EMERGING AND NEGLECTED INFECTIOUS DISEASES THROUGH THE ONE HEALTH APPROACH

Prof Christina Pettan-Brewer DVM, MSc , Veterinarian Director

Department of Comparative Medicine

School of Medicine

University of Washington , Seattle WA USA

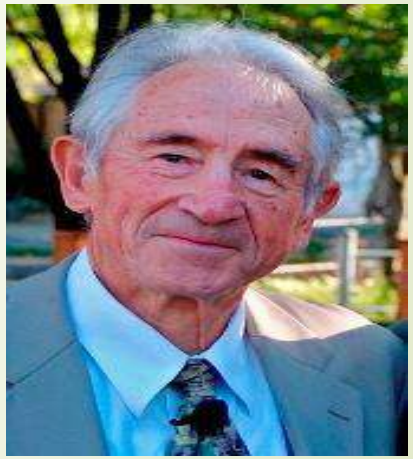
WVA - One Health Brazil Latin America- President 2012

One Health Fulbright Scholar – Ambassador

UW Center for One Health Research – COHR

One Health Latin America (OHLA) – One Health Commission

"I One Health International Symposium & III One Health Symposium of Paraná – Challenges of Multisectoral Collaboration"
Pontifícia Universidade Católica do Paraná (PUCPR)
Curitiba, Paraná, Brasil
October 9-10, 2019



Dedicated to Dr. Murray E Fowler Legacy

"I have come to believe that a great teacher is a great artist and that there are as few as there are any other great artists. Teaching might even be the greatest of the arts since the medium is the human mind and spirit."

— John Steinbeck

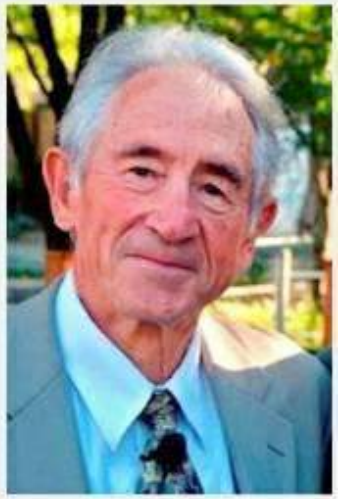


Photo courtesy of the University of California

A diplomate of the American College of Zoological Medicine, the American College of Veterinary Internal Medicine and the American Board of Veterinary Toxicology, Dr. Murray Fowler's career encompassed private practice, academia and 24 years as a veterinarian for the Sacramento Zoo, which named its veterinary hospital in his honor.

Legacy, Mentor for 30 years and In Memorian

Prof Dr Murray E Fowler (2015)
UC Davis

In Memorian:

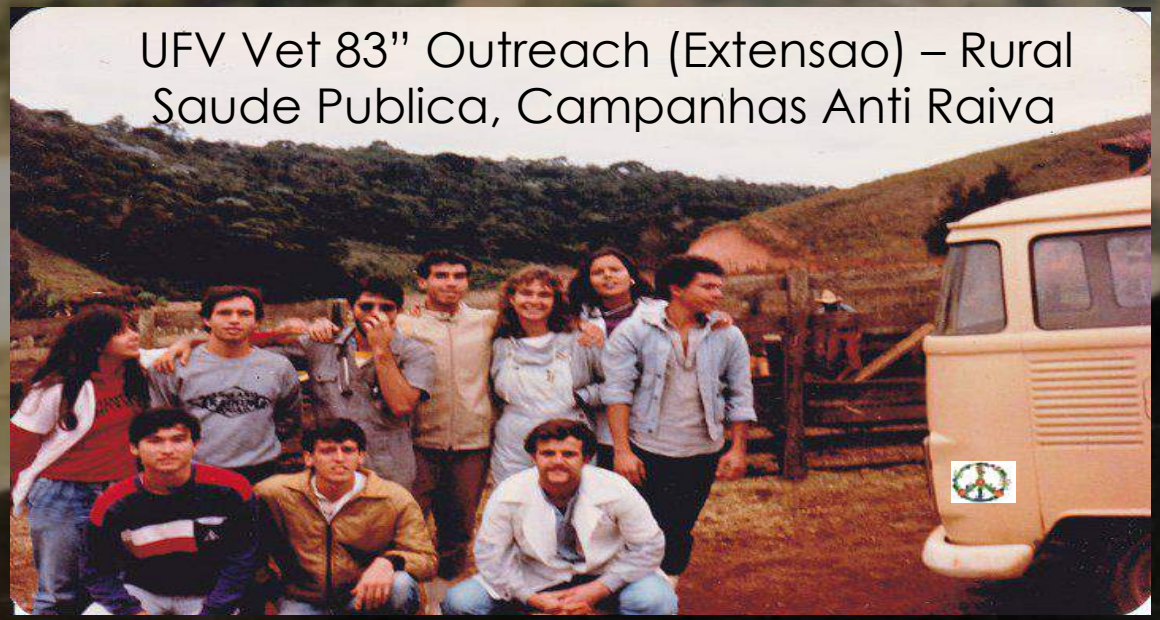
Prof Dr Nivaldo Silva
(CFMV 2018) and One Health)

ONE HEALTH

Graduate Program
Veterinary Medicine

DVT UFV

Universidade Federal de Viçosa, Minas Gerais VET 1983-1988

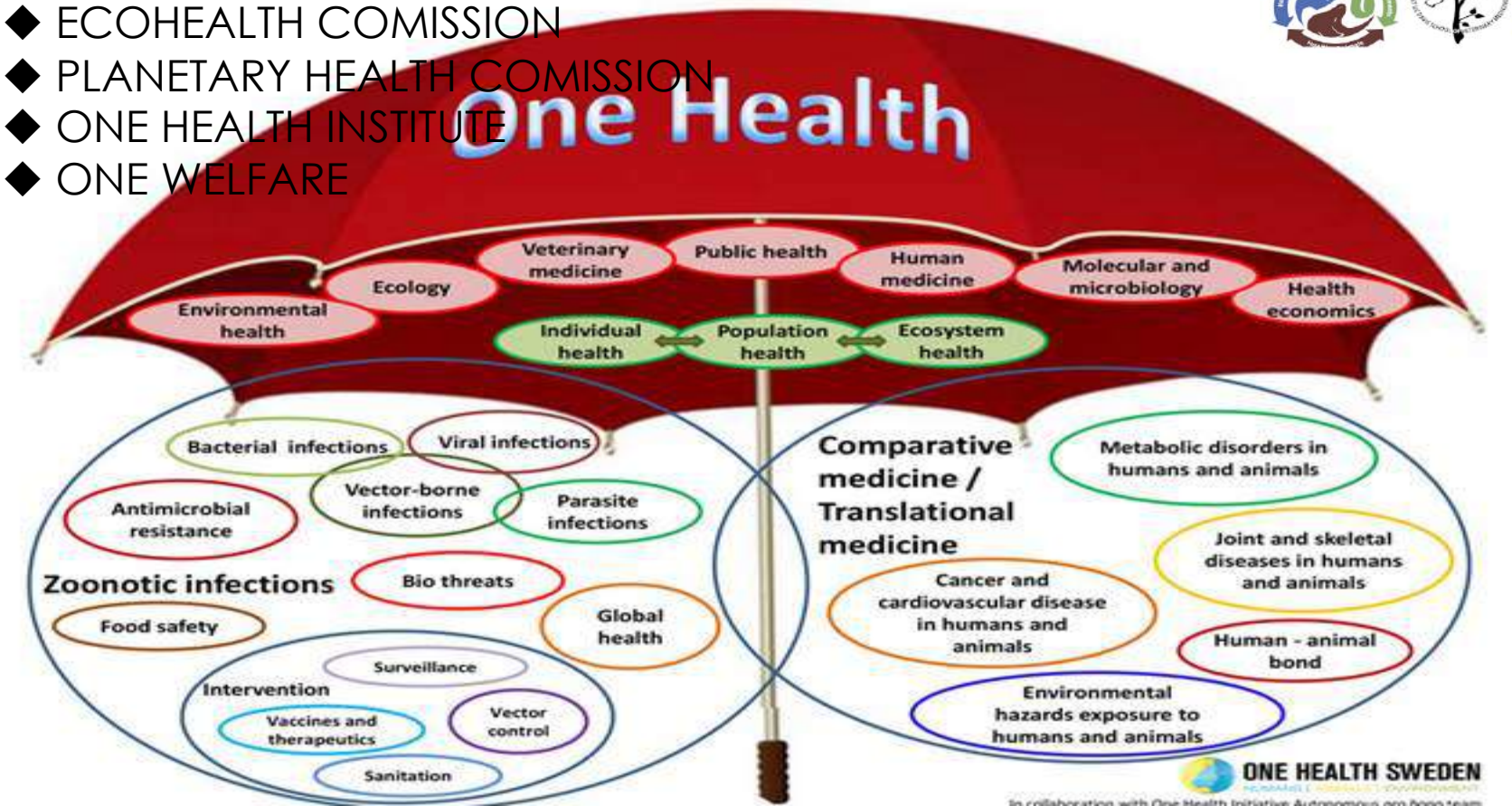


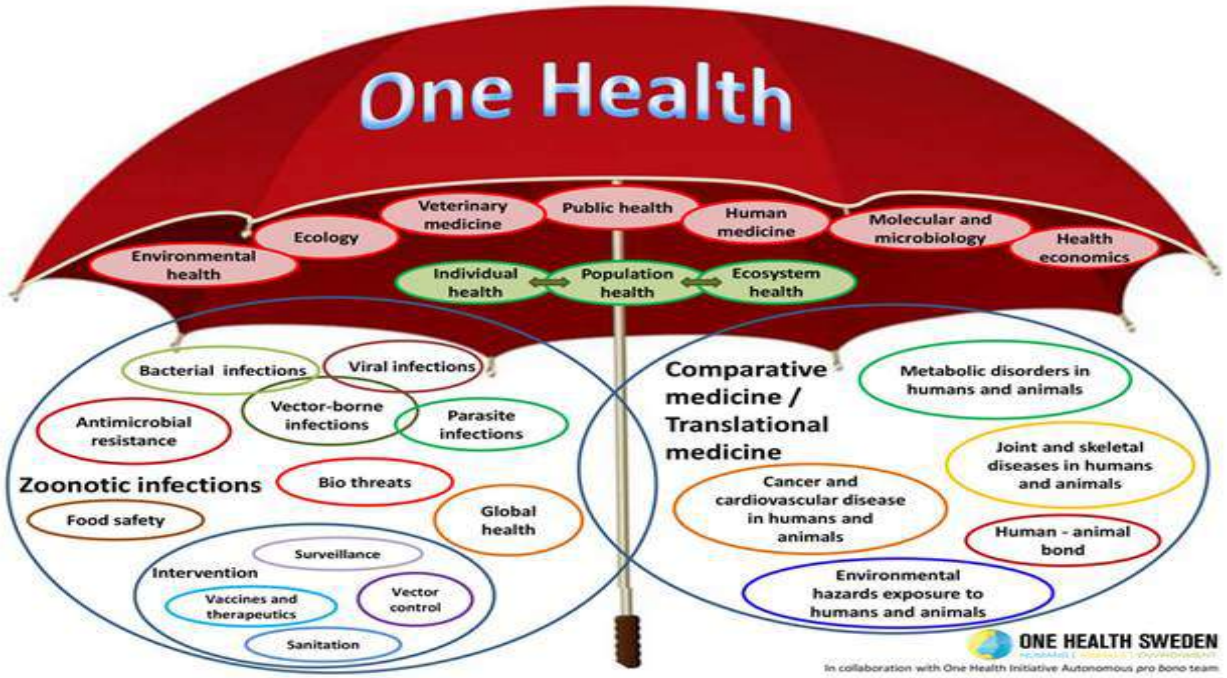
Human/Animal/Environmental Interface

UFV ZOO & WILDLIFE MEDICINE/ COMP PATHOLOGY 1983-Jan 1988 Mar 1988 – Los Angeles Zoo
1989-1996 UCDavis , 1996 CDC Post Doc and 2001 University of Washington UW(Medicine)
The University of Washington, School of Medicine & WSU School of Vet Med
**** 2010 One Health BRAZIL LATIN AMERICA (WVA/WMA)***
****400" Cruzados" E um Visto de Estudante***

