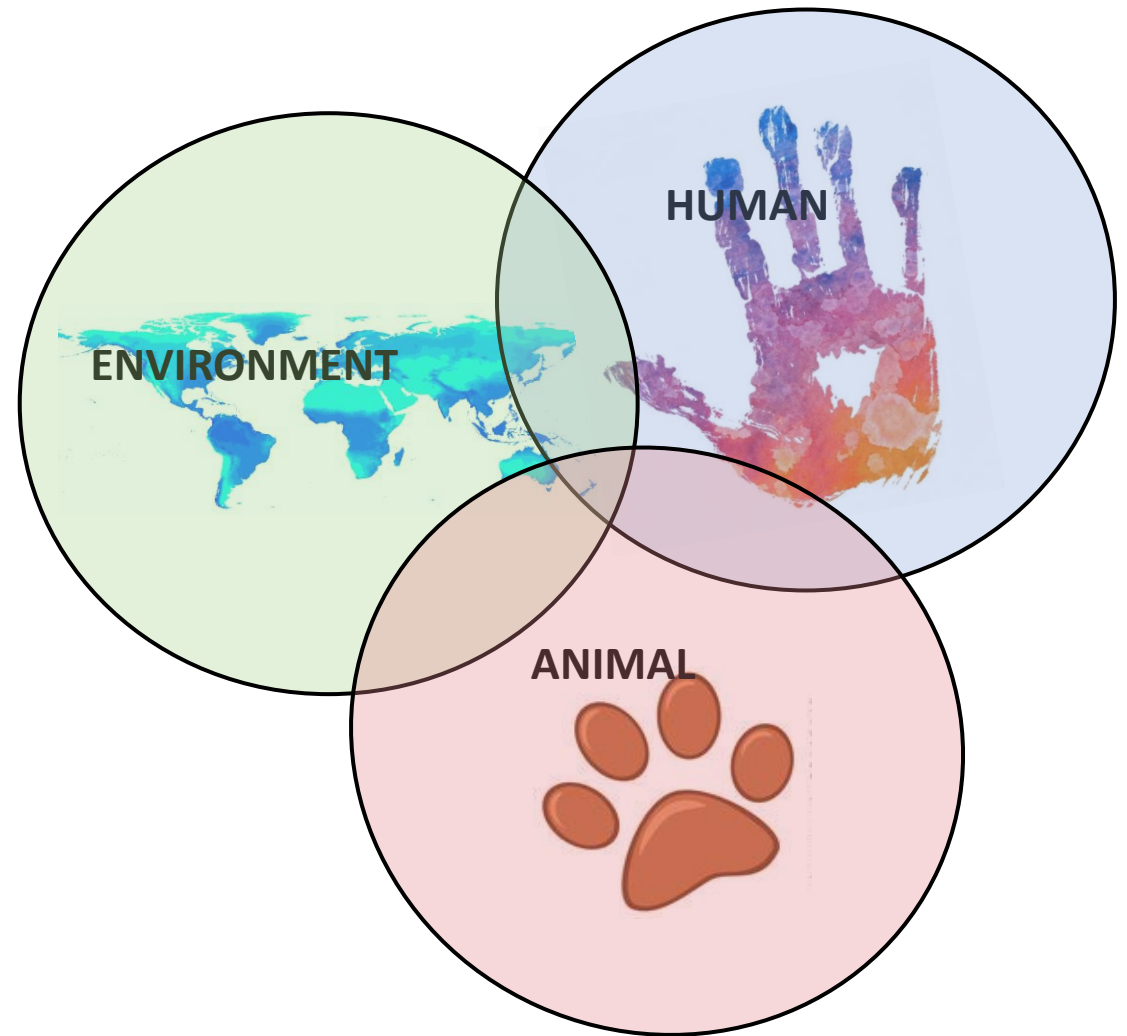


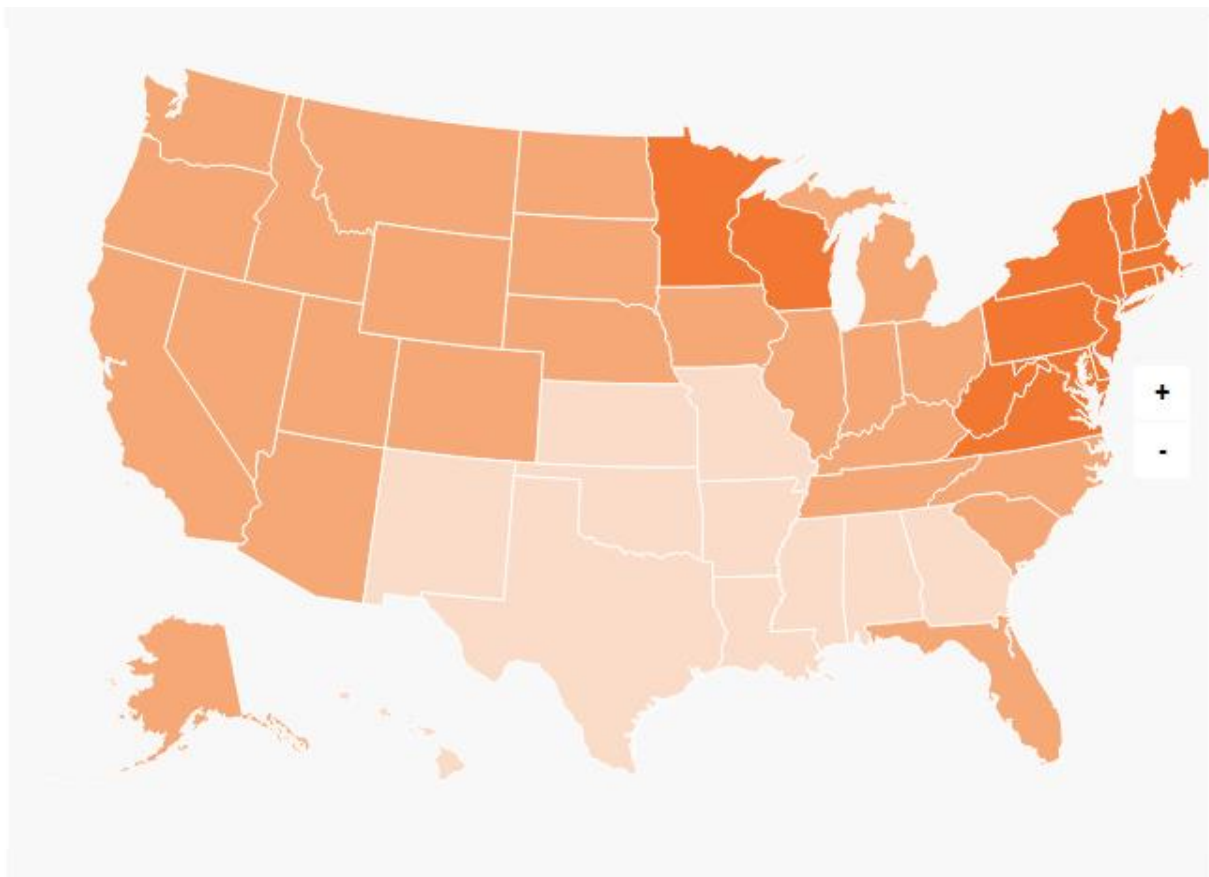


Wayne Carter DVM, PhD, DACVIM
President and CEO



One Health





Lyme Disease

Animal-to-Animal Transmission

Evidence suggests that bats are the reservoir hosts for the Ebola virus. Bats carrying the virus can transmit it to other animals, like apes, monkeys, and duikers (antelopes), as well as to humans.

