

# Overview of One Health Concept



**M.Z. Azmie**

Pusat Ilmuan Darulaman



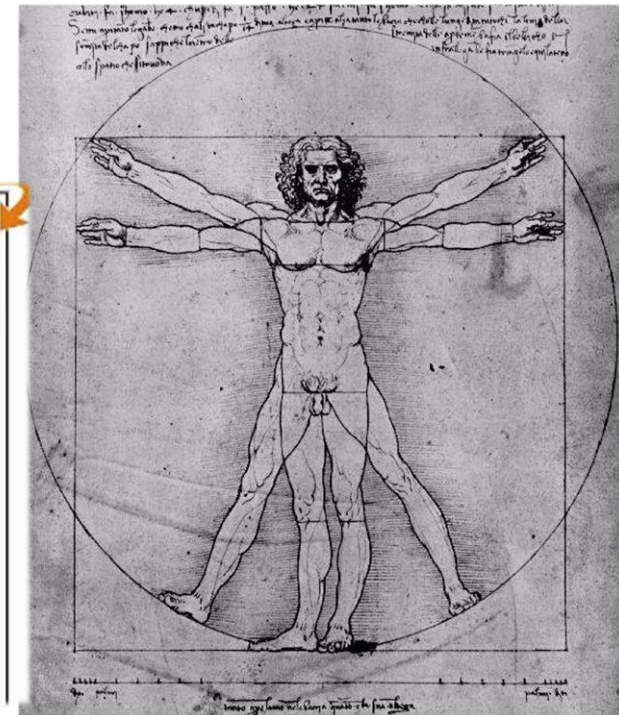
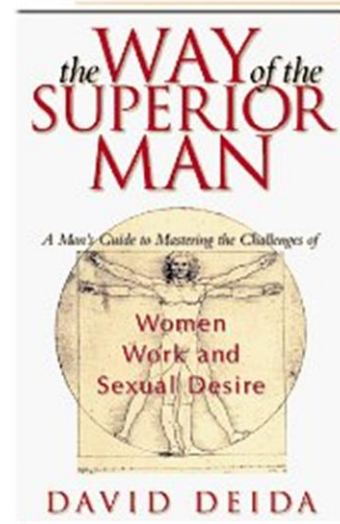
Email: [mzazmie@gmail.com](mailto:mzazmie@gmail.com)  
Blogs: [mzazmie.blogspot.com](http://mzazmie.blogspot.com)  
Facebook: M.z. Azmie

# Presentation

- Introduction
- One Health
- One Health in *Malaysia*
- Challenges
- Summary

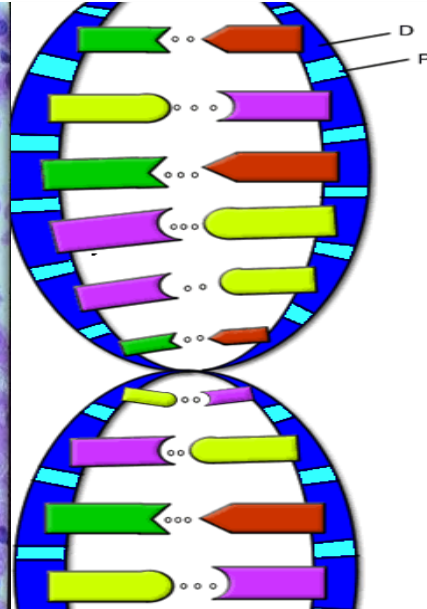
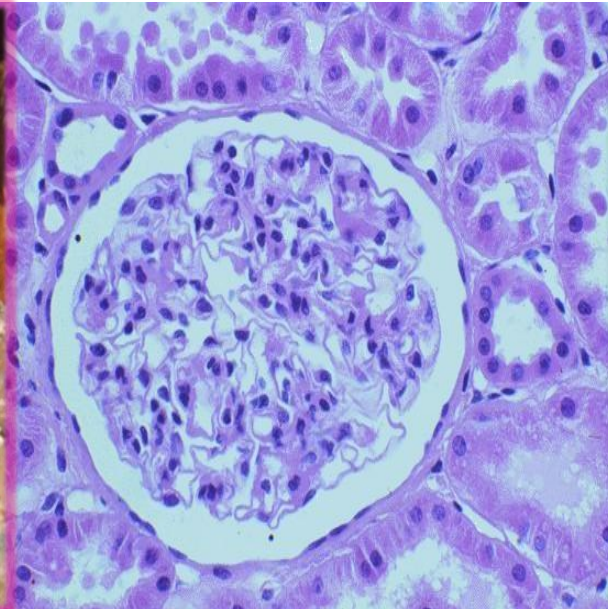
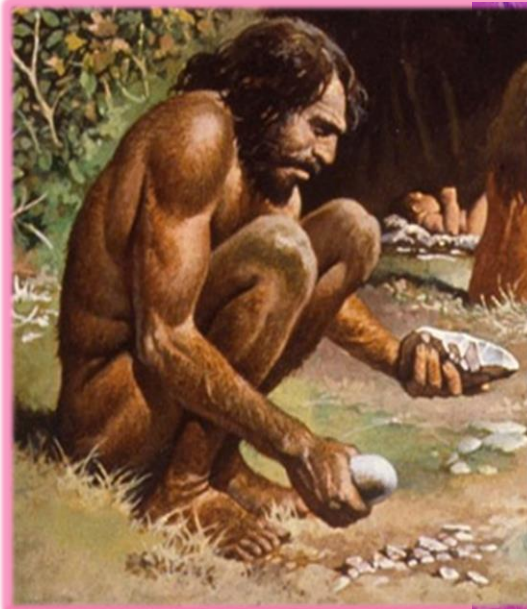
# Introduction

Man are different and superior than animal



# Introduction

Homo sapiens biologically share many similarities with other animals, at cellular, at DNA level having thymine, adenine, guanine and cytosine with phosphate and hydrogen bond.



- Thymine
- Adenine
- Guanine
- Cytosine
- D = Deoxyribose (sugar)
- P = Phosphate
- Hydrogen Bond

# Introduction

Man are superior  
Intellectually  
but biologically  
its one of the being  
that share the earth  
ecosystem  
and faces the same  
biological challenges  
and threat as the  
others



# Introduction

*There is not an animal ( that lives) on earth,  
nor a being that flies on its wings,  
but ( forms part of )communities like you.*

Al Quran: Surah Al-An,aam 6:38

Translation : Abdullah Yusuf Ali

**Man and animal is part of the ecosystem**

# Nipah encephalitis

Kampong Nipah, Bukit Pelanduk, Port Dickson

Sept 1998- June 1999

265 cases of encephalitis and 105 human death

1 million pigs destroyed to eradicate the disease

Diseases that  
Infect animal  
May infect  
Human too



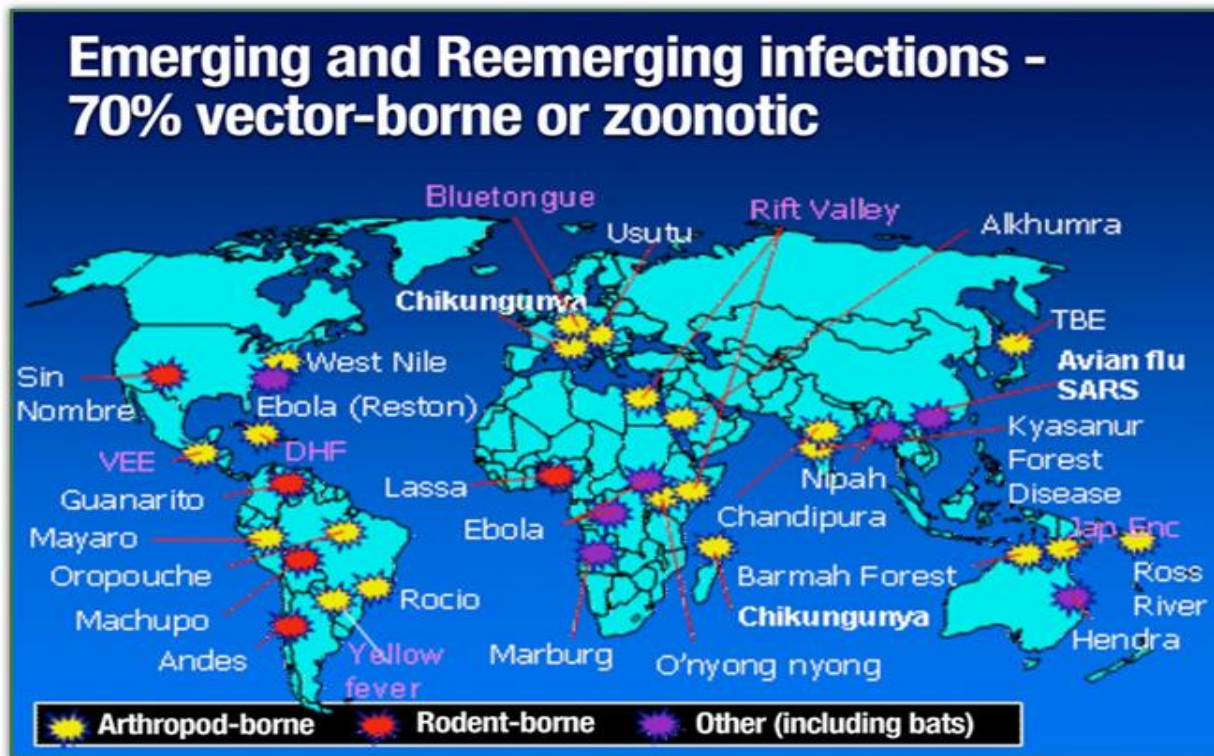
# Beginning of the rethinking

- Dramatic visual of Nipah eradication jolted the world to the new reality
- Recognition of other new emerging diseases further reinforced the concerned
- Role of wildlife in new emerging posed a serious threat to conservationist



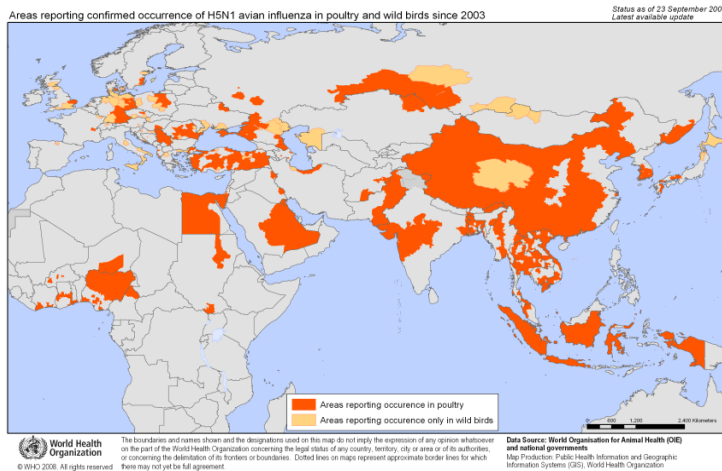


# Recognising the threat



- ✓ 60% human pathogens are of animal origins
- ✓ 75% of emerging animal diseases are transmissible to human
- ✓ wildlife has significant role