MONTEREY, CA

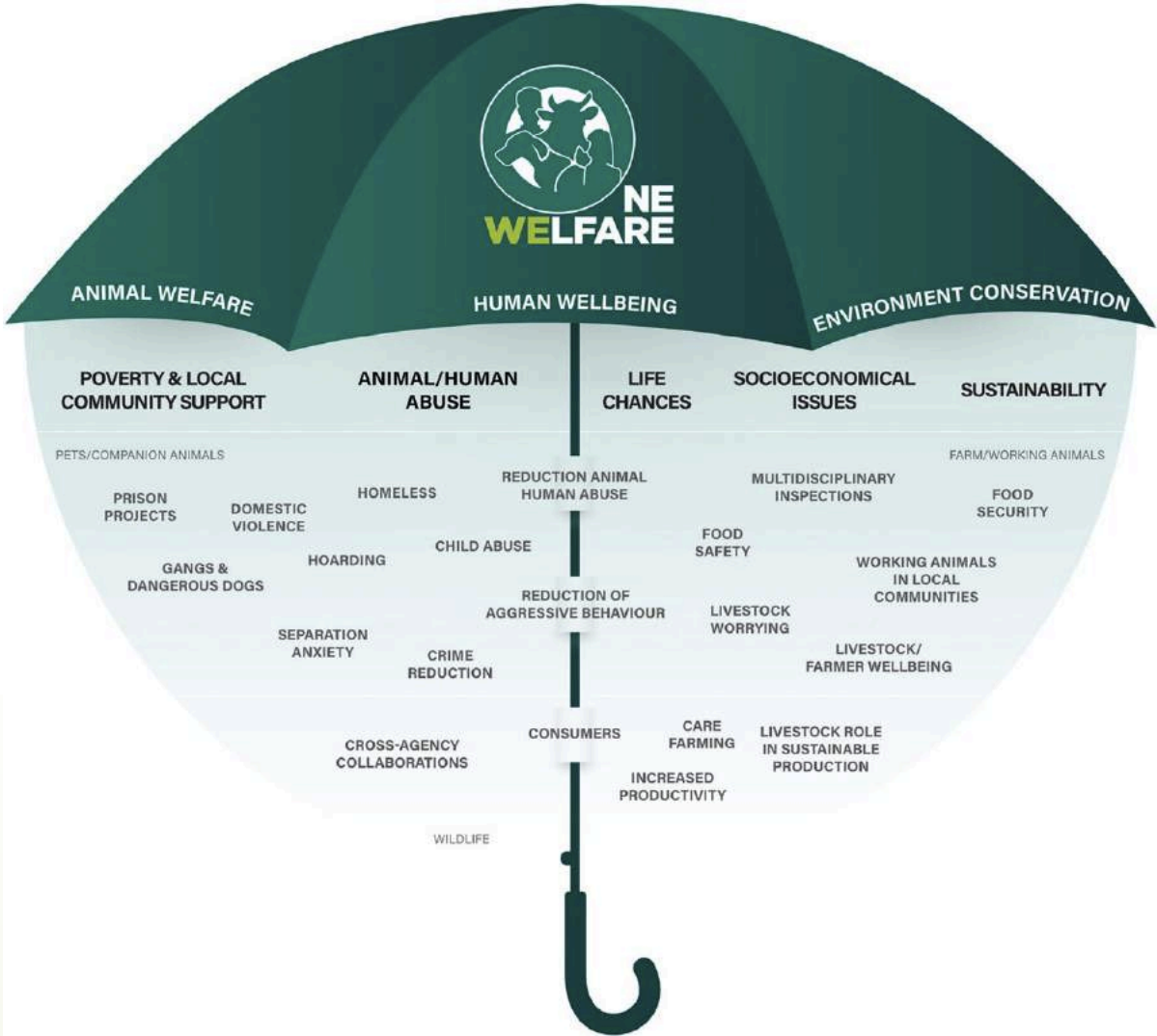
- ONE HEALTH INITIATIVE
- ONE HEALTH COMISSION
- ONE HEALTH INTERNATIONAL ALLIANCE
- ONE HEALTH PLATAFORM
- ONE HEALTH SWEEDEN
- ONE HEALTH BRAZIL LATIN AMERICA
- ONE HEALTH COLOMBIA
- OHLA – ONE HEALTH LATIN AMERICA
- IOHSA – International One Health Students Association
- ECOHEALTH COMISSION
- PLANETARY HEALTH COMISSION
- ONE HEALTH INSTITUTE
- ONE WELFARE





One Health
Eco Health
Planetary Health

One Health, **One Welfare**
Dra Rebbeca Pirillos , Espanha
2018 – BEM ESTAR ANIMAL E HUMANO



When the "One Health" concept was conceived, initial collaboration between human medicine and veterinary medicine resulted in an inevitable research bias toward zoonotic diseases (15), temporarily ignoring the important question of chronic non-infectious diseases, which are the leading cause of global human mortality. Nowadays, the "One Health" concept hopes to extend to other fields, such as antimicrobial resistance, ecotoxicology, or health in urban environments.

doi: 10.3389/fvets.2018.00014

ONE HEALTH **human_animal_environment**

ECOHEALTH **environment**_human_animal

PLANETARY HEALTH **human_environment** (animals)

ONE WELFARE health and **well being of human_animals** (environment)

Pettan-Brewer 2018 – Capitulo 7 – Clinica Medica – Infectologia EDITORA GEN

"THE ONE HEALTH CONCEPT IS NOT OWNED BY ANY PROFESSION OR COUNTRY OR REGION.

IT IS AN ALL-INCLUSIVE, CO-EQUAL ENDEAVOR THAT BELONGS TO ALL HUMANITY."
One Health – The Rosetta Stone for 21st century health and health providers

MARY ECHOLS and Bruce Kaplan , 2009 – Rivista Veterinaria Italiana

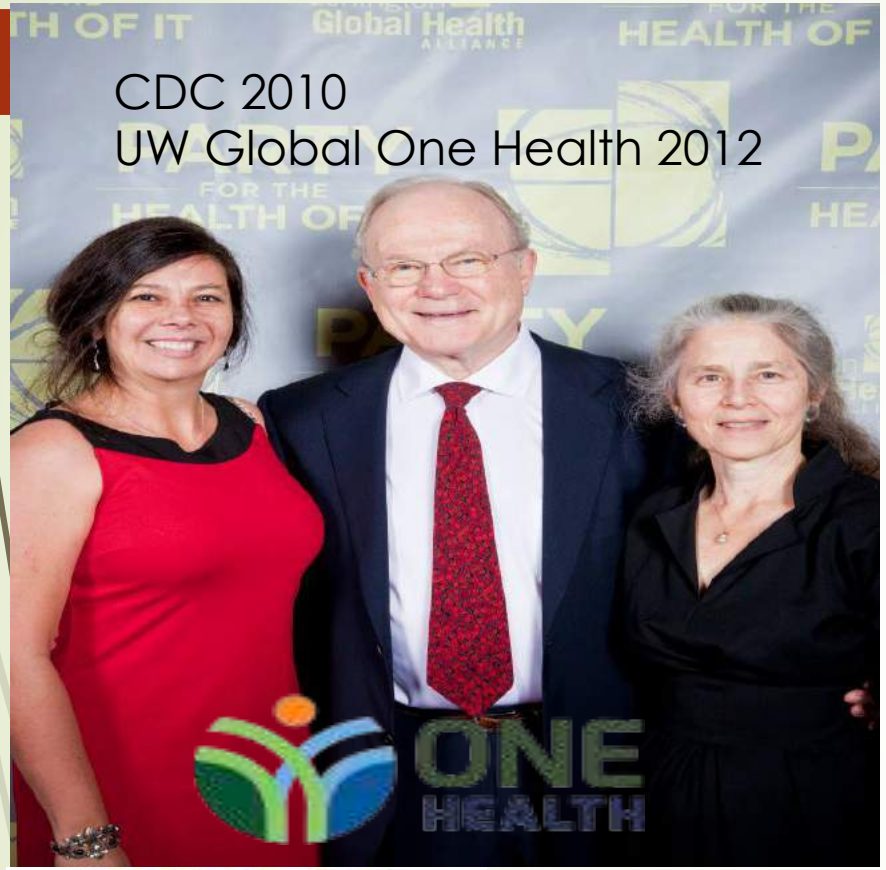
One Health: A Ray of Hope for the Future – Cheryl Stroud , One Health Commission 2017

One Health Brazil Latin America Clinica Medica Livro Infectologia 2017 (Pettan-Brewer) – Medicina Portugues

http://www.onehealthinitiative.com/news.php

1869 – German Physician Virchow/Willian Osler Canada One Medicine BUT not appreciated
1960– UCDavis veterinarian Epidemiologista Calvin Schwabe – **One Medicine**
1984 - the book "Veterinary Medicine and Human Health" (Schwabe)
1996 First class of the EID Fellowship @ CDC - Atlanta, GA USA
(ONE MEDICINE; ONE WORLD, ONE HEALTH)
2004 – "One Medicine" for Human and Animal Health EID Journal 2004
2007 – East Lansing, Michigan AVMA and AMA One Health, One Medicine – One Health Initiative/ Sweeden
2009 – One World, One Health Workshop – Bronx Zoo – World Conservation Society
2010 – Stone Mountain, Georgia – Centers for Disease Control and Prevention – Atlanta (GA)
December 2012 – (UFV) Viçosa , Minas Gerais – One Health Brazil Partnership Programme/Zoobiquity
January 2013 – Porto de Galinhas, One Health International Conference**
September 2013 – UFV Visit to WSU/UW 3 Day One Health Workshop and Partnership agree/
October 2014 – One Health Workshop at UFV – official Dual Degree WSU/UFV and UW-others
March to July 2015 ONE HEALTH FULBRIGHT BRAZIL CENTERS OF EXCELLENCE IN ONE HEALTH
May 22, 2015 – One Health Brazil Latin America at the World Health Organization and One Health Global Conference *2014 , 2015 (Sao Paulo, PUC Parana, Mato Grosso do Sul, ….)

2012 Centers of Excellence for ONE HEALTH in Brazil and LA



GLOBAL ONE HEALTH RESEARCHCOLLABORATIVE PARTNERSHIPS

Brasil 2009- WWF (1st One Health, One World)
December 2012 – UFV – Minas Gerais

UW/WSU PhD dual degre in One Health

FULBRIGHT
One Health Ambassador

France
UK
Norway, Iceland
Australia
New Zealand
Malaysia
Indonesia
Japao

ONE HEALTH

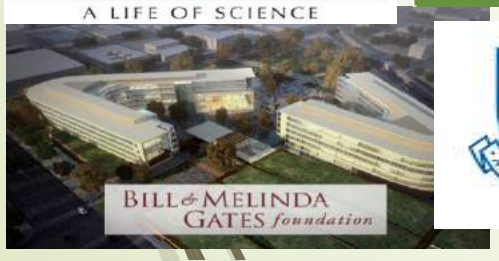
ONE HEALTH BRASIL
Minas Gerais
Rio de Janeiro
Bahia
Mato Grosso do Sul
Pernambuco
Piaui
Roraima
Rondonia
Rio Grande do Sul …

*Colombia, Chile and Peru CEOH

IDRI Infectious Disease Research Institute

FRED HUTCHINSON CANCER RESEARCH CENTER
A LIFE OF SCIENCE

WOODLAND PARK ZOO



Public Health , Epidemiology and Global Health
Antibiotic Resistance
Food Safety and Production
Microbiome and Probiotics
Environmental Health
EID and Neglected ID
NUTRITION, NON EID – Chronic diseases
**dom. and wild animals as sentinels*
Dance and ARTS with the One Health Approach – veja YOU TUBE CHANEL (One Health Brasil Latin America)
Compassion" Fatigue" in animal care professionals and Burn Out in Health Sciences – Suicide in Veterinarians (Global Health Issue)
Human and Animal Bond – ONE WELFARE
NASF
SUS

CHALLENGE OF ONE HEALTH NO BRASIL E NO MUNDO
CILOS ISOLADOS * (Isolated Silos)