Spillover Event

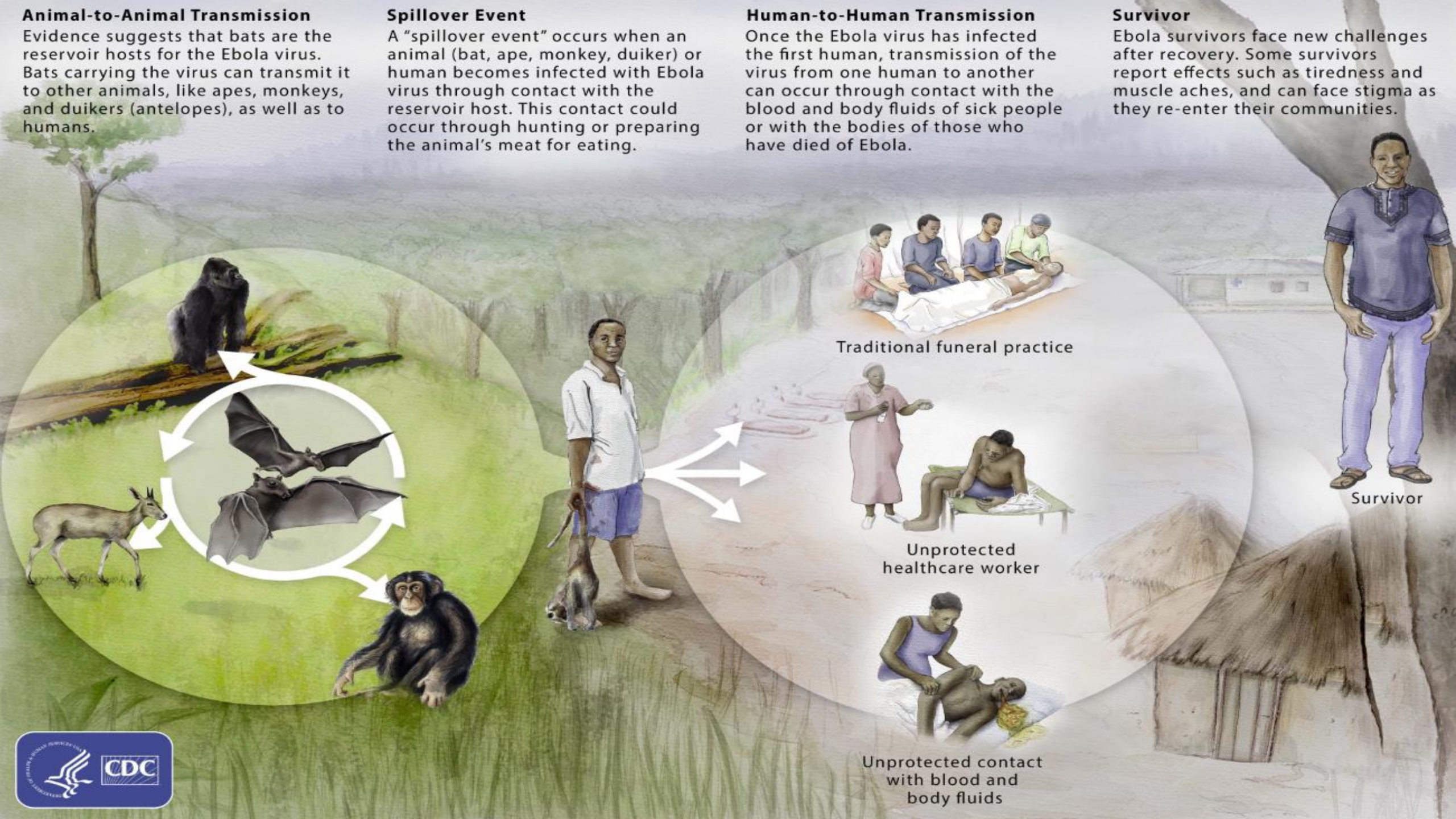
A "spillover event" occurs when an animal (bat, ape, monkey, duiker) or human becomes infected with Ebola virus through contact with the reservoir host. This contact could occur through hunting or preparing the animal's meat for eating.

Human-to-Human Transmission

Once the Ebola virus has infected the first human, transmission of the virus from one human to another can occur through contact with the blood and body fluids of sick people or with the bodies of those who have died of Ebola.

Survivor

Ebola survivors face new challenges after recovery. Some survivors report effects such as tiredness and muscle aches, and can face stigma as they re-enter their communities.