# Avian Influenza



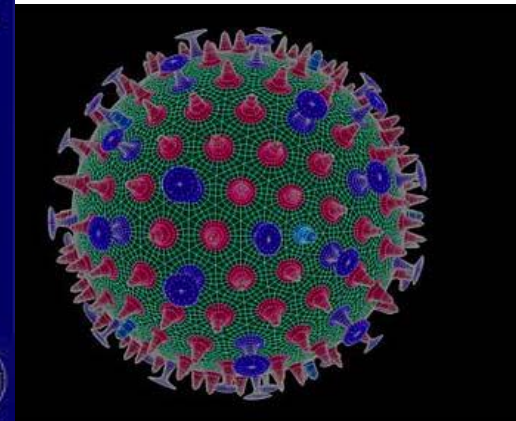
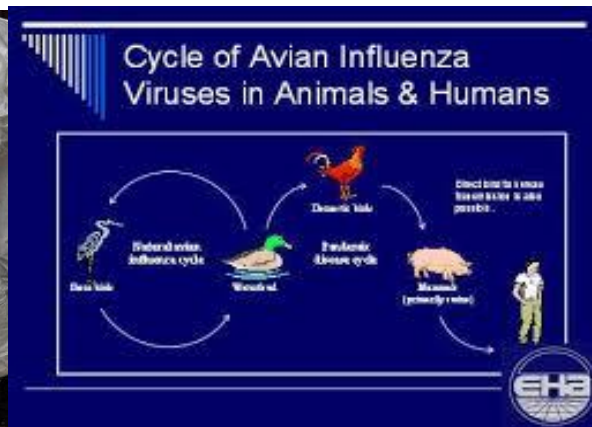
First identified- H5N1- 1987

Outbreak in in Hong Kong, 2003

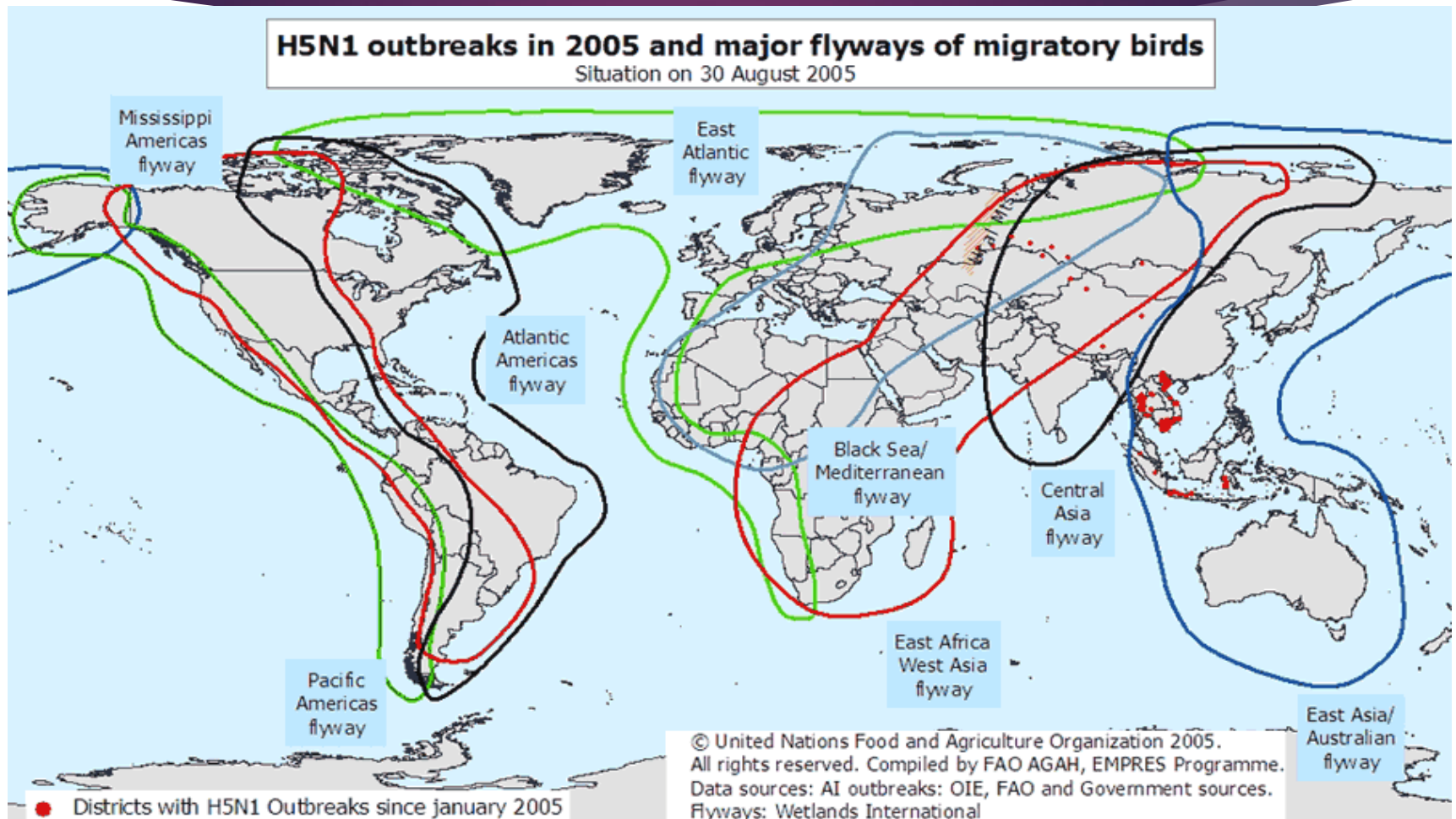
Between 2003- 17 July 2015- 449 human death

Millions of birds dead or destroyed

Billions in economic losses



# Role of migratory birds in the spread of H5N1



# Ethical dilemma



Do we really need  
To destroy all these  
Creatures to extinction  
To ensure man  
safety.

# International Union for Conservation of Nature ( IUCN )

## Conservation Status

Extinct

Extinct

Extinct in Wild

Threatened

Critically Endangered

Endangered

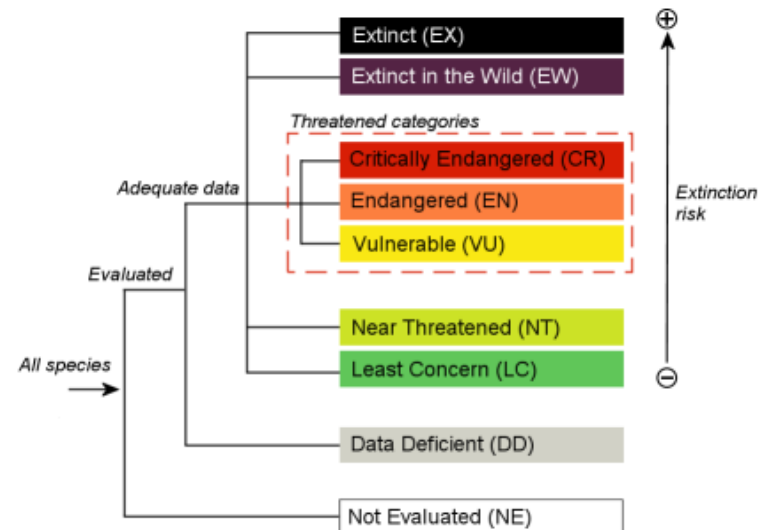
Vulnerable

Least Concerned

Conservation Dependent

Not Threaten

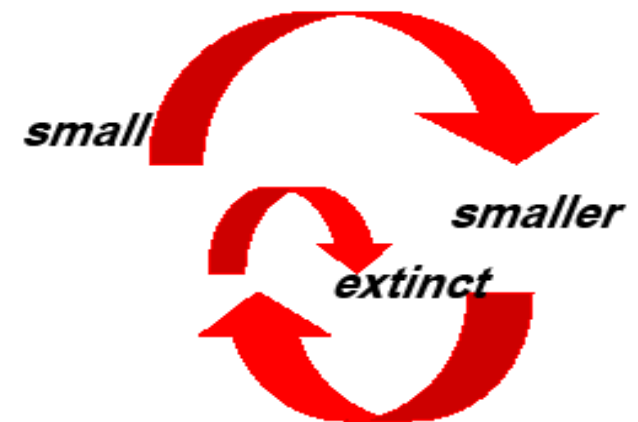
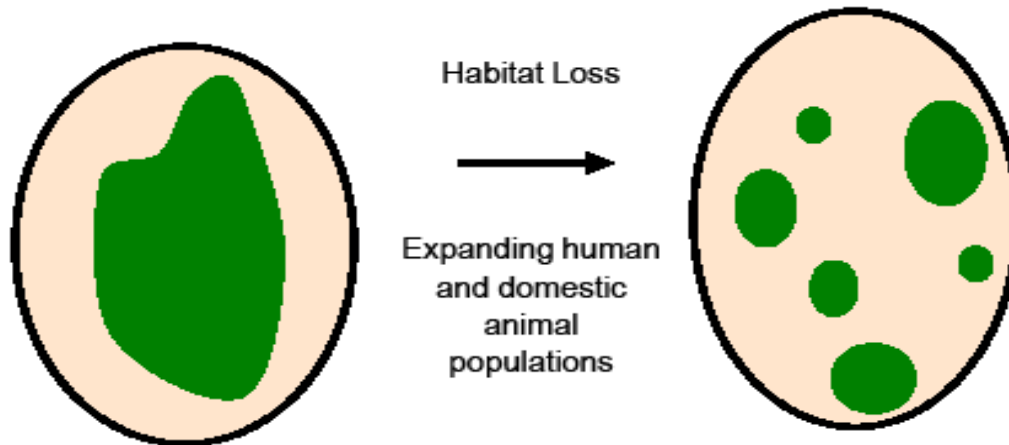
Least Threaten



## Disease and threatened populations

- Part of extinction vortex

- Population viability analyses  
=> Diseases that cause high adult mortality pose the major threat to small populations



### Large home ranges

- Exposure to range of pathogens
- Manifestation of 'edge effects'

# EARLY ADVOCATE OF OWOH

The screenshot shows the Wildlife Conservation Society (WCS) website. At the top, there is a navigation bar with links for 'Our Mission', 'Global Conservation', 'WCS in New York', 'High-Tech Tools', 'Education', and 'Search'. The main header features the WCS logo and the text 'SAVING WILDLIFE'. A blue box on the right highlights a 'New AHEAD book on Wildlife, Livestock, and Human Health'. Below the header is a row of links for 'VISIT OUR PARKS >>' including 'BRONX ZOO', 'NEW YORK AQUARIUM', 'CENTRAL PARK ZOO', 'QUEENS ZOO', and 'PROSPECT PARK ZOO'. A row of images shows various animals: a monarch butterfly, an elephant, a tiger, a bear, a dolphin, a bird, and a cow. The 'Field Veterinary Program' section is highlighted in the left sidebar. The main content area for this program includes the title 'Field Veterinary Program', a sub-heading 'A Global Approach to Health', and a paragraph explaining the program's mission. Below the text are four green buttons with white text: 'AHEAD: ANIMAL HEALTH FOR THE ENVIRONMENT AND DEVELOPMENT', 'ANIMAL HEALTH MATTERS: NEW GUIDELINES TO PROTECT WILD AND DOMESTIC ANIMALS', 'GAINS: Global Avian Influenza Network for Surveillance', and 'ONE WORLD, ONE HEALTH'. The bottom of the page features an 'Internet' logo.