ONE HEALTH

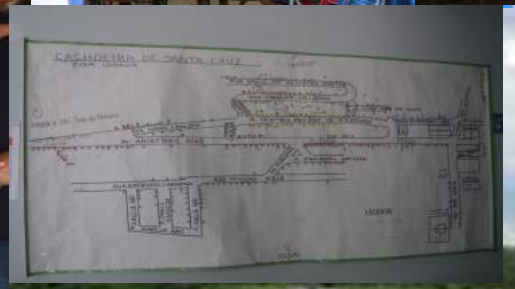
Programas de Extensao e Educacao : LEISHNAO

BRET – RAIVAOH Commission
Morcegos e primatas
BRET WHATSAPP

Prof Dra Juliana Galhardo UFMS

RADIO IDARON - 2012

Public Health Agents



Centers of Excellence for ONE HEALTH in Brazil – RONDONIA 2013 (Dra Flavia Ward)

SERRA DA CAPIVARA, PIAUI
Restinga, Caatinga, Mata Branca

CENTER OF EXCELLENCE ONE HEALTH
PIAUI - Serra da Capivara

ONE HEALTH

Animais Domesticos e Selvagens como Sentinelas

2015 One Health Program Award –
Korea Associations of Veterinary Medicine and Medicine
World Veterinary Association (WVA) and World Medical Association (WMA)

"From the Approach To the Concept" – a successful "grass root" One Health movement in Brazil and Latin America

Christina **PETTAN-BREWER** [*1],Antonio BANDEIRA[2],Paulo Eduardo VELHO[3],Douglas CALL[4],Juliana GALHARDO[5], Flavia WARD[6],Marjorie LOPEZ[7],Cindy BRAUD[8],Peter RABINOWITZ[9],Luis Augusto NERO[10]

1 Comparative Medicine, School of Medicine, University of Washington, Seattle , USA
2 Hospital Alliance , Infectious Diseases Sector, Bahia , Brazil
3 School of Medicine, University of Campinas, Sao Paulo , Brazil
4 Paul G Allen School for Global Animal Health , Washington State University , Pullman , USA
5 School of Veterinary Medicine, Epidemiology and Public Health, University of Mato Grosso , Brazil
6 IDARON, Agencia de Defesa Sanitaria Agropastoril , Rondonia , Brazil
7 Department of Food Microbiology and Biotechnology , University of Cordoba , Colombia
8 Ecole Nationale Veterinaire de Toulouse, University of Toulouse , France
9 Center for One Health Research, School of Public Health, University of Washington, Seattle , USA
10 School of Veterinary Medicine, University Federal of Viçosa, Minas Gerais , Brazil

One Health Brazil Latin America International Partnership Programme

Purpose

Latin American countries focus emergency attention on emerging and neglected infectious diseases that cross between animals and human beings. Many of these diseases occur as manifestations of environmental changes related to land use, climate change, intensification of food production, habitat destruction, human encroachment and wildlife interference. Professionals recently faced high mortality outbreaks such as Zika, Dengue, Malaria, Yellow Fever, Chikungunya and other zoonoses. Academics, clinicians and field workers joined forces by acting immediately together using the One Health approach. *Chagas Disease, Rickettsia, Erlichia, Leishmania, Borrelia, Bartonella, Babesia and* co-infections are still under diagnosed and neglected in endemic areas.

Materials and Methods

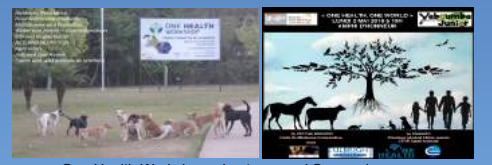
The One Health "approach" in Latin America happened before there was widespread knowledge, or even a word's choice (*Saúde Única*) and clear definition - hence the appearance of the "***grass roots***" movement. Since 2007, groups from several universities, private and government institutions have been successfully and officially working together through collaborative partnerships. Considering the common scientific activities of the universities and organizations, the main interdisciplinary research topics were defined at the One Health Workshops of 2012 and 2014 in Minas Gerais, between Brazil and the USA. The main topics have been grouped in the following themes in which animal, human and animal health interfaces:

1. Global One Health and Nutrition
2. Gut Microbiota Diversity of humans and animals – Microbiome & Probiotics
4. Food Safety and Quality
5. Emerging , Neglected Diseases and Outbreaks
6. Human and Animal Health :animals as sentinels *"canary in the cool mine"*
7. Environmental Health and Conservation wildlife reservoirs, sustainability
8. One Health in History, Arts and Dance – *Emotion on a Motion*
9. Comparative Medicine and One Health
10. Microbial Research and Antibiotic Resistance

Sustainable Collaborations for Research, Training, Teaching
Wildlife data and sample collection for research banking
Matching financial funding for research, outreach and training

Results

The One Health "concept" was officially introduced at graduate and undergraduate curriculum. Training has been disseminated through courses, workshops, symposiums, online videos, conferences, and One Health textbook chapters published in Portuguese. Sustainable research has been established through Centers of Excellence for Global One Health which have been created consisting of interdisciplinary teams of professionals from science and humanities to arts involving directly communities, Hospitals and organizations. The first non-official announcement of Zika virus discussion associated with hydrocephaly occurred during the One Health Brazil Workshop 2015 among physicians, veterinarians and health professionals of Bahia and the Northeast states.



One Health Workshops, Lectures and Symposiums

Community Involvement – "discoveries from the Lab to the Field"

Conclusion

Successful "grass roots" team efforts occurred during the outbreaks through the One Health approach. Antibiotic resistance, food safety, nutrition and other topics are all in scope. Human health must involve creating and maintaining healthier animals and environments. Better communication among all independent One Health groups in Latin America with professional associations and a national centralization is under progress. Meanwhile, continuing community active participation is the strength for successful outcomes.

The One Health Brazil Latin America is a member of the World Veterinary Association. Research and Photos are from associates.

33rd WORLD VETERINARY CONGRESS "One Health, New Wave"
2017 인천 세계수의사대회
Songdo Convensia, Incheon, KOREA
August 27(sun) – 31(thu), 2017
WORLD VETERINARY ASSOCIATION
Korean Veterinary Medical Association

GOAL

A Importancia da Saúde Pública pela Abordagem da One Health

SAUDE PUBLICA ?

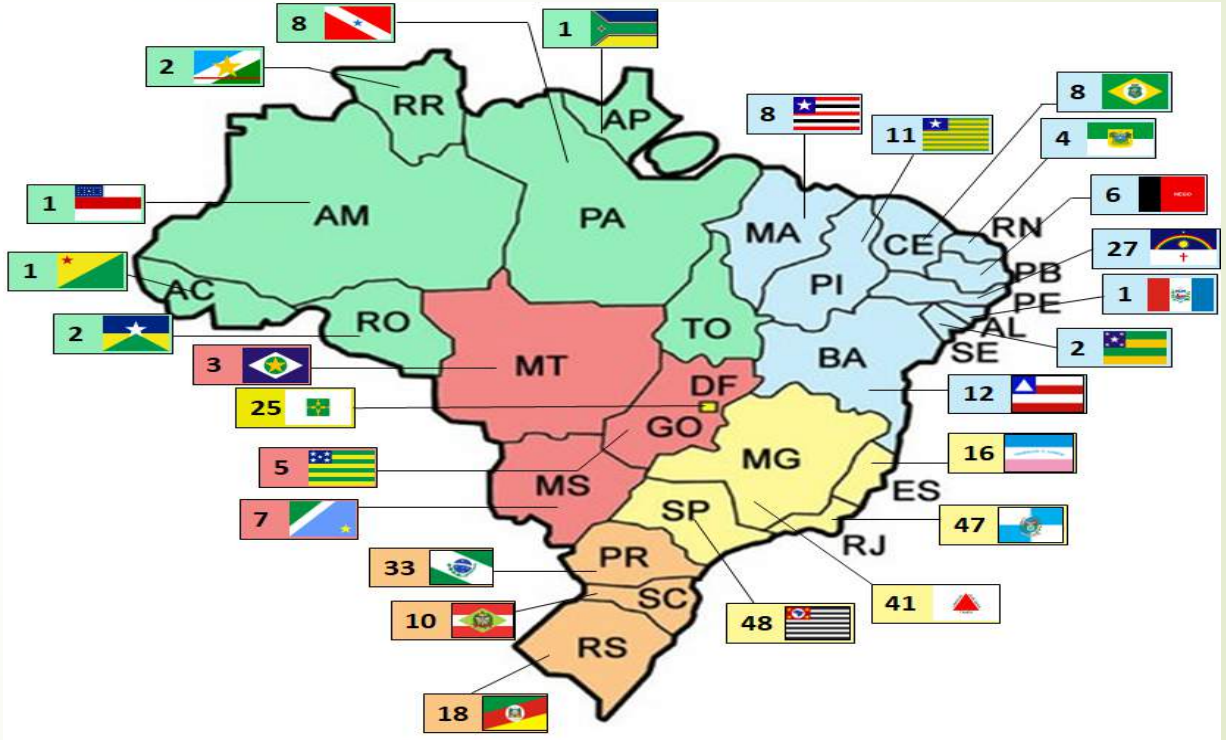
SAUDE UNICA ?

AGRADECIMENTOS: Whats Group (>285 pessoas) , CFMV, CRMV, ****

Saúde Única (One Health) Brasil

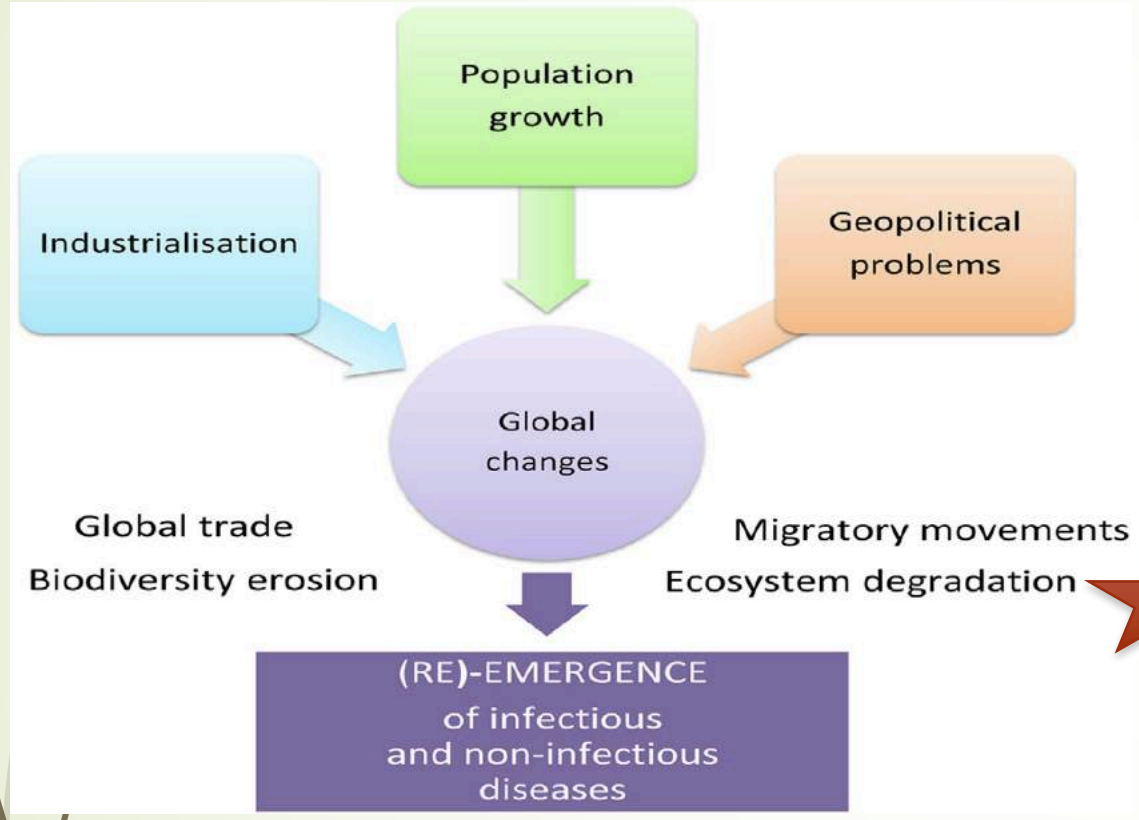
Daniel Paiva Barros de Abreu
International Student One Health Alliance (ISOHA) – Representante continental da América do Sul
[Christina Pettan Brewer]
Fulbright Scholar/Embaixadora

