ICAP Grand Rounds

Emerging Infectious Diseases: The Value of a One Health Approach

May 18, 2021

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Agenda

1. Welcome and Introduction

Fatima Tsiouris, MS

ICAP at Columbia University

2. Emerging Infectious Diseases: The Value of a One Health Approach

Woutrina Smith, DVM, MPVM, PhD

School of Veterinary Medicine, UC Davis

USAID One Health Workforce – Next Generation Project

3. Q&A and Discussion

Reminders:

For questions to the speakers, **use Q&A box**

Please use **chat box** to indicate your name and organization

The webinar recording and slides will be posted on **www.icap.columbia.edu**

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Woutrina Smith, DVM, MPVM, PhD

School of Veterinary Medicine, UC Davis

Project Director, USAID One Health Workforce – Next Generation Project

Dr. Smith is a Professor of Infectious Disease Epidemiology in the School of Veterinary Medicine at the University of California, Davis, and co-leads the USAID One Health Workforce – Next Generation Project working with AFROHUN and SEAOHUN. She also co-leads the multi-campus Planetary Health Center of Expertise within the UC Global Health Institute, and is an Associate Director at the UC Davis One Health Institute. Dr. Smith has worked on One Health research projects across Africa, Asia, and in the Americas, where multidisciplinary teams innovate together to solve complex health problems. Dr. Smith has received funding from diverse sources including the National Institutes of Health, the US Agency for International Development, the US Department of Defense, and the Bill & Melinda Gates Foundation to support her research and training programs.

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Emerging Infectious Diseases: The Value of a One Health Approach

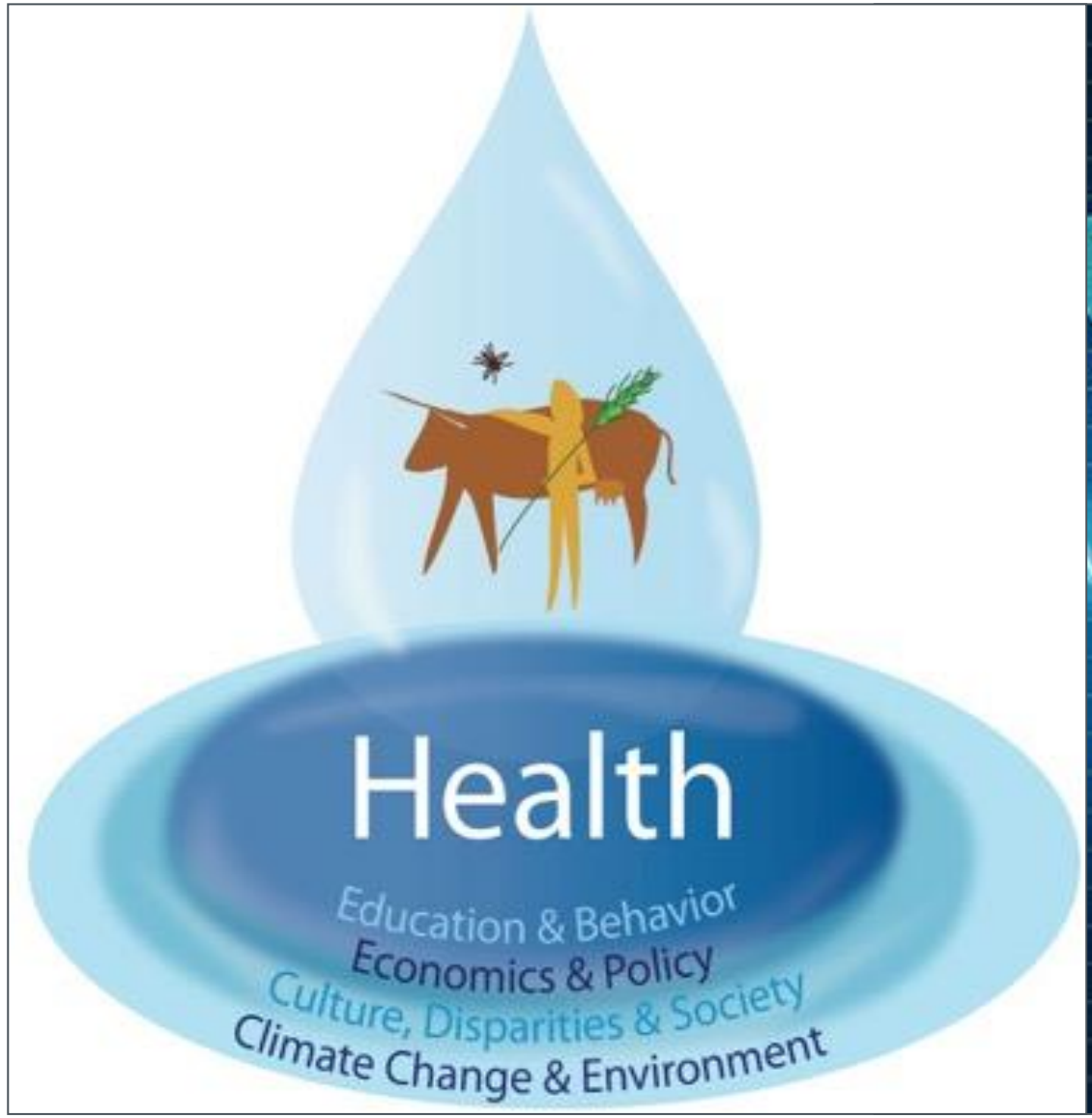
Woutrina Smith, DVM, MPVM, PhD
Associate Dean for Global Programs
School of Veterinary Medicine, UC Davis

UCDAVIS One Health Institute School of Veterinary Medicine
AFROHUN Advancing One Health
SEAOHUN Southeast Asia One Health University Network
EcoHealth Alliance
Ata Health Strategies
icap Global Health
Berkeley UNIVERSITY OF CALIFORNIA
Project ECHO
UCI University of California, Irvine

