

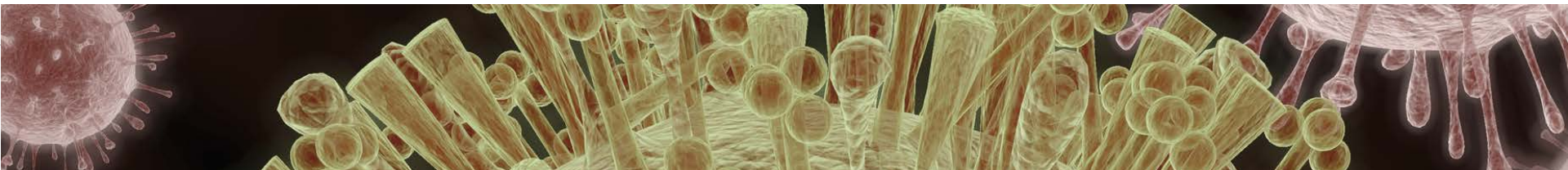


Transdisciplinary Collaboration: A Key to Success in Global Health

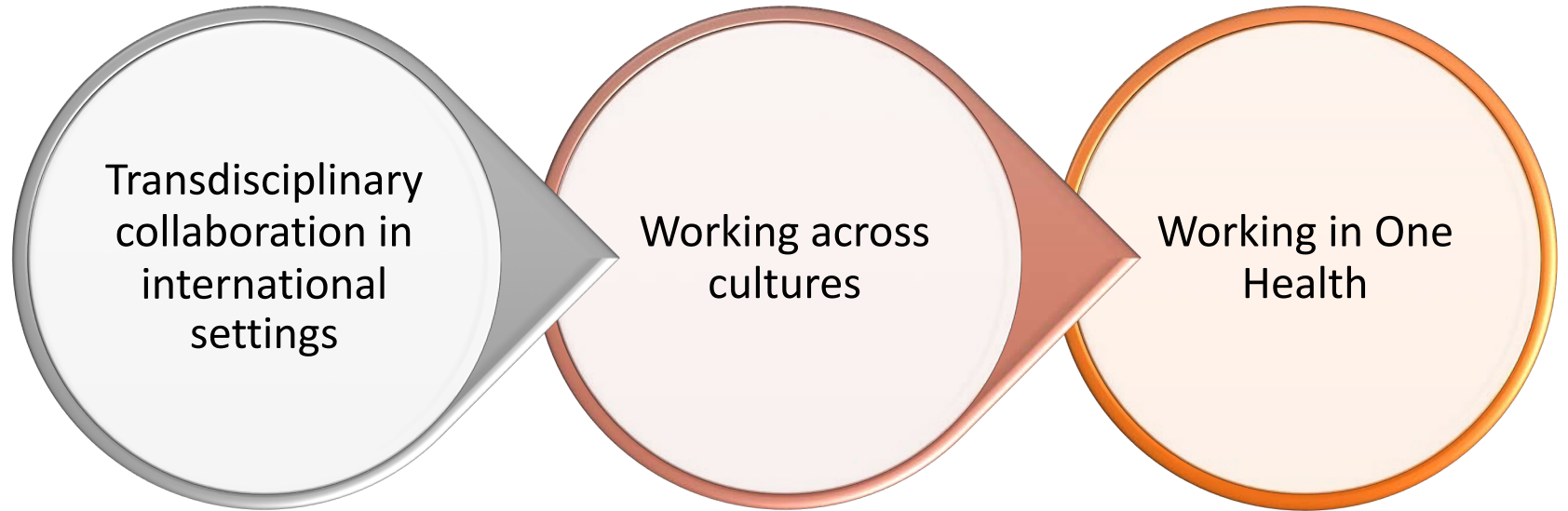
GloCal Career Development Webinar Series

November 20, 2019

Jonna Mazet, DVM, MPVM, PhD



Topics covered



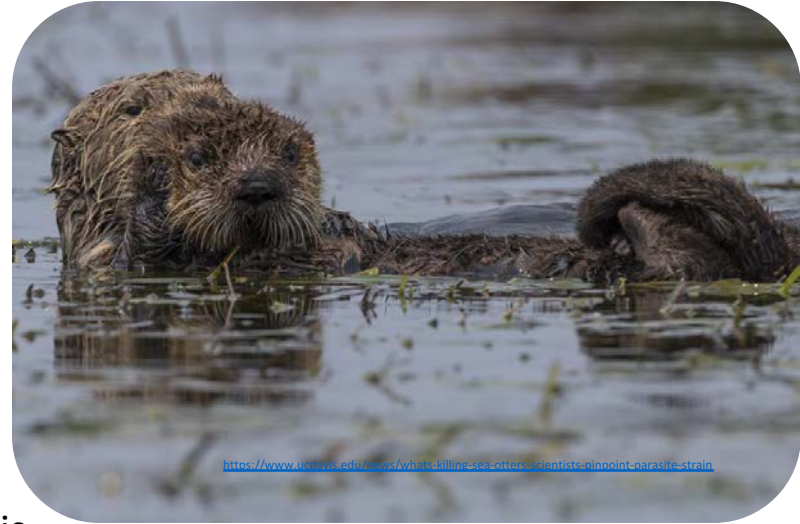
Background

Education and Training

- UC Davis, BS, Veterinary Science
- UC Davis, DVM, Wildlife Medicine
- UC Davis, MPVM, Infectious Disease Epidemiology
- UC Davis, PhD, Epidemiology

Current Position

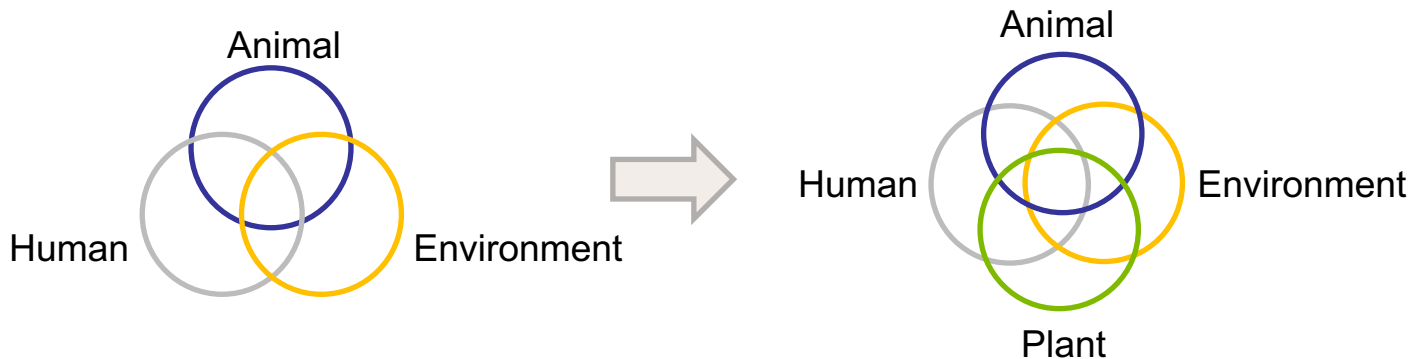
- Professor of Epidemiology and Disease Ecology, UC Davis
- Affiliate, Institute for Global Health Sciences, UC San Francisco
- Executive Director, One Health Institute, UC Davis School of Veterinary Medicine
- Director, USAID One Health Workforce – Next Generation
- Chair, One Health Action Collaborative, National Academy of Sciences, Engineering, and Medicine