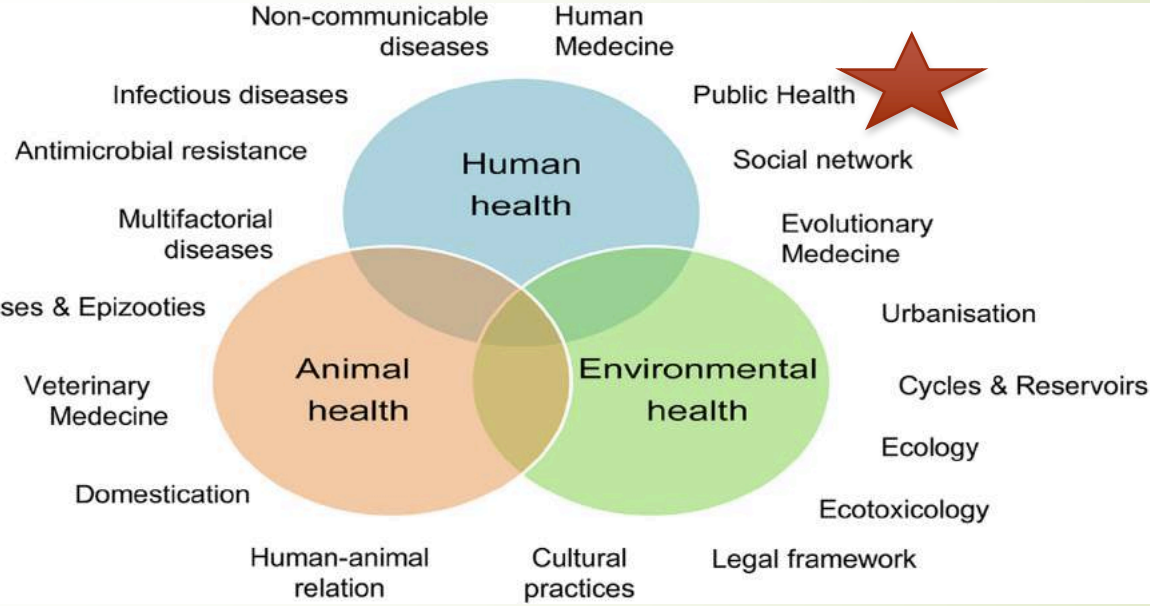
Cadastramento de profissionais e estudantes :
https://forms.gle/DUX5FY4dX7M3s2Z78
Lista de contatos e ferramenta de busca para auxílio na formação de novas parcerias e conexões



Who is Whom in One Health in Latin America Julho 2019 – ONE HEALTH COMMISSION

PUBLIC HEALTH or ONE HEALTH ?



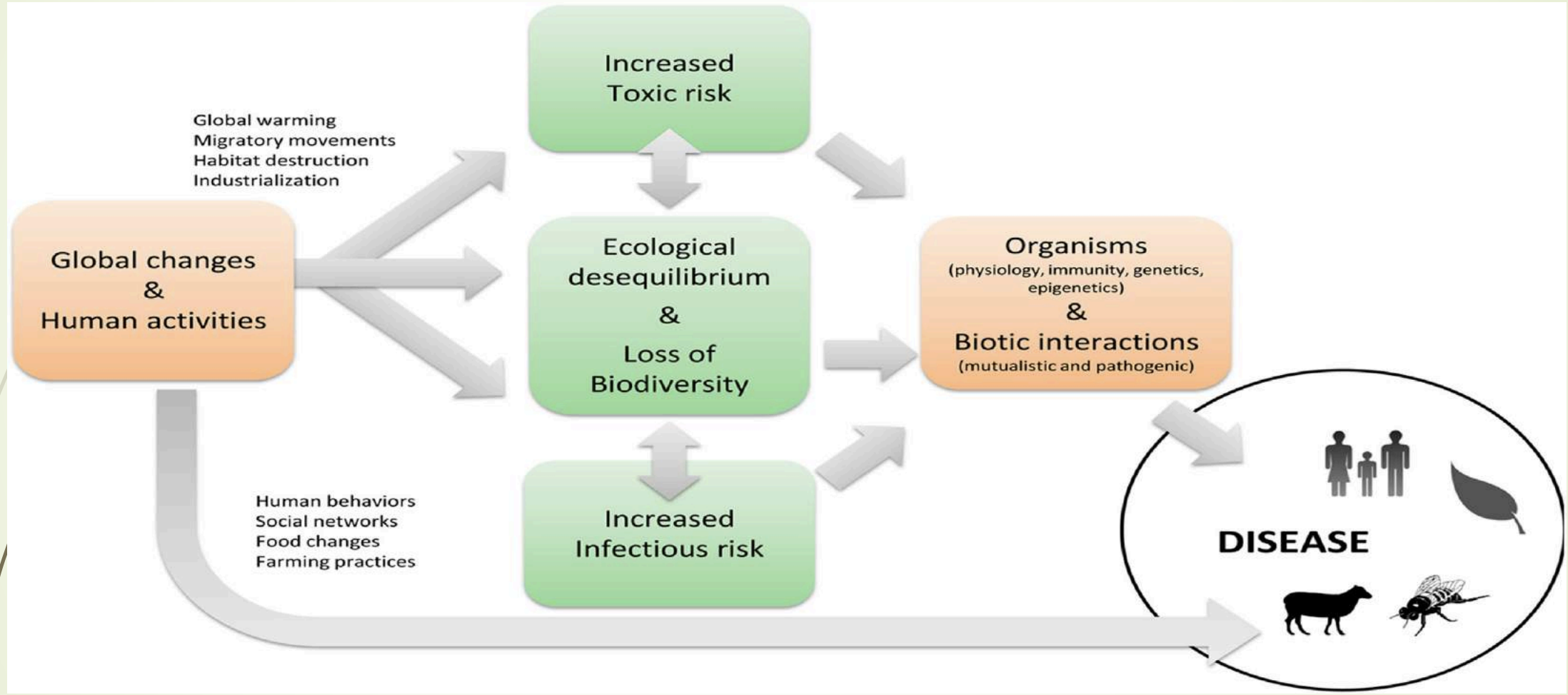


The One Health concept: a holistic, transdisciplinary, and multisectoral approach of Health.

doi: 10.3389/fvets.2018.00014

Front Vet Sci. 2018; 5: 14.
Published online 2018 Feb 12. doi: 10.3389/fvets.2018.00014
PMCID: PMC5816263
PMID: 29484301
The One Health Concept: 10 Years Old and a Long Road Ahead
Delphine Destoumieux-Garzón et al

The infectious and toxic risks and their interactions.



Front Vet Sci. 2018; 5: 14.
Published online 2018 Feb 12. doi: 10.3389/fvets.2018.00014
PMCID: PMC5816263
PMID: 29484301
The One Health Concept: 10 Years Old and a Long Road Ahead
Delphine Destoumieux-Garzón et al

doi: 10.3389/fvets.2018.00014

Zoonotic pathogens cause more than 2 billion illness and 2 million deaths per year globally.

Since 1980, more than 87 new zoonotic and/or vector-borne diseases have emerged!

Saúde Única no Brasil e America Latina e Global One Health

Doencas Emergentes e Neglegenciadas :

- **CHAGAS – 2007* – Belem do Para visit ***
- **Hanseniase (Lepra)**
- **Arboviroses, Febre Amarela, Raiva**
- ***Borrelia ?* e *Co-Infeccoes* – Mito ou Fato ?? Cross- reactivity**
- **Leishmaniose**
- **Sifilis (Treponema)**

PLECTS* (**One Health Brasil WhatsApp* Group (07/ 2019)** = (Drs. Andrea Regina e Daniel Brandspin)

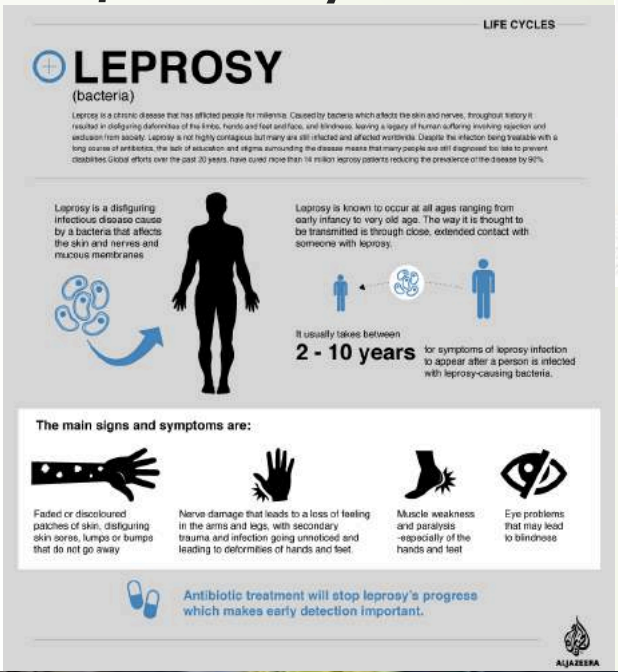
Paracoccidioidomicose, Leishmaniose, Esporotricose, Cromomicose e Tuberculose e Treponema **(Sifilis)**

Hanseniasis - Leprosy (*M leprae*) - armadillos as reservoirs

Figure 1
Erythematous maculae, with little desquamation, disseminated in the trunk.

Hanseniasis - Leprosy (*M leprae*) – armadillos as reservoirs

Figure 1
Erythematous maculae, with little desquamation, disseminated in the trunk.



Geographical Distribution of New Cases of Hansen's Disease Reported to WHO in 2015

https://www.cdc.gov/leprosy/transmission/index.html

RESEARCH ARTICLE

Evidence of zoonotic leprosy in Pará, Brazilian Amazon, and risks associated with human contact or consumption of armadillos

Moises B. da Silva[1☯], Juliana M. Portela[2☯], Wei Li[3], Mary Jackson[3], Mercedes Gonzalez-Juarrero[3], Andrea Sánchez Hidalgo[3], John T. Belisle[3], Raquel C. Bouth[1,4], Angélica R. Gobbo[1], Josafá G. Barreto[1,5], Antonio H. H. Minervino[2], Stewart T. Cole[6], Charlotte Avanzi[6], Philippe Busso[6], Marco A. C. Frade[7], Annemieke Geluk[8], Claudio G. Salgado[1,4‡], John S. Spencer[3‡]*

1 Laboratório de Dermato-Imunologia, Instituto de Ciências Biológicas, Universidade Federal do Pará, Marituba, Pará, Brazil, **2** Universidade Federal do Oeste do Pará, Santarém, Pará, Brazil, **3** Department of Microbiology, Immunology, and Pathology, Mycobacteria Research Laboratories, Colorado State University, Fort Collins, Colorado, United States of America, **4** Unidade de Referência Especializada em Dermatologia Sanitária do Estado do Pará - URE Dr. Marcelo Candia, Marituba, Pará, Brazil, **5** Spatial Epidemiology Laboratory, Universidade Federal do Pará, Campus Castanhal, Pará, Brazil, **6** École Polytechnique Fédérale de Lausanne, Lausanne, Switzerland, **7** Dermatology Division of the Department of Internal Medicine, Faculdade de Medicina de Ribeirão Preto da Universidade de São Paulo, Ribeirão Preto, São Paulo, Brazil, **8** Department of Infectious Diseases, Leiden University Medical Center, Leiden, The Netherlands

"Hanseniase" :
80% of all cases of Incidence of Leprosy in The World: India, **Brazil** and Indonesia (2019 WHO)

Mato Grosso, Rondonia, Para, Tocantins, Maranhao e Rio de Janeiro

Armadillos have been shown to be a natural reservoir ofMycobacterium leprae infection in the southern states of the U.S. and have been implicated in the zoonotic transmission of leprosy to humans. To investigate this in Brazil, we conducted surveys of armadillos in western ParaÂ state in the Brazilian Amazon region where leprosy is hyperendemic in humans. Individuals living in the small town of Belterra were surveyed for the extent and frequency of interaction with armadillos (hunting, preparing the meat for cooking, or eating the meat for food). We also took samples of liver and spleen from armadillos to look for M. leprae infection in the tissues. We found that a majority of residents had some contact with armadillos (~65%) and that infection byM. leprae in armadillos in this area was also very high (62%). Those individuals who ate armadillo meat more than once a month had a significantly higher antibody titer to the M. leprae-specific antigen, PGL-I. Understanding the dynamics of leprosy transmission in different geographic regions and knowing the behavioral risks of humans interacting with potentially infected animals will help clarify the relative risk of zoonotic transmission of leprosy in this region.

