik Snestrud,<sup>a</sup> Rosslyn Maybank,<sup>a</sup> Brendan Corey,<sup>a</sup> Ana C. Ong,<sup>a</sup> Robert Clifford,<sup>a</sup> Mary Hinkle,<sup>a</sup> Timothy Whitman,<sup>b</sup> Emil Lesho,<sup>a</sup> Kurt E. Schaecher<sup>c</sup>

Multidrug-resistant Organism Repository and Surveillance Network, Walter Reed Army Institute of Research, Silver Spring, Maryland, USA<sup>a</sup>; Department of Infectious Diseases, Walter Reed National Military Medical Center, Bethesda, Maryland, USA<sup>b</sup>; Department of Pathology, Walter Reed National Military Medical Center, Bethesda, Maryland, USA<sup>c</sup>

# Antimicrobial Resistance

## L.A. County patient was infected with drug-resistant E. coli



An increasing number of E. coli bacteria, shown here, are resistant to colistin, an antibiotic of last resort. (Janice Carr / Associated Press)



By **Soumya Karlamangla** · Contact Reporter

JANUARY 31, 2017, 4:25 PM

**S**cientists were alarmed last year when they found that a woman in Pennsylvania had been infected with bacteria that was resistant to colistin, an antibiotic that is considered the last line of defense against particularly nasty illnesses.

Invest v  
Up to  
**\$600**  
when you inv  
in a new acco  
**MERRILL  
EDGE**  
Bank of America Corporati

ADVERTISEMENT

### In Case You



300  
vide  
offic  
teen

7:25



One  
capt  
susj  
FEB.

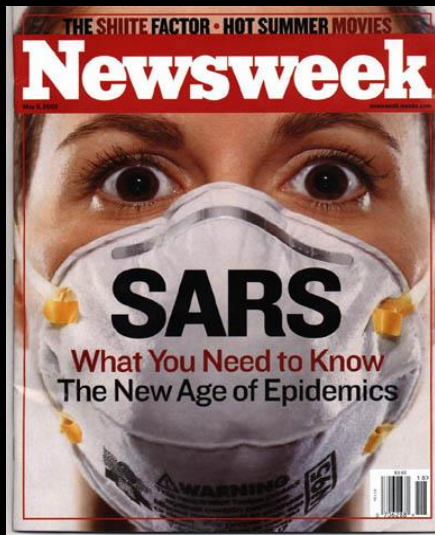


Will  
trad  
dou

...man infected when traveling in Asia.

# Climate Change

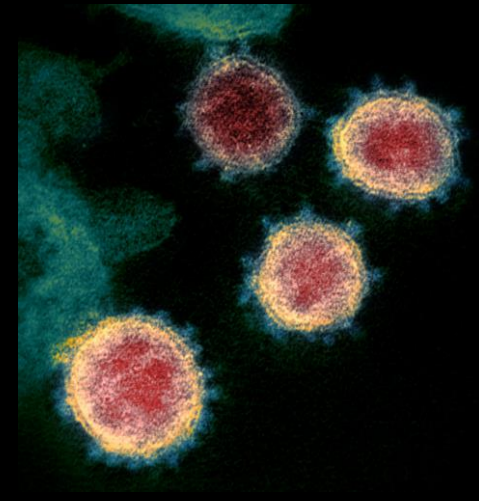




SARS-CoV



Influenza  
(pH1, H5, H7, etc.)



SARS-CoV-2



MERS-CoV



Nipah virus



Ebola virus

It has been estimated that **60%** of emerging infectious diseases in humans are due to zoonotic pathogens and that zoonotic pathogens are **twice as likely** to be associated with emerging diseases than are non-zoonotic pathogens

*Emerg Infect Dis.* 2005 Dec; 11(12): 1842–1847.

*Nature.* 2008; 451(7181): 990–993.

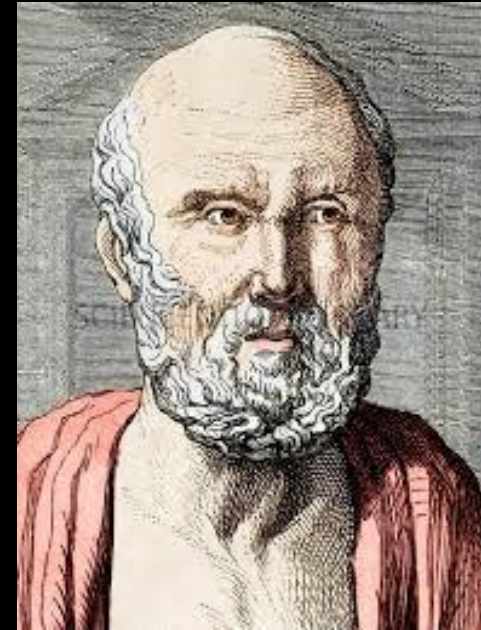
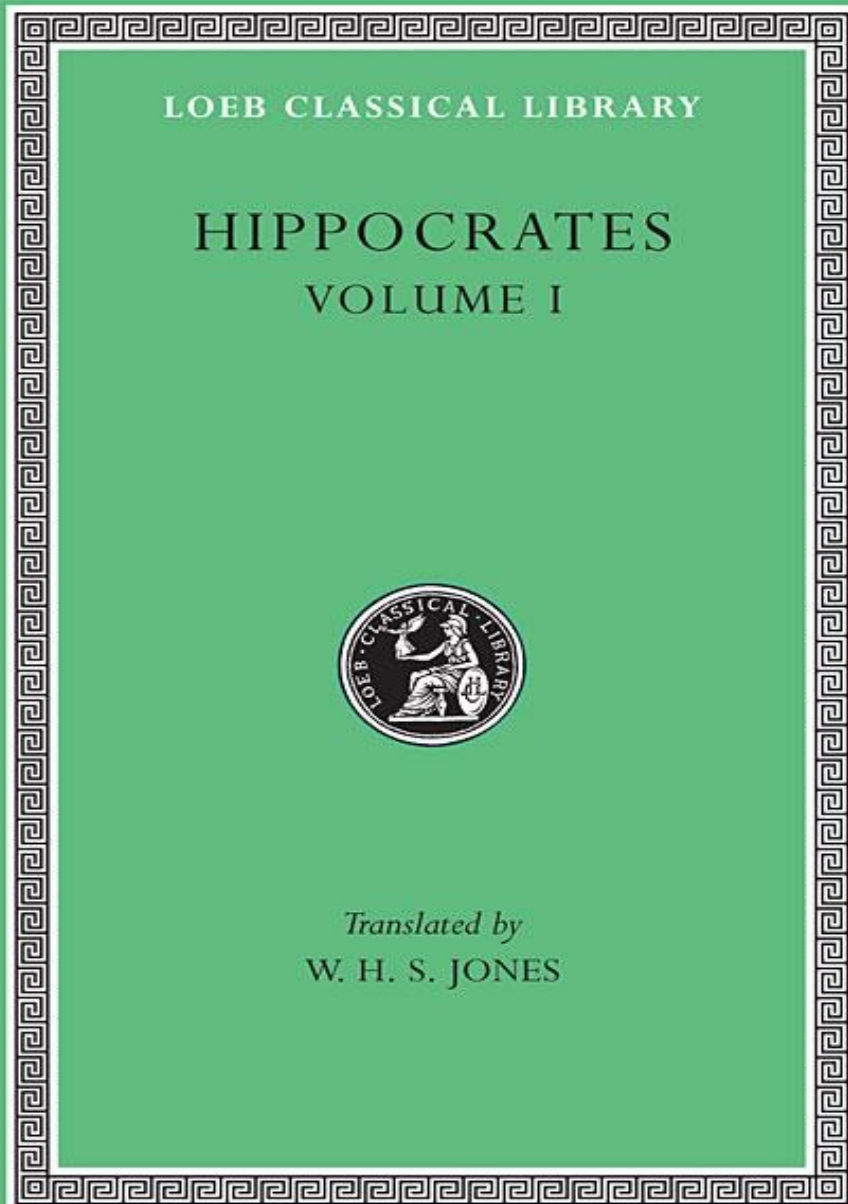