Carbon monoxide

Tobacco smoke

Lead

Asbestos

Carbon tetrachloride

Radiation

Radon

Ultraviolet radiation

Cyclophosphamide

Chlorambucil

Tamoxifen

Estrogens

Endocrine disruptors

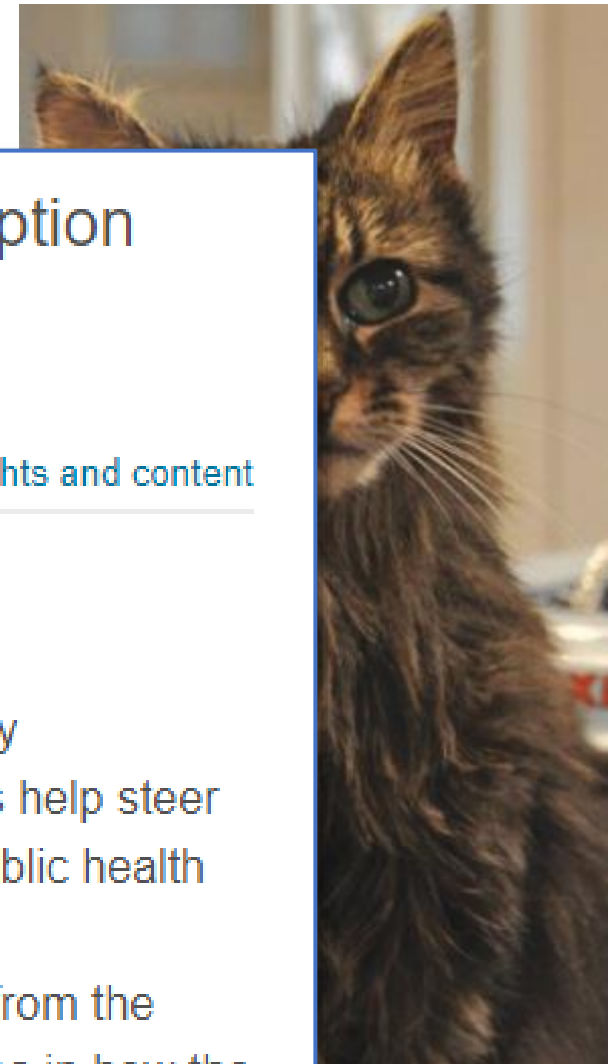
DES – diethylstilbestrol

DDT – dichlorodiphenyltrichloroethane

PCB - polychlorinated biphenyls

BPA – bisphenol - A





The intersection of neurotoxicology and endocrine disruption

Bernard Weiss  

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<https://doi.org/10.1016/j.neuro.2012.05.014>

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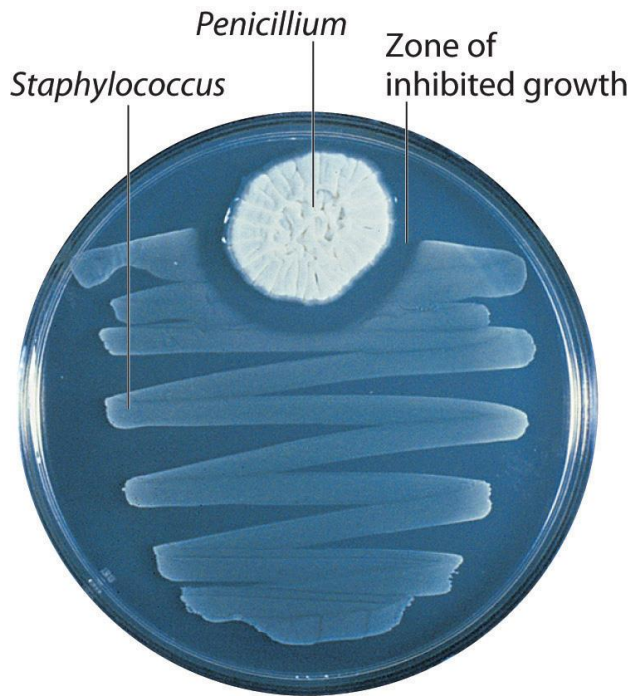
Abstract

