

# One Health Newsletter

A quarterly newsletter highlighting the interconnectedness of animal and human health



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- Palm Beach County Health Department
- Florida Department of Health
- University of Florida
- Kahn/Kaplan/Monath/Woodall One Health Team



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Palm Beach County Health Department



*This newsletter is dedicated to enhancing the integration of animal, human, and environmental health for the benefit of all by demonstrating One Health in practice.*

## A One Health Approach to Public Health

**Gaël Lamielle, DVM, MPH candidate 2011**

In the traditional model for public health (below left), there are minimal interactions between each field. A One Health approach (below right) recognizes the inherent relationships between each field.

While not new, the principle of One Health has recently resurfaced. On its most basic level, it refers to the relationships between human, animal, and environmental health. While the definition of global health may vary, my belief is that it is the application of One Health to a global scale.

The traditional view of public health is one that is often sheltered within its specific field. There is thus the belief that human health is only a matter of human health professionals, animal health a matter of veterinarians, and environmental health a matter of environmentalists.

In such a situation, there is little communication between each field, and in that sense they progress isolated, at a different pace and with little cooperation with each other. Problems are viewed from only one perspective and are managed in a unilateral fashion. This is, however, not a realistic representation of our world, where every system affects one another.

The advent of the Industrial Age has changed our world in dramatic ways. Science has progressed to new exciting heights and human success has boomed. The other side of the coin is that the world has become overpopulated, leading to unequal development, an increase in poverty and disease, a decrease in food supply and environmental degradation. These are known as “wicked problems” and are multi-factorial in nature. Unfortunately, there is rarely a simple answer to such complicated problems. It is only by looking at the world in a new way and appreciating its complexities that we come to realize that one-sided approaches cannot provide long-lasting solutions to these problems.

There is thus the need to shift away from this traditional, unilateral approach. One Health provides a more comprehensive perspective to public health, taking into account the intricate complexities of our world and using interdisciplinary tools to solve problems. In this model, humans and other animals live in a common environment. It is logical to assume that a change in one of these factors will affect the other two.

Veterinarians are lucky (well, that’s how I see it at least) in the sense that they find themselves at the center of these interactions. Indeed, they are on the frontlines of human health when

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it comes to zoonotic diseases ( diseases transmissible between animals and people ). According to the World Health Organization, 70% of infectious diseases discovered in the past twenty years originated from animals. These include well-known illnesses such as HIV-AIDS, tuberculosis, plague, and influenza virus. If we are able to detect and identify outbreaks of such diseases in animals, we will be more likely to reduce their impact on the human population.

Public health is also strongly influenced by animal health. Indeed, many depend on animals for their subsistence and it is important to promote adequate animal health to ensure proper food safety and security. Diseases such as rinderpest and foot and mouth disease are directly harmless to humans; however, they can devastate agriculture and thus people ' s livelihoods. Animal welfare is also an important part of promoting public health from this perspective and it is important to understand that, besides the obvious ethical issues, mistreated or stressed animals are more susceptible to illness.

Perhaps the most complicated issue we are faced with is the impact of humans on the environment and climate. It is difficult to project how environmental degradation will affect long-term public health. Losses in biodiversity have reached unprecedented levels through over-exploitation and habitat loss. The numbers are staggering, as illustrated by dwindling shark numbers worldwide ( 100 million fished yearly ) and the decreasing bluefin tuna population in the Mediterranean. Wildlife species such as amphibians provide us with important bio-markers for environmental health, and it is important to adequately study them if we are to better understand how environmental changes affect public health.

To conclude, One Health shows us the complexity of our world but appreciating how each part affects another can be difficult. While I am positive that we can do it, the question is: can we act accordingly? To tackle these “wicked problems”, a comprehensive and multidisciplinary approach is essential.

***Dr. Gaël Lamielle, originally from Lyon, France, currently works at a small animal clinic in Southern California as well as at Western University of Health Sciences in Pomona, California. In addition, he is pursuing a Masters in Public Health (MPH) with [University of Minnesota](http://www.umn.edu).***

***Throughout his studies, he has been exposed to public and global health through projects in Latin America as well as wildlife medicine in South Africa.***

***His website, [Veterinary Public Health—A One Health Approach](http://globalhealthvet.wordpress.com/), promotes global health at the human-animal-environmental interface.***

<http://globalhealthvet.wordpress.com/>

***He hopes to promote the perspective of the veterinarian in addressing public health issues and share experiences on a local and international level.***

## The Bed Bug Epidemic: An Interview with Dr. Susan Little

By Clinician's Brief <http://www.cliniciansbrief.com/>

### 1. Nationally, there is a bedbug epidemic underway. What do you think is causing this?

The exact cause isn ' t clear, but it is thought to be a combination of increased travel ( particularly international travel ), the development of resistance to pesticides, and



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*The Clinician's Brief recently interviewed Susan E. Little, DVM, PhD, about the bed bug epidemic.*

perhaps a shift in how pesticides are used in the home. Broadcast pesticides, like sprays and bombs, have largely been replaced by baits for ants and cockroaches, and by adulticides applied to the pet for fleas, reducing the level of pesticides in the rest of the home where the bed bugs spend most of their time.