**WILDLIFE CONSERVATION SOCIETY**

Our Mission Global Conservation WCS in New York High-Tech Tools Education Search

## SAVING WILDLIFE

New AHEAD book on Wildlife, Livestock, and Human Health

VISIT OUR PARKS >> BRONX ZOO NEW YORK AQUARIUM CENTRAL PARK ZOO QUEENS ZOO PROSPECT PARK ZOO

**Section Topics**

- Department of Clinical Care
- Department of Pathology
- Clinical Medicine and Pathology Residency Programs
- Clinical Medicine and Pathology Externship
- Field Veterinary Program**

**Field Veterinary Program**

**A Global Approach to Health**

As people and their domestic animals penetrate once pristine areas and expand their range and intensity of activities around the globe, the risk of transmitting deadly diseases to wildlife increases significantly. Today, infectious and noninfectious diseases of humans, domestic animals and wildlife are being recognized as an increasing challenge to biodiversity conservation, as well as the efforts to improve the quality of life for humans. Although wildlife diseases play important ecological roles, human activities have imbalanced these systems with devastating consequences including both gradual and catastrophic losses of wildlife populations.

The WCS Field Veterinary Program, established in 1989, uses a collaborative approach to address the complexities of maintaining ecosystem health. Working with in-country wildlife experts, government agencies and public health officers from Patagonia to Central Africa, we use our knowledge in wildlife disease to create local training programs, conduct cutting-edge health investigations, advise on policies and compile preventive guidelines to reduce disease transmission between wildlife, humans and their domestic animals. This program — the first of its kind in the world — has the added benefit of being based at

**AHEAD**  
ANIMAL HEALTH FOR THE ENVIRONMENT AND DEVELOPMENT

**ANIMAL HEALTH MATTERS:**  
NEW GUIDELINES TO PROTECT WILD AND DOMESTIC ANIMALS

**GAINS**  
Global Avian Influenza Network for Surveillance

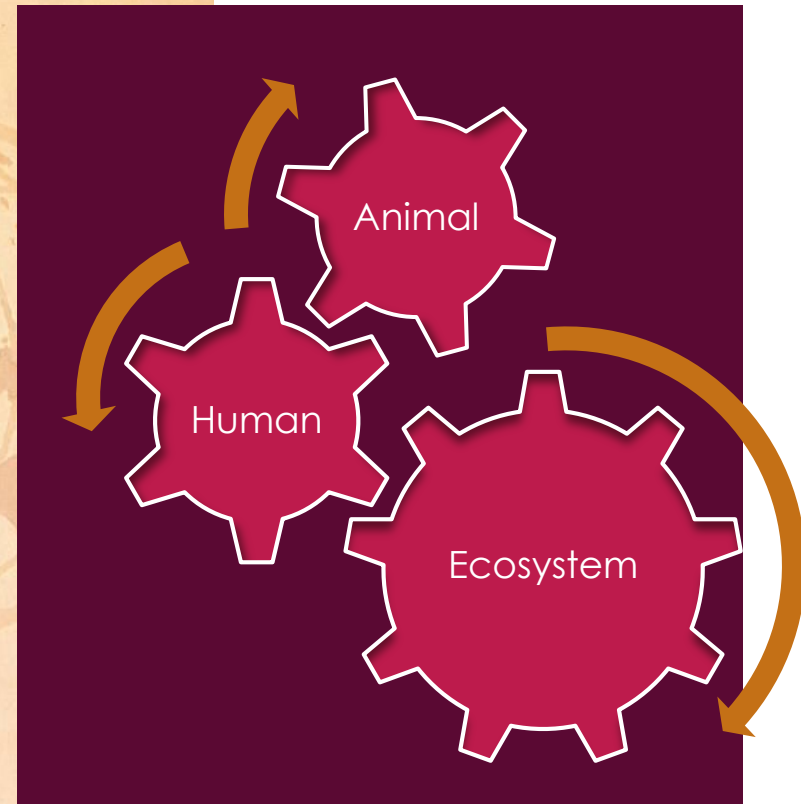
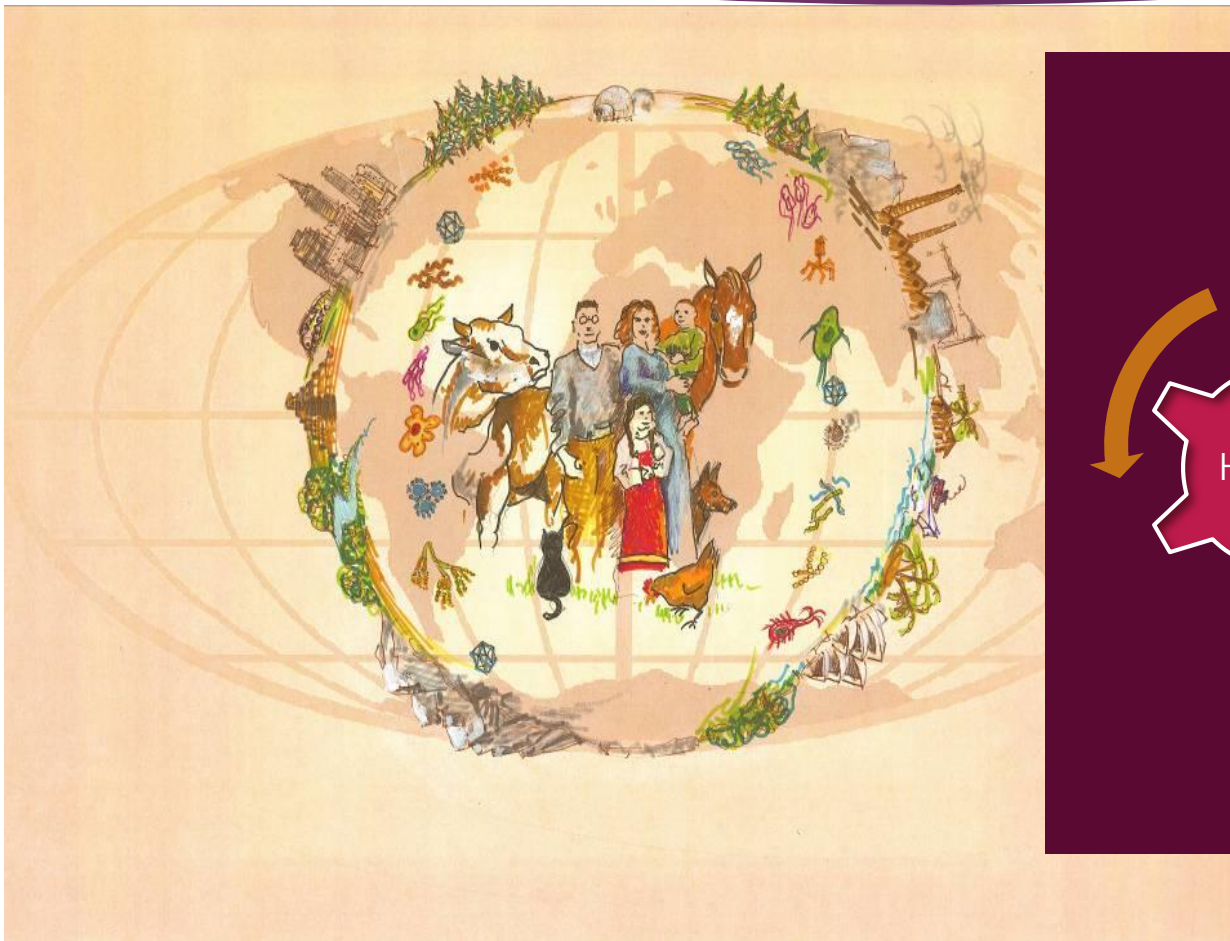
**ONE WORLD, ONE HEALTH**

Internet



**WILDLIFE CONSERVATION SOCIETY** organised the conference  
Hosted by Rockefeller University, **SEPTEMBER, 29, 2004**

# One World One Health



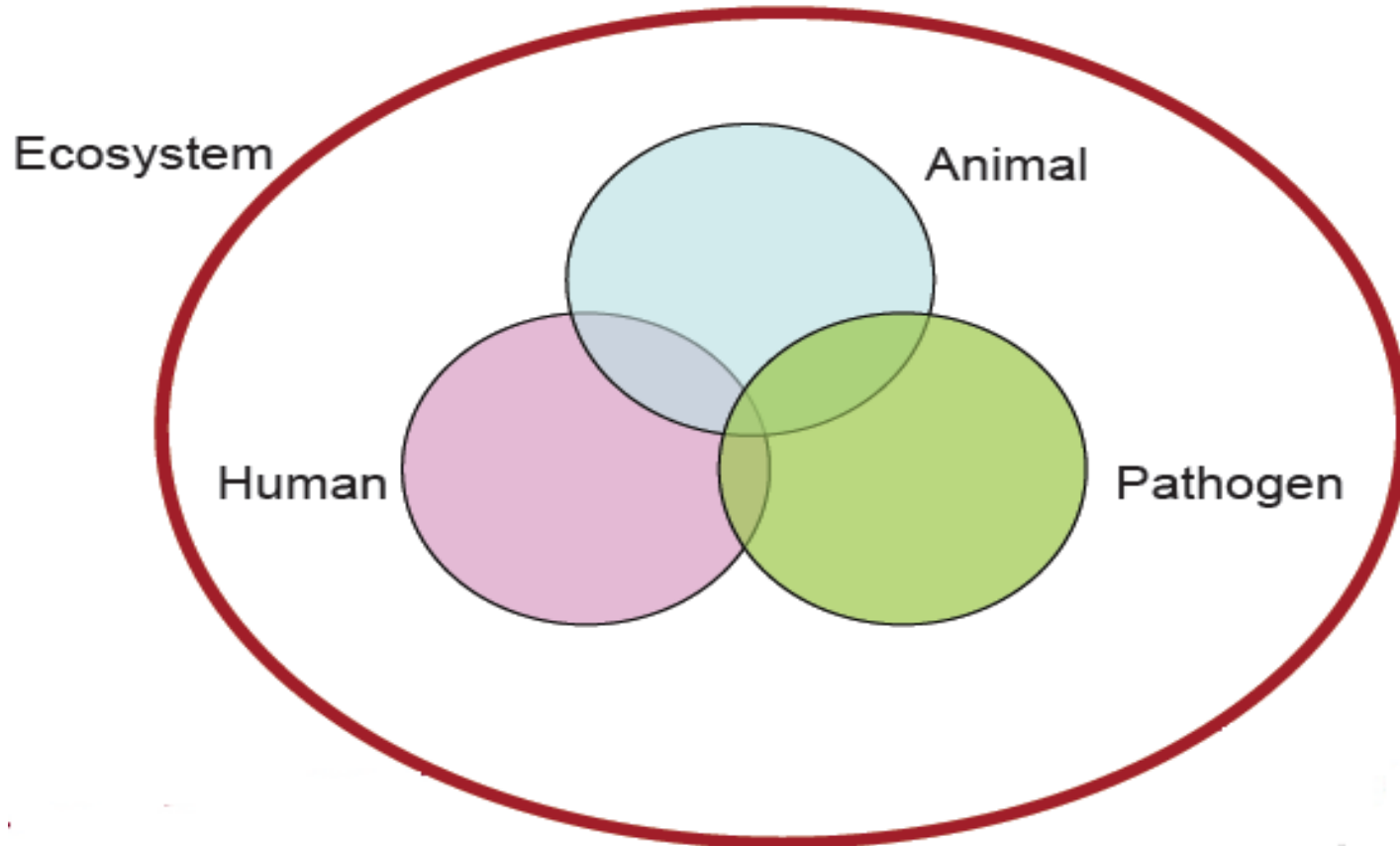


# One World One Health Approach

“ the collaborative efforts of multiple disciplines working locally, nationally and globally to attain optimal health for people, animals, plants and our environment.”