# The Challenge

- No one discipline is trained to engage such complex problems
- No one agency or organization can do it alone
- And limited resources



# Historical Perspective



Hippocrates  
(460 B.C. – 377 B.C.)

*On Airs, Waters, and  
Places*

# Historical Perspective

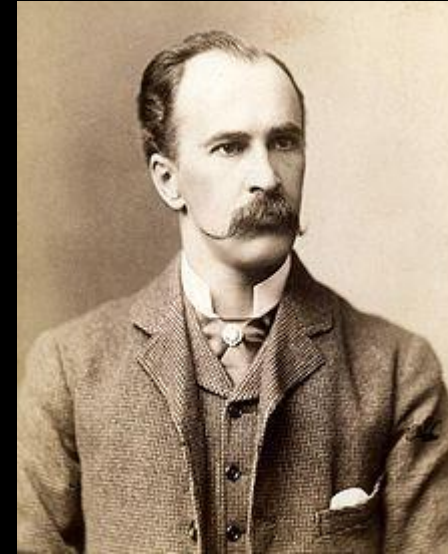
“Between animal and human medicine there is no dividing line — nor should there be. The object is different but the experience obtained constitutes the basis of all medicine.”

- Rudolf Virchow, 19<sup>th</sup> Century



# Historical Perspective

## The Relation of Animals to Man by Sir William Osler 1849-1919



Dr. James H. Steele and his wife, "Chief of Staff" Ms. Doris Vaughn, in Houston, June 2012

To call Jim Steele "just" a veterinarian is like saying Bill Gates is "just" a software engineer. During his one hundred years of life, Steele changed the face of veterinary medicine and public health.

As the first US assistant surgeon general for veterinary affairs, he pioneered the simple but powerful philosophy that human health is inextricably connected to the health of animals and our surrounding environment. His unwavering convictions, passion for medical progress, and strong leadership have saved and enriched countless human and animal lives.

Animal Health Human Health One Health recounts Jim Steele's remarkable story, bringing to life his rough-and-tumble childhood in Chicago, his veterinary and academic career, and his final years when he was still mentoring and advising his students and colleagues and coauthoring books on zoonotic diseases. He was the father of Veterinary Public Health and an inspiration to all who meet him.



Animal Health Human Health One Health CRAIG NASH CARTER

## Animal Health Human Health One Health

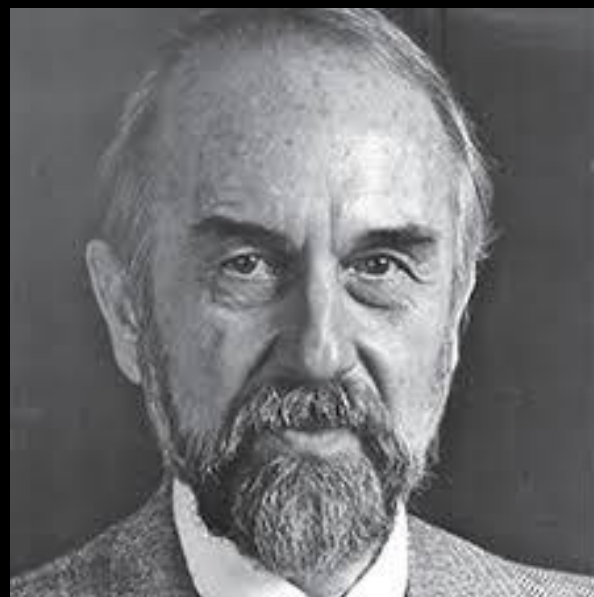
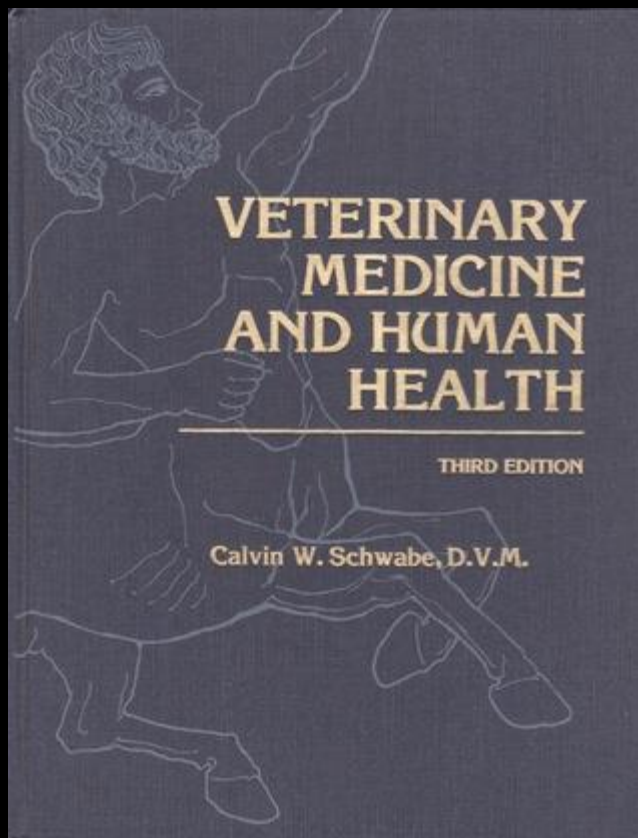
The Life and Legacy of Dr. James H. Steele