**2. Have you noticed any geographic regions that have been particularly hard hit by bed bug infestation?**

No – the infestations are reported from all across the US. We do see more reports in urban areas and in premises with a large transient population such as hotels, college dormitories, and even some apartment complexes where people move in and out frequently.

**3. What tell-tale signs of bed bug infestation should pet owners look for?**

Often clients will have itchy bites but they may be attributing these to mosquitoes or fleas. When bed bugs are suspected, the home should be inspected with particular attention paid to the mattresses, bed frames, and areas around the beds. The bugs may be distributed widely in the bedroom, so be sure to check around baseboards, corners, and any cracks or crevices where they can hide. Look for dark stained or speckled areas (bed bug feces is similar in character to flea dirt) as well as eggs and cast skins from molting.

**4. What clinical signs should a veterinarian look for in a patient? Are there any diagnostics available to confirm bed bug bites?**

Bed bugs cause pruritus, and a wheal reaction can develop at the bite site. If the infestation is heavy enough then anemia could be present, but in most cases it is just irritation from the sleep disturbance and the uncomfortable, itchy bites. There are not specific diagnostics unless the client brings in a bed bug for identification, which does happen. A careful history may lead the veterinarian to ask about bed bugs, particularly if the client also mentions being bitten, and then an information sheet on inspecting for bed bugs can be provided to the client. Some clients will mistake the bed bugs for ticks, although they do not stay attached to the dog or the person as ticks do.

**5. Is there a difference in appearance between a flea bite and a bed bug bite?**



They can resemble one another, but bed bug bites on people tend to be on the torso whereas flea bites are more common on the feet, ankles, and lower legs.

**6. If a patient has been bitten by bed bugs, should the practice be concerned that they or their other patients are at risk for infestation?**

No - bed bugs are most likely to be introduced into a new location in luggage, clothing, or furniture, not on a pet. Unlike fleas, which stay on the pets as adults feeding intermittently for weeks on end, bed bugs return to the environment after feeding for just a few

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minutes at night.

**7. Do pet owners have to be worried about any diseases that bed bugs might carry?**

Although bed bugs may harbor a pathogen after feeding on an infected host, they have not been shown to transmit any disease agents to date.

**8. Are there any secondary conditions that can result in patients bitten by bed bugs?**

Certainly if the bites are scratched they can become infected. In unusual cases, where people are debilitated or otherwise unable to respond and the infestation is particularly heavy, then anemia can develop, but this appears to be rare.

**9. What treatment plan do you recommend for patients bitten by bed bugs?**

Contact a licensed pest control operator familiar with treating premises for bed bugs in your area. This is not an infestation to try and combat alone, especially since some of the pesticides that will be applied in the home have toxicity concerns. A local exterminator will also have the most current information on what resistance patterns are present in the infestations in your region and will thus be able to recommend an approach that is most likely to resolve the infestation as quickly as possible.

**10. Are there any chemical treatments used to eliminate bed bugs in the home that may be dangerous to pets?**

Yes – some of the treatments can have toxicity concerns, particularly if applied inappropriately. Few pesticides are labeled as safe to apply to a mattress, and none can be used on bedding linens.

**11. Would you recommend the use of bed bug sniffing dogs to pet owners?**

The dogs can be very helpful in identifying the location of the infestations in a home. A positive signal from a trained dog should be followed by visual confirmation of the infestation prior to treatment, but the dogs can really help in focusing the places to inspect.

**12. Are there any websites or resources with important bed bug information you feel are especially valuable for the veterinary community?**

Several university entomology websites have some very good information – for example, University of Kentucky: <http://www.ca.uky.edu/entomology/entfacts/entfactpdf/ef636.pdf>

**13. Anything else you'd like to add?**

Bed bugs are really a human problem that also happen to affect the pets that live in the home. As veterinarians, clients may come to us with a bed bug problem and we need to be able to help them, but the pets are not the source of the infestation or the only host sustaining the bed bugs in their homes.

*Dr. Little is a professor of veterinary parasitology at Oklahoma State University. She received her veterinary degree from Virginia Tech, her PhD from University of Georgia, and is boarded in veterinary parasitology through the European College of Veterinary Parasitology. She also serves on the board of the Companion Animal Parasite Council and as past-president of the American Association of Veterinary Parasitologists.*

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*This is not an infestation to try and combat alone.*

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*Both wildlife and livestock represent economic growth opportunities in an increasingly globalized world.*

*Has the time come to seriously explore alternative animal health management regimes that do not implicitly pit the livestock and wildlife sectors against each other?*

## MINI-TORIAL:

### One Health, One Land Base, One Holistic Economic Impact and Risk Assessment?

**Steve Osofsky, DVM and Mark Atkinson, BVSc MRCVS**

Across parts of southern and eastern Africa, it is perhaps clearer than ever that both wildlife and livestock represent economic growth opportunities in an increasingly globalized world. However, costs associated with current approaches to managing international trade-associated animal disease risks often preclude the livestock sector's access to international markets, while many attempts to meet international standards related to freedom from disease under current policy constructs have had significant negative repercussions for free-ranging wildlife, largely related to veterinary cordon fencing.