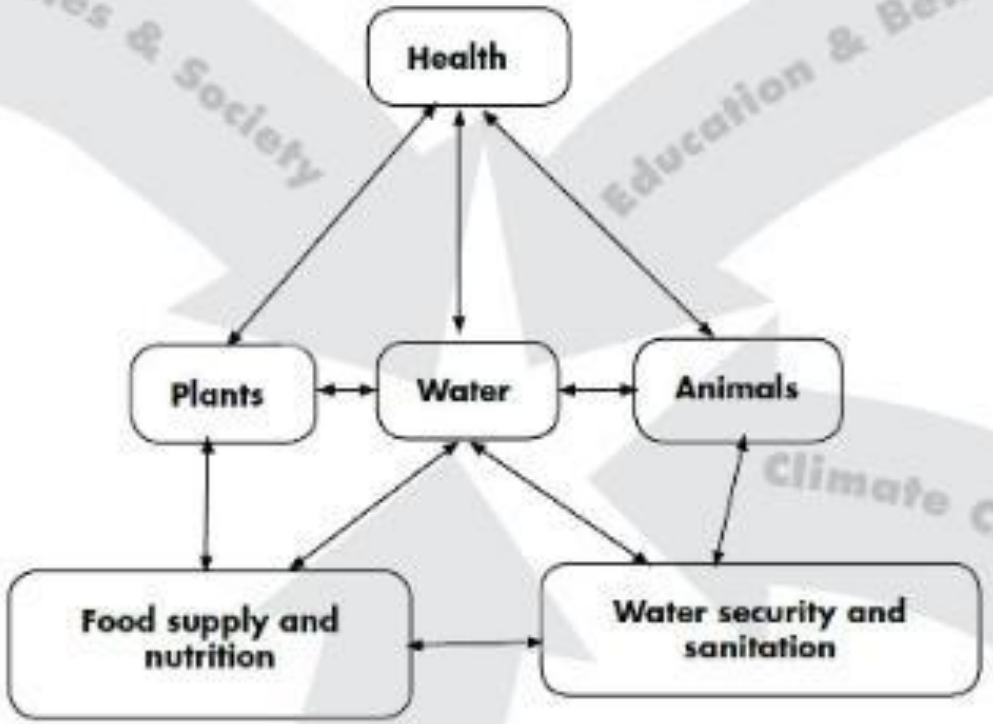
We are a globally connected society

A One Health approach considers connections between

One Health puts technical knowledge into social contexts

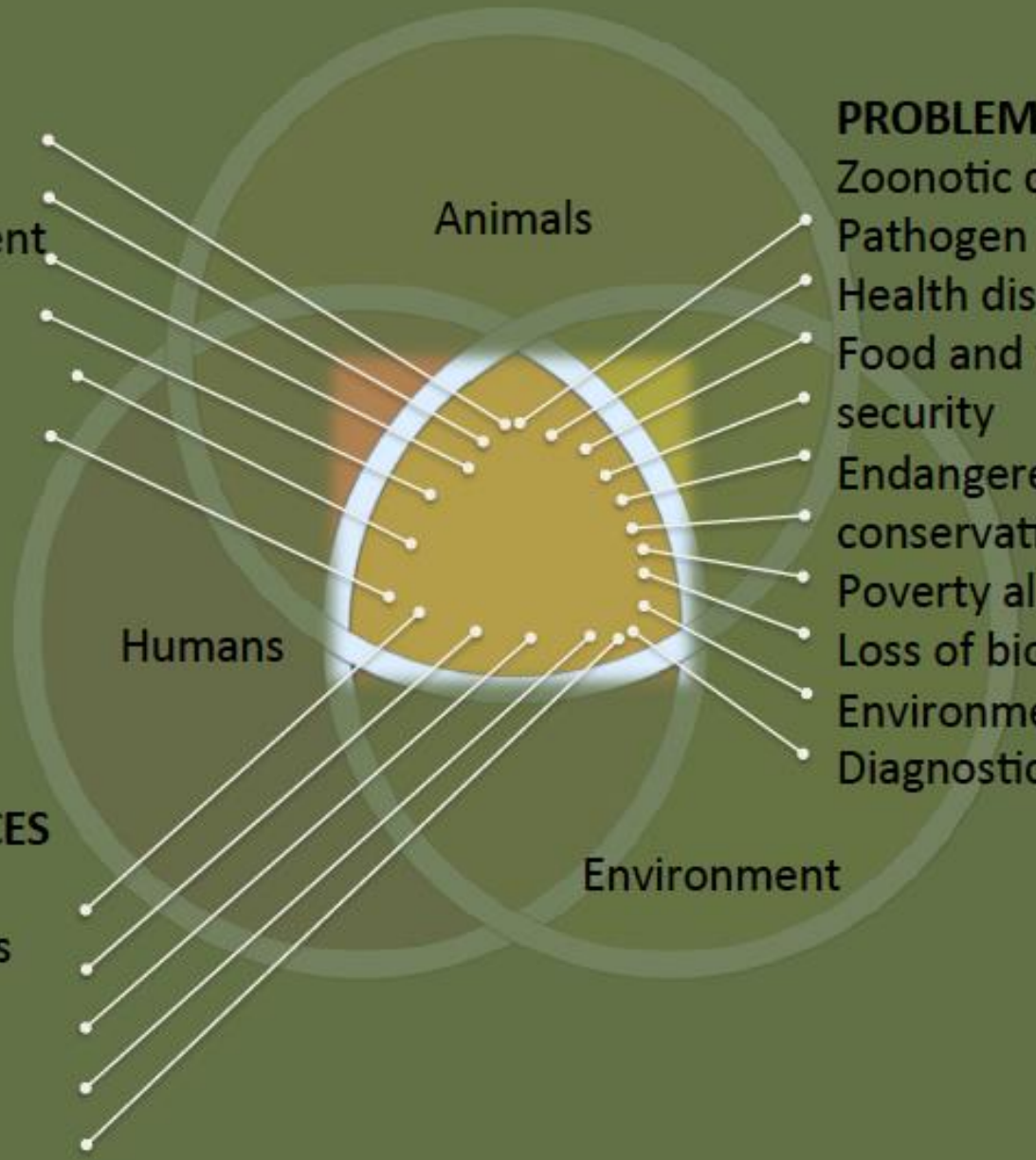


One Health Framework



Transdisciplinary Problems

DRIVERS
Land use
Climate change
Economic development
Globalization
Energy extraction
Migration