Endocrine disruption, the guiding theme of the 27th International Neurotoxicology Conference, merged into the neurotoxicology agenda largely because hormones help steer the process of brain development. Although the disruption motif first attracted public health attention because of reproductive anomalies in both wildlife and humans, the neurobehavioral implications had been planted decades earlier. They stemmed from the principle that sex differences in behavior are primarily the outcomes of differences in how the brain is sexually differentiated during early development by gonadal hormones (the Organizational Hypothesis). We also now understand that environmental chemicals are capable of altering these underlying events and processes. Among those chemicals, the group labeled as endocrine-disrupting chemicals (EDCs) offers the clearest evidence of such

eline
canned catfood.
diet and
ere greater than
canned cat food
ating. Mean +/-
1.5 (3.5), 10.5 +/-

3.5 (5.9), and 12.7 +/- 3.9 (6.2) ng/mL, respectively. Due to high variability within each group, no association was detected between HT cats

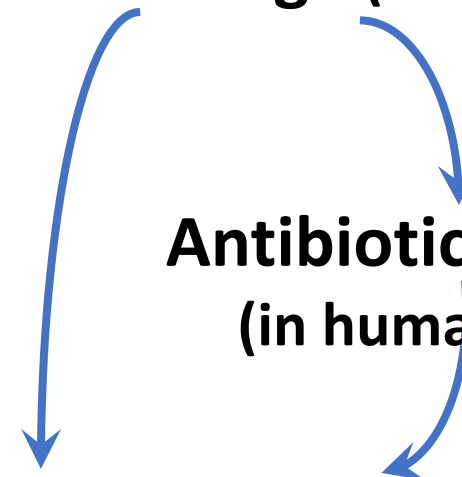
One Health Implications of Antibiotics



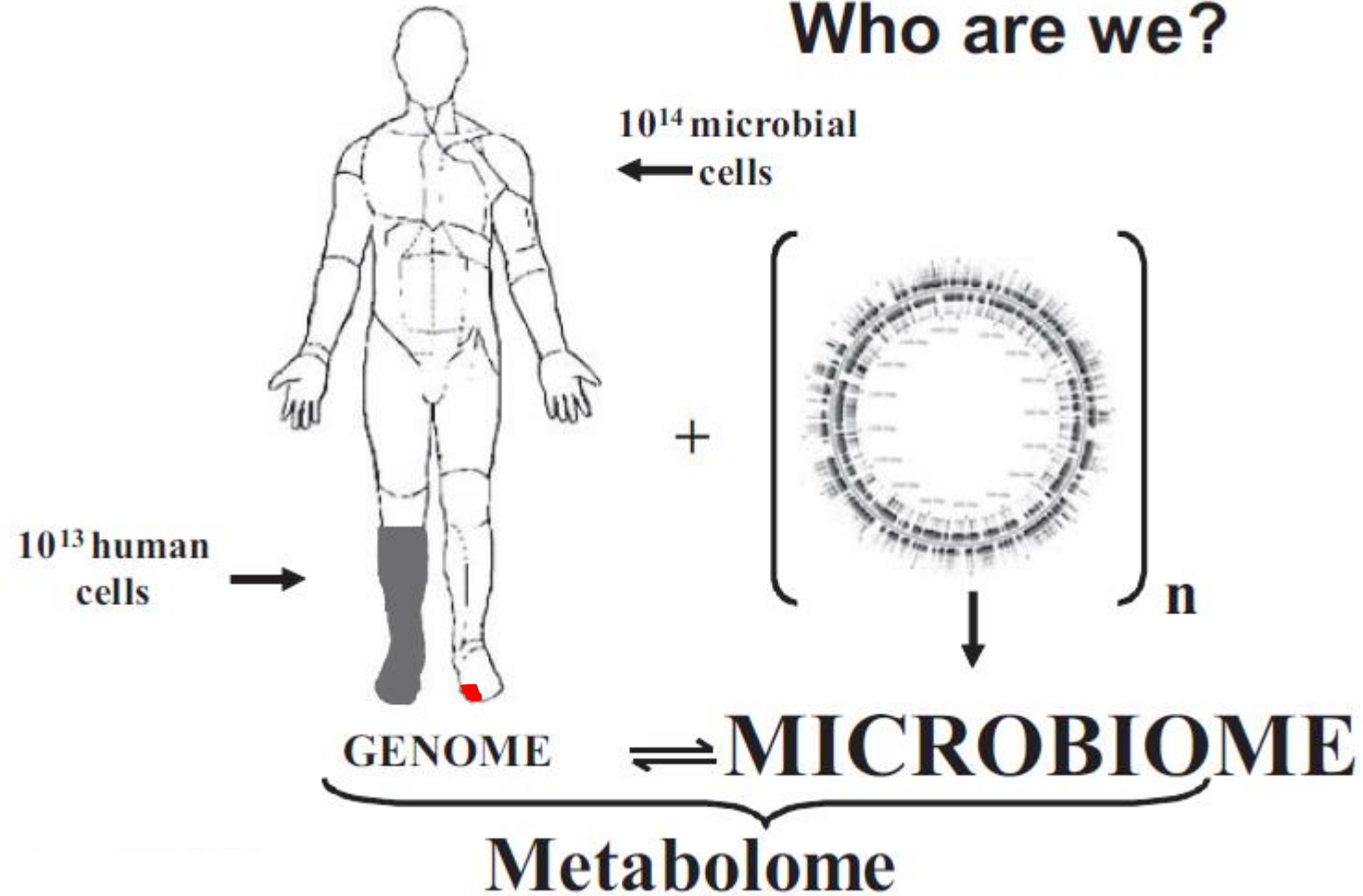
Antibiotic Usage (in humans and animals)