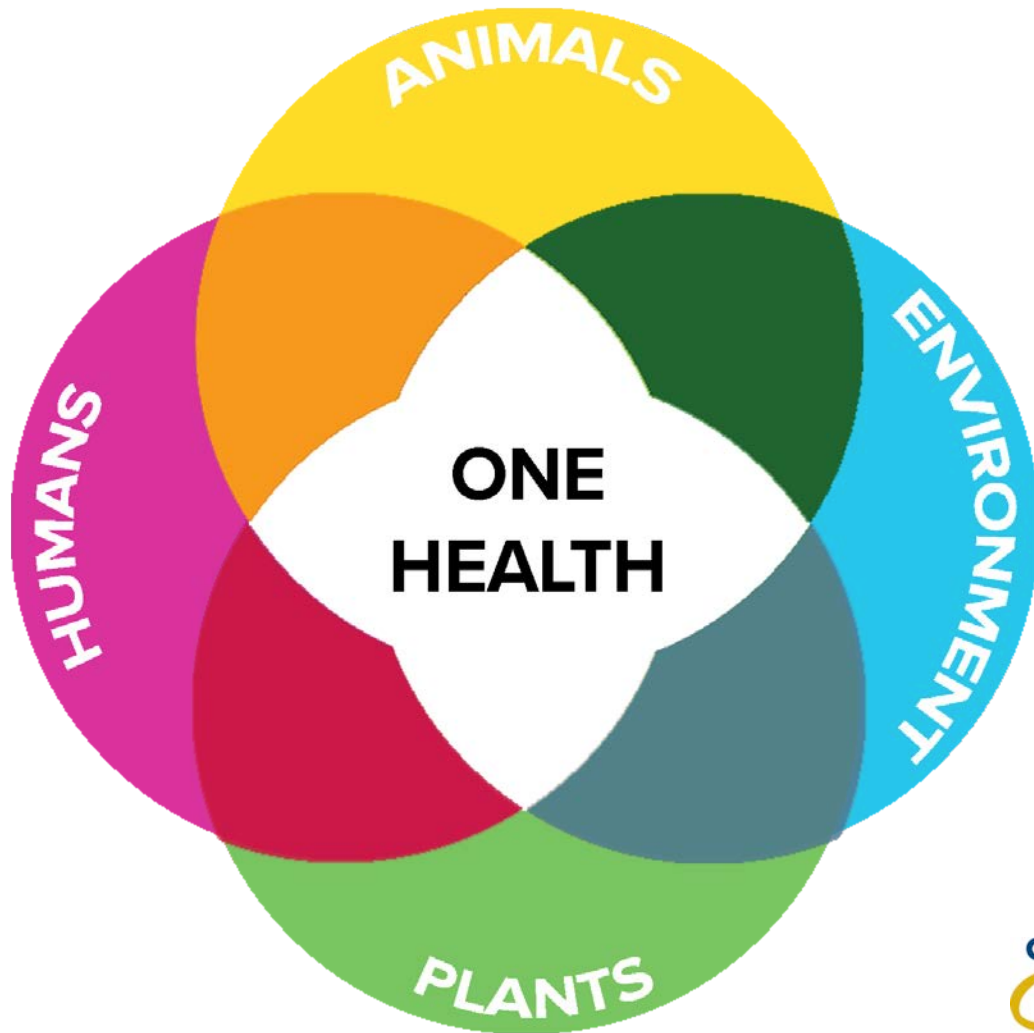


Definition of One Health

“A collaborative, multisectoral, and trans-disciplinary approach — **working at the local, regional, national, and global levels** — with the goal of achieving optimal health outcomes recognizing the interconnection between people, animals, plants, and their shared environment.”

- CDC One Health Office, Department of Interior, USDA definition
<https://www.cdc.gov/onehealth/basics/index.html>





“the collaborative efforts of multiple disciplines – working locally, nationally, and globally – to achieve the best health for people, animals, *plants*, and our environment ”

adapted from US CDC 2018

One Health

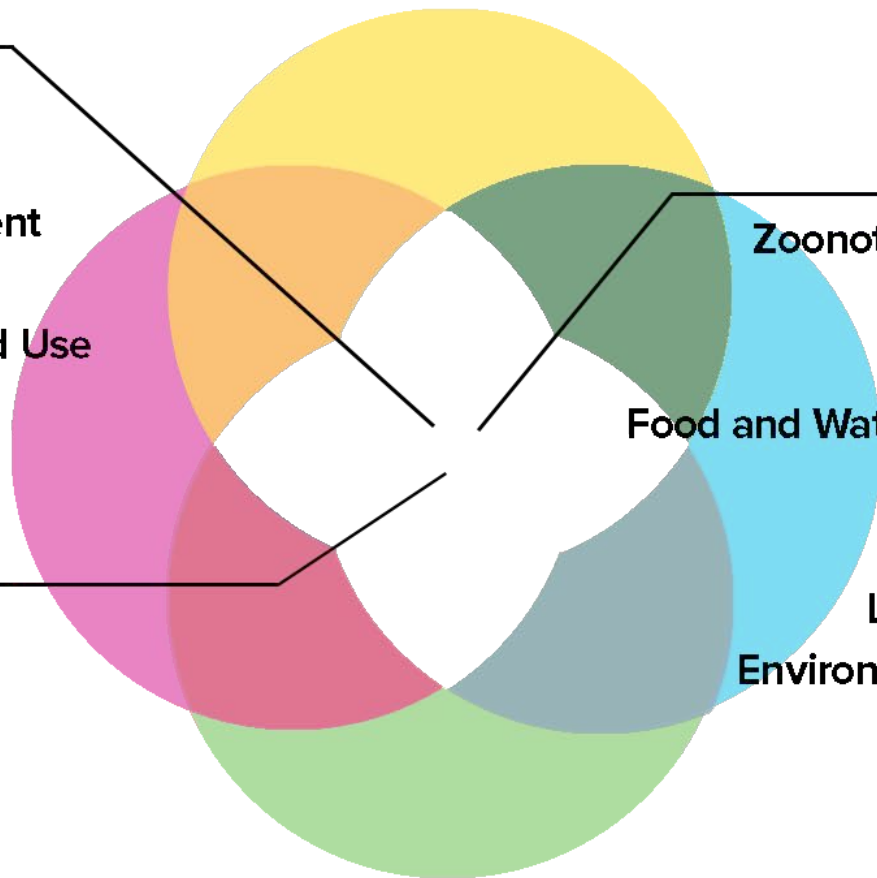
- One Health – new phrase, but ancient concept: environmental factors and human health – Hippocrates
- Lancisi (1654–1720), epidemiologist, physician & veterinarian; role of environment in disease spread; advocated mosquito nets for prevention of malaria
- German physician and pathologist Virchow (1821–1902) coined "...between animal and human medicine there are no dividing lines – nor should there be"
- Steele, DVM, established veterinary public health PHS/CDC (1947)
- "One Medicine" promoted by Calvin W. Schwabe (1927–2006)

DRIVERS

Land Use
Climate Change
Economic Development
Globalization
Energy Extraction and Use
Migration