By Craig Nash Carter  
with Cynthia Gregg Hoobler

## James Steele establishes veterinary health division at US CDC 1947

# Historical Perspective



## One Medicine

*“There is no difference of paradigm between human and veterinary medicine. Both sciences share a common body of knowledge in anatomy, physiology, pathology, on the origin of disease in all species.”*

- Calvin Schwabe, 20<sup>th</sup> century

# Wildlife Conservation Society

## 12 Manhattan Principles

2004

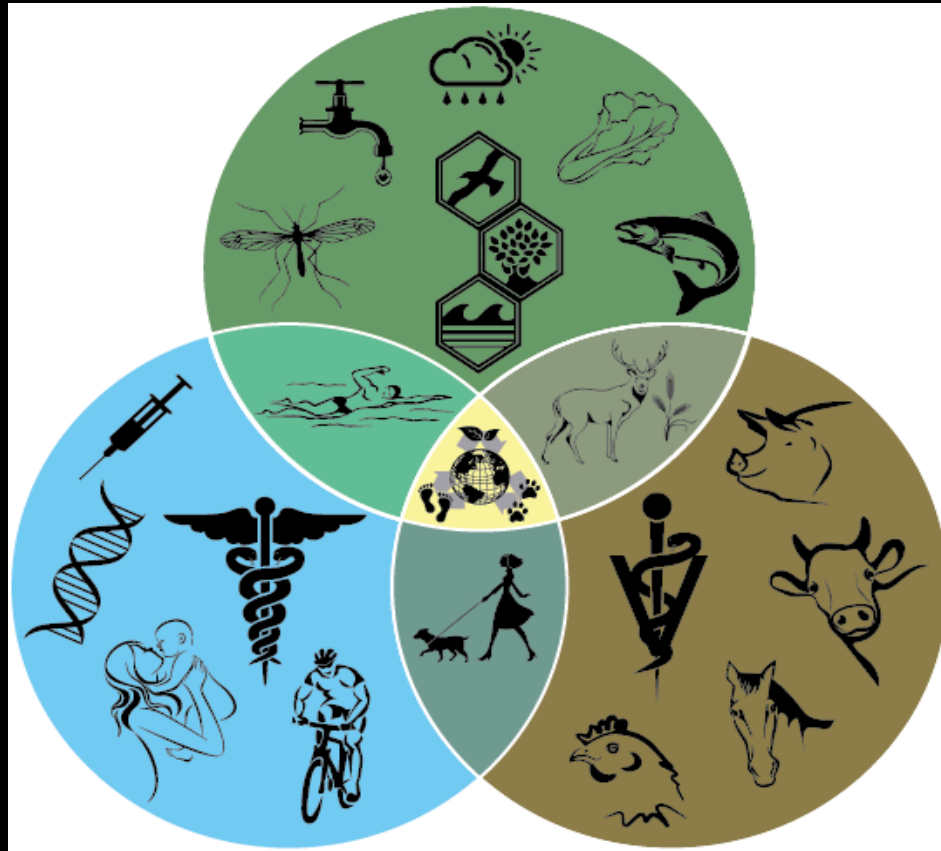
...called for an international, interdisciplinary approach to prevent disease and formed the basis of the “One World, One Health<sup>TM</sup>” concept.



**Wildlife  
Conservation  
Society**

# One Health

## Environment



Humans

Animals

# One Health Defined

*“The integrative effort of multiple disciplines working locally, nationally, and globally to attain optimal health for people, animals, and the environment” -AVMA*



# AVMA

Our Passion. Our Profession.



# One Health Defined

*“A collaborative global approach to understanding risks for human and animal health (including both domestic animals and wildlife) and ecosystem health as a whole.” -*