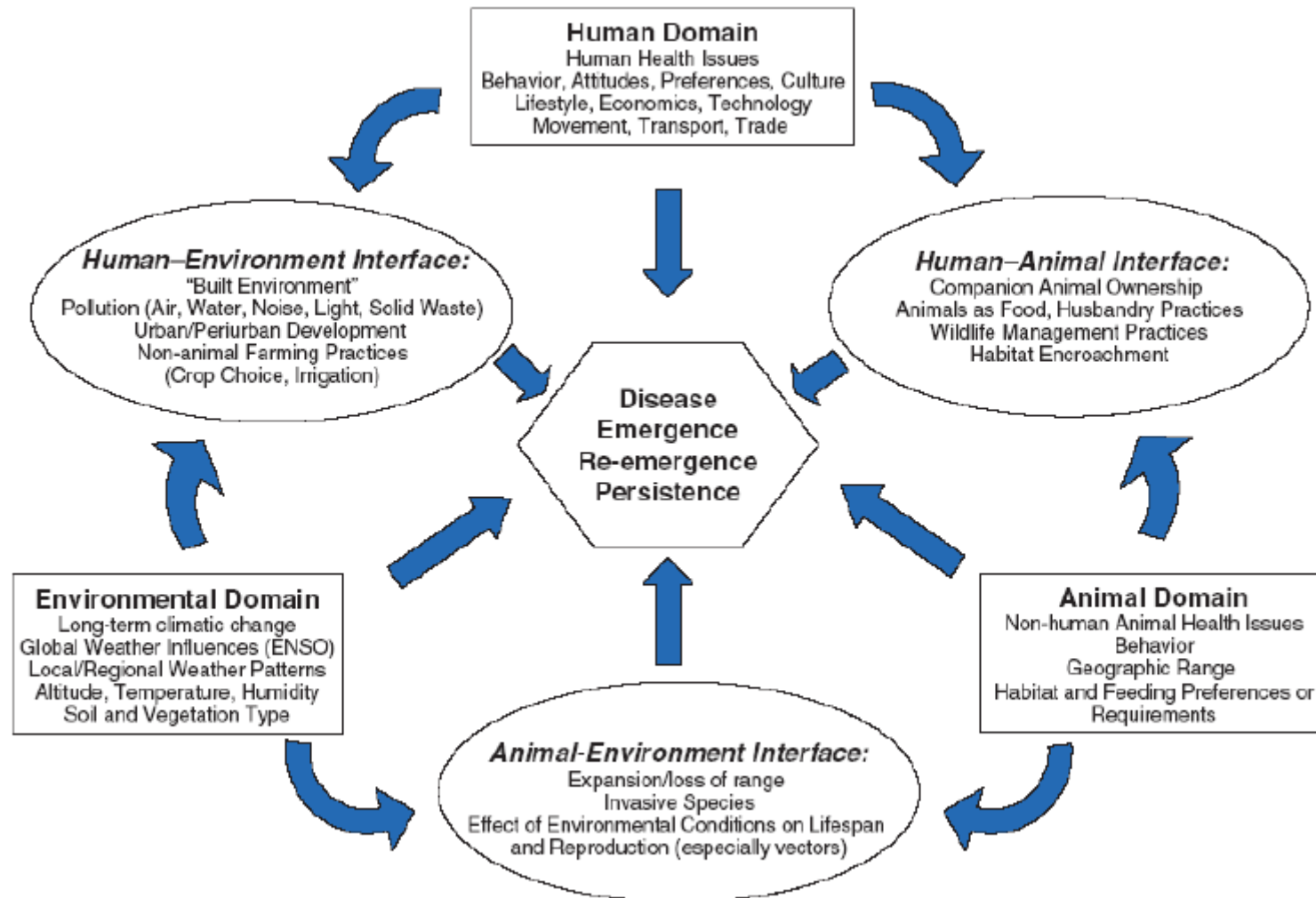
( American Veterinary Medical Association, 2008)

# Animal-Human-Pathogen-Ecosystem Interfaces



Monique Eloit , One World One Health.  
Influenza at the Interface Between Human and  
Animal, Bruxelles, 30 Oct 2009

# Human- Animal- Ecosystem Domain Interface



Monique Eloit , One World One Health.  
Influenza at the Interface Between Human and  
Animal, Bruxelles, 30 Oct 2009

# Contributing to One World, One Health\*

A Strategic Framework for Reducing Risks of  
Infectious Diseases at the  
Animal–Human–Ecosystems Interface

14 October 2008

Consultation Document

Produced by:



UN System  
Influenza Coordination



THE WORLD BANK

# Advancement of the “OWOH” Agenda

- \*2006: **Beijing** Declaration At the International Pledging Conference on Avian and Human Pandemic Influenza
- \*2007: **New Delhi** International Ministerial Conference on Avian and Pandemic Influenza
- \*2008: **Verona**, FAO-OIE-WHO Joint Technical Consultation on Avian Influenza at the Human-Animal Interface,
- \*2008: **Sharm el Sheikh** Inter Ministerial Conference on Avian Influenza,
- \*2009: **Winnipeg** → from ideas to action
- 2010: International Ministerial Conference on Avian and Pandemic Influenza (March)

Monique Eloit , One World One Health.  
Influenza at the Interface Between Human and  
Animal, Bruxelles, 30 Oct 2009

# Sixth International Ministerial Conference on Avian and Pandemic Influenza in Sharm El Sheikh, Egypt on 24-25 Oct 2008

Jointly organised by:

WHO

OIE

FAO

UNICEF

**UNSC**


WORLD

530 minister and senior  
officials from  
120 countries



Funding agenda, project survivals

# One World One Health



**One World, One Health**      one world • one health

<b>Home</b>
<b>29 September 2004 New York Symposium</b> <i>"Building Interdisciplinary Bridges to Health in a 'Globalized World' "</i>
<b>15 November 2004 Bangkok Workshop</b> <i>"Beyond Zoonoses: The Threat of Emerging Diseases to Human Security and Conservation, and the Imp- lications for Public Policy"</i>
<b>15-17 November 2005 China Workshop</b> <i>"Beyond Zoonoses: The Threat of Emerging Diseases to Human Health, Agriculture and Conservation: Imp- lications for Public Policy"</i>
<b>2-4 October 2007</b>

[Visit our Brazil Workshop page](#)  
2-4 October 2007  
**All presentations, including video, audio, PDFs,  
and slides are now online.**

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**View Press Release:**  
"Wildlife Conservation Society Announces  
One World One Health Research Projects Funded by Cargill"  
[English PDF](#) | [Portuguese PDF](#)

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**About "One World, One Health"**

Need for more  
Holistic approach  
of health management

Scientists need to  
Breakdown barriers  
of their silo of  
knowledge

Government  
Department and  
agencies need  
To work together

<http://www.oneworldonehealth.org/>

Multisectorals  
Multidisciplines

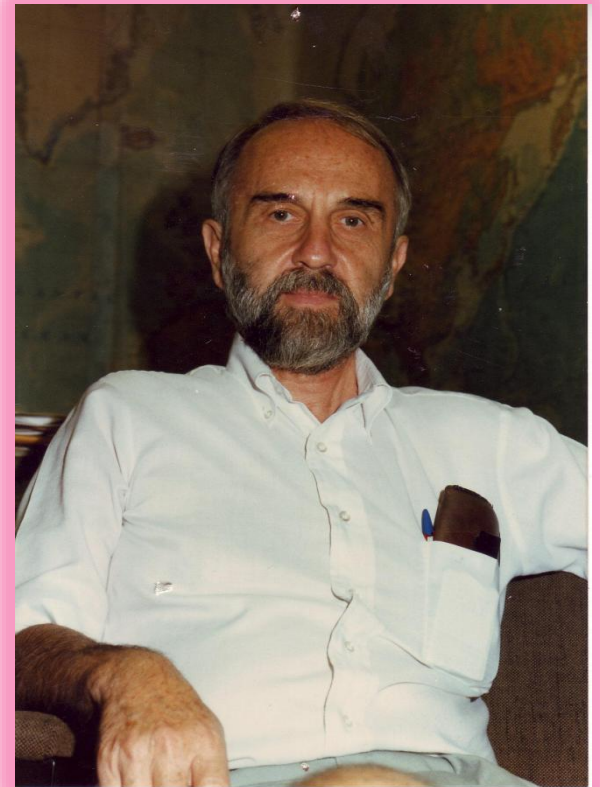
Transboundary  
Transpecies

# One Medicine

The “one medicine” by Calvin Schwabe’s has its origins in his work with Dinka pastoralists in Sudan in the 1960s

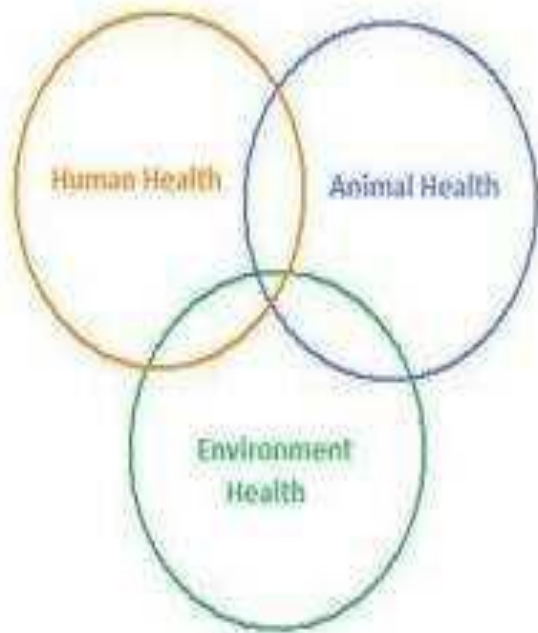
*“There is no difference of paradigm between human and veterinary medicine. Both sciences share a common body of knowledge in anatomy, physiology, pathology, on the origin of diseases in all species.”*

Schwabe C. (1964, 1984 3rd Edition): Veterinary Medicine and Human Health. Williams and Wilkins, Baltimore





# One Health Approach



Traditional perspective of public health



One Health approach

# International Collaboration

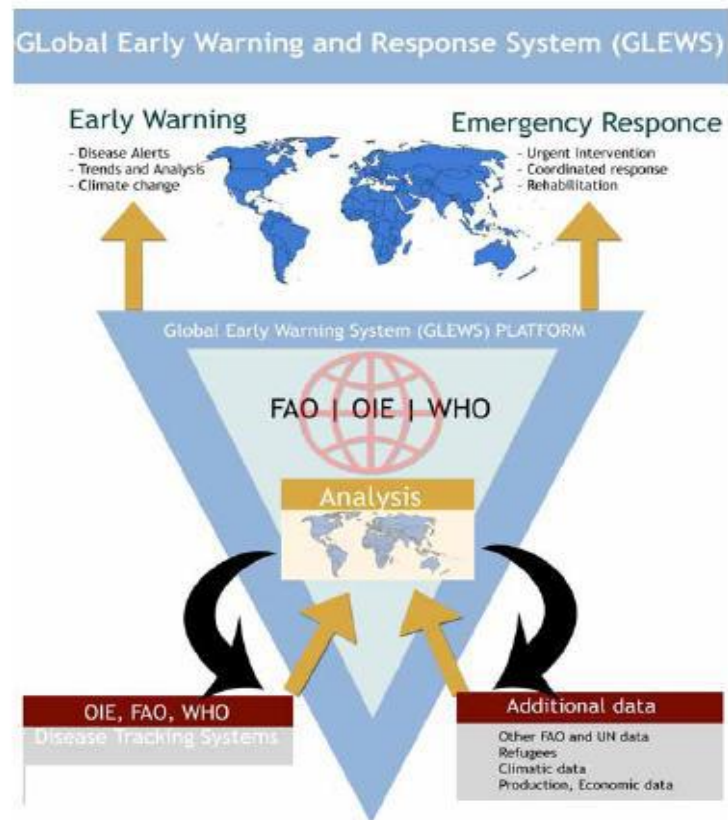
## The FAO-OIE-WHO Collaboration

Sharing responsibilities  
and coordinating global activities  
to address health risks at the  
animal-human-ecosystems interfaces