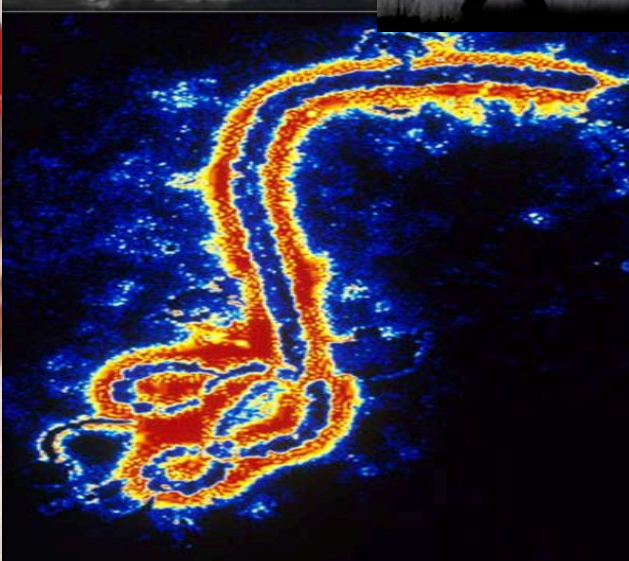
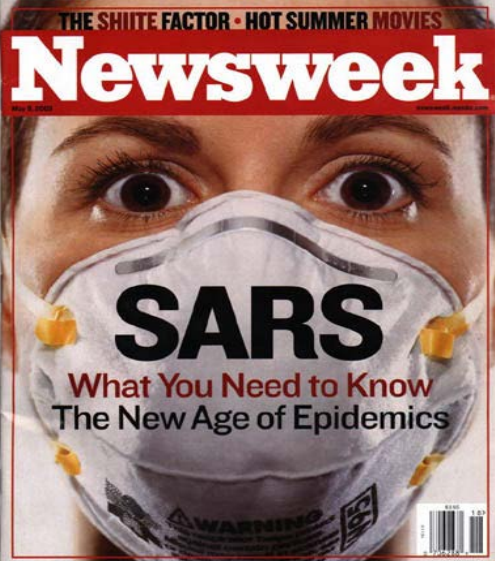
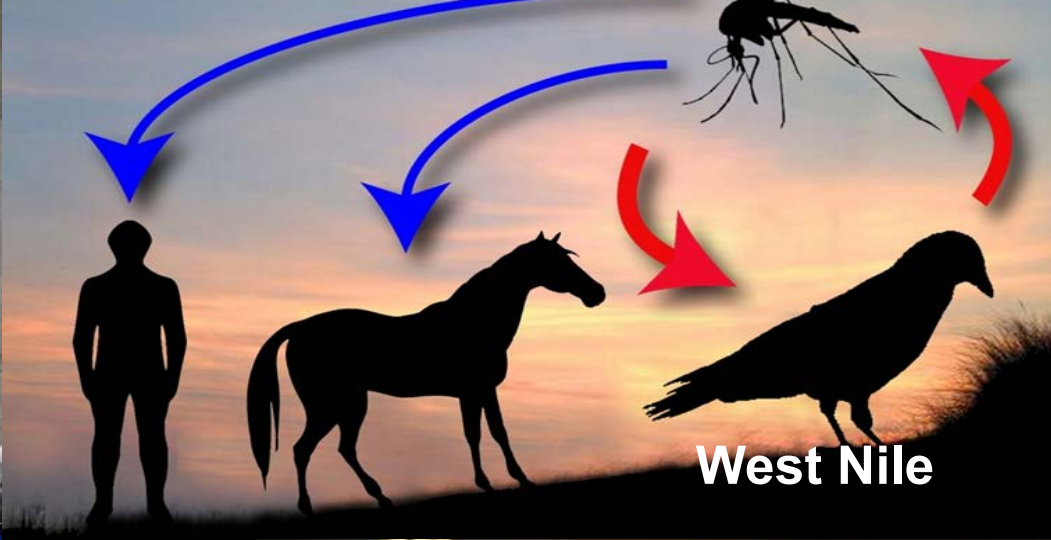
INFLUENCES

Culture
Economics
Policy
Behavior
Education

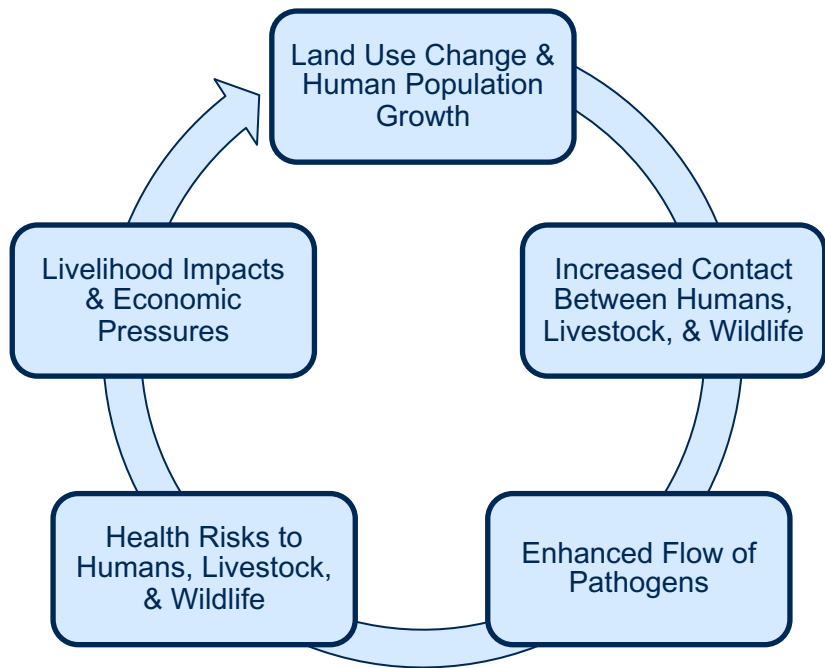


PROBLEMS

Zoonotic Disease Emergence
Pathogen Distribution
Health Disparities
Food and Water Safety and Security
Poverty
Loss of Biodiversity
Loss of Wildlife Habitat
Environmental Contamination
Diagnostic Limitations



One Health Interface



- Majority of emerging infectious diseases (EIDs) in people are of animal origin (zoonotic)
- 75% of emerging zoonoses have wildlife origins
- Human activities at the interface linked to EIDs (Nipah virus, SARS, Ebola)
- On the order of 3 new infectious diseases in people each year

The Challenge

Pre-empt or combat, at their source, the first stage of emergence of zoonotic diseases that pose a significant threat to public & animal health (potentially pandemic infections)

Towards a proactive paradigm for early disease detection and response



One Health approach to understanding the dynamics of zoonotic virus evolution, spillover from animals to people, amplification, and spread to inform prevention and control