OIE



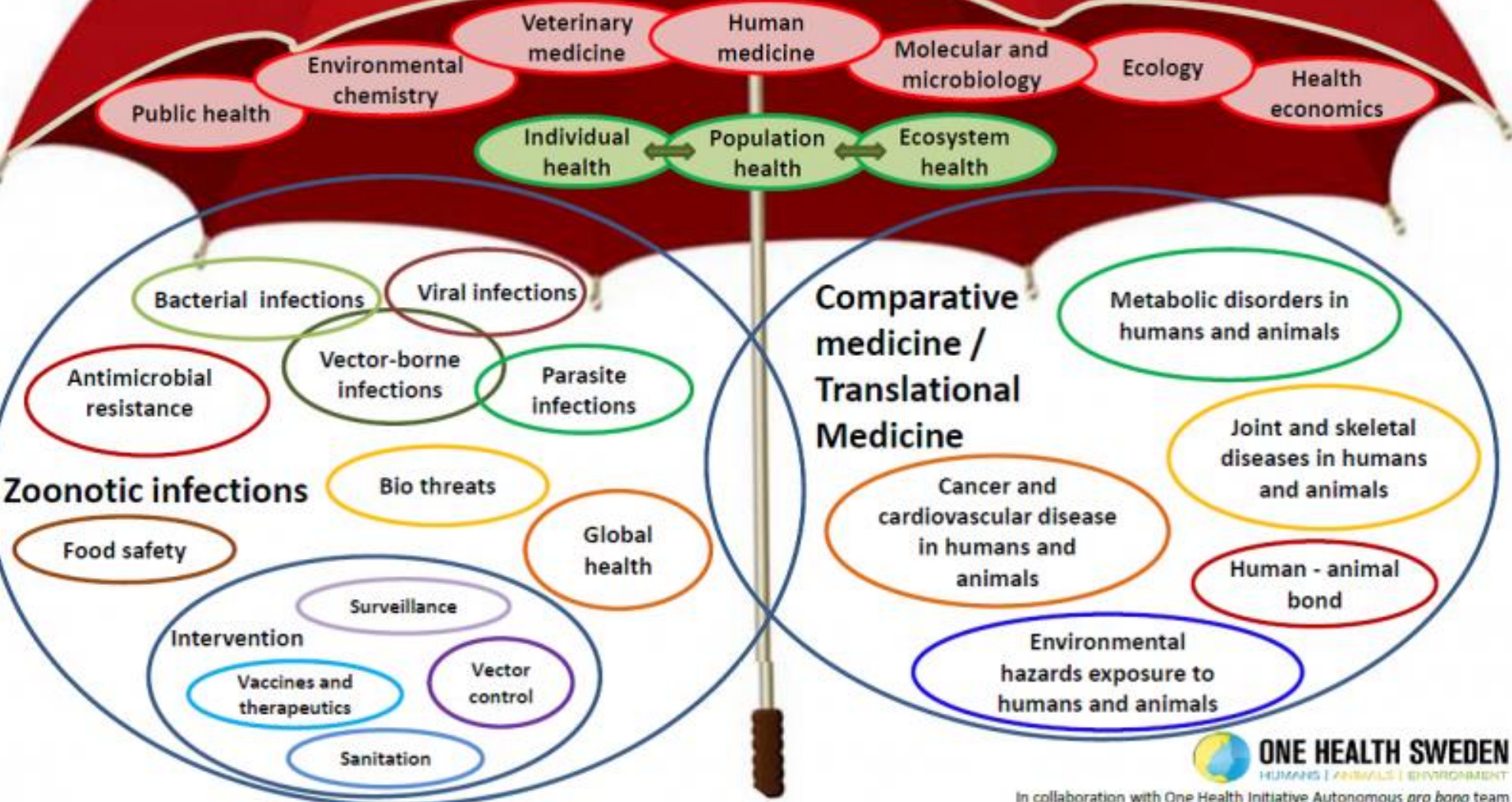
# One Health Defined

*“An approach to designing and implementing programmes, policies, legislation and research in which multiple sectors communicate and work together to achieve better public health outcomes.” -WHO*



**World Health  
Organization**

# One Health

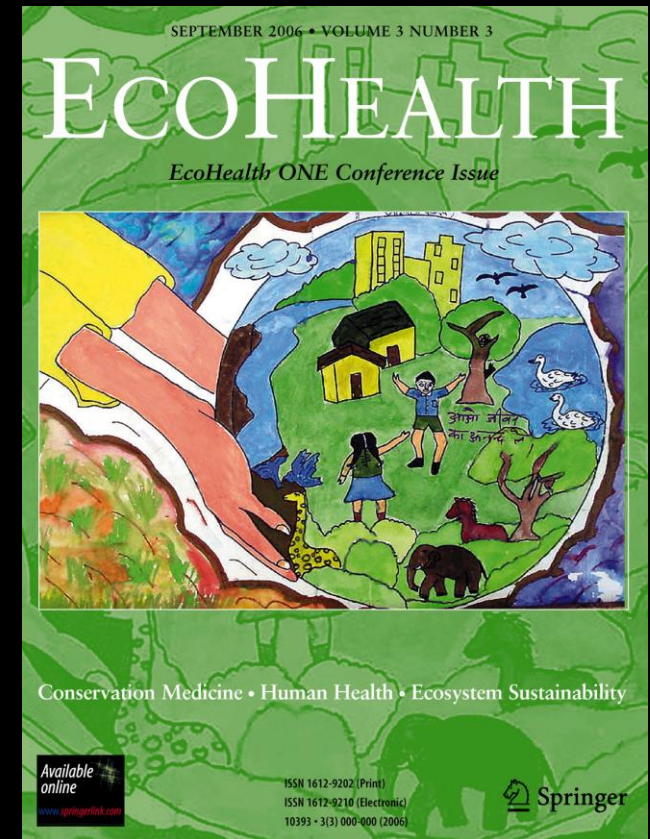


# Other Paradigms

# EcoHealth

## Pillars

- Systems thinking
- Transdisciplinary
- Participation
- Gender and social equity
- Sustainability
- Knowledge to action



# Ecosystems Approach

[Infect Ecol Epidemiol](#). 2016; 6: 10.3402/iee.v6.30978.

Published online 2016 Feb 17. doi: [10.3402/iee.v6.30978](https://doi.org/10.3402/iee.v6.30978)

PMCID: PMC4761681

PMID: [26899935](https://pubmed.ncbi.nlm.nih.gov/26899935/)

## One Health and EcoHealth: the same wine in different bottles?

[François Roger](#), DVM, PhD,<sup>1,\*</sup> [Alexandre Caron](#), DVM, PhD,<sup>1</sup> [Serge Morand](#), PhD,<sup>1</sup> [Miguel Pedrono](#), PhD,<sup>1</sup> [Michel de Garine-Wichatitsky](#), DVM, PhD,<sup>1</sup> [Veronique Chevalier](#), DVM, PhD,<sup>1</sup> [Annelise Tran](#), PhD,<sup>1</sup> [Nicolas Gaidet](#), PhD,<sup>1</sup> [Muriel Figuié](#), PhD,<sup>2</sup> [Marie-Noël de Visscher](#), PhD,<sup>1</sup> and [Aurélie Binot](#), PhD<sup>1</sup>

[Author information](#) ► [Article notes](#) ► [Copyright and License information](#) ► [Disclaimer](#)

[Ecohealth](#). 2012 Dec;9(4):371-3. doi: [10.1007/s10393-013-0812-z](https://doi.org/10.1007/s10393-013-0812-z). Epub 2013 Feb 8.

## Convergence of EcoHealth and One Health.

[Zinsstag J](#).

PMID: 23392841 PMCID: [PMC3627853](https://pubmed.ncbi.nlm.nih.gov/PMC3627853/) DOI: [10.1007/s10393-013-0812-z](https://doi.org/10.1007/s10393-013-0812-z)

[Indexed for MEDLINE] [Free PMC Article](#)

[Ecohealth](#). 2015 Jun;12(2):212-9. doi: [10.1007/s10393-014-0964-5](https://doi.org/10.1007/s10393-014-0964-5). Epub 2014 Sep 19.

## Need for Enhanced Environmental Representation in the Implementation of One Health.

[Barrett MA](#)<sup>1,2,3</sup>, [Bouley TA](#)<sup>4</sup>.