A Tripartite Concept Note



April 2010



# Inter disciplines International Initiatives



2005



FAO/OIE  
**GF-TADs**  
May 2004  
GLOBAL FRAMEWORK FOR THE  
PROGRESSIVE CONTROL OF  
TRANSBOUNDARY ANIMAL DISEASES



Emergency Prevention Programme  
for Transboundary Animal Diseases  
(EMPRES)

**Global Early Warning System for  
Major Animal Diseases, including  
Zoonoses (GLEWS)**



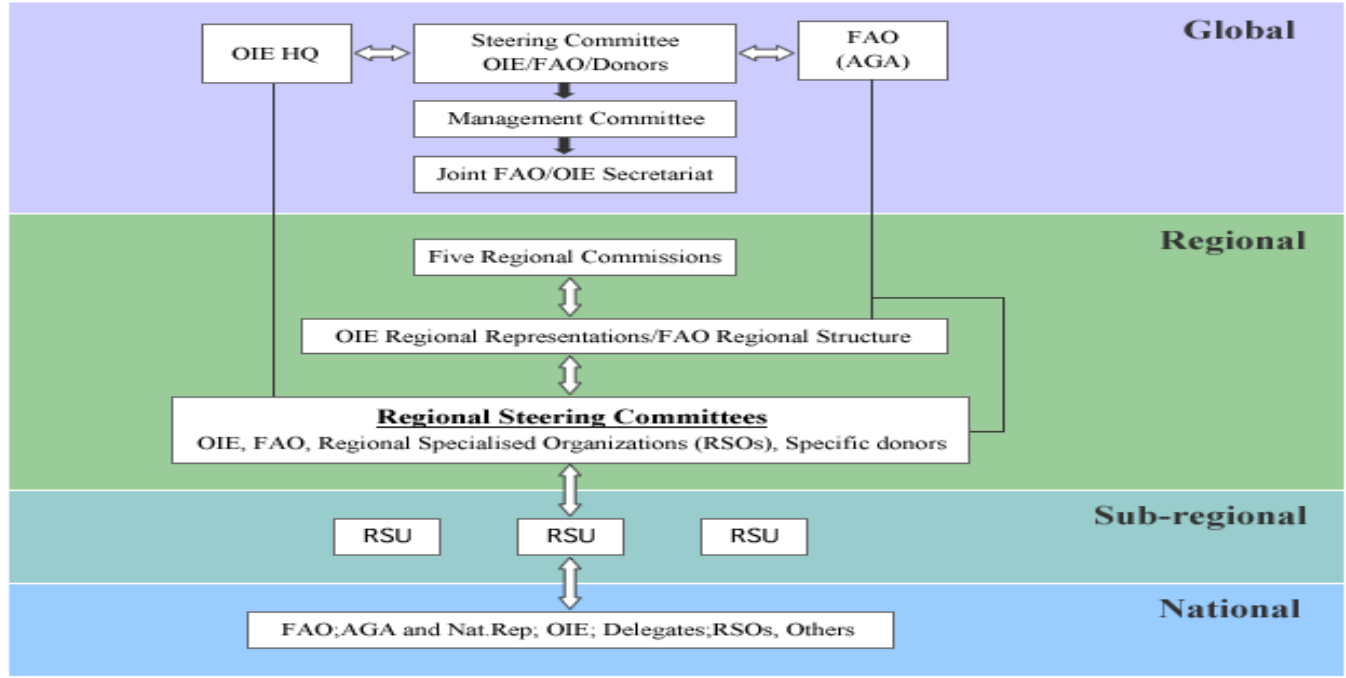


# FAO/OIE GF-TADs

GLOBAL FRAMEWORK FOR THE  
PROGRESSIVE CONTROL OF  
TRANSBOUNDARY ANIMAL DISEASES

This is  
Coordinating  
Meeting  
Between

- Regional Bodies
- World Bodies
- Donor Agencies

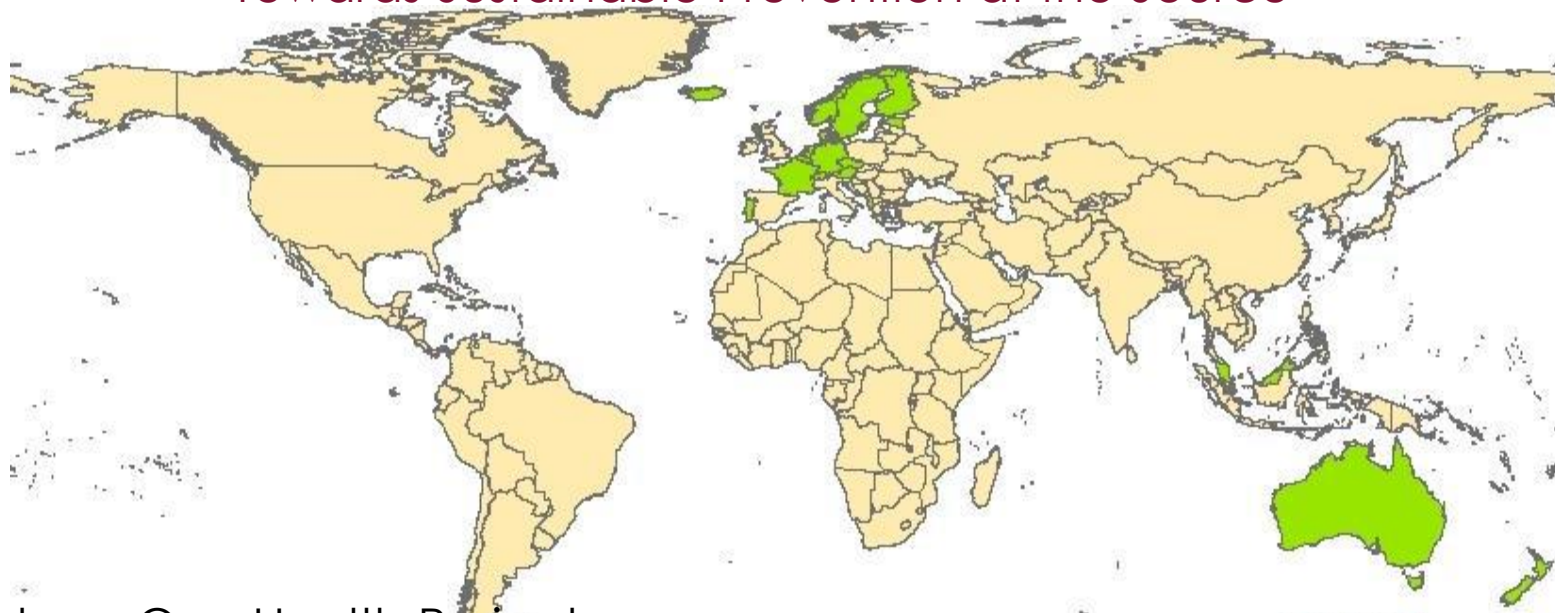


Priority Setting Funding Agenda

# One health



**OIE Global conference on Rabies control:  
with the support of WHO and FAO**  
Towards Sustainable Prevention at the Source

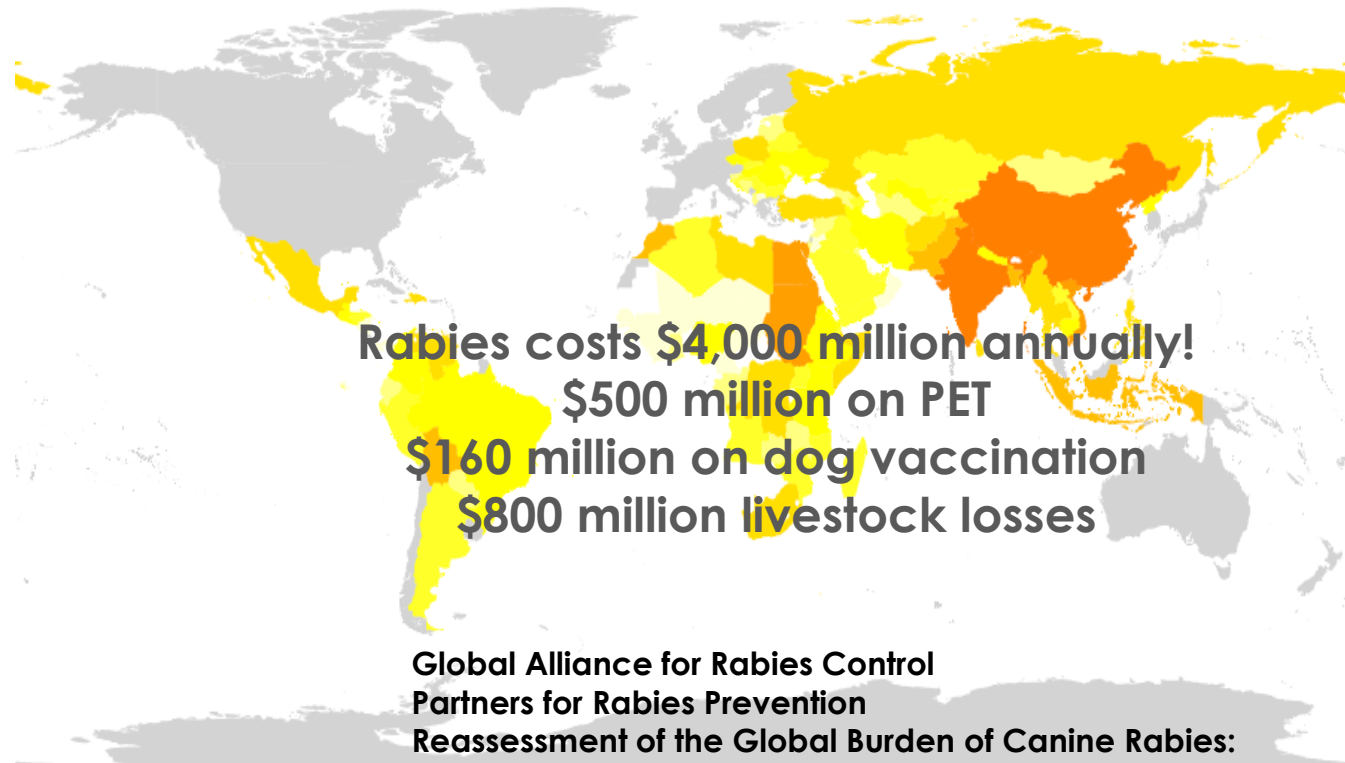
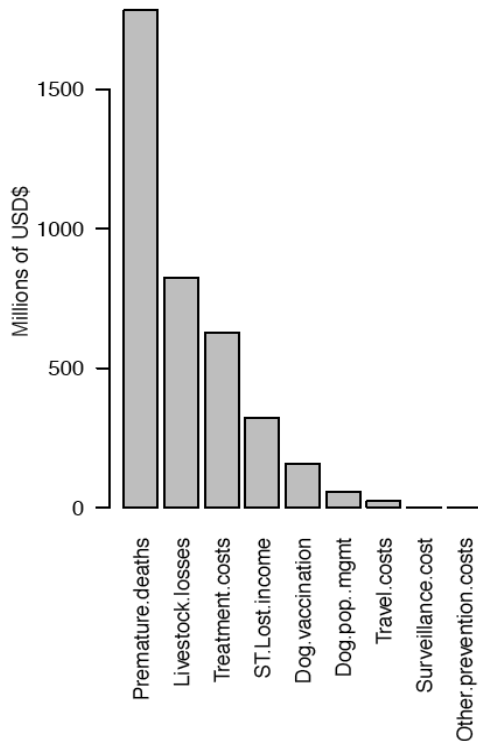