USAID
FROM THE AMERICAN PEOPLE



PREDICT



**EcoHealth
Alliance**



METABIOTA



Smithsonian
Institution

**The Ministries of Health, Agriculture & Environment and
Implementing University and NGO Partners in 35 Countries**



HealthMap
Global Health, Local Information

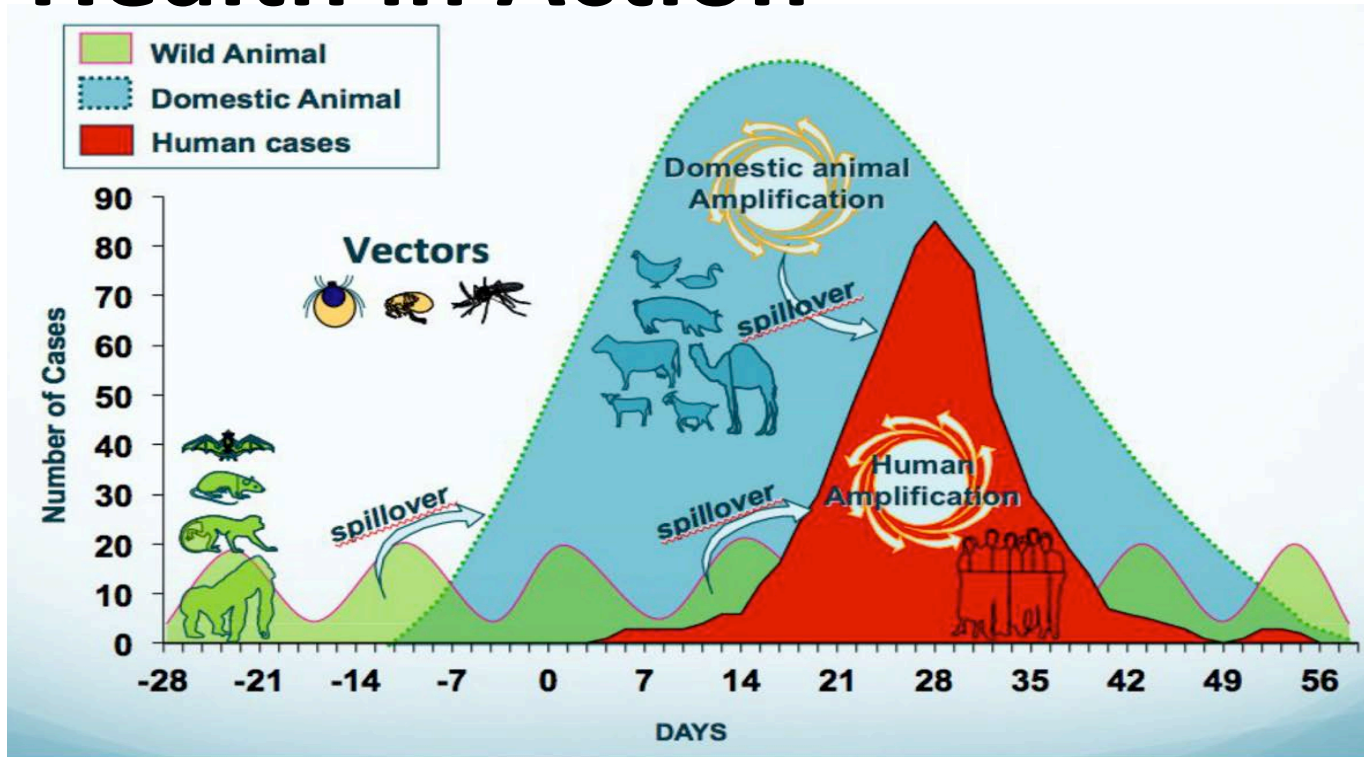


ProMED
mail



UCSF

One Health in Action



Source: Karesh et al. 2012. The Lancet & WHO

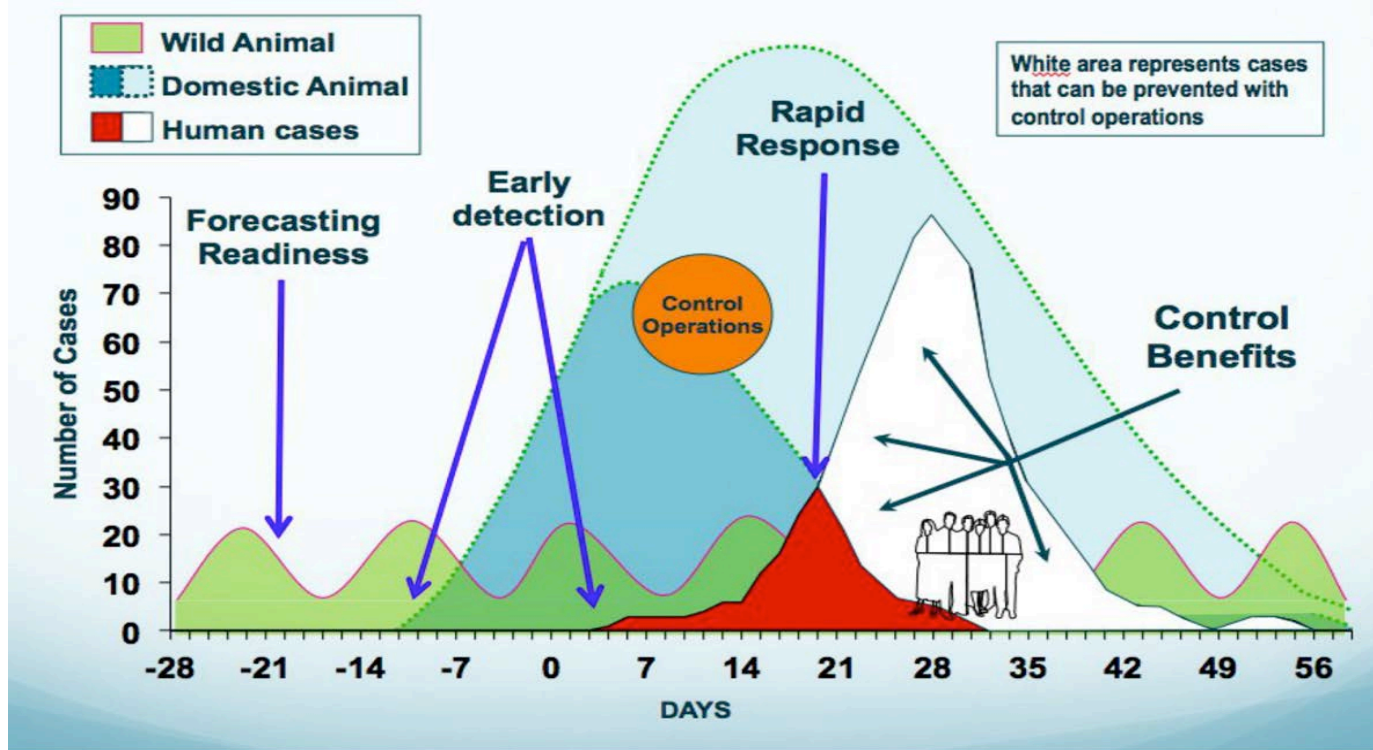


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PREDICT

ONE HEALTH
One UC DAVIS

One Health in Action



Source: Karesh et al. 2012. The Lancet & WHO



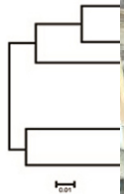
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PREDICT