[⊕ Author information](#)

# Planetary Health

Zoom in (Ctrl+Plus)

The Lancet Commissions



## The Rockefeller Foundation–Lancet Commission on planetary health

### Safeguarding human health in the Anthropocene epoch: report of The Rockefeller Foundation–Lancet Commission on planetary health

Sarah Whitmore, Andy Haines, Chris Beynon, Frederick Boffa, Anthony C Caporin, Bruni de Ferraris de Souza Diniz, Alan East, Howard Franklin, Peng Gong, Peter Hain, Richard Horton, Georgina M Hux, Robert Martin, Somaia S Myers, Soria Molkar, Steven A Olfelt, Sukhvinder K Pattinson, Martina Pongraci, Cristina Romanello, Agnes Soreca, Lucette Vaya, Derek Yach

**Executive summary**  
 Far-reaching changes to the structure and function of the Earth's natural systems represent a growing threat to human health. And yet, global health has mainly improved as these changes have gathered pace. What is the explanation? As a Commission, we are deeply concerned that the explanation is straightforward and sobering: we have been misjudging the health of future generations to realise economic and development gains in the present. By unreasonably exploiting nature's resources, human civilisation has thrust itself into new risks substantial health effects from the degradation of nature's life support systems in the future. Health effects from changes to the environment including climate change, ocean acidification, land degradation, water scarcity, over-exploitation of fisheries, and biodiversity loss pose serious challenges to the global health gains of the past several decades and are likely to become increasingly dominant during the second half of this century and beyond. These striking trends are driven by highly inequitable, inefficient, and unsustainable patterns of resource consumption and technological development, together with population growth.

We identify three categories of challenges that have to be addressed to maintain and enhance human health in the face of increasingly harmful environmental trends. Firstly, conceptual and empirical failures (imagination challenges), such as an over-reliance on gross domestic product as a measure of human progress, the failure to account for future health and environmental harms over present day gains, and the disproportionate effects of those harms on the poor and those in developing nations. Secondly, knowledge failures (research and information challenges), such as failure to address social and environmental drivers of ill health, a historical scarcity of interdisciplinary

research and funding, together with an unwillingness or inability to deal with uncertainty within decision making frameworks. Thirdly, implementation failures (governance challenges), such as how governments and institutions delay recognition and responses to crises, especially when faced with uncertainties, pooled common resources, and time lags between action and effect.

Although better evidence is needed to underpin appropriate policies than is available at present, this should not be used as an excuse for inaction. Substantial potential exists to link action to reduce environmental damage with improved health outcomes for nations as all levels of economic development. This Commission identifies opportunities for action by the key constituencies: health professionals, research funders and the academic community, the UN and Bretton Woods bodies, governments, investors and corporate reporting bodies, and civil society organisations.

Depreciation of natural capital and nature's subsidy should be accounted for so that economy and nature are not falsely separated. Policies should balance social progress, environmental sustainability, and the economy. To support a world population of 9–10 billion people or more, rethinks food and agricultural systems are needed to address both undernutrition and over-nutrition, reduce waste, diversify diets, and minimise environmental damage. Meeting the need for modern family planning can improve health in the short term—eg, from reduced maternal mortality and reduced pressures on the environment and on infrastructure.

Planetary health offers an unprecedented opportunity for advocacy of global and national reforms of taxes and subsidies for many sectors of the economy, including energy, agriculture, water, fisheries, and health. Regional trade treaties should act to further incorporate the

Lancet 2015, 386: 1–239. doi:10.1016/S0140-6736(15)00251-9  
 Published Online  
 July 01, 2015  
 Copyright © 2015 by Elsevier Ltd. This is an open access article under the CC BY license. See [www.lancet.com](http://www.lancet.com) for details.  
 For reprints see [www.lancet.com](http://www.lancet.com) or [reprints@lancet.com](mailto:reprints@lancet.com)  
 For telegraphic use  
<http://www.lancet.com>  
 ISSN 0140-6736  
 The Lancet Commission on Planetary Health

Centre for Biodiversity and  
 Conservation Research,  
 University College London,  
 London, UK (Dr Horton PR),  
 The Centre for Health Policy,  
 School of Hygiene & Tropical  
 Medicine, London, UK  
 (Dr Haines PR), Johns Hopkins  
 Bloomberg School of Public  
 Health, Baltimore, MD, USA  
 (Prof C Beynon PR), The  
 Rockefeller Foundation,  
 New York, NY, USA (Dr Boffa PR),  
 Dr Martin International  
 Institute for Global Health,  
 United Nations University,  
 Institute for Future Generations  
 Studies, Tokyo, Japan  
 (Prof A Caporin PR),  
 Commission on Global  
 Development, Rio de Janeiro,  
 Brazil (Dr Diniz PR),  
 Centre for Science and Policy,  
 London, UK (Dr East PR),  
 Centre for Science and Policy,  
 London, UK (Dr Franklin PR),  
 Department of Health, Behavior,  
 and Society, Johns Hopkins  
 University, Baltimore, MD, USA  
 (Dr Gong PR), Centre for  
 Global Health, University of  
 Edinburgh, Edinburgh, UK  
 (Dr Hux PR), Centre for  
 Global Health, University of  
 Edinburgh, Edinburgh, UK  
 (Dr Martin PR), Centre for  
 Global Health, University of  
 Edinburgh, Edinburgh, UK  
 (Dr Myers PR), Centre for  
 Global Health, University of  
 Edinburgh, Edinburgh, UK  
 (Dr Molkar PR), Centre for  
 Global Health, University of  
 Edinburgh, Edinburgh, UK  
 (Dr Olfelt PR), Centre for  
 Global Health, University of  
 Edinburgh, Edinburgh, UK  
 (Dr Pattinson PR), Centre for  
 Global Health, University of  
 Edinburgh, Edinburgh, UK  
 (Dr Romanello PR), Centre for  
 Global Health, University of  
 Edinburgh, Edinburgh, UK  
 (Dr Soreca PR), Centre for  
 Global Health, University of  
 Edinburgh, Edinburgh, UK  
 (Dr Vaya PR), Centre for  
 Global Health, University of  
 Edinburgh, Edinburgh, UK  
 (Dr Yach PR)