- human contact, the only other known transmission route is from human contact with armadillos that have been naturally infected with M . leprae .
- Armadillos have an immune system that responds similarly to M . leprae infection as the spectrumof human disease:
- progressive nerve damage
- Characteristic ulcers and skin lesions due to loss of sensation in the feet/face
- high antibody titers to PGL-I and other M . leprae proteins

PLOS Neglected Tropical Diseases | https://doi.org/10.1371/journal.pntd.0006532 June 28, 2018

NEGLECTED AND EMERGING INFECTIOUS DISEASES – species spanning approach to the diagnostics, treatment and prevention of clinical medicine

UFV/UW/WSU ONE HEALTH PARTNERSHIP

Leprosy (M leprae) – armadillos as reservoirs

CHAGAS AND CONTAMINATED FOOD – acai/beans
Chagas – humans and dogs (CVD and Digestive)
Leishmaniosis
Malaria
Dengue
Vector Borne Diseases
Rocky Mountain Fever (febre Maculosa)

JORNAL.USP.BR

Alimentos contaminados são causa de surtos da doença de Chagas

Volume 15, Number 4—April 2009
THEME ISSUE
The Amazon Region

Dispatch

Oral Transmission of Chagas Disease by Consumption of Açaí Palm Fruit, Brazil

Aglaêr A. Nóbrega✉, Marcio H. Garcia, Erica Tatto, Marcos T. Obara, Elenild Costa, Jeremy Sobel, and Wildo N. Araujo
Author affiliations: Brazilian Ministry of Health, Brasília, Brazil (A.A. Nóbrega, M.H. Garcia, E. Tatto, M.T. Obara, W.N. Araujo); Secretariat of Public Health, Belem, Brazil (E. Costa); Centers for Disease Control and Prevention, Atlanta, Georgia, USA (J. Sobel); Gonçalo Muniz Institute, Salvador, Brazil (W.N. Araujo)
Cite This Article

Abstract

In 2006, a total of 178 cases of acute Chagas disease were reported from the Amazonian state of Pará, Brazil. Eleven occurred in Barcarena and were confirmed by visualization of parasites on blood smears. Using cohort and case–control studies, we implicated oral transmission by consumption of açaí palm fruit.

Chagas disease (American trypanosomiasis) chronically infects ≈10 million persons in Latin America (1). The etiologic agent is *Trypanosoma cruzi*, which is transmitted by bloodsucking triatomine insects. Other modes of transmission are transfusional, congenital, and oral (foodborne) (2). Oral transmission occurs by consumption of foods contaminated with triatomines or their feces or by consumption of raw meat from infected mammalian sylvatic hosts (3). The precise stage of food handling at which contamination occurs is unknown. The first outbreak of orally transmitted Chagas disease in Brazil was reported in 1965 (4). Two outbreaks were associated with

In 2006, 178 cases of Acute Chagas Disease were reported from the Amazonian State of Para by oral consumption of acai palm fruit.

In 1965 with sugar cane juice. [incubation = 22 days compared with
4-15 days for vectorial transmission and 30-40 days for blood transfusion/organ transplant transmission

TREPONEMA sp – animais selvagens??Solo contaminado com Toxinas?animais domesticos de Producao

Figure 3. This view of the soles of a 33-year-old man with syphilis shows erythematous plaques with significant scaling.

Figure 1. This image of the dorsal hands of a 33-year-old man with syphilis shows erythematous scaly papules and plaques.

Local Fauna as sentinels of the environment

Animals as sentinels of the environment and human health

RAIVA NO PIAUI *

Callithrix penicillata... conhecido como Sagui do Tufo Preto... fauna paulista.

BRAT – ONE HEALTH COMMISSION
DR JULIANA GALHARDO - WHATSAPP

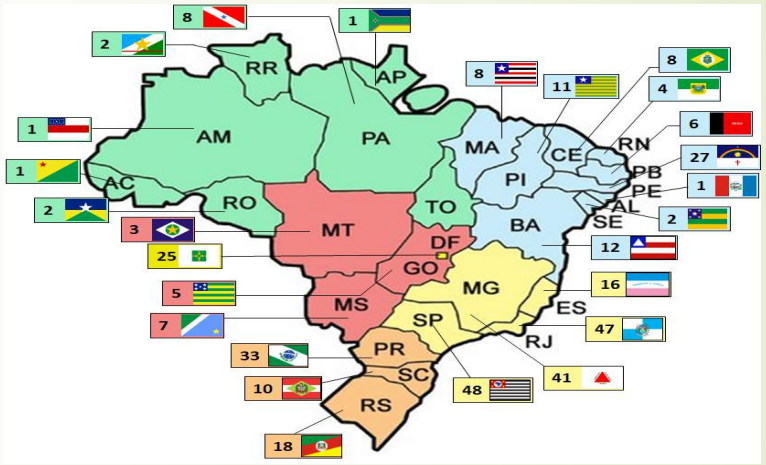
Animais Selvagens como sentinelas e reservatorios

Bio-Manguinhos/Fiocruz
August 4 at 11:00 AM ·

Like Page

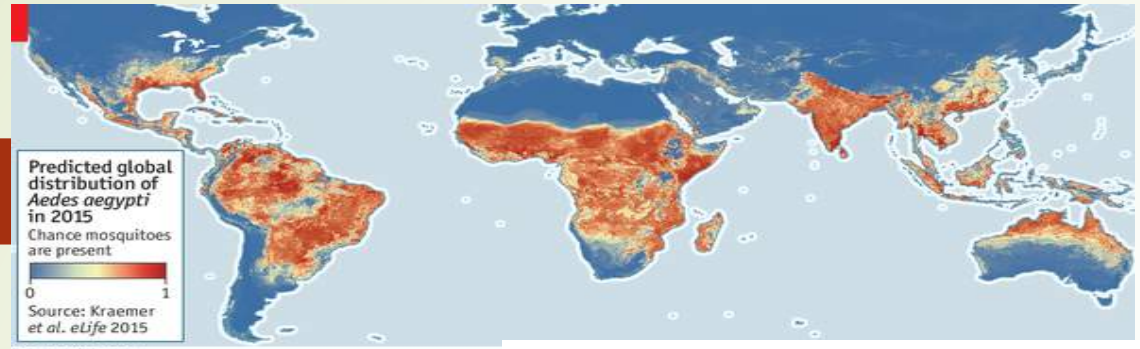
As ações de combate ao avanço da febre amarela no Brasil inauguram um patamar inédito. Com base nos dados apurados a partir do cenário da doença em São Paulo no último ano, na mortalidade de macacos no Paraná e nos aspectos climáticos e

- Conectar
- Criar
- Colaborar
- Compartilhar
- Educar



Local com as Comunidades , Nacional, Global
EEE
West Nile Virus* (ES)
RAIVA (BRET – OHC e OHLA)

One Health Brazil Latin America Facebook , KCPB Facebook, OHLA, One Health Brasil , Locais e Estaduais



29 Jan 2017

Experts investigate connection of yellow fever with environmental degradation

REPORT from Government of Brazil

Published on 28 Jan 2017 — View Original

A yellow fever outbreak in Minas Gerais state has killed 38 in 2017, according to the latest epidemiological reports from the Minas Gerais Health Secretariat, released on Tuesday (Jan. 24). Other 45 deaths are being investigated.

A group of specialists from different Brazilian states is investigating the yellow fever outbreak and its association with the environmental degradation. They believe that if more information on the subject was provided, the sudden outbreak of the virus could be prevented.

Caused by a virus of the Flaviviridae family, yellow fever is an outbreak disease that can suddenly spread to groups of monkeys and human beings. The reasons for the disease behavior are not well known yet. But specialists believe that it is influenced by the environment. According to Sérgio Lucena, primatologist and zoology professor at the Federal University of Espírito Santo (UFES), the yellow fever outbreak is an ecological phenomenon.

The disease is transmitted in rural and forest areas by the Haemagogus mosquito. In urban areas, it can be transmitted by the Aedes aegypti, which also transmits dengue, Zika virus, and chikungunya fever. However, there are no records of yellow fever transmission in urban settings in Brazil since 1942. In the current outbreak, none of

Primary country: Brazil

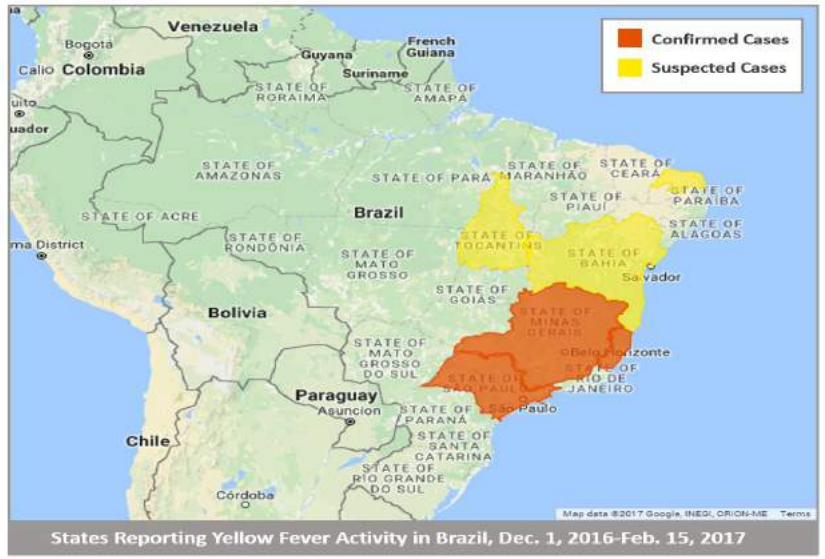
Brazil: Yellow Fever Outbreak - Jan 2017

Content format: News and Press Release

Language: English

Theme: Health

Disaster type: Epidemic



University of California , Davis
One Health Isntitute
Eco Health
Planetary Health