Rabies is suitable as One Health Project

Dr Bernard Vallat  
Director General of OIE

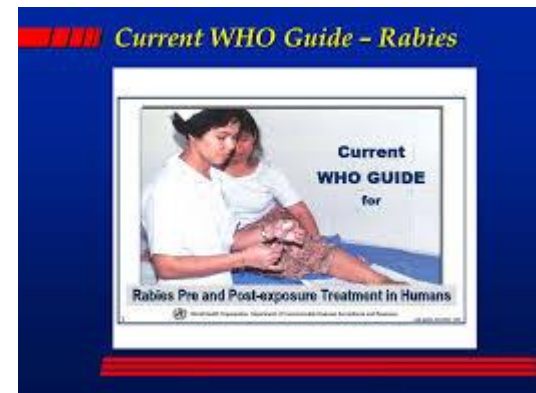
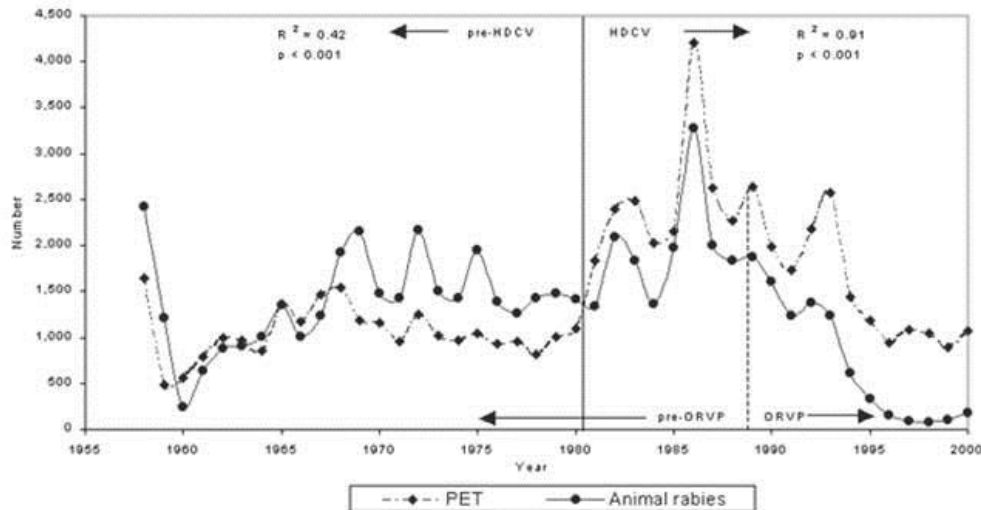
© OIE 2011

# Economic burden of canine rabies



7 September 2011, Incheon, Korea  
OIE Global conference on rabies control

# One Health- relook at rabies



PET cost USD 100 per patient

Better resource allocations helped  
Solved the national health problem



Cost of vaccinating dog USD 0.50

# World Rabies Day



**World Rabies Day**

*Working Together to Make Rabies History!*

Working independently:

- Ministry of Health
- Veterinary Services
- Municipal Council

Most of the fund to MOH



- 150 countries have rabies
- 50,000 died of rabies annually
- Rabies control in animal:
  - ✓ Rabies vaccination in dog
  - ✓ Stray control
  - ✓ Dog licensing
  - ✓ Public awareness
  - ✓ Post Exposure Treatment



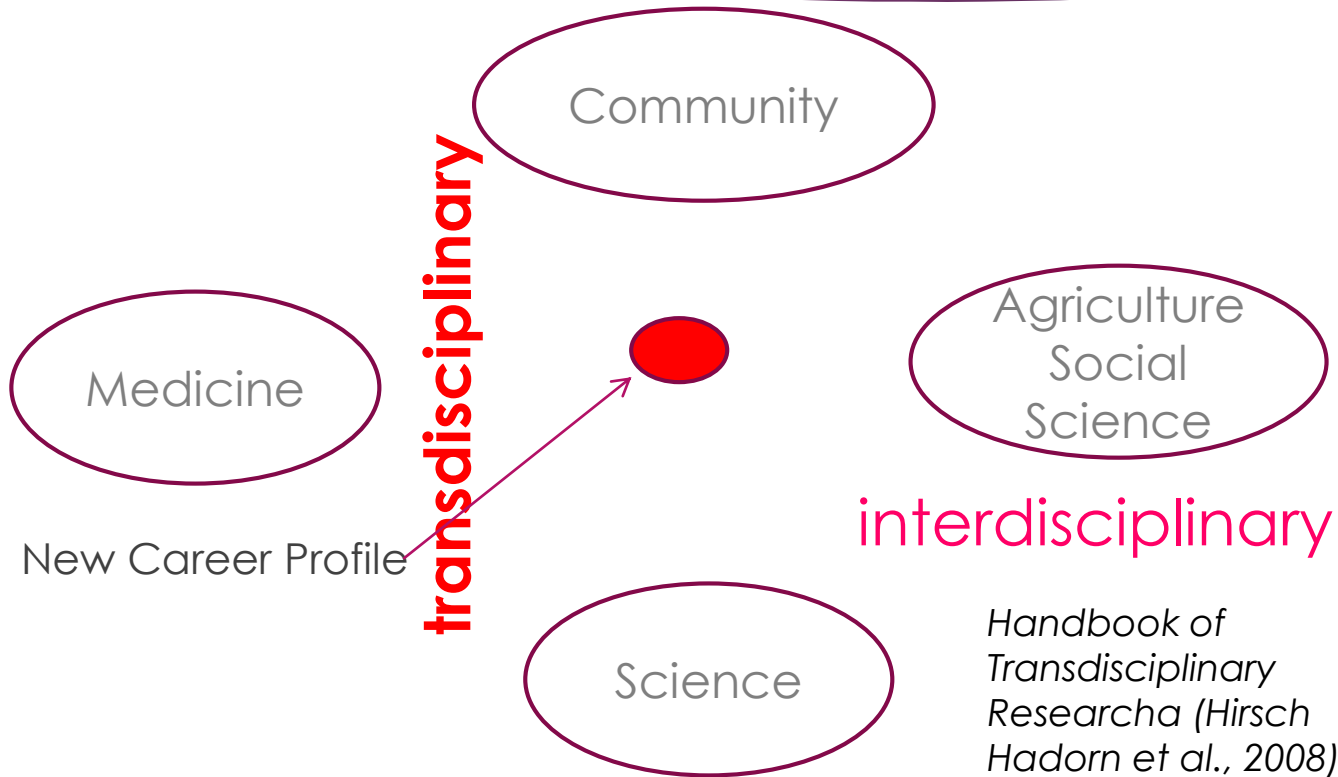
# Integrating ?



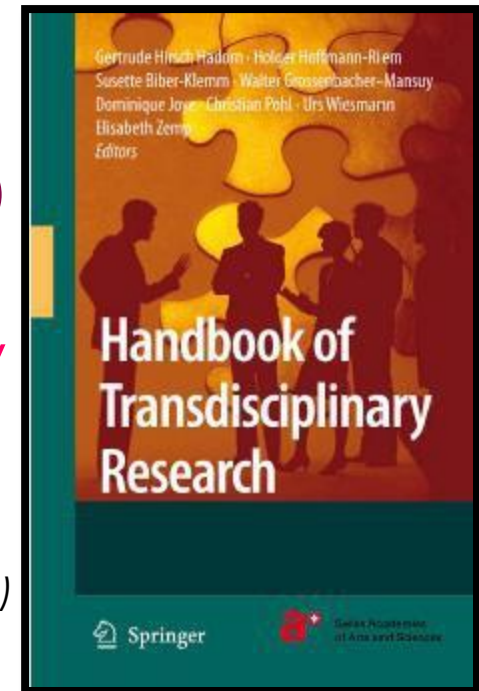
While other are talking  
About **collaboration**  
Switzerland is talking  
About **integrative**

One Health -One Planet -One Future  
Risks and Opportunities  
19-23 February 2012 Davos, Switzerland

# Transdisciplinary



*Handbook of  
Transdisciplinary  
Researcha (Hirsch  
Hadorn et al., 2008)*



**Jakob Zinsstag, Monique Lechenne, Esther Schelling**  
Swiss Tropical and Public Health Institute, PO Box 4002, Basel  
Switzerland

# One Health Approach

Specialised



Collaborative



Integrated



Traditional  
Approach working  
From within individual  
Knowledge silo

There are already  
project in integrated  
approach but not  
widely accepted

# One Health Today



Search : One Health

530,695 articles  
On 1.8. 2015

  
**870,883**  
visitors

**261,417**  
loans  


  
**1,996,653**  
e-journal article views  
**1,765,302**  
e-book chapter views

# One Health in Malaysia

- One health collaborative approach has been practice in Malaysia even before the concept has a name
- Initially veterinary service used to be part of Medical Department
- The success of rabies eradication and subsequently nipah and HPAI were partly due to those close relationship
- Further strengthen by National Blue Ocean Strategy

## **Official Relationship**

- **OIE National Committee**
- **Inter- Ministeries Committee for Control of Zoonotic Disease**
- **National Security Council**

# OIE National Committee



**Veterinary Services Department**

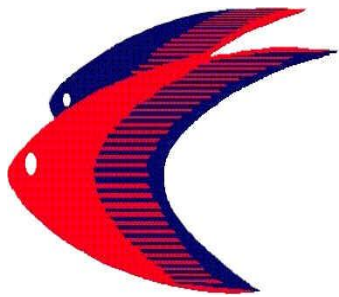


Ministry of Health Malaysia

**Ministry of Health**



**Wildlife Department**



**Fishery Department**



**Agriculture Department**



**Universiti Putra Malaysia  
Univesiti Malaysia Kelantan**

**Coordinate  
National Animal  
Disease Status  
Report**

- First Half Year
- Second Half Year
- Annual

# One Health In Malaysia

Inter-Ministeries Committee for Control of Zoonotic Diseases

## Committee Members

1. Department of Veterinary Services
2. Health Department
3. Occupational Safety and Health Department
4. Department of Environment
5. Department of Wild Life and National Park
6. Ministry of Housing and Local Government
7. University Malaya
8. University Putra Malaysia
9. University Kebangsaan Malaysia
10. Department of Local Government

Alternate Chairmanship:

**Director General of Health**

**Director General of Veterinary Services**

Malaysian  
One  
Health  
Mechanism  
22 November  
1999

Prior to 1999  
there were already  
DGs meeting held

# One Health In Malaysia

Inter-Ministeries Committee for Control of Zoonotic Diseases

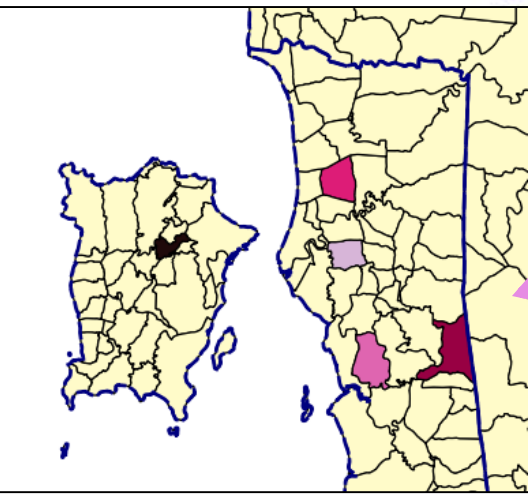
## Zoonotic Diseases List

Nipah	Japanese Encephalitis
HPAI	Anthrax
Rabies	Leptospirosis
S. Enteritidis/ typhimurium	Toxoplasmosis
Brucellosis	Rift Valley Fever/ Exotic Diseases
VRE/ Drug Resistance	Q fever
Tuberculosis	Hanta Virus
BSE/ CJD	Filariasis
Influenza (human, Swine, Equine)	Yellow Fever

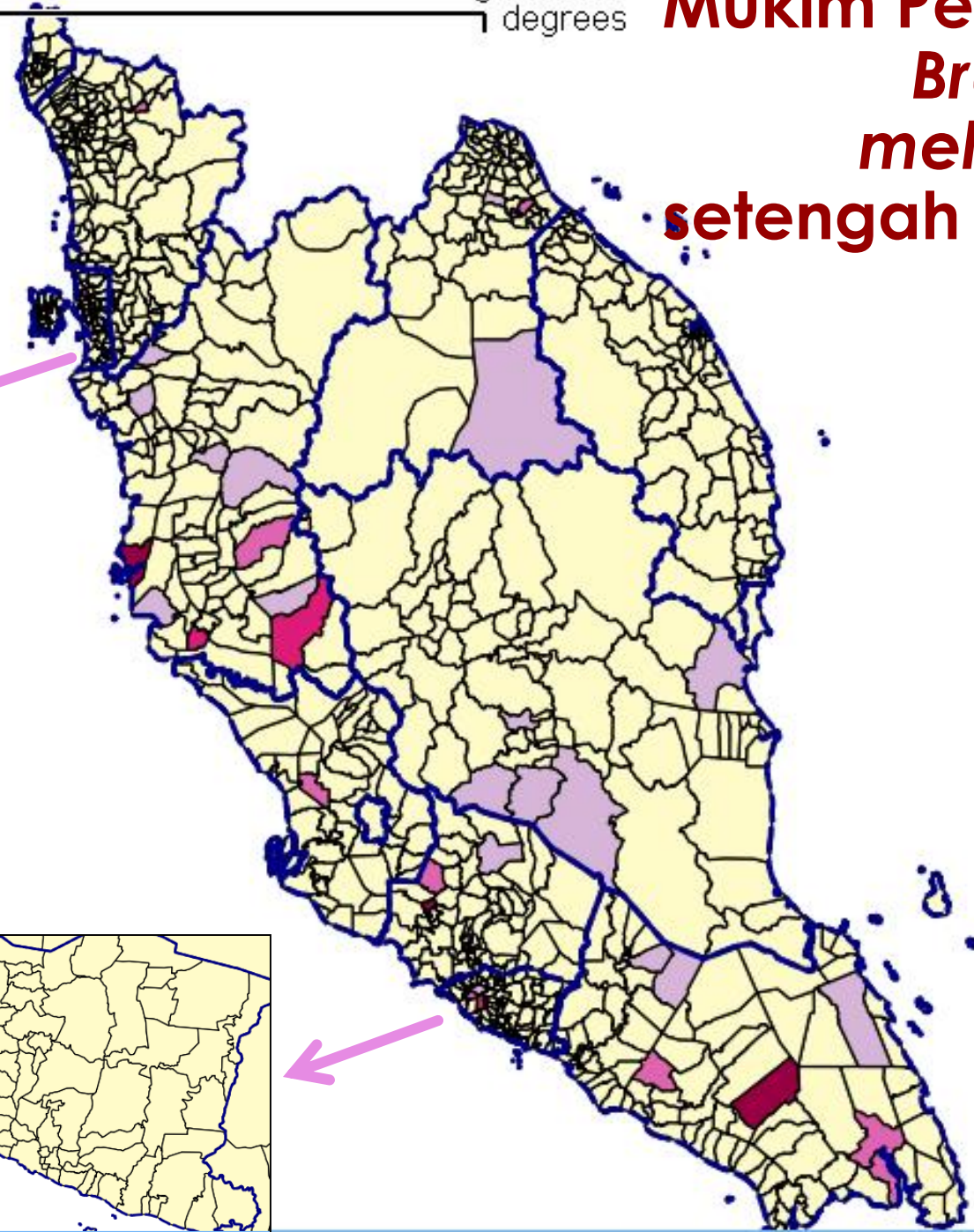
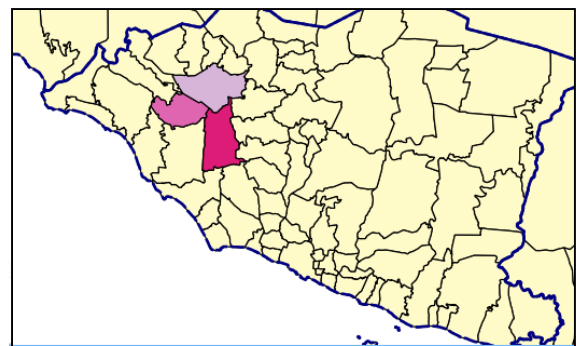


# Mukim Penyakit *Brucella melitensis* setengah Tahun 2011

0 3 degrees



- 0 Tiada Kes
- 1 - 6 ekor
- 6 - 13 ekor
- 13 - 26 ekor
- 26 - 45 ekor
- 45 - 103 ekor



# National Security Council

- National Disaster and Emergency Committee
- State Disaster and Emergency Committee
- District Disaster and Emergency Committee

*Existing organisational structure allow  
For rapid mobilisation of national resources,  
assets, logistic, manpower, policy , expertise  
and financial supports during disease emergency*

Strategic

Tactical

Operational



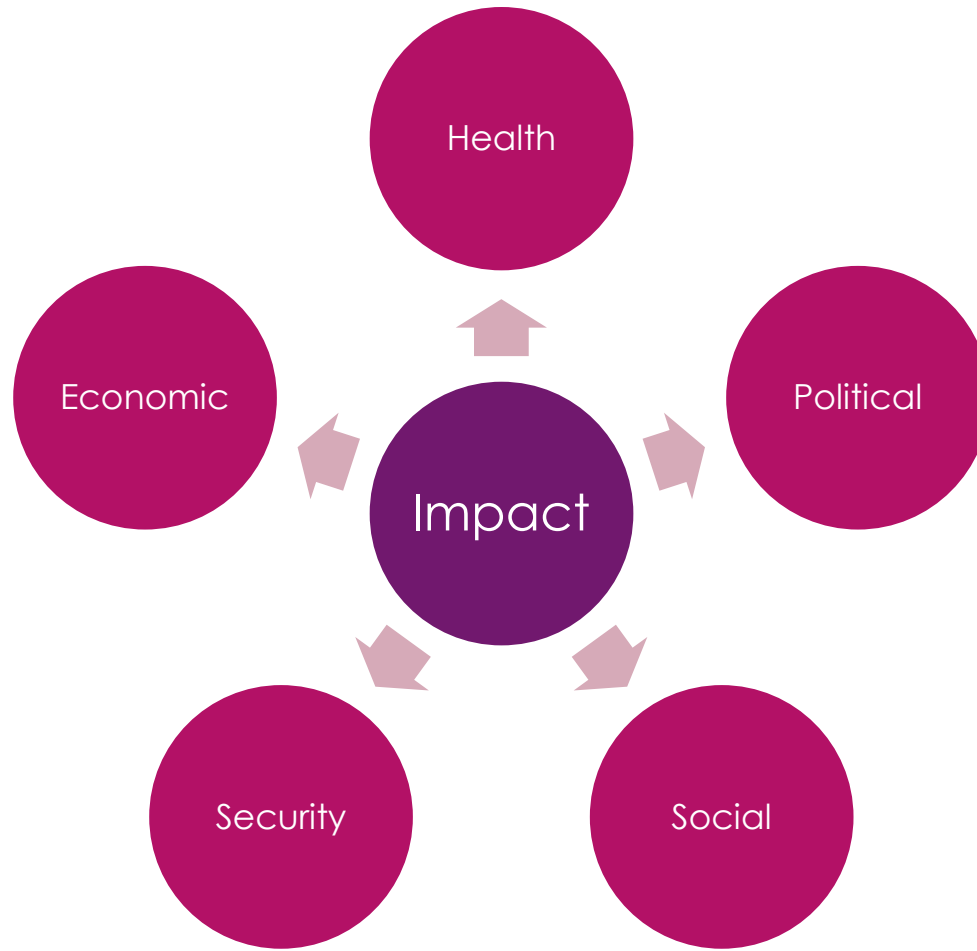
LAMAN WEB RASMI

**MAJLIS KESELAMATAN NEGARA**

JABATAN PERDANA MENTERI



# Impact of disease outbreak



# Nipah Encephalitis



**Cost of Disease  
Eradication  
US\$136 Mil.**



**Encephalitis 257 cases  
105 human death in 8  
months period**



**1.1 million pig destroyed  
At a cost of US \$ 97 mil.**

**Compensation paid  
to the affected  
farmers US\$35 mil.**



Loss of export market  
estimated to about  
US\$120 mil at 1999 and has  
ceased ever since

**RESPONSE TIME DETERMINE SEVERITY OF DAMAGE**

**DAMAGE**

**CRISIS**

**RESPONSE**

Health  
Economic  
Politic  
Security  
Crisis to Disaster

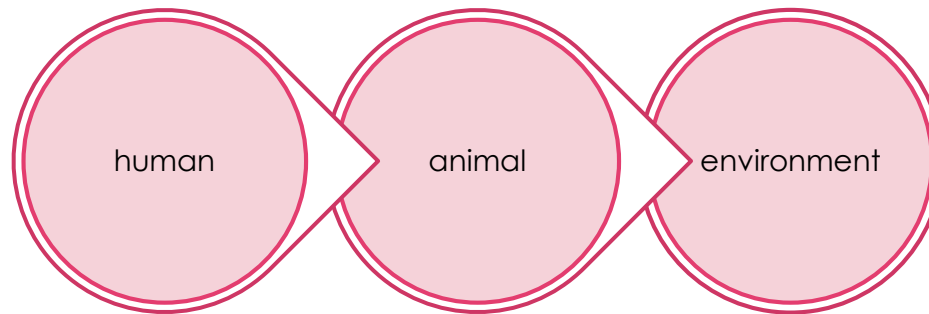


# One Health in Malaysia

- Information sharing
- Simulation exercises
- Research area
- Task force formation
- Seminar and conference
- Secondment of officer
- Centre of excellence- NGO