PROBLEMS
Zoonotic disease emergence
Pathogen distribution
Health disparities
Food and water safety & security
Endangered species & habitat conservation
Poverty alleviation
Loss of biodiversity
Environmental contamination
Diagnostic limitations

INFLUENCES
Culture
Economics
Policy
Behavior
Education

One Health

Holistic

Collaborative and transdisciplinary

Focused on integrated solutions

One Health

http://www.cdc.gov/onehealth

The collaborative efforts of multiple disciplines working locally, nationally and globally to attain optimal health for people, animal and our environment

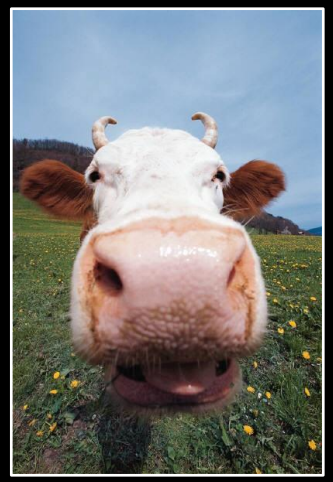
(FAO, OIE, WHO, WB…)

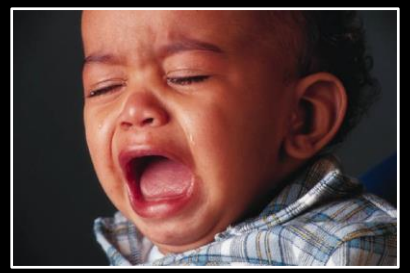
From theoretical to operational definition:

"One Health" can be defined as the ***added value*** in terms of ***lives*** of animals and humans ***saved, financial savings and improved ecosystem services*** from a ***closer cooperation of human and animal health*** as compared to single sector approaches (**Zinsstag et al., 2012)**

We start, and end, in communities…

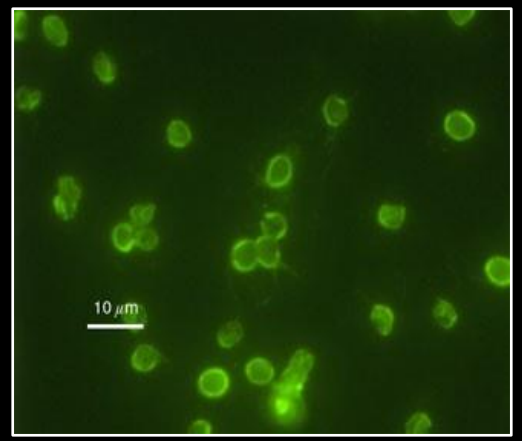
What kind of wildlife do we live with?