[www.thelancet.com](http://www.thelancet.com) Vol 386 November 14, 2015

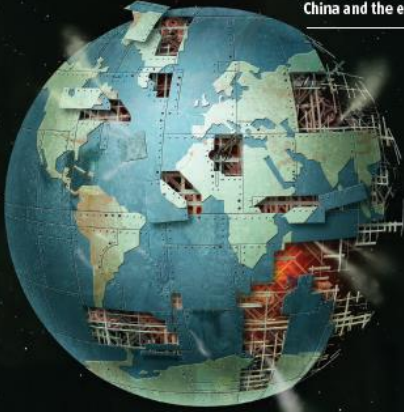
1073

The Economist

SPECIAL EDITION  
**PLANETARY HEALTH**  
 From The Economist 2014

In this issue:

Climate change and poverty  
 The future of the oceans  
 The melting north  
 Livestock diseases  
 China and the environment



## Panorama Perspectives

### Conversations on Planetary Health

Planetary Health 101  
 Information and Resources  
 Report 1 - September 2017

# Planetary Health

*Achievement of the highest attainable standard of health, wellbeing, and equity worldwide through judicious attention to the human systems – political, economic, and social – that shape the future of humanity and the Earth's natural systems that define the safe environmental limits within which humanity can flourish.*



**It is time for a  
new discipline.**



THE LANCET

**#PlanetaryHealth**

[Front Vet Sci](#). 2017; 4: 163.

Published online 2017 Sep 29. doi: [10.3389/fvets.2017.00163](https://doi.org/10.3389/fvets.2017.00163)

PMCID: [PMC5649127](#)

PMID: [29085825](#)

## A Comparison of Three Holistic Approaches to Health: One Health, EcoHealth, and Planetary Health

[Henrik Lerner](#)<sup>1,\*</sup> and [Charlotte Berg](#)<sup>2</sup>

[Author information](#) ▶ [Article notes](#) ▶ [Copyright and License information](#) ▶ [Disclaimer](#)

### Abstract

Go to:

Several holistic and interdisciplinary approaches exist to safeguard health. Three of the most influential concepts at the moment, One Health, EcoHealth, and Planetary Health, are analyzed in this paper, revealing similarities and differences at the theoretical conceptual level. These approaches may appear synonymous, as they all promote the underlying assumption of humans and other animals sharing the same planet and the same environmental challenges, infections and infectious agents as well as other aspects of physical—and possibly mental—health. However, we would like to illuminate the differences between these three concepts or approaches, and how the choice of terms may, deliberately or involuntary, signal

# One Health in Action

# Our Approach

- **Hotspots** – select environments with high density of humans and animals w/ close contact
- **Sampling Strategy** – collect specimens and data from humans, animals, and the environment
- **Testing Strategy** – use combination of molecular and virological techniques
- **Risk Characterization** – quantitatively define risk using epi methods





# Hotspot: Pig Farms

- China produces and consumes over half of all pork in the world
- It is estimated that pork production will continue to rise in China to meet demands

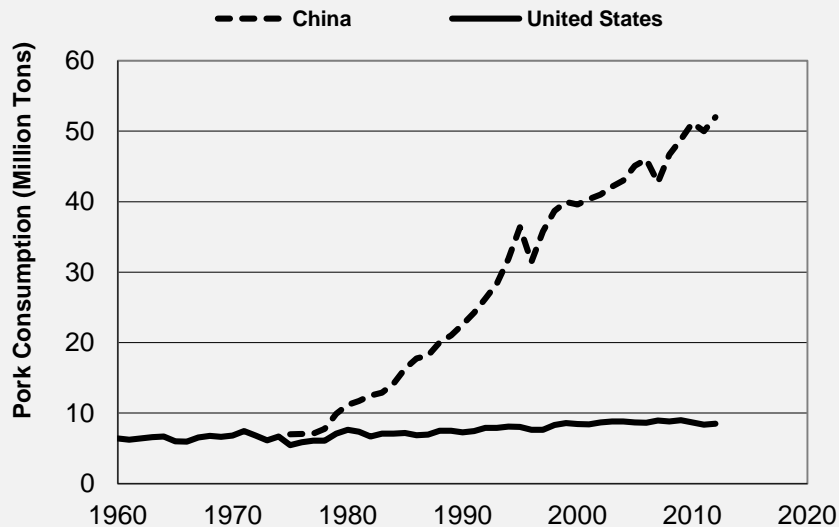


Fig 1. Pork Consumption in China and the United States, 1960-2012 (Source: USDA)