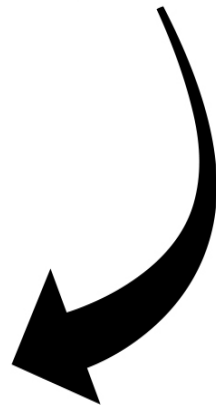
ONE HEALTH
One UC DAVIS



LABORATORY INVESTIGATIONS



PROBABILISTIC MODELS



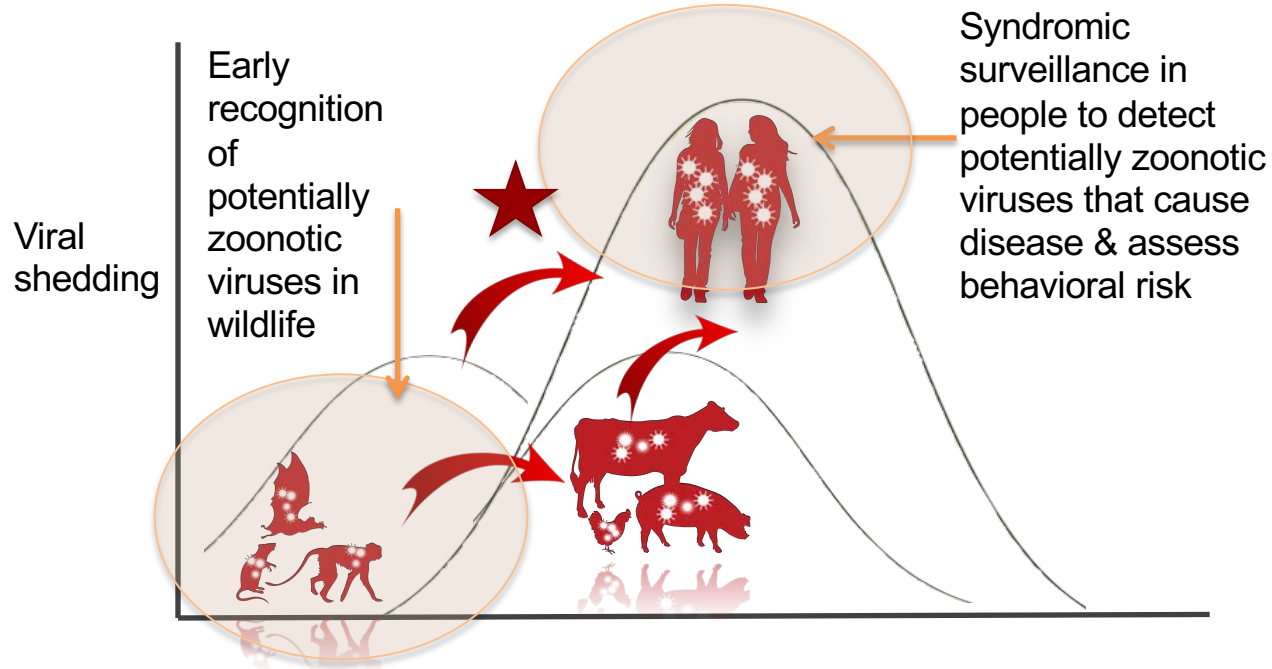
High-risk Interfaces





PREDICT-2 Surveillance Strategy

Target = zoonotic viruses that causes disease in animals & people



Evidence-based surveillance strategy







Smiley Evans et al.
*PLoS Neglected
Tropical Diseases*,
2015

Working across cultures

Training a disease surveillance and detection workforce



PREDICT



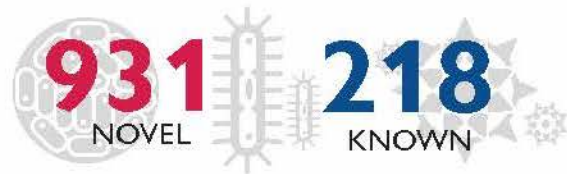
DEVELOPED the One Health Workforce by training more than 6,000 people in over 30 countries.



STRENGTHENED laboratory systems and zoonotic disease detection capabilities in over 60 labs around the world.



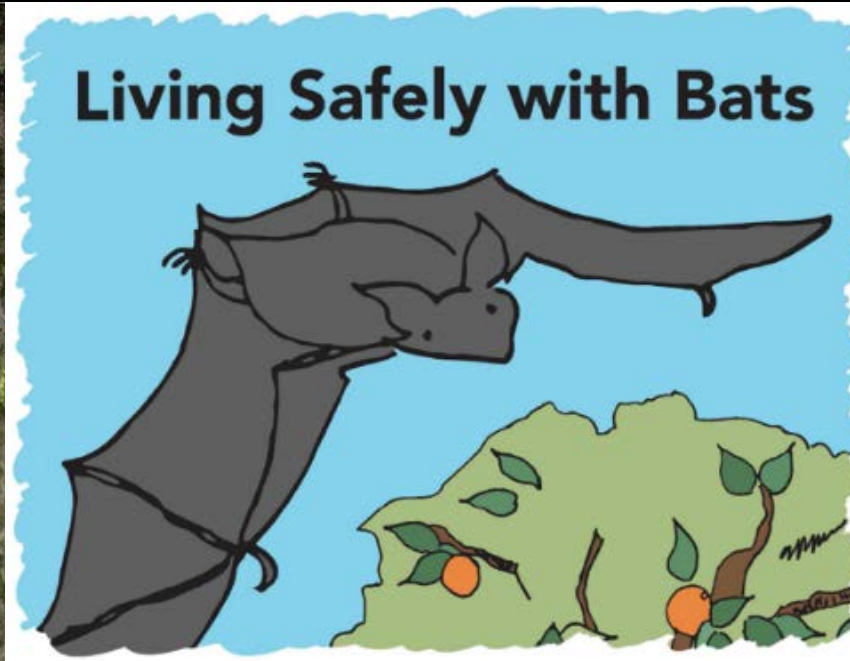
OPERATIONALIZED One Health surveillance and sampled over 163K animals and people, helping minimize the spillover of zoonotic disease threats from animals into human populations.



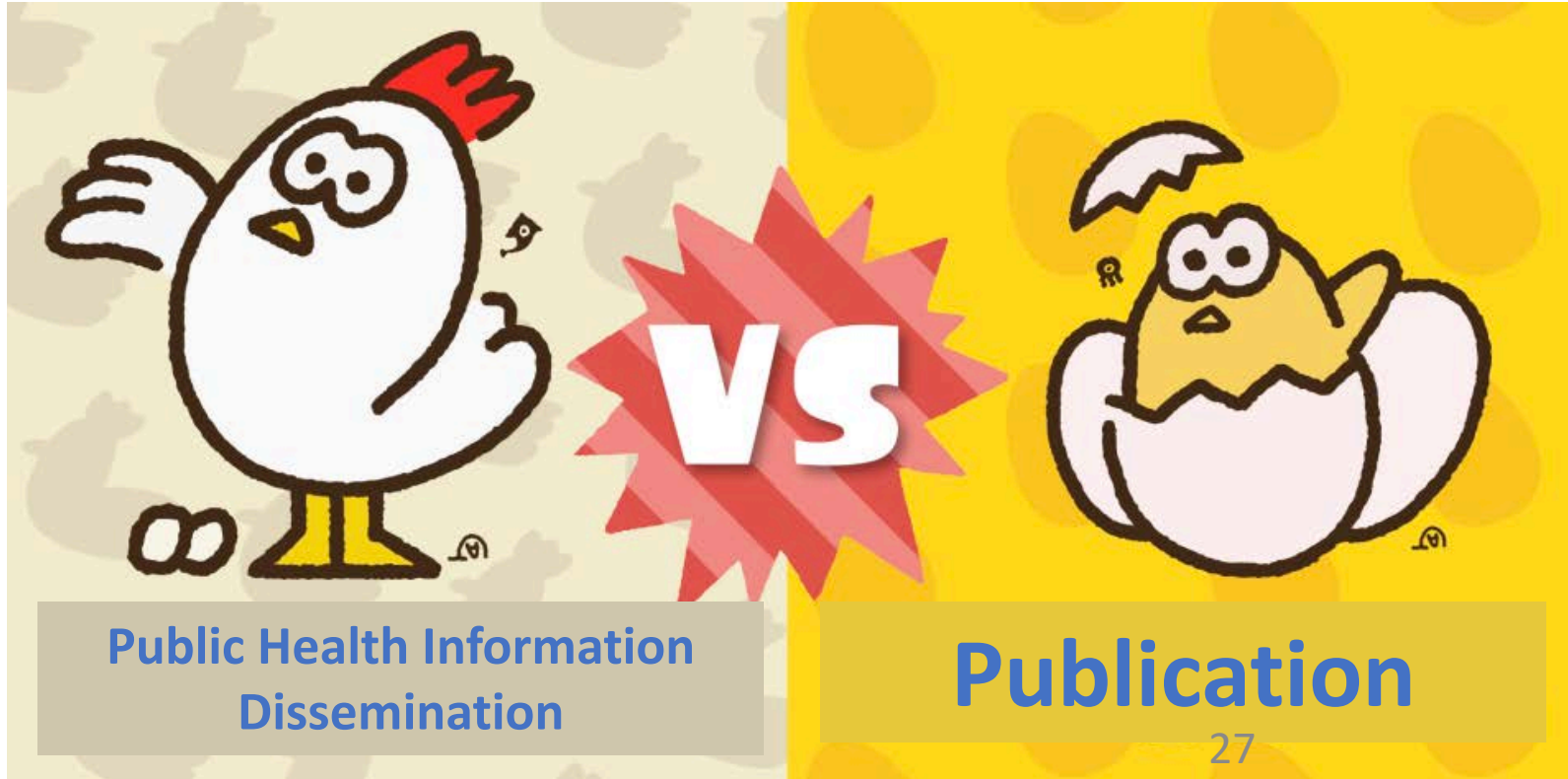
DETECTED over 1,100 unique viruses, including zoonotic diseases of public health concern such as Bombali ebolavirus, Zaire ebolavirus, Marburg virus, and MERS- and SARS-like coronaviruses.