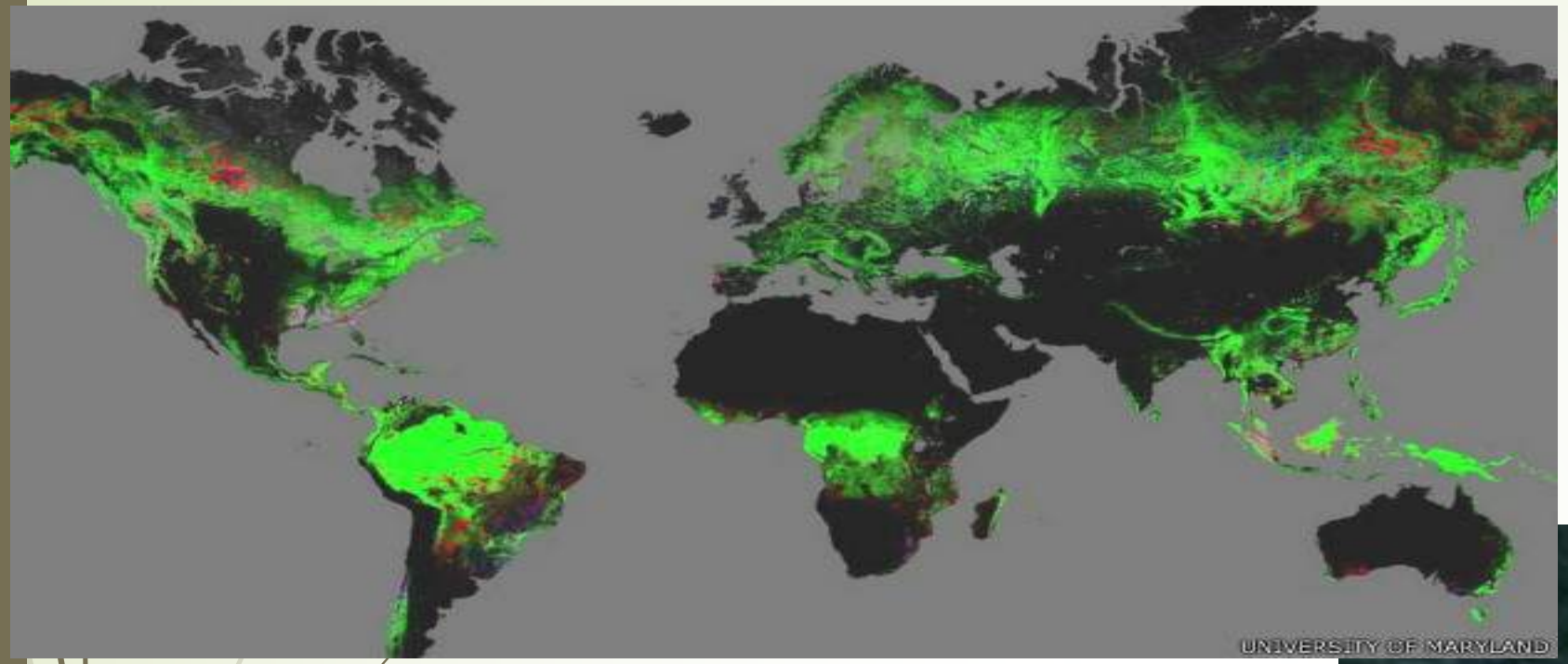
Vetores e Saude Unica

CONFLITOS
ECONOMICOS
NA BIODIVERSIDADE

Predadores e Animais Domesticos

Human Encroachment _ ENVIRONMENT-Animal – Human – HEALTH

*Febre Maculosa e outras pelo carrapato



Desmatamento ao Vivo _globe_map

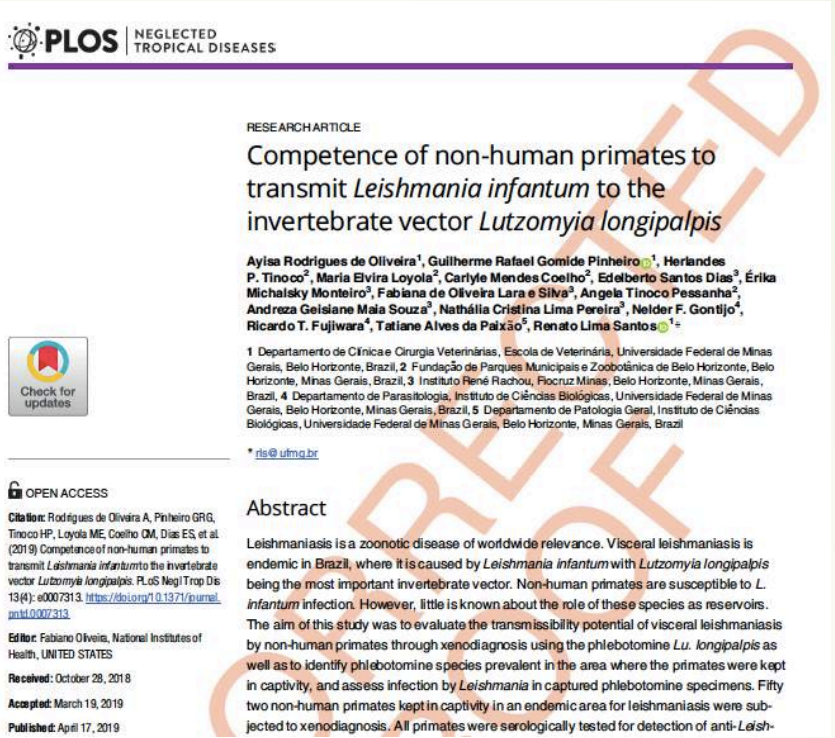
Desmatamento e introducao de doencas Infecciosas e emergentes

One Health
Human and Animal Medicine – Environment Health

INCLUIR COMUNIDADE, SOCIEDADE - MEC e CAPES * Parametros para Bolsas e Apoio a Pesquisa
NIH
World Foundations $$$$:
Sair dos Laboratorios e Universidades (nichos) com e para as Comunidades – menos previligiadas

Human
Animal
Environmental Changes
(Conservation Medicine)

Eco Health/One Health Aspect



PLOS | NEGLECTED TROPICAL DISEASES

RESEARCH ARTICLE

Competence of non-human primates to transmit *Leishmania infantum* to the invertebrate vector *Lutzomyia longipalpis*

Ayisa Rodrigues de Oliveira[1], Guilherme Rafael Gomide Pinheiro[1], Herlandes P. Tinoco[2], Maria Elvira Loyola[2], Carlyle Mendes Coelho[2], Edelberto Santos Dias[3], Érika Michalsky Monteiro[3], Fabiana de Oliveira Lara e Silva[3], Angela Tinoco Pessanha[2], Andreza Geisiane Maia Souza[3], Nathália Cristina Lima Pereira[3], Nelder F. Gontijo[4], Ricardo T. Fujiwara[4], Tatiane Alves da Paixão[5], Renato Lima Santos[1]*

1 Departamento de Clínica e Cirurgia Veterinárias, Escola de Veterinária, Universidade Federal de Minas Gerais, Belo Horizonte, Brazil, 2 Fundação de Parques Municipais e Zoobotânica de Belo Horizonte, Belo Horizonte, Minas Gerais, Brazil, 3 Instituto René Rachou, Fiocruz Minas, Belo Horizonte, Minas Gerais, Brazil, 4 Departamento de Parasitologia, Instituto de Ciências Biológicas, Universidade Federal de Minas Gerais, Belo Horizonte, Minas Gerais, Brazil, 5 Departamento de Patologia Geral, Instituto de Ciências Biológicas, Universidade Federal de Minas Gerais, Belo Horizonte, Minas Gerais, Brazil

* ris@ufmg.br

OPEN ACCESS

Citation: Rodrigues de Oliveira A, Pinheiro GRG, Tinoco HP, Loyola ME, Coelho CM, Dias ES, et al. (2019) Competence of non-human primates to transmit *Leishmania infantum* to the invertebrate vector *Lutzomyia longipalpis*. PLoS Negl Trop Dis 13(4): e0007313. https://doi.org/10.1371/journal.pntd.0007313

Editor: Fabiano Oliveira, National Institutes of Health, UNITED STATES

Received: October 28, 2018

Accepted: March 19, 2019

Published: April 17, 2019

Abstract

Leishmaniasis is a zoonotic disease of worldwide relevance. Visceral leishmaniasis is endemic in Brazil, where it is caused by *Leishmania infantum* with *Lutzomyia longipalpis* being the most important invertebrate vector. Non-human primates are susceptible to *L. infantum* infection. However, little is known about the role of these species as reservoirs. The aim of this study was to evaluate the transmissibility potential of visceral leishmaniasis by non-human primates through xenodiagnosis using the phlebotomine *Lu. longipalpis* as well as to identify phlebotomine species prevalent in the area where the primates were kept in captivity, and assess infection by *Leishmania* in captured phlebotomine specimens. Fifty two non-human primates kept in captivity in an endemic area for leishmaniasis were subjected to xenodiagnosis. All primates were serologically tested for detection of anti-*Leish*-

Visceral leishmaniasis is a zoonotic disease with worldwide distribution. The disease is endemic in several Brazilian regions, including the city of Belo Horizonte, where visceral leishmaniasis is caused by Leishmania infantum and transmitted by Lutzomyia longipalpis . This study evaluated the competence of non-human primates to infect Lutzomyia longipalpis with Leishmania infantum . Eight of 52 non-human primates were positive to leishmaniasis by xenodiagnosis, i.e. capable of infecting sand flies, with averages of 5.67 to 1,181.93 promastigotes/μ g of DNA. Positive animals had higher levels of IgG anti-Lu . longipalpis saliva when compared to negative animals, prior to xenodiagnosis. This study highlights the importance of non-human primates in the leishmaniasis cycle, providing information that is relevant for development of better public health strategies, and to conservation medicine.

EMERGING INFECTIOUS DISEASES®

ISSN: 1080-6059

EID Journal > Volume 25 > Ahead of Print / In Press > Main Article

Volume 25, Number 11—November 2019

Dispatch

Crithidia-related parasites were involved in an atypical manifestation similar to VL in this patient.

Non-*Leishmania* Parasite in Fatal Visceral Leishmaniasis–like Disease, Brazil

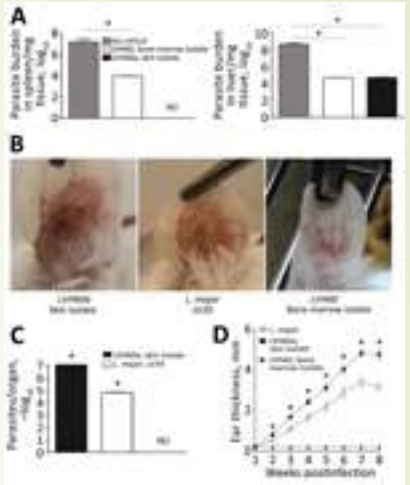
Sandra R. Maruyama[1]✉, Alynne K.M. de Santana[12], Nayore T. Takamiya, Talita Y. Takahashi, Luana A. Rogerio, Caio A.B. Oliveira, Cristiane M. Milanezi, Viviane A. Trombela, Angela K. Cruz, Amélia R. Jesus, Aline S. Barreto, Angela M. da Silva, Roque P. Almeida[3], José M. Ribeiro[3], and João S. Silva[3]

Author affiliations: Universidade Federal de São Carlos, São Carlos, Brazil (S.R. Maruyama, N.T. Takamiya, T.Y. Takahashi, L.A. Rogerio, C.A.B. Oliveira); Universidade Federal de Sergipe, Aracaju, Brazil (A.K.M. de Santana, A.R. Jesus, A.S. Barreto, A.M. da Silva, R.P. Almeida); Universidade de São Paulo, Ribeirão Preto, Brazil (C.M. Milanezi, V.A. Trombela, A.K. Cruz); National Institutes of Health, Rockville, Maryland, USA (J.M. Ribeiro); Fundação Oswaldo Cruz Bi-institucional, Ribeirão Preto, Brazil (J.S. Silva)

Suggested citation for this article

Abstract

Through whole-genome sequencing analysis, we identified non-*Leishmania* parasites isolated from a man with a fatal visceral leishmaniasis–like illness in Brazil. The parasites infected mice and reproduced the patient's clinical manifestations. Molecular epidemiologic studies are needed to ascertain whether a new infectious disease is emerging that can be confused with leishmaniasis



Sergipe

Moreover, the fact that this parasite appeared in a sister phylogenetic position to C. fasciculata focuses attention on potential vectors because leishmaniasis is transmitted by female sand flies, whereas C. fasciculata infects only anopheline and Culex mosquitoes. Recently, both C. fasciculata and L. infantum sequences were detected in phlebotomine Nyssomyia whitmani samples collected in the northern region of Brazil (15). Our findings raise concerns about the need to isolate and characterize parasites from more humans, reservoirs, and vectors; map trypanosomatid distribution and epidemiologic control measures; study the sensitivity of these parasites to drugs and design new treatment options; and develop new epidemiologic/ecologic strategies to control Crithidia-related species.

El perro tratado con insecticida reduce la transmisión de leishmaniasis a humanos

Me gusta 48 Tweet

Tratar a los perros con insecticida sistémico podría reducir la transmisión de leishmaniasis visceral a humanos, según un estudio de modelización liderado por ISGlobal. Hasta ahora, en Brasil donde la prevalencia de la enfermedad es alta, se sacrifican los perros infectados, pero sin frenar la transmisión del parásito. Este nuevo trabajo ayudará a definir el tipo de insecticida y la manera de aplicarlo para lograr la máxima efectividad.