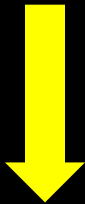
Human



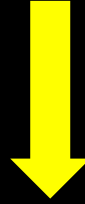
Animal



Environment



Nasal



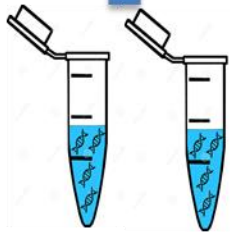
Oral Secretions



Bioaerosol



**Molecular Detection**



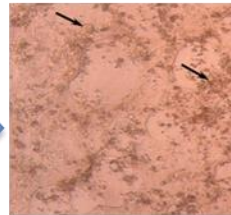
**RNA/DNA extraction**



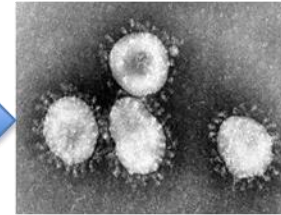
**Sample processing**



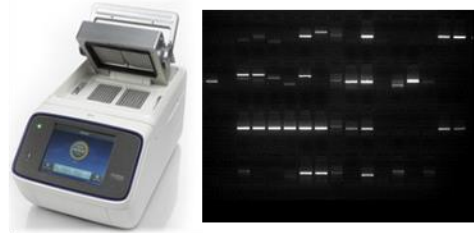
**Culture**



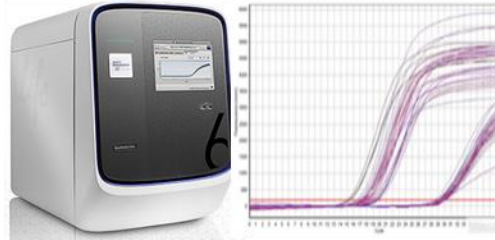
**Cytopathic effect**



**Microscopy**



**Conventional RT-PCR**

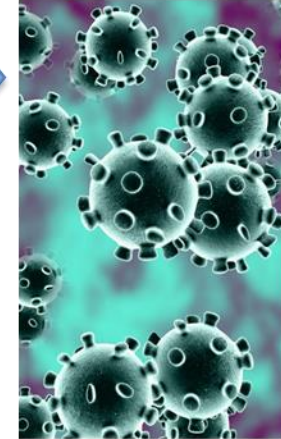


**Real time RT-PCR**

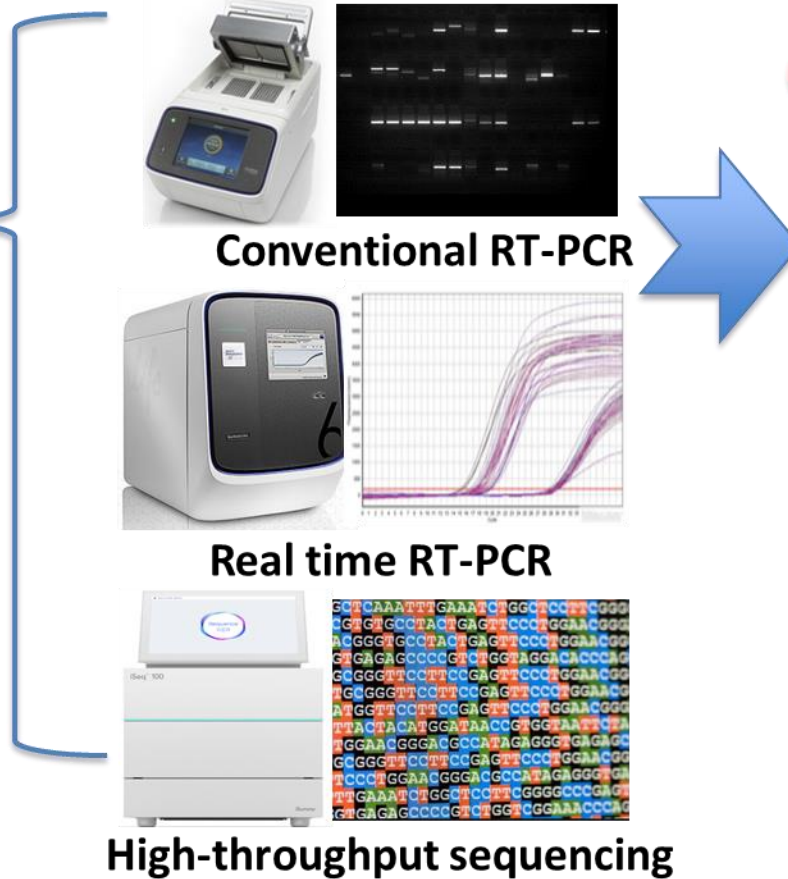


**High-throughput sequencing**

**Confirm**



**Novel Agent**



# Advantages of One Health Study Design

- Better understand viral ecology
- Improves environmental risk assessment
- Provides stronger evidence of zoonotic transmission risk
- Maximizes resources, when implemented in known hot spots



What are the challenges?

# Economic Issues

- When prevention strategies work, budgets are usually at risk for being cut.
- Supplemental spending only happens when outbreaks occur.

## IMF estimates global Covid cost at \$28tn in lost output

World economic outlook says 2020 impact is less than thought but there will be deep scars



▲ The WEO's country-by-country breakdown predicted the UK economy would shrink by 9.8% this year, the joint second worst alongside France among the G7 group of industrialised nations. Only Italy fared worse. Photograph: Justin Tallis/AFP/Getty Images

The International Monetary Fund has **scaled back** its estimate of the hit to the global economy from Covid-19 this year but warned that the final bill for the pandemic would total \$28tn (£21.5tn) in lost output.

# Reputational Risk

- Government's and industries want to protect their reputations.
- Can also be motivated by economics.



The screenshot shows the top portion of a webpage from 'The Pig Site'. The logo is on the left, and navigation links for 'Events', 'Shop', and 'Our site' are on the right. A green horizontal menu contains links for 'Home', 'Genetics & reproduction', 'Pig Management', 'Disease & welfare', 'Farm economics', and 'Anatomy & physiology'. The main heading is 'Economic Impact of the 'Swine Flu' Misnomer'. Below the heading are four category tags: 'DISEASE AND WELFARE', 'NOTIFIABLE DISEASES', 'H1N1 SWINE INFLUENZA', and 'MARKETS'. The author information is 'by 5m Editor' and '18 September 2009, at 12:00am'. The first paragraph of the article text is visible at the bottom.

The Pig Site

Events Shop Our site

Home | Genetics & reproduction | Pig Management | Disease & welfare | Farm economics | Anatomy & physiology

## Economic Impact of the 'Swine Flu' Misnomer

DISEASE AND WELFARE NOTIFIABLE DISEASES H1N1 SWINE INFLUENZA MARKETS

by 5m Editor  
18 September 2009, at 12:00am

What was believed to have started in April at a pig farm in Mexico and in the United States has now taken its toll across the globe. Countries around the world are negatively impacted by what is known as 'swine flu', a name misleading enough to affect pork markets everywhere. Rachel Ralte, reporting for ThePigSite, writes about the negative impact of referring to the novel A/H1N1 pandemic as 'swine flu'.

# Political Will

- Without the political will to translate research findings into effective policies, the impact of the science will always be limited.

## U.S. Sens. Tina Smith, Todd Young Introduce Bipartisan Legislation to Push Coordinated “One Health” Approach to Improve Public Health Preparedness

*Senators’ Bill Would Shore Up Efforts to Prepare for, and Prevent, Health Crises Like 2015 Avian Flu Outbreak*

WASHINGTON, D.C. [06/19/19]—Today, U.S. Senators Tina Smith (D-Minn.) and Todd Young (R-Ind.) introduced their bipartisan *Advancing Emergency Preparedness Through One Health Act*, which would improve public health preparedness by ensuring federal agencies advance a “One Health” approach—the idea that human and animal health are linked, and that they should be studied together—to prevent and respond to disease outbreaks.

# Collaboration

- COVID-19 demonstrated the importance of collaboration.
- Barriers still exist, primarily across sectors.

## *Covid-19 Changed How the World Does Science, Together*

Never before, scientists say, have so many of the world's researchers focused so urgently on a single topic. Nearly all other research has ground to a halt.

What are the solutions?