PREDICT
PARTNERS:

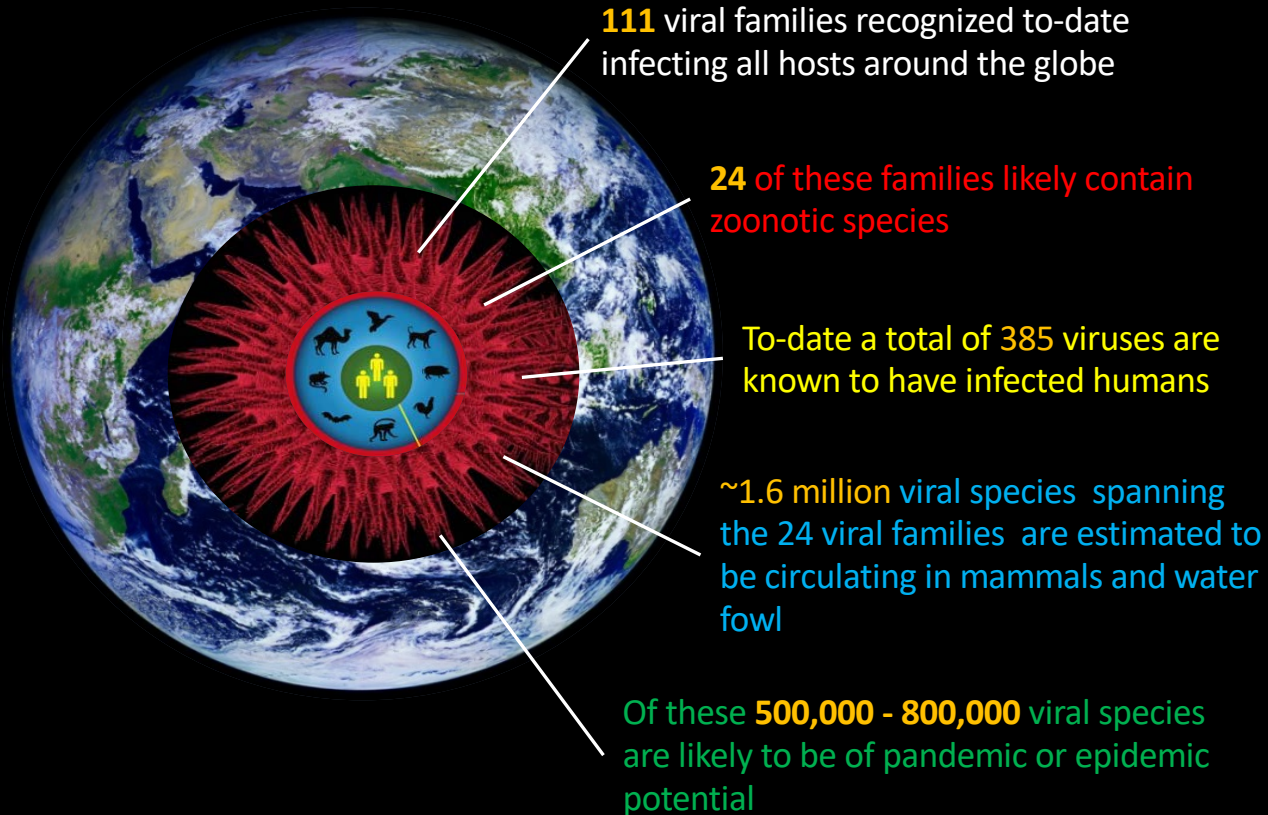




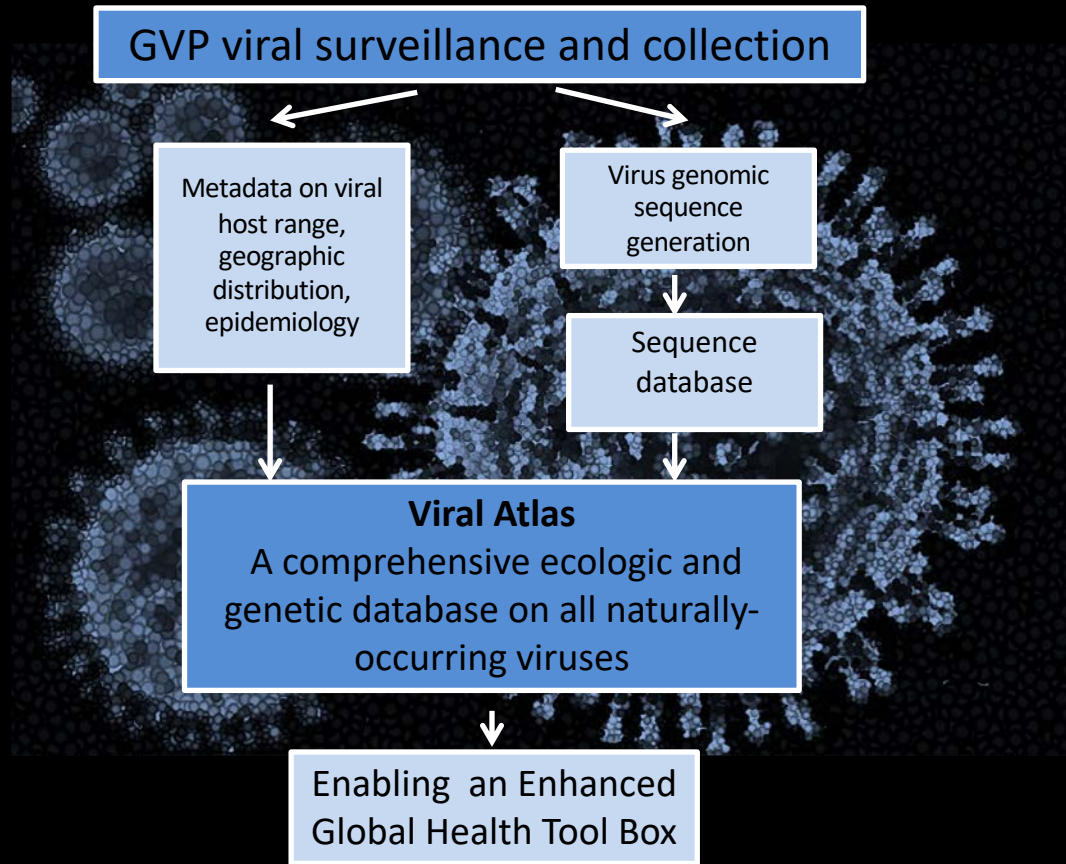
Detecting novel & known filoviruses in the three countries most affected by West African Ebola outbreak



Making the unknown known



Global Virome Project (GVP)