Más información sobre: leishmaniasis visceral perros insecticida enfermedad

SINC | Seguir a @agencia_sinc | 04 octubre 2018 10:07

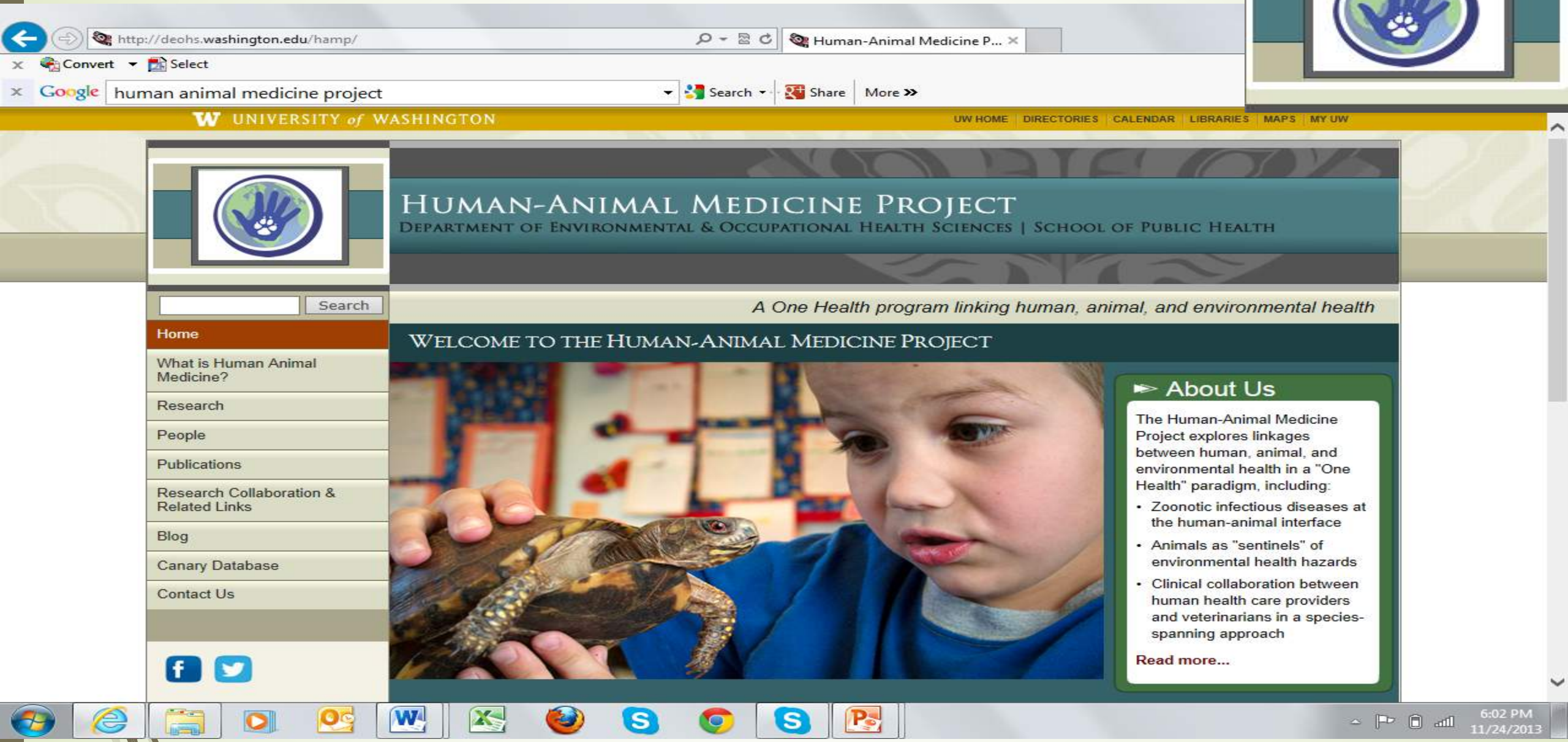
Referencia bibliográfica:
Gomez S, Chapman LAC, Dilger E, Courtenay O, Picado A.
"Estimating the efficacy of community-wide use of systemic insecticides in dogs to control zoonotic visceral leishmaniasis: A modelling study in a Brazilian scenario".
***Plos Negl Trop Dis*. 2018;12(9):e0006797. doi: 10.1371/journal.pntd.000679**

Perspectivas pela Saúde Pública e Saúde Única :

- ✓ Controle da Populacao Canina*
- ✓ Uso de inseticidas sistemico (DVM)
- ✓ Uso de colares *com deltamethrin**
- ✓ Vacinacao obrigatoria por medico veterinarios* (e.g. LetiFend^{R})

CONTROLE DO MOSQUITO
INDIA – sacred animal – non –euthanasia
https://saludanimal.leti.com/pt/letifend-vacina-contra-a-leishmaniose-canina_3944

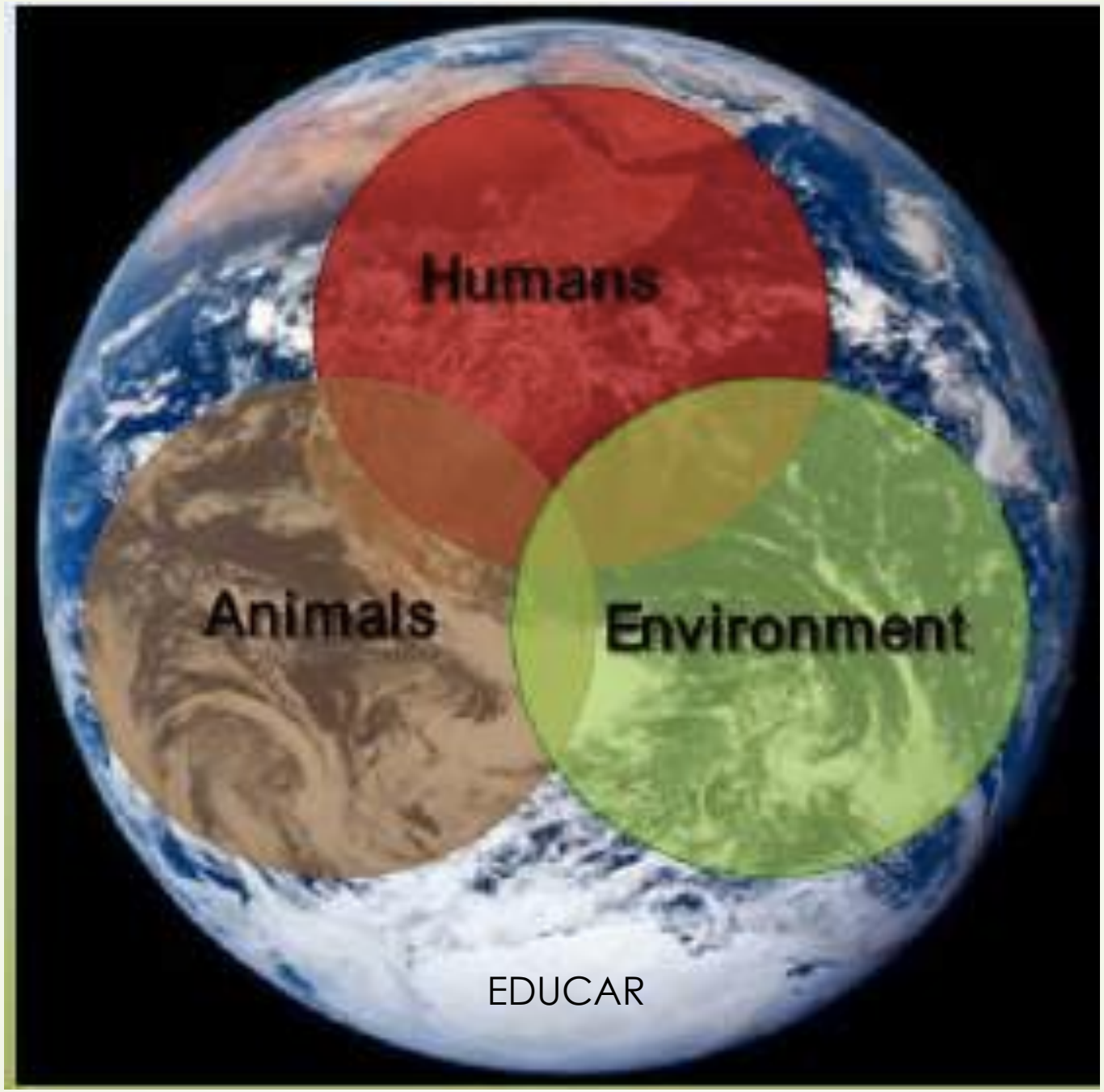
400-600 caes/km2
Aumentou # raiva humana, mas nao alarmente



http://deohs.washington.edu/hamp/

COMPARTILHAR

COLABORAR



CRIAR

CONTINUAR

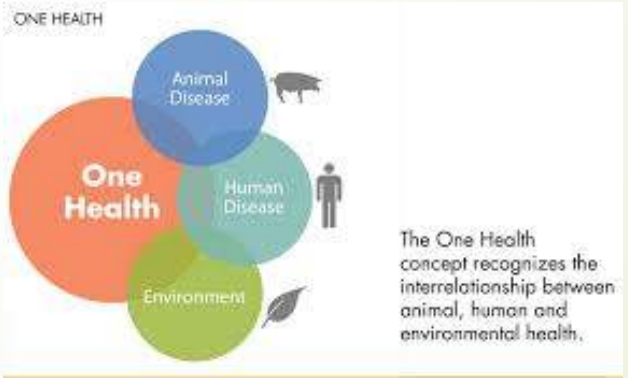
EDUCAR

O que é essa Saúde Única da qual tanto se fala na Saúde Pública?

- Pelo **CDC**: "O conceito One Health reconhece que a saúde dos seres **humanos** está ligada à saúde dos **animais** e do **meio ambiente**." [1]

- Menos de 10% das instituições médicas incorporaram o treinamento One Health em seus currículos.
  - Em contraste, mais de 95% das escolas de medicina veterinária têm One Health listada de alguma maneira em seus currículos de treinamento [2]

- Oportunidade de desenvolver verdadeiras parcerias e colaboracoes transdisciplinares



1. Centers for Disease Control, section on "Zoonotic Disease." http://www.cdc.gov/onehealth/zoonotic-diseases.html. Last accessed September 5, 2015.
2. Rabinowitz, P: "Why the Human Medicine side lags behind on One Health." Vet Pract News. Published online 6/10/15

ONE HEALTH **human_animal_environment**

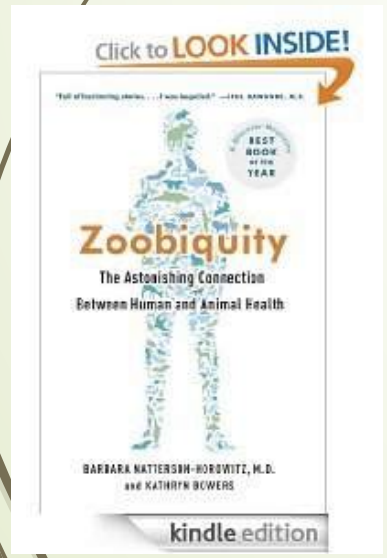
ECOHEALTH **environment**_human_animal

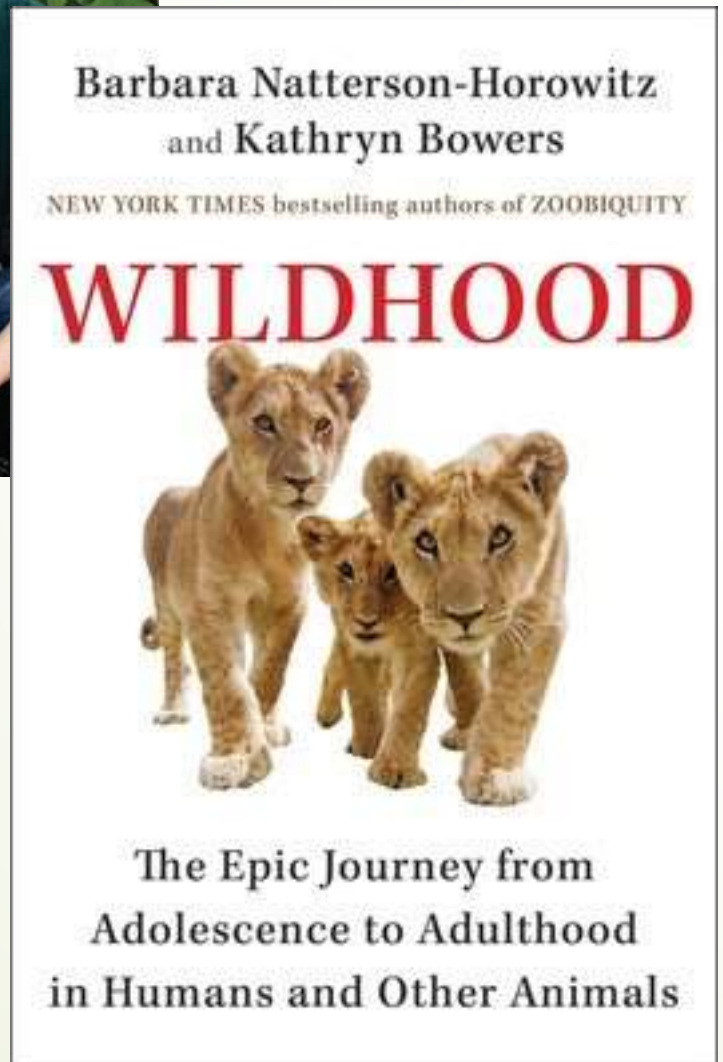
PLANETARY HEALTH **human_environment** (animals)