T

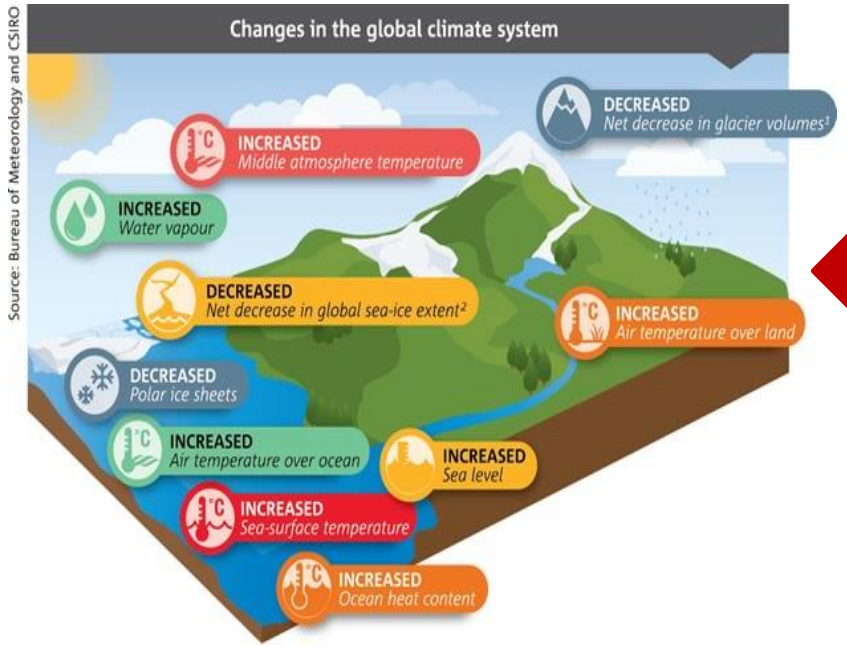
PATHOGEN



ENVIRONMENT

Land use change & population density drive viral spillover events…

Climate



Population Growth

Drivers in Emerging Infectious Diseases

Globalization

Changing Ecosystems

Human Demographics & Behavior

Markets & Trade

Migration & Conflict

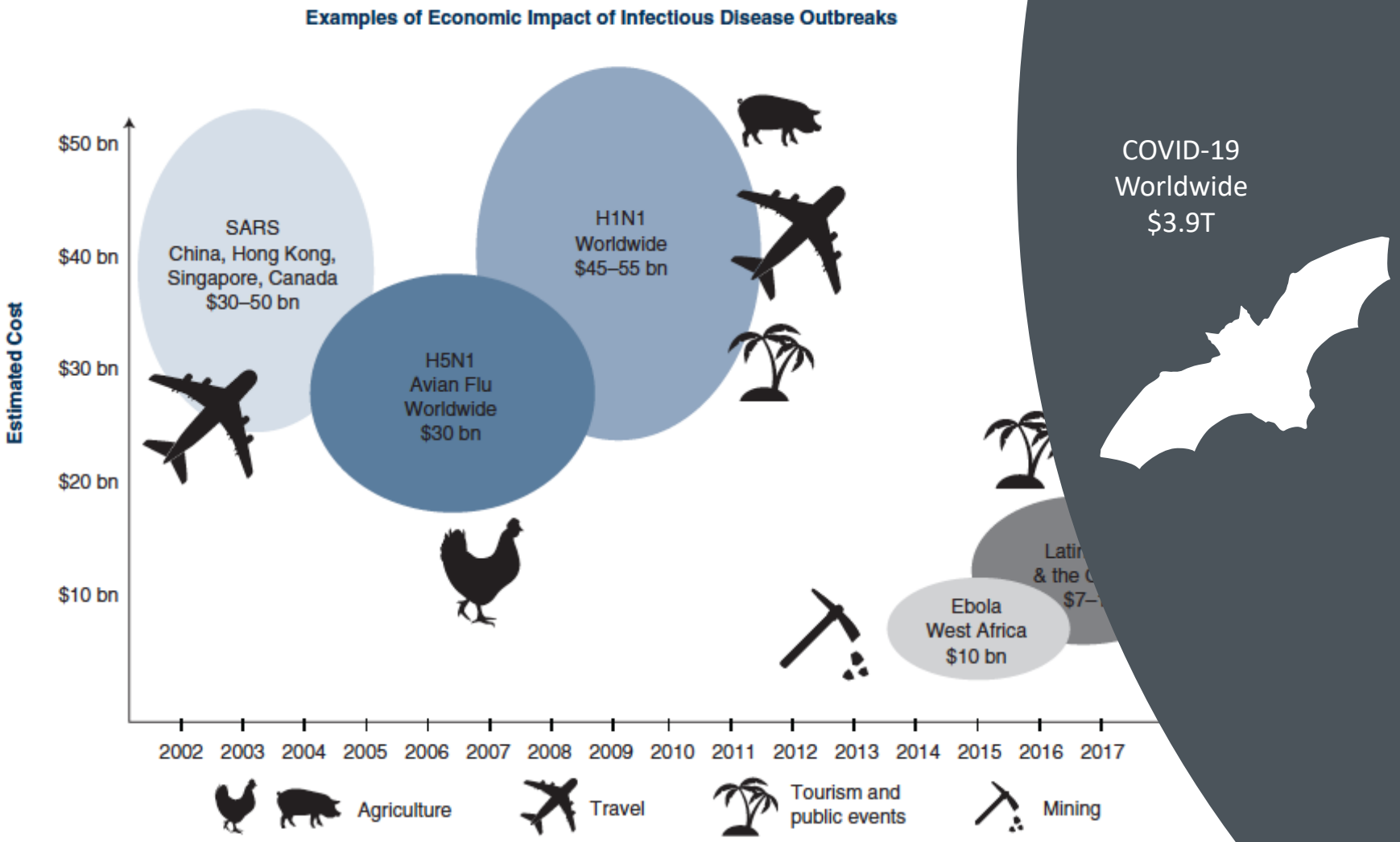
Poverty & Social Inequality

Microbial Adaptation

and more…

Source: Author San Jose, 27 November 2006, based on the [http://gmt.soest.hawaii.edu/ Generic Mapping Tools]

One Health Economics



Figures are estimates and are presented as relative size. Based upon BioEra, World Bank, and UNDP data. Chart updated by EcoHealth Alliance.

Estimates represent medical and non-medical costs; icons depict highly affected industries.

COVID-19
Worldwide
$3.9T

THE WORLD BANK IBRD • IDA | WORLD BANK GROUP · USAID FROM THE AMERICAN PEOPLE · UC DAVIS VETERINARY MEDICINE One Health Institute · WCS · EcoHealth Alliance · METABIOTA · Smithsonian Institution

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UC DAVIS VETERINARY MEDICINE One Health Institute

PREDICT

WILDLIFE CONSERVATION SOCIETY

EcoHealth Alliance

METABIOTA

Smithsonian Institution

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

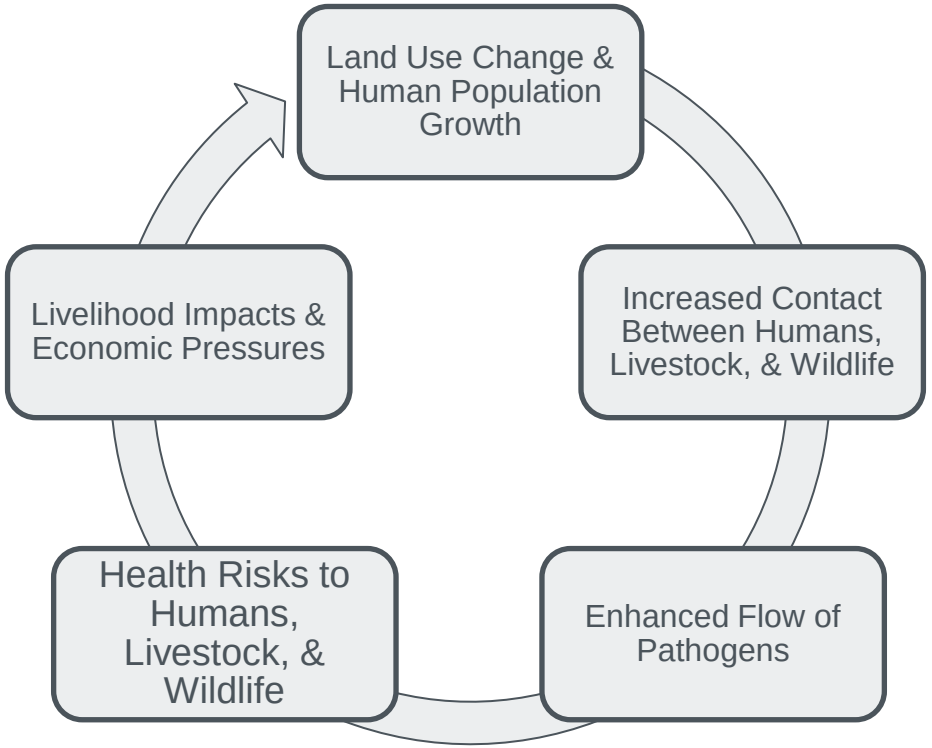
THE CENTER FOR INFECTION AND IMMUNITY
COLUMBIA UNIVERSITY IN THE CITY OF NEW YORK

HealthMap Global Health, Local Information

ProMED mail
International Society for Infectious Diseases

UCSF

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)
- Annual population growth among highest in buffers to protected areas near wildlife