**Antibiotic Resistance
(in humans, animals and soil)**

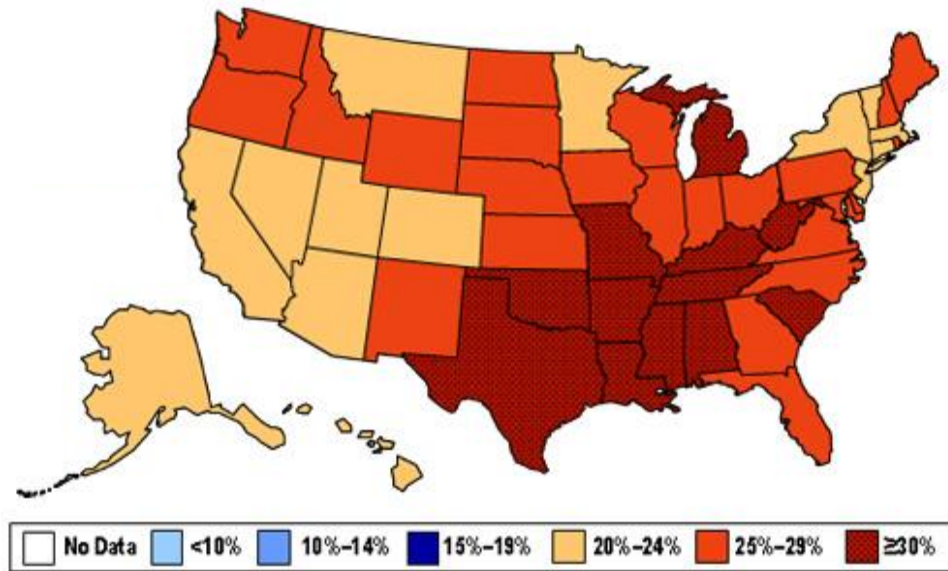
**Effect on Microbiome
(in humans, animals, plants and soil)**



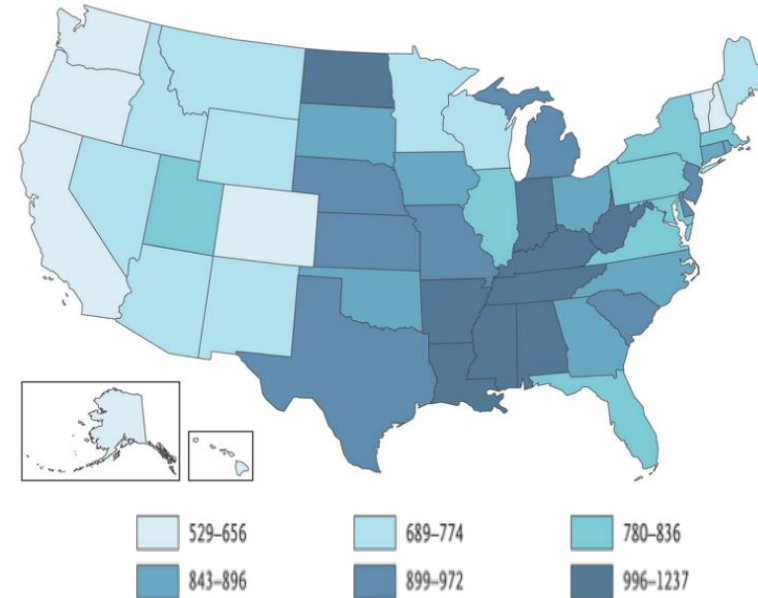
Who are we?