ONE WELFARE health and **well being of human_animals** (environment)

Pettan-Brewer 2018 – Capitulo 7 – Clinica Medica – Infectologia EDITORA GEN

ZOOBIQUITY


Click to LOOK INSIDE!
Zoobiquity
The Astonishing Connection
Between Human and Animal Health
BARBARA NATTERSON-HOROWITZ, M.D.
and KATHRYN BOWERS
kindle edition


Barbara Natterson-Horowitz
and Kathryn Bowers
NEW YORK TIMES bestselling authors of ZOOBIQUITY
WILDHOOD
The Epic Journey from
Adolescence to Adulthood
in Humans and Other Animals


LANÇAMENTO EM CURITIBA
Saúde Única | One Health
MEDICINA VETERINÁRIA DO COLETIVO
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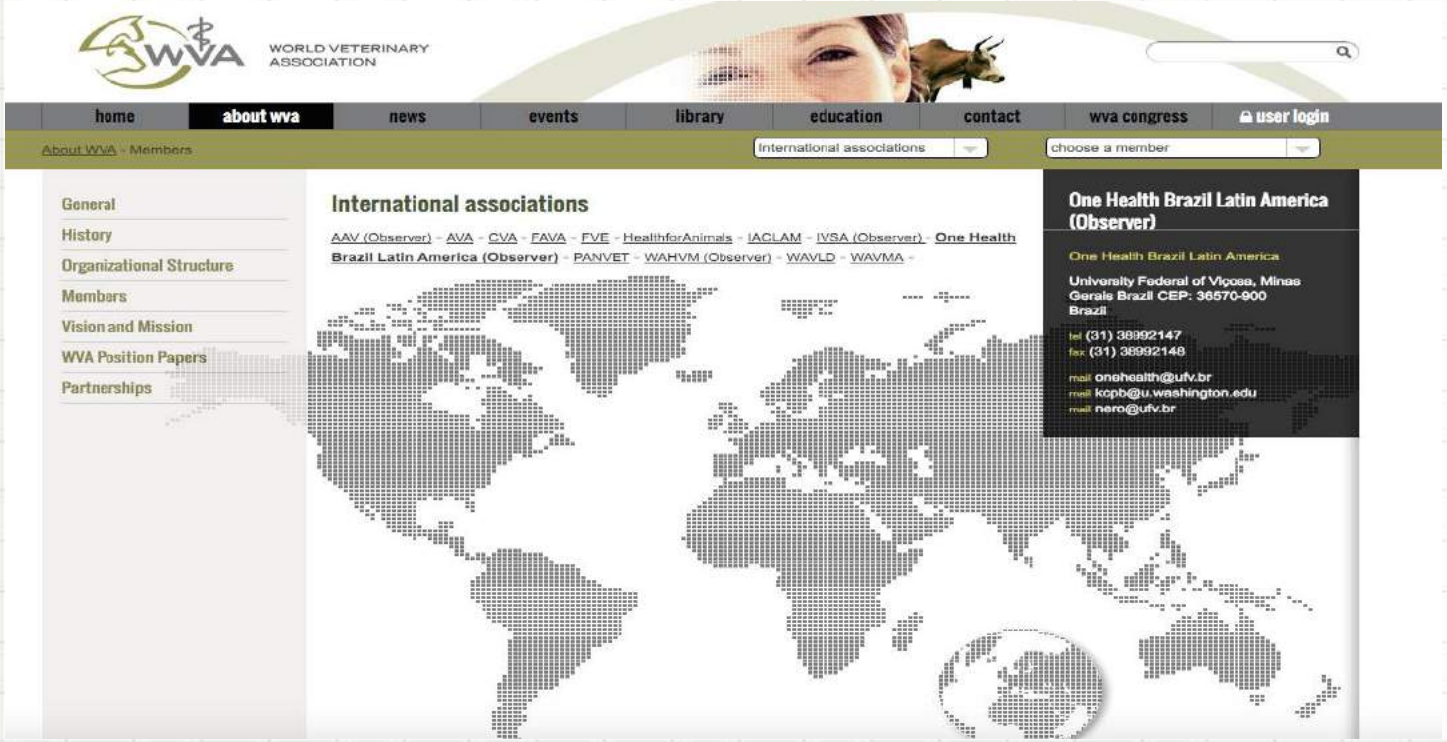
UPDATES

- 2020 WVA + WMA – New Zealand
- 2020 Edingburgh (6TH One Health INT MEET)
- NOV 2019 ONE HEALTH COLOMBIA (OHLA)

3rd One Global Health Conference

LATIN AMERICA ??? BRAZIL ? ****

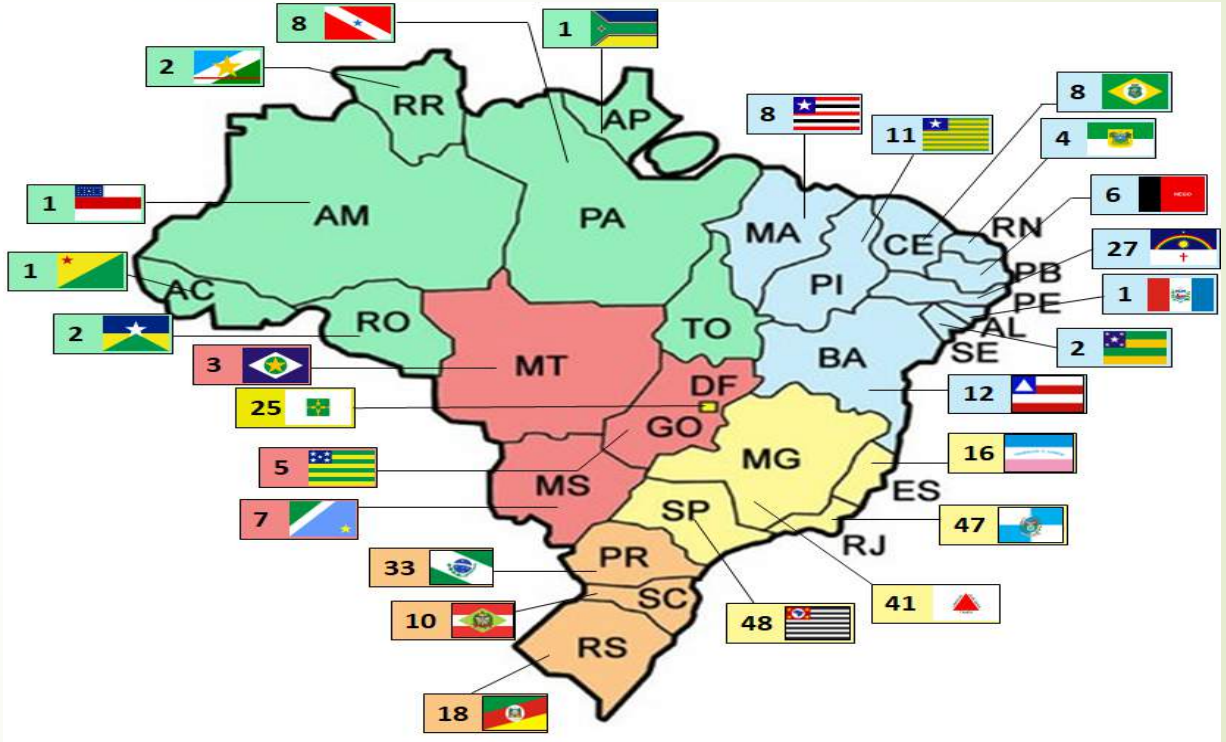


ONE HEALTH

Saúde Única (One Health) Brasil

Daniel Paiva Barros de Abreu
International Student One Health Alliance (ISOHA) – Representante continental da América do Sul
[Christina Pettan Brewer]
Fulbright Scholar/Embaixadora

Cadastramento de profissionais e estudantes :
https://forms.gle/DUX5FY4dX7M3s2Z78
Lista de contatos e ferramenta de busca para auxílio na formação de novas parcerias e conexões

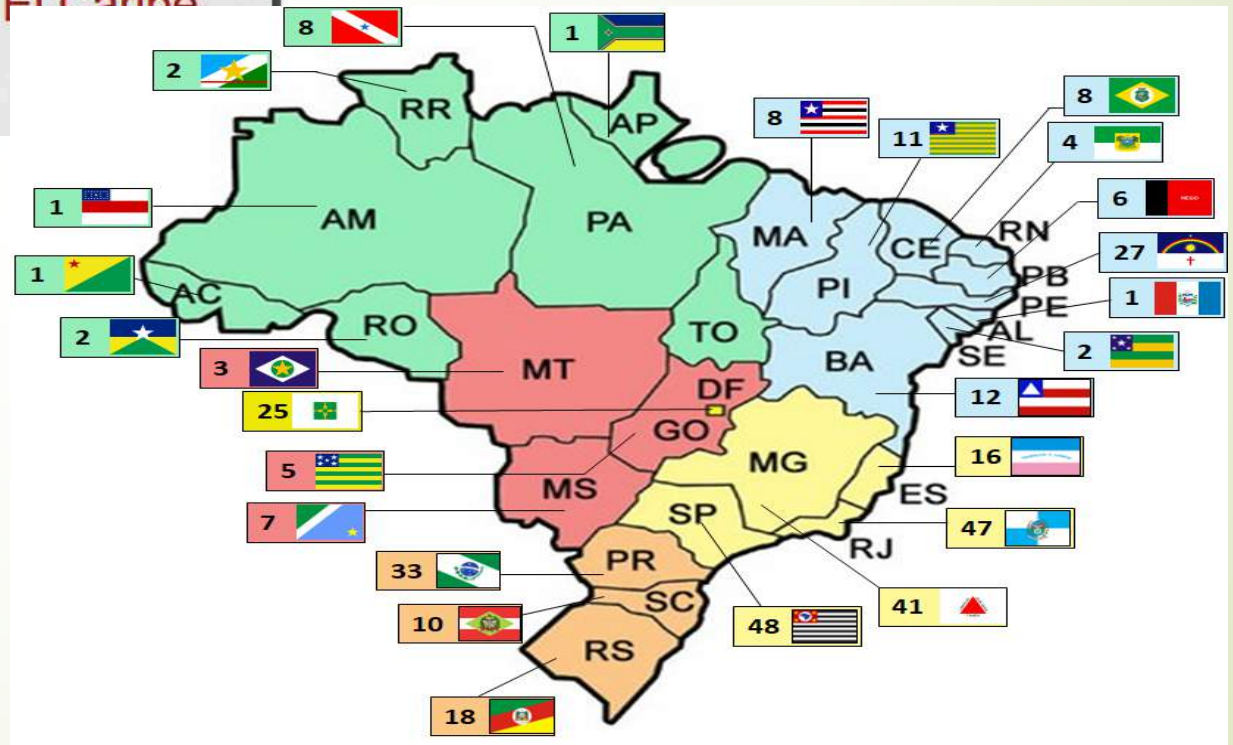


Who is Whom in One Health in Latin America Julho 2019 – ONE HEALTH COMMISSION

2019
Webinar Quién es Quién (Who´s Who) en One Health Latinoamérica y El Caribe (OHLA)

ONE HEALTH
LATINOAMÉRICA
y El Caribe

The webinar will begin in a moment.
El webinar comenzará en un momento.



THANK YOU & Acknowledgments

Conselho Federal de Medicina Veterinaria – Executive e Adm

CRMV – PR e PUC PARANA - OH Comissao - Organizadora

Conselhos Regionais de Medicina Veterinaria

Francisco Cavalcanti

Rodrigo Tavora Mira

Claudia Turra Pimpao

Jessica Kayamori Lopes

Daniel Paiva

Maristela Packie

Vera Porto e Savio

Familia

OHB and OHLA

University of Washington

Thank you ALL BEINGS for what you do…..

you truly make a difference!

BE DIFFERENT , BE DETERMINED , BE HUMBLE AND DON'T EVER GIVE UP !!!

UFV 1983

Do Turtles Smile???