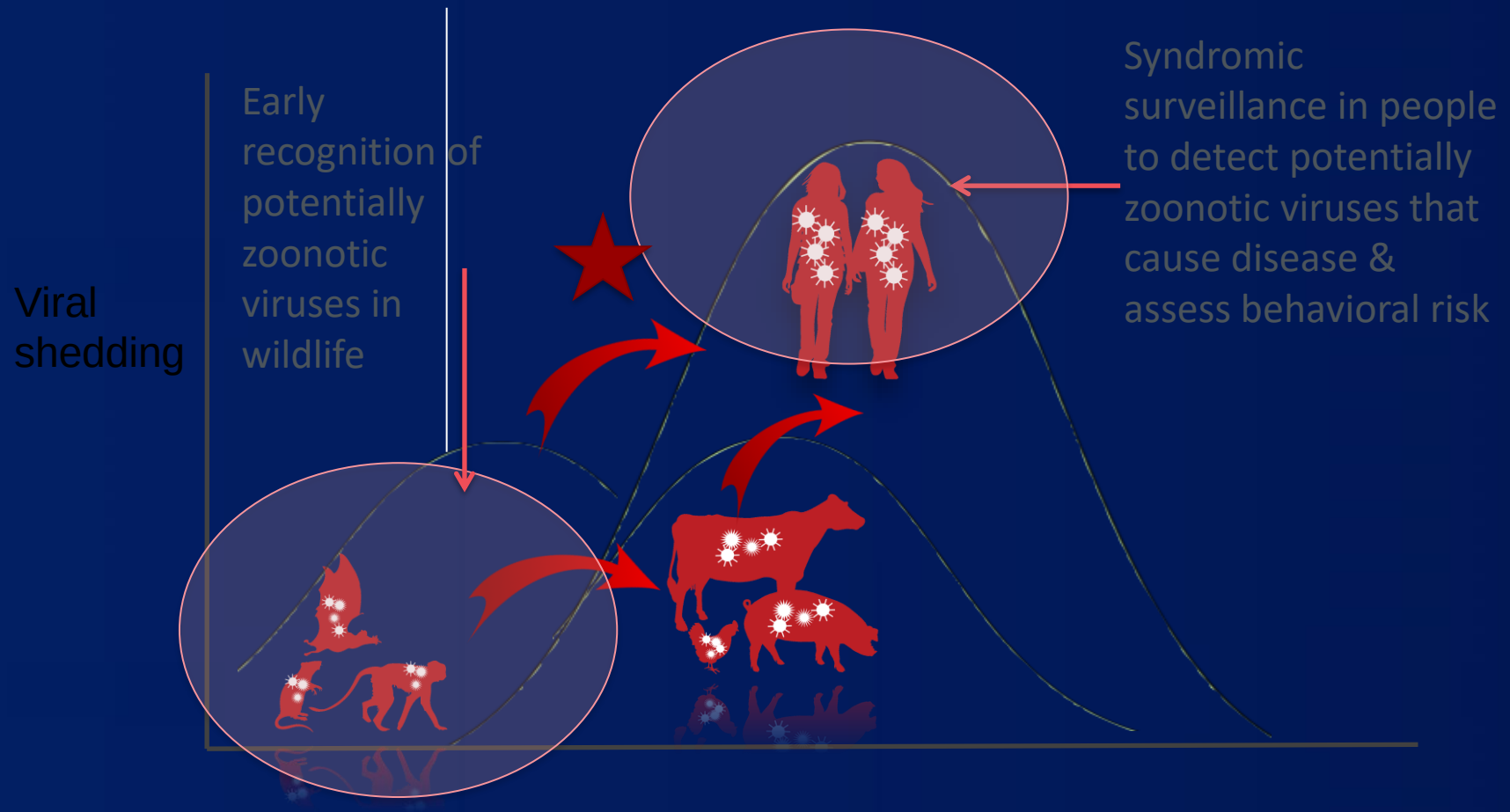
Targeted, Risk-based Surveillance

- **Primates**
- **Bats**
- **Rodents**
- Birds
- Suids
- Carnivores
- Ungulates

Global Health

PREDICT Surveillance Strategy

Target = zoonotic viruses that causes disease in animals & people



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High Risk Interfaces

Bat Guano Farms

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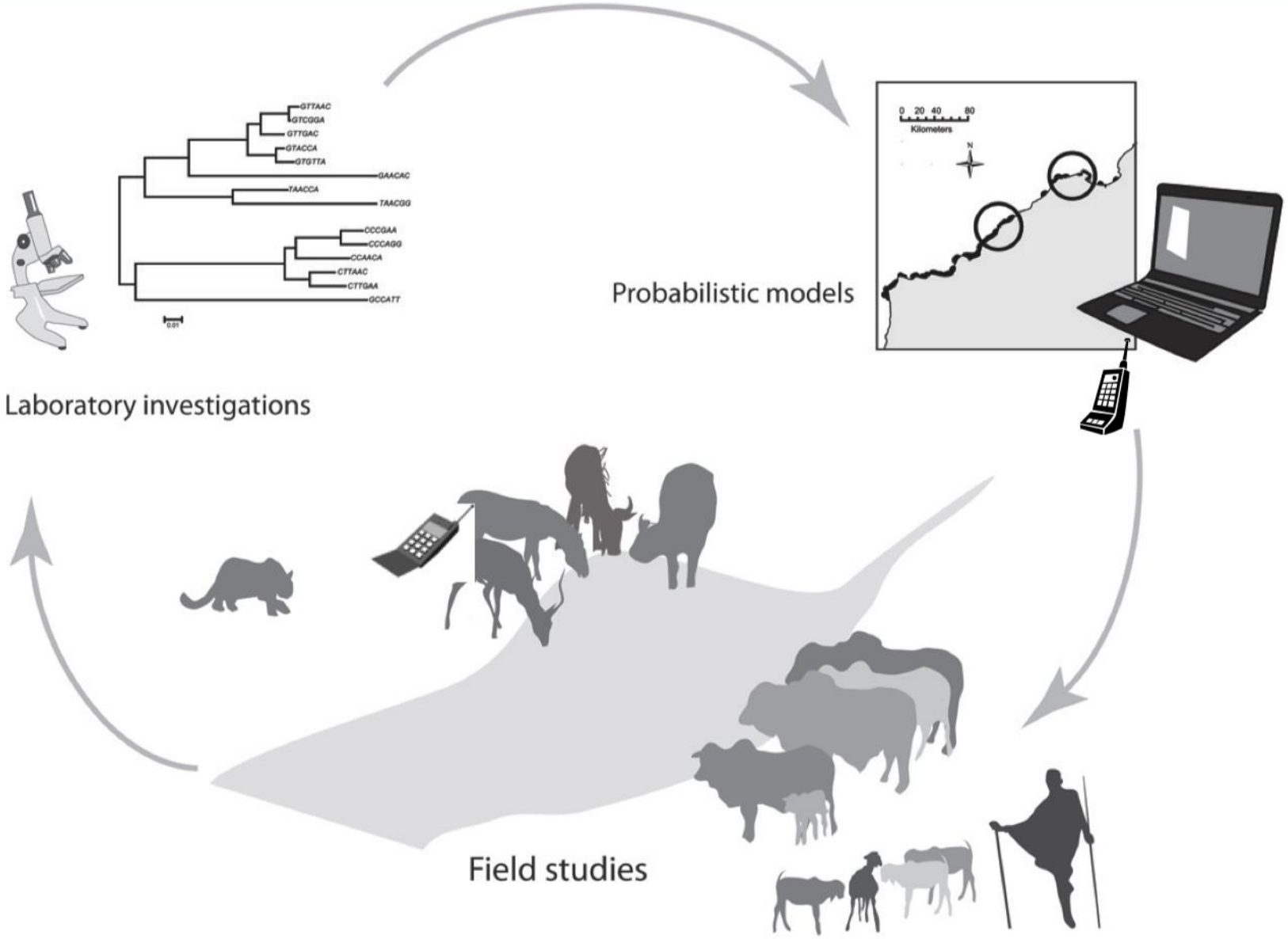

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Developed & Operationalized Diagnostic Platform

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ONE HEALTH One UC DAVIS

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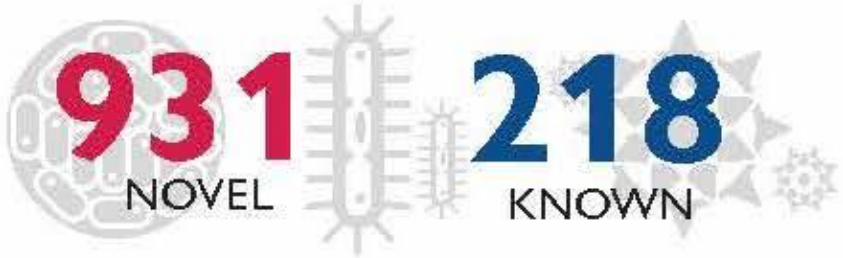
PREDICT OVERVIEW

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.

Health professional colleagues around the world

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SEAOHUN
Southeast Asia One Health University Network

SEAOHUN

SOUTHEAST ASIA ONE HEALTH UNIVERSITY NETWORK

OUR NETWORK

87
MEMBER UNIVERSITIES