# Need for balance



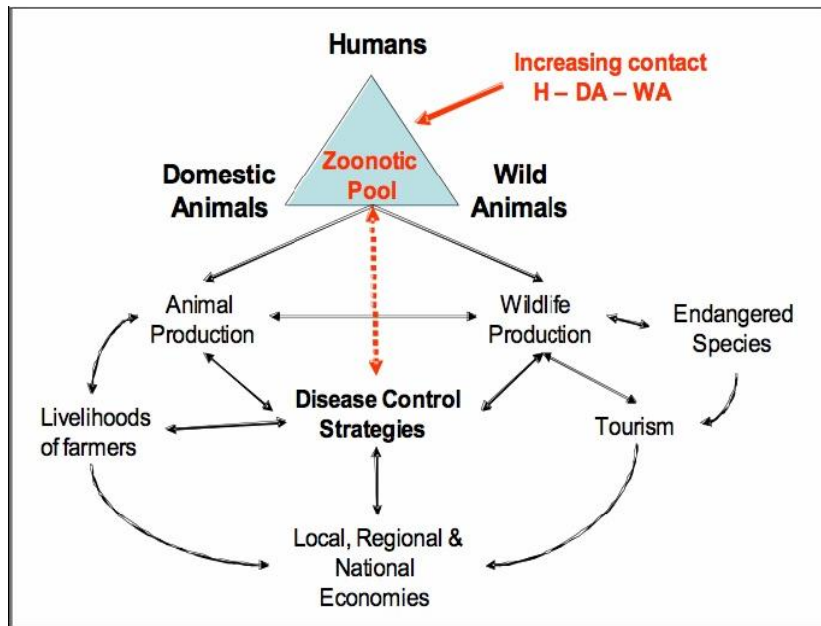
وَالْأَرْضَ مَدَدْنَاهَا وَأَلْقَيْنَا فِيهَا رَوَاسِيَ وَأَنْبَتْنَا فِيهَا مِنْ كُلِّ شَيْءٍ مَوْزُونٍ

And We spread out the earth, and cast in it firm mountains, and We grew in it *every kind of balanced thing*,

Al Quran : Surah al Hijr 15:19

# Wild Life In Changing Environment

- Urbanisation Encroaching To Wild Life Habitat
- Wildlife Adapting To Urban Environment
- Lifestyle Changes- Recreation & Illegal Wild Life Trade



Domestic Animals received More Intensive Attention By the Owners and Veterinarian thus may Serve as our sentinel for Zoonotic Diseases



# Adaptation To Urban Environments

Urban monkey  
Squirrels  
Monitor Lizard in Drains  
Hornbill in Town  
Frogs  
Snakes  
Wild Boar

Dog  
Cat  
Crows  
Rat  
Coachroaches  
Birds  
Chicken



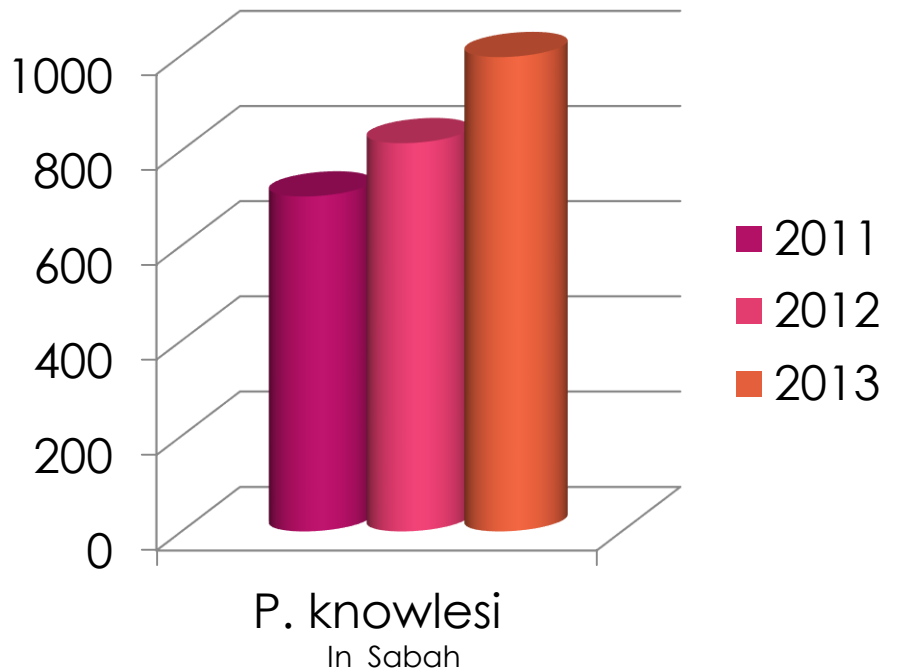
• **Bat**

• **Rat**

• **Monkey**

# Changing malaria

*Plasmodium falciparum*  
*Plasmodium vivax*

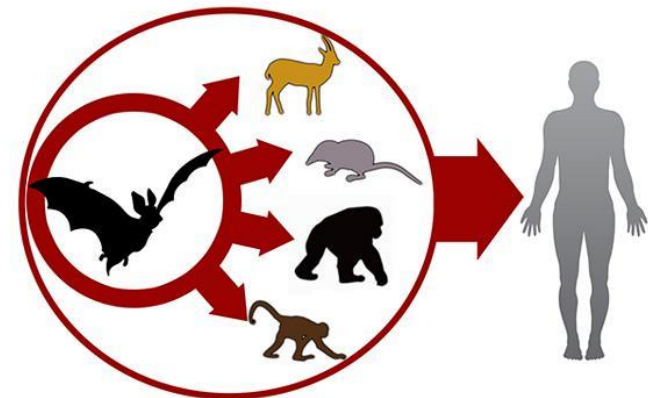


Changing epidemiology of malaria in Sabah, Malaysia: increasing incidence of *Plasmodium knowlesi*  
Timothy William<sup>12</sup>, Jenarun Jelip<sup>3</sup>, Jayaram Menon<sup>4</sup>, Fread Anderios<sup>5</sup>, Rashidah Mohammad<sup>5</sup>, Tajul A  
Awang Mohammad<sup>5</sup>, Matthew J Grigg<sup>26</sup>, Tsin W Yeo<sup>267</sup>, Nicholas M Anstey<sup>268</sup> and Bridget E Barber<sup>26\*</sup>  
*MalariaJournal* 2014, **13**:390

# Ebola Virus Disease

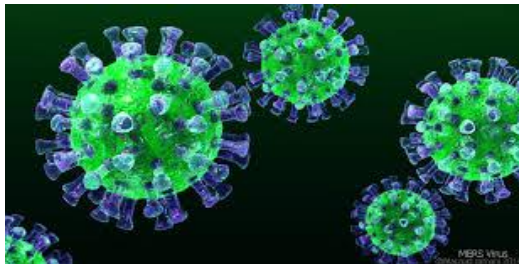
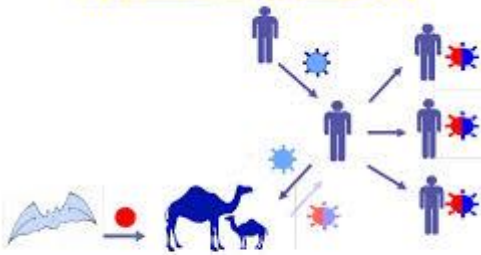


- First detected: 1976, Sudan & Congo
- Latest: March 2014, 7 countries
- Cases by 28 July 2015: 27, 872 cases
- Death: 11,295 dead
- Case fatality: 50%



# MERS- CoV

TRANSMISSION OF MERS-CoV



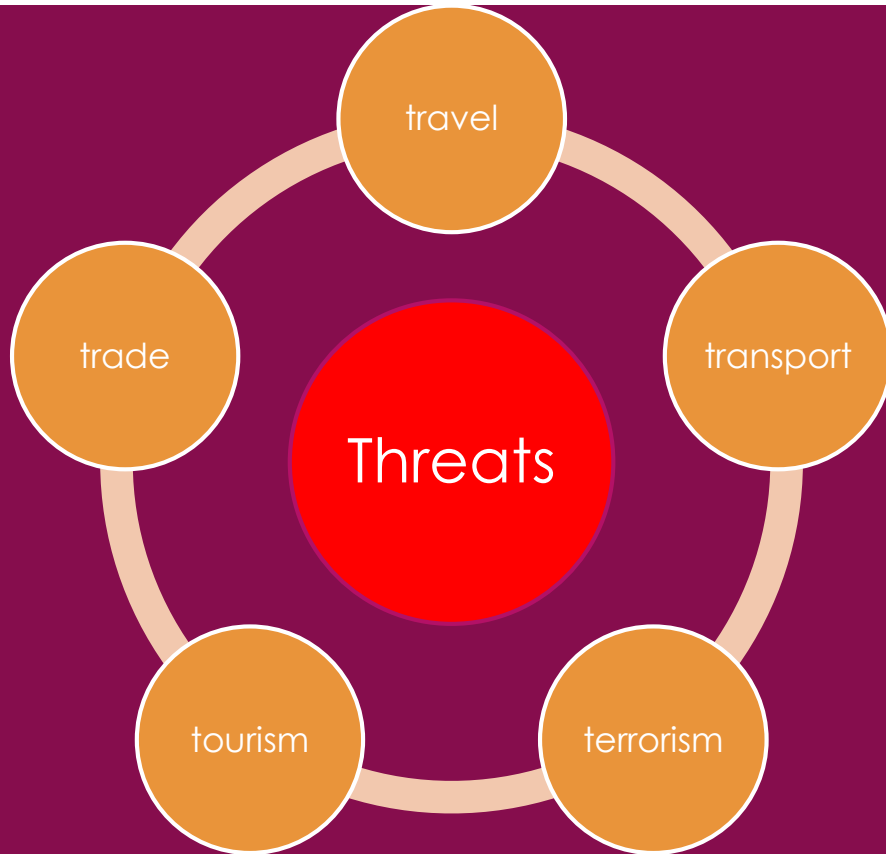
## Middle Eastern Respiratory Syndrome-Corona Virus

- First detected – 2012, Saudi Arabia
- July 2015- been reported in 21 countries
- Originate from bat
- Infecting camel



Haj pilgrimage may help transmission  
But according to WHO "the risk of sustained person-to-person transmission appears to be very low."

# Modern challenges to health professional



## 5 Ts



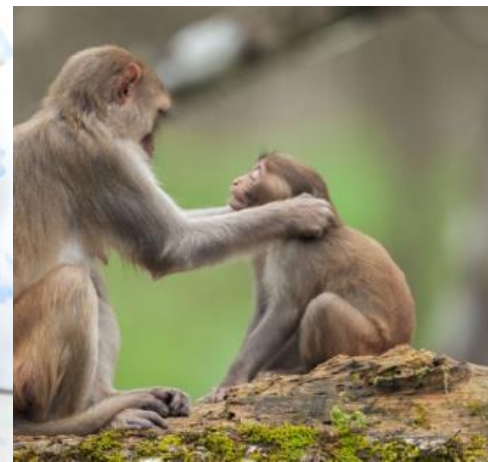
# Great Smog & Champion Bull in London



- Champion Bull dead in London after being brought for show during Great Smog
- Trigger Medical Services to check their record and found 4,000 dead and 100,000 with respiratory problem in human too
- Clean Air Act, 1956

# Summary

**One Health concept or collaborative approach in health management has been accepted internationally and being adopted in Malaysia long before it has a name. Moving forward this approach should be further enhanced, by identifying our centre of excellence, develop stakeholder forum to assist in its advocacy, to leverage on strength and to remain focus.**



*Terima kasih*