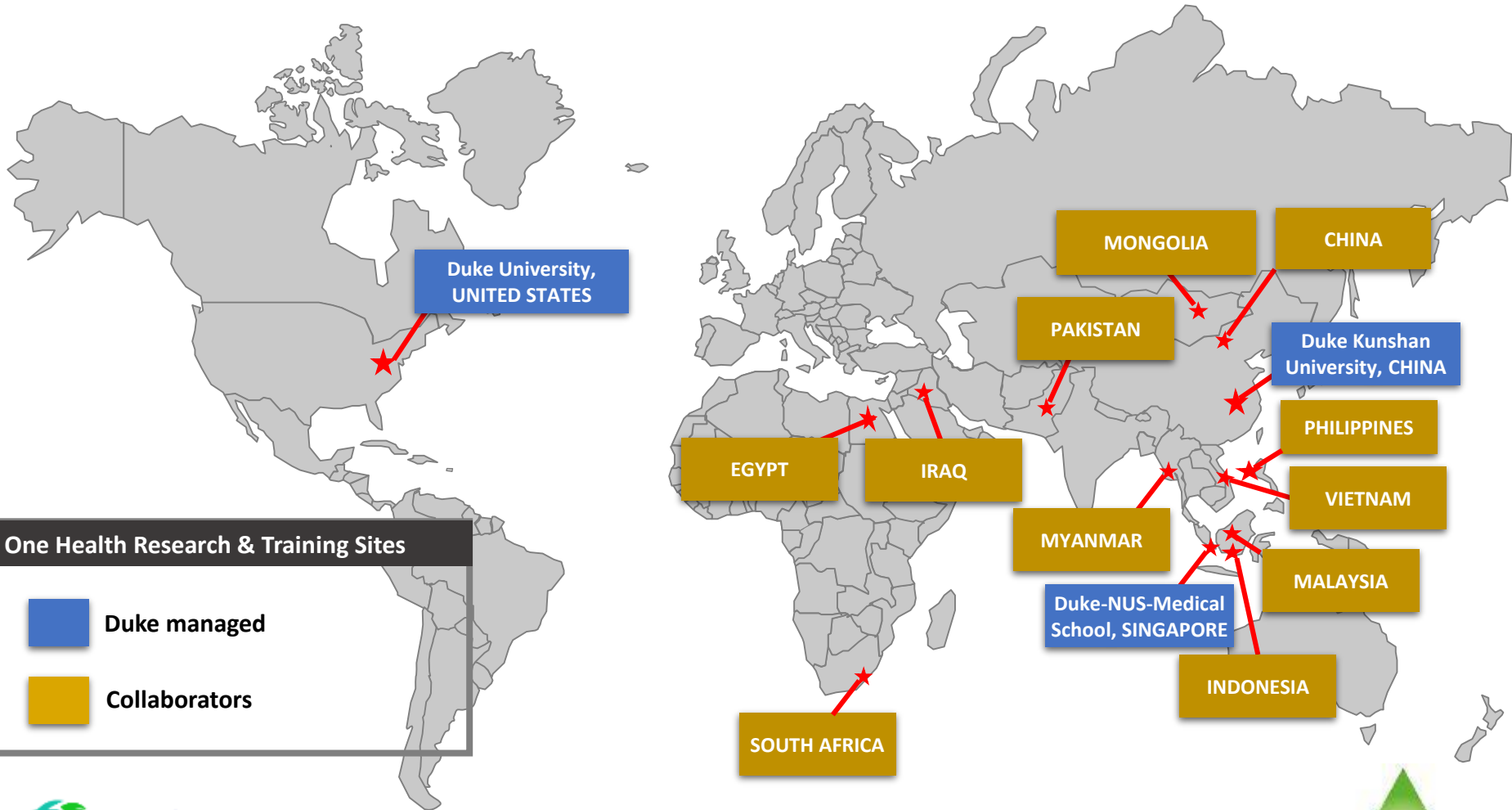
# Duke One Health Research & Training Network

>30 Partners

>30 pathogens

~30 projects

13 countries



Website: <https://sites.globalhealth.duke.edu/dukeonehealth/>



# Thank you!



[benjamin.anderson2@dukekunshan.edu.cn](mailto:benjamin.anderson2@dukekunshan.edu.cn)

<https://sites.globalhealth.duke.edu/dukeonehealth/>



## SDGHI Global Health Seminar Series – Reference Links

1. David M. Morens, Gregory K. Folkers, and Anthony S. Fauci. The challenge of emerging and re-emerging infectious diseases. *Nature*. 2004; 430(6996): 242–249. [PMC Free Article](#).
2. David M. Morens, and Anthony S. Fauci. Emerging Pandemic Diseases: How We Got to COVID-19. *Cell*. 2020 Sep 3; 182(5): 1077–1092. [PMC Free Article](#).
3. Hippocrates. On Airs, Waters, and Places. 400 B.C.E. MIT Classics Archive. Translated by Francis Adams. [Link](#).
4. François Roger, Alexandre Caron, Serge Morand, Miguel Pedrono, Michel de Garine-Wichatitsky, Veronique Chevalier, Annelise Tran, Nicolas Gaidet, Muriel Figuié, Marie-Noël de Visscher, and Aurélie Binot. One Health and EcoHealth: the same wine in different bottles? *Infect Ecol Epidemiol*. 2016; 6: 10.3402/iee.v6.30978. [PMC Free Article](#).
5. Jakob Zinsstag. Convergence of EcoHealth and One Health. *Ecohealth*. 2012 Dec; 9(4): 371–373. [PMC Free Article](#).
6. Sarah Whitmee, Andy Haines, Chris Beyrer, Frederick Boltz, Anthony G Capon, Bráulio Ferreira de Souza Dias, Alex Ezeh, Howard Frumkin, Peng Gong, Peter Head, Richard Horton, Georgina M Mace, Robert Marten, Samuel S Myers, Sania Nishtar, Steven A Osofsky, Subhrendu K Pattanayak, Montira J Pongsiri, Cristina Romanelli, Agnes Soucat, Jeanette Vega, Derek Yach. Safeguarding human health in the Anthropocene epoch: report of The Rockefeller Foundation-Lancet Commission on planetary health. *Lancet*. 2015 Nov 14;386(10007):1973-2028. [Link](#).
7. Henrik Lerner, and Charlotte Berg. A Comparison of Three Holistic Approaches to Health: One Health, EcoHealth, and Planetary Health. *Front Vet Sci*. 2017; 4: 163. [PMC Free Article](#).