28
ONE HEALTH STUDENT CLUBS*

8
COUNTRIES

200
INDIVIDUALS REACHED VIA COVID-19 RCCE ACTIVITIES

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AFROHUN

AFRICA ONE HEALTH UNIVERSITY NETWORK

OUR NETWORK

18
MEMBER UNIVERSITIES

16
STUDENT ONE HEALTH CLUBS

9
COUNTRIES

1,043
INDIVIDUALS REACHED VIA RCCE ACTIVITIES RELATED TO COVID-19

OHW-NG Goal

Empower One Health university networks to sustainably develop and deliver world-leading model programs for equipping professionals with transdisciplinary skills to address complex global health issues.

The USAID One Health Workforce - Next Generation Project Supports SEAOHUN, AFROHUN, and the Member Universities in:

WORKFORC EMPOWERMENT:

DEVELOP AND DELIVER TRAININGS IN ALIGNMENT WITH PRIORITIZED ONE HEALTH CORE COMPETENCIES AND TECHNICAL SKILLS

DGE EMENT:

ESTABLISH SYSTEMS AND STRATEGIES TO EVALUATE PERFORMANCE AND TRACK WORKFORCE PLACEMENTS

STRENGTHEN CAPACITIES OF THE REGIONAL ONE HEALTH UNIVERSITY NETWORKS FOR ACQUISITION AND MANAGEMENT OF DIRECT DONOR FUNDING