Obesity and Antibiotic Prescriptions in US

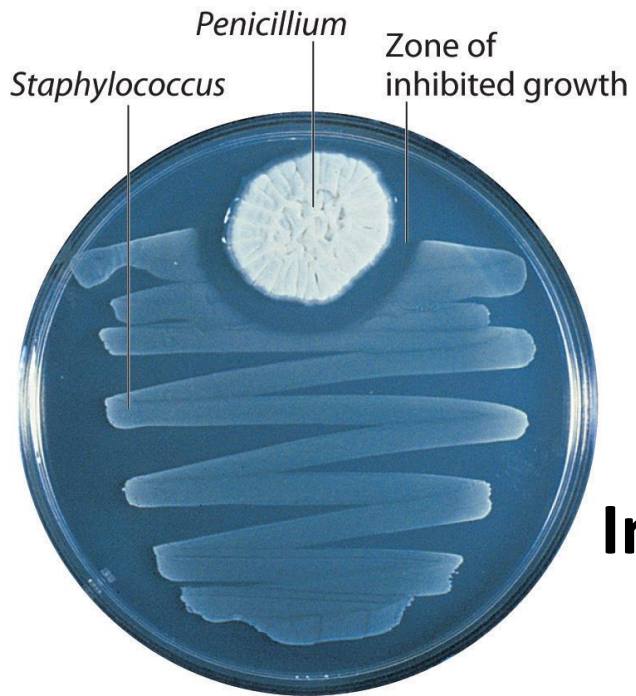


CDC 2010 Behavioral Risk Factor Surveillance System



L Hicks, TH Taylor, RJ Hunkler. NEJM 2013, 368:1461

One Health Implications of Antibiotics

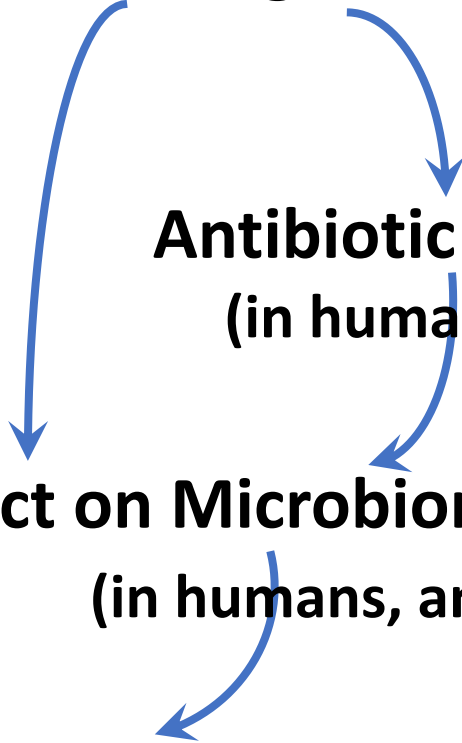


Antibiotic Usage (in humans and animals)