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FROM THE AMERICAN PEOPLE

One Health Workforce *Next Generation*



Working in One Health

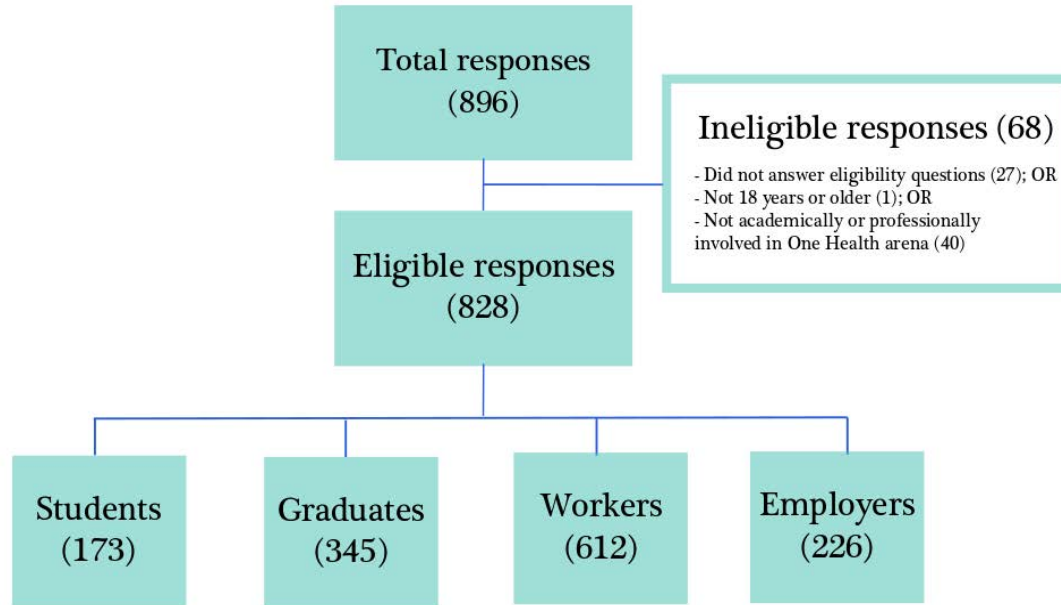
- Findings from One Health workers' multinational survey
- Objective: To collect and analyze perspectives from **students, graduates, workers, and employers** in One Health in order to:
 - Understand the benefits of One Health education
 - Identify gaps in the One Health workforce
 - Better understand employers' needs in One Health

Conducted by individuals from the One Health Action Collaborative, National Academies of Sciences, Engineering, and Medicine

<http://nationalacademies.org/hmd/Activities/PublicHealth/microbialthreats/Action-Collaboratives/OHAC.aspx>



Survey: Respondents



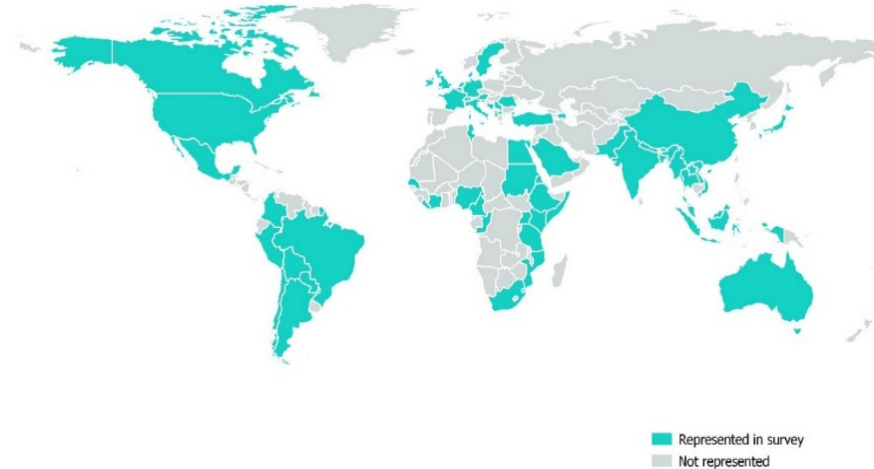
- Ineligible respondents did not proceed to the survey questions.

- The number of students, graduates, workers, and employers do not add up to the number of total eligible responses, because a respondent could be categorized into more than one group (student/graduate/worker/employer).

Survey: Respondents

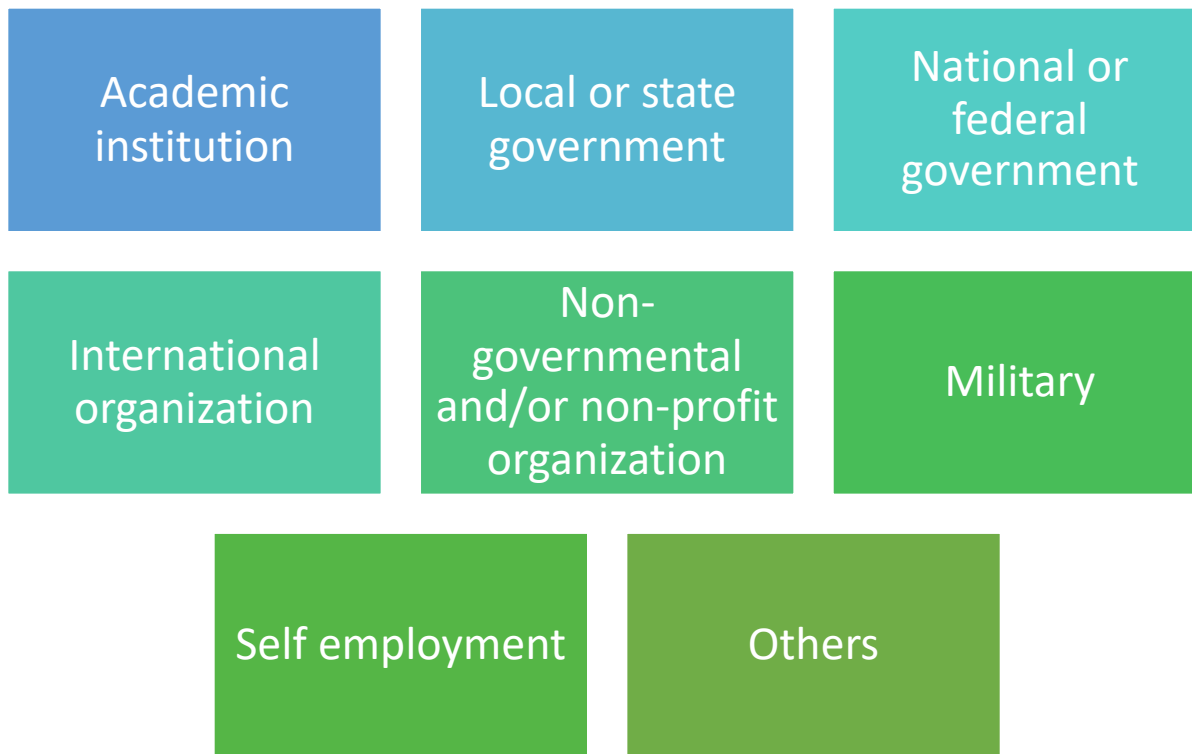
- Total of 828 eligible responses recorded
- Nov 16, 2018 and Feb 1, 2019
- 66 countries represented

- Northern America (60%)
- Africa (11%)
- Europe (8%)
- Eastern and South-Eastern Asia (6%)
- Latin America and the Caribbean (5%)
- Central and Southern Asia (3%)
- Western Asia (1%)
- Oceania (1%)