GENDE

SUPPORT GENDER INTEGRATION AS A CORE COMPETENCY AND INCLUDE GENDER CONSIDERATIONS AS A CROSS-CUTTING THEME

46
MENTORED STUDENT ONE HEALTH CLUBS

9
AFROHUN COUNTRY CHAPTERS

8
SEAOHUN COUNTRY NETWORKS (OHUNs)

51
ACTIVITIES INCREASING CAPACITY TO RESPOND TO COVID-19

2
SECRETARIATS

7
GLOBAL TEAM PARTNERS

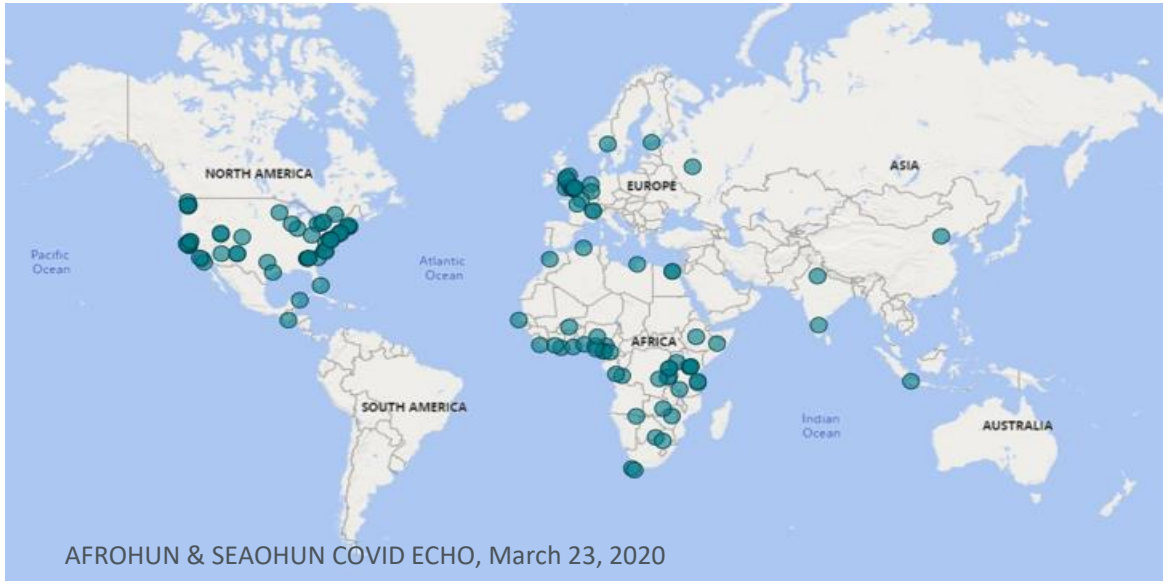
22,569
INDIVIDUALS TRAINED

3
GLOBAL OBJECTIVES

12
STRATEGIES

Building a Global Community of Practice

Interactive COVID-19 ECHO Online Sessions

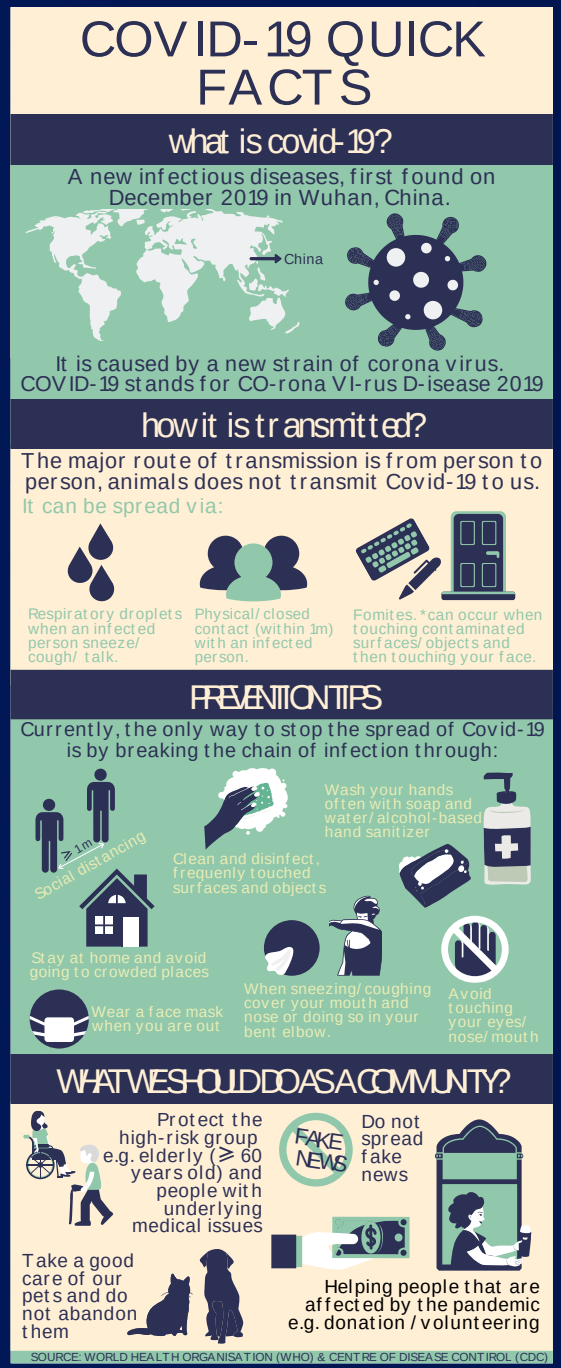


AFROHUN & SEAOHUN COVID ECHO, March 23, 2020

Sharing experiences and best practices around the world

Regional Webinars

Student One Health COVID-19 Risk Communication Contests – e-Posters & Videos



Training the Next Generation of One Health Leaders

APPLIED INNOVATIONS IN E-LEARNING TO EXTEND TRAINING OPPORTUNITIES IN THE CLASSROOM AND THE FIELD

- Teams used online platforms to continue teaching and training in the face of COVID-19
  - Platforms used for classroom instruction and field-based experiential learning

Training the Next Generation of One Health Leaders

STUDENTS OBTAINED HANDS-ON TRAINING ON THE FRONTLINES OF THE COVID-19 RESPONSE THROUGH STUDENT ONE HEALTH CLUBS

- Student One Health Clubs led COVID-19 risk communication and community engagement campaigns

Training the Next Generation of One Health Leaders

STUDENTS GAINED REAL-WORLD EXPERIENCE WORKING WITH COVID-19 RESPONSE TEAMS THROUGH FELLOWSHIPS AND INTERNSHIPS

5
One Health Fellows

- Uganda FAO, Amref Health Africa, Infectious Disease Institute, and Ministry of Health
- Put knowledge and skills in outbreak response, communication, and leadership into practice