**Antibiotic Resistance
(in humans, animals and soil)**

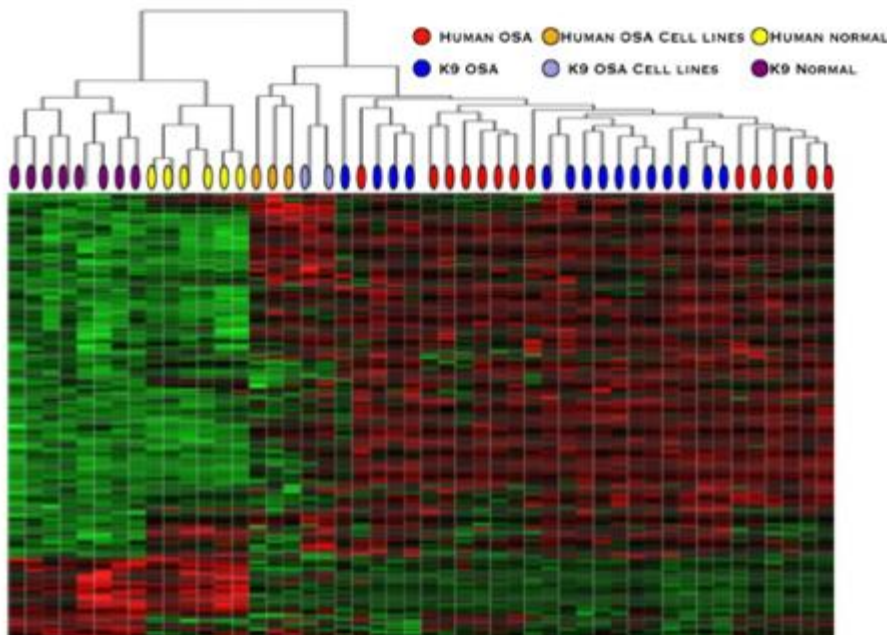
**Effect on Microbiome
(in humans, animals, plants and soil)**

Impact on Obesity and other diseases (in humans and animals)





Pediatric and Canine Osteosarcoma



Candidate genes implicated in the pathogenesis of pediatric and canine osteosarcoma

PTEN	HER2/neu (erbB-2)
Retinoblastoma	Ezrin
P53	Villin-2
C-met	
Mesenchymal-epithelial transition factor	

Pediatric and canine osteosarcoma are not distinguishable by global gene expression analysis.

Paoloni M., et al *BMC Genomics* 2009



Human **Proof of Concept**
in client-owned dogs with
spontaneous tumors

Cisplatin-Hyaluronan

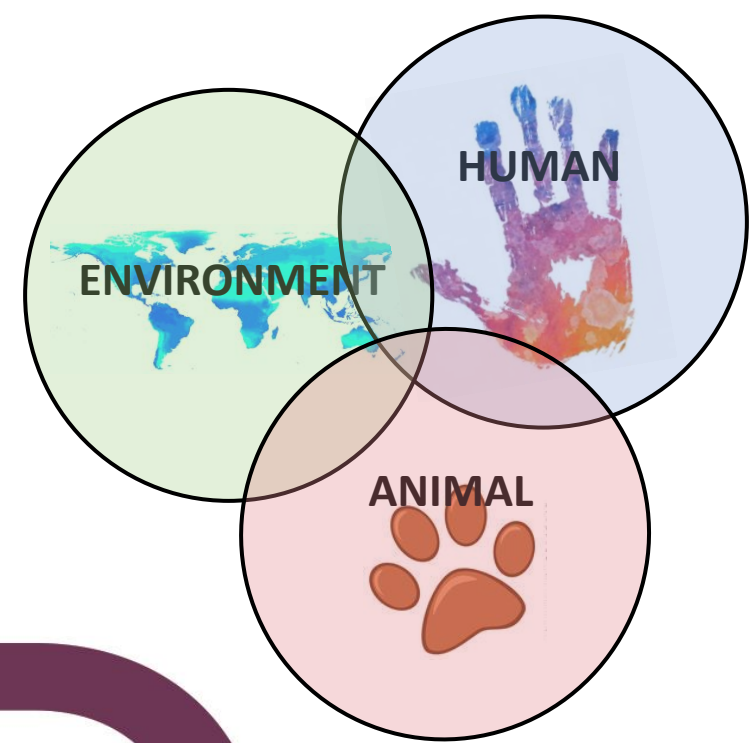


Canine – Pivotal blinded trial 150 dogs

Human – Phase 1, Non-resectable, treatment resistant head and neck Squamous Cell Carcinoma

1 Data

Interoperable
database of animal
health data built
on the Cerner FHIR
platform to enable
linkage to human
data



1D

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We need more!

...more information sharing

...more interdisciplinary programs

...more therapeutics

Why do we need One Health?

*"A definite purpose,
like blinders on a horse,
inevitably narrows its possessor's point of view."*

Robert Frost