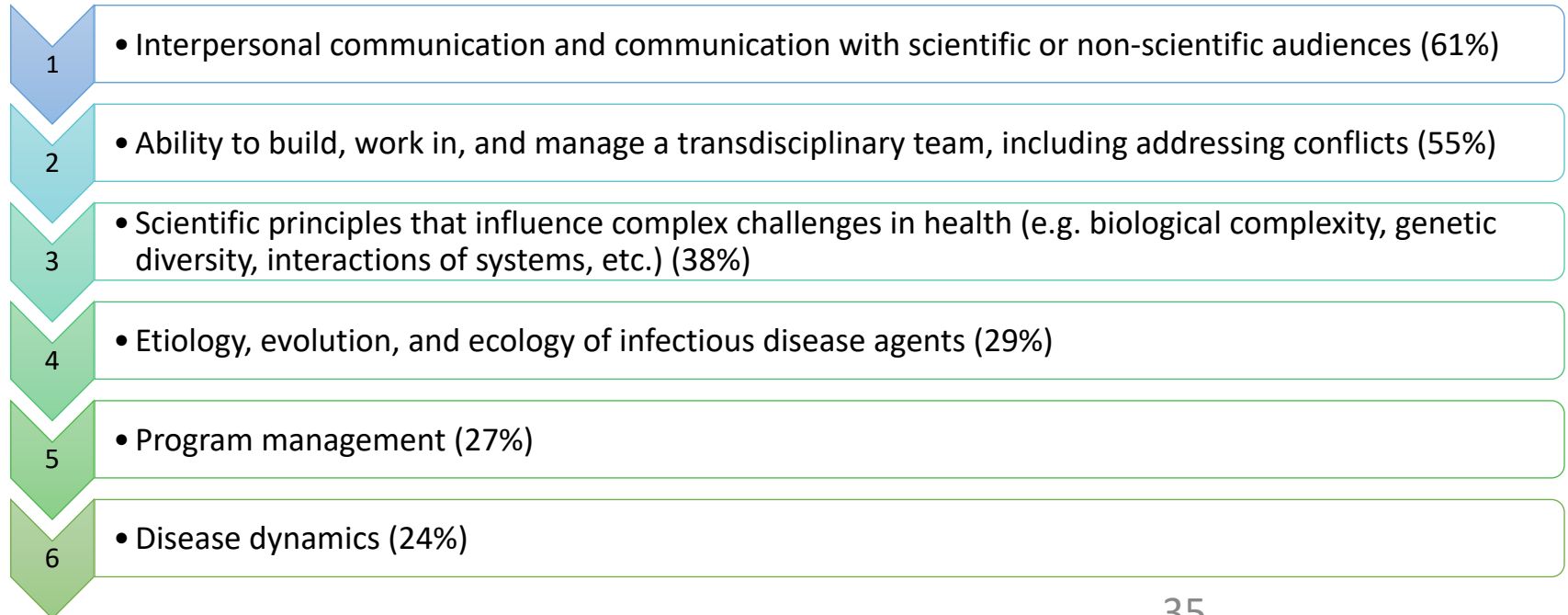


➔ Further details in upcoming publication(s)

Many types of employers



What are the top 6 knowledge or skills that employers look for in a candidate? (n=226)



Recommendations: Students and Early Career Professionals

- ❑ Speak with, and **learn from professionals and mentors** already working in your field of interest
- ❑ Evaluate what **expertise** you would like to bring to an interdisciplinary team
- ❑ Understand that the One Health approach is **essential to most jobs** within the relevant sectors, even if an opportunity is not explicitly advertised as “One Health”
- ❑ Build **program leadership and management skills** through practical experiences and coursework



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<https://www.freepik.com/free-photos-vectors/background>

Recommendations: One Health workers



- ❑ Seek opportunities to work across disciplines and organizations, and demonstrate your collaborative, team building skills
- ❑ Describe to employers how a One Health approach can enhance the organization's goals
- ❑ Avoid the use of jargon or technical terms when communicating in an interdisciplinary team
- ❑ Make an effort to understand your team members' expertise, skillset, and baseline knowledge of subject matter

Working in One Health

Potential challenges

- You may be required to step out of your comfort zone when collaborating across diverse disciplines and multiple stakeholders

Benefits

- A transdisciplinary team can address complex challenges and achieve goals by working together and complementing expertise

Resources for One Health

One Health

One Health Basics

The One Health concept recognizes that the health of people is connected to the health of animals and the environment. [CDC uses a One Health approach](#) by working with physicians, veterinarians, ecologists, and many others to monitor and control public health threats and to learn about how diseases spread among people, animals, and the environment.

One Health is defined as a collaborative, multisectoral, and transdisciplinary approach — working at the local, regional, national, and global levels — with the goal of achieving optimal health outcomes recognizing the interconnection between people, animals, plants, and their shared environment.

One Health Fact Sheet



The One Health Institute is active all over the world, working at the interface of animals, people and the environment to solve complex problems that impact health and conservation. The Institute grew out of the UC Davis School of Veterinary Medicine's



One Health

September 2017

What is 'One Health'?

'One Health' is 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.

The areas of work in which a One Health approach is particularly relevant include food safety, the control of zoonoses (diseases that can spread between animals and humans, such as flu, rabies and Rift Valley Fever), and combatting antibiotic resistance (when bacteria change after being exposed to antibiotics and become more difficult to treat).

Why do we need a One Health approach?

Many of the same microbes infect animals and humans, as they share the ecosystems they live in. Efforts by just one sector cannot prevent or eliminate the problem. For instance, rabies in humans is effectively prevented only by targeting the animal source of the virus (for example, by vaccinating dogs).

Related links

- Food Safety and Zoonoses
- Zoonoses and the Human-Animal-Ecosystems Interface
- Global Influenza Programme
- More on influenza

HOME

AGA News

News Archive

ONE HEALTH

FAO in One Health: working proactively instead of reactively

The current approaches to animal disease prevention and control emphasize transmission disruption. Whilst critically important, this approach in itself does not address the root causes of disease emergence. To better comprehend disease emergence at its most fundamental level, there is a need to understand the key drivers of disease emergence.

Changing the emerging disease dynamics at the driver level with the aim to counter the progressive flare-ups of diseases arising at the human-animal-ecosystems interface requires reassessment of traditional prevention and control approaches and global health security strategies; along with renovation of multiple aspects at the technical, social, and institutional levels.

also in AGA website...

FAO as One Health: Moving Forward

FAO in development of major initiative to combat infectious diseases

Livestock in Southeast Asia

also in FAO media centre

Rinderpest eradicated - what next?

Celebration honors success against cattle disease

Concerted international effort urged on African

Home > For the media

For the media

- > OIE Photo Competition
- > Infographics
- > Press releases
- > Editorials
- > Press packs
- > Animal diseases
- > Key documents
- > Multimedia

One Health



One Health "at a glance" More effective control of global health risks
 International collaboration: Strengthening multi-sectoral collaboration at the national level

One Health "at a glance"

Protecting "One Health"

The "One Health" concept was introduced at the beginning of the 2000s. In a few words, it summarises an idea that had been known for more than a century: that human health and animal health are interdependent and bound to the health of the ecosystems in which they exist.

This concept is embraced and implemented by the OIE as a collaborative global approach to understanding risks for human and animal health (including both domestic animals and wildlife) and



- > Definitions
- > Zoonosis
- > Veterinary Services
- > Documents
- > Animals, humans and diseases
- > OIE Working Groups
- > Wildlife
- > Animal Production Food Safety

- <http://vetmed.ucdavis.edu/ohi/index.cfm>
- <http://www.oie.int/en/for-the-media/onehealth/>
- <https://www.cdc.gov/onehealth/index.html>
- <https://www.who.int/features/qa/one-health/en/>
- http://www.fao.org/ag/againfo/home/en/news_archive/2011_FAO_in_One_Health.html

And many more!



Rx One Health

Training future One Health professionals



UC Davis One Health Institute

Upcoming course dates: June 29 - July 24, 2020

<https://rxonehealth.vetmed.ucdavis.edu/>

Destination: TANZANIA

Dar Es Salaam, Mafia Island, Bagamoyo, Morogoro, Iringa, Ruaha



Questions?

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