6
One Health Interns

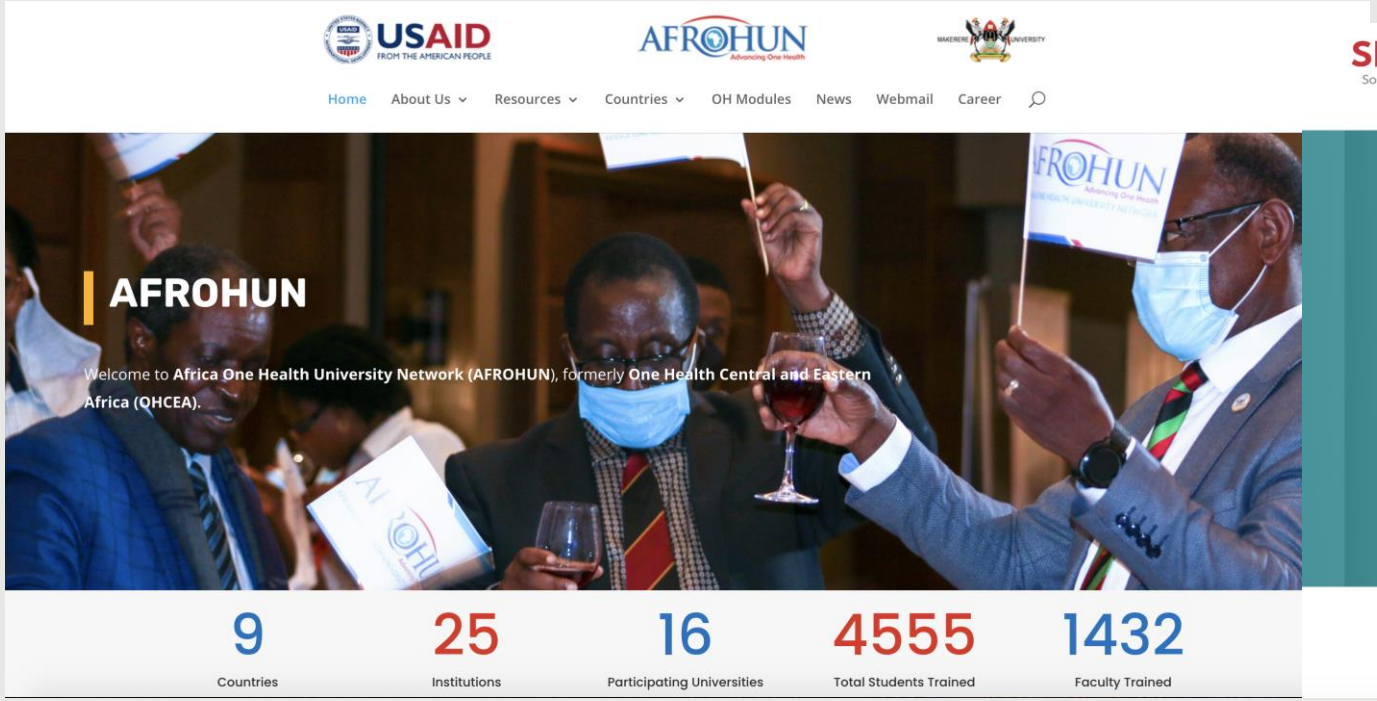
- DRC Ministry of Health
- Gained experience in COVID-19 surveillance, contact tracing, and case investigation

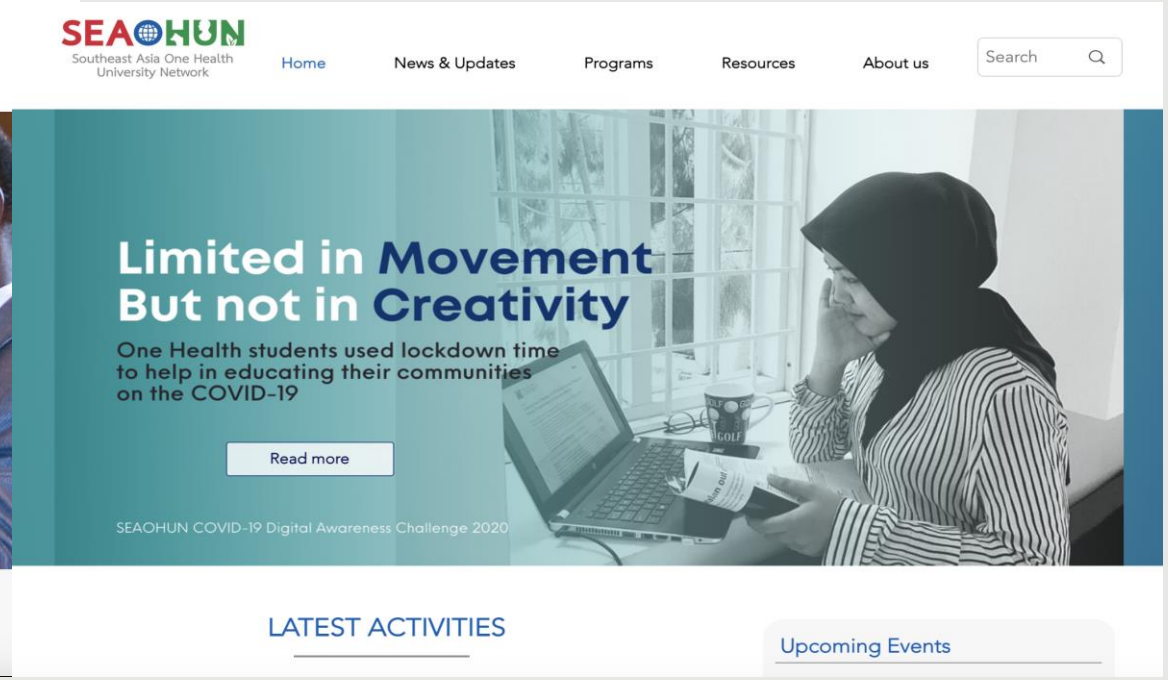
Training the Next Generation of One Health Leaders

Vietnamese lecturer Tuyen Ha Van received **fellowship support**, gaining hands-on experience with International Livestock Research Institute (ILRI)

SEAOHUN offered **6 scholarships** to health professionals in pursuit of master's degrees incorporating One Health

Awarded **small grants to 8 projects from 7 countries**: Cambodia, Indonesia, Malaysia, Myanmar, Philippines, Thailand, and Vietnam





onehealthnextgen@ucdavis.edu

http://ohwng.org

https://afrohun.org/

https://seaohun.org/

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UCI University of California, Irvine

Q&A and Discussion

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Join Our Upcoming Grand Rounds

Tuesday, June 29, 2021 | 9-10 AM ET

Addressing Cancer in LMICs — Progress and Plans at the US National Cancer Institute

- **Satish Gopal**, MD, MPH, Director of the Center for Global Health, National Cancer Institute, National Institutes of Health, will discuss progress and plans addressing cancer in low- and middle-income countries at the National Cancer Institute.

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Thank You

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