Has the time come to seriously explore alternative animal health management regimes that do not implicitly pit the livestock and wildlife sectors against each other? Given the importance of both sectors to many countries across southern and eastern Africa, we believe the timing has never been better in terms of rethinking how to best manage risks from diseases like foot and mouth in ways that help Africa's pastoralists and farmers, do not threaten free-ranging wildlife, and also provide confidence to beef importing countries that the products they are buying pose minimal threats to their own agricultural sector.

At the same time, we suggest that any sound economic impact or risk assessments of potential new trade initiatives must be multi-sectoral in nature. Major animal health policy adjustments require serious cross-sectoral dialogue and earnest stakeholder consultation in order to be comprehensive, inclusive and socially, environmentally and economically sustainable. In other words, evaluations of animal health policy and its impacts cannot be confined to the agricultural sector alone.

History has shown that other activities undertaken on the same land base, such as wildlife conservation, are perhaps just as likely to be impacted, positively or negatively, by changes in policies designed for the livestock sector. Whether it is because some fencing regimes may be able to be altered to allow for greater freedom of movement of wildlife (good for wildlife) or whether demand curves shift for beef or other animal products leading to more land under livestock in an export enabling environment (potentially bad for wildlife), no credible economic impact or risk assessment can be carried-out without a truly cross-sectoral analysis in those countries in southern and eastern Africa for which livestock and wildlife are both vital contributors to GDP.

To date, we are not aware of robust, holistic analyses examining multi-sectoral impacts of alternative animal disease management regimes, including those based on commodity-based trade. We urge policymakers to seek this type of critical information when faced with land-use decisions that must prove themselves to be ecologically and economically sustainable for generations to come.

#### What is AHEAD?

Animal & Human Health for the Environment And Development was launched by WCS and a consortium of organizations six years ago at the 2003 IUCN World Parks Congress in Durban, South Africa. <http://www.wcs-ahead.org/>

*AHEAD brings different and often competing sectors together .....*

*.....to collaborate on addressing the challenges at the interface of wildlife health, livestock health, and human health & livelihoods.*

*AHEAD recognizes the importance of animal and human health to both conservation and development interests.*

By assembling a ‘dream team’ of veterinarians, ecologists, biologists, social and economic scientists, agriculturists, wildlife managers, public health specialists, and others from across eastern and southern Africa, the Wildlife Conservation Society, IUCN, and a range of partners tapped into some of the most innovative conservation and development thinking on the African continent—and AHEAD was born. Since then, a range of programs addressing conservation, health, and concomitant development challenges have been launched with the support of a growing list of implementing partners and donors who see the intrinsic value of what WCS has called the One World, One Health™ approach.

**AHEAD is a convening, facilitative mechanism, working to create enabling environments that allow different and often competing sectors to literally come to the same table and find collaborative ways forward to address challenges at the interface of wildlife health, livestock health, and human health and livelihoods.** We convene stakeholders; help delineate conceptual frameworks to underpin planning, management, and research; and provide technical support and resources for projects stakeholders identify as priorities. AHEAD recognizes the need to look at health and disease not in isolation but within a given region's socioeconomic and environmental context.

In short, AHEAD recognizes the importance of animal and human health to both conservation and development interests. Around the world, domestic and wild animals are coming into increasingly more intimate contact, and without adequate scientific knowledge and planning, the consequences can be detrimental on one or both sides of the proverbial fence. But armed with the tools that the health sciences provide, conservation and development objectives have a much greater chance of being realized— particularly at the critical wildlife/livestock interface, where conservation and agricultural interests meet head-on.

AHEAD’s efforts focus on several themes of critical importance to the future of animal agriculture, human health, and wildlife health, including: zoonoses, competition over grazing and water resources, disease mitigation, local and global food security, and other potential sources of conflict related to land-use decision-making in the face of resource limitations.

Historically, neither governments, nongovernmental organizations, the aid community, nor academia have holistically addressed the landscape-level nexus represented by the triangle of wildlife health, domestic animal health, and human health and livelihoods as underpinned by environmental stewardship.

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## An Opinion

### “We are in it together”... physicians and veterinarians serving human and animal health worldwide

**Bruce Kaplan, DVM**

Known as the “Father of modern medicine,” Canadian physician Sir William Osler, a 19<sup>th</sup> and early 20<sup>th</sup> century practitioner of modern day “One Health,” organized a significant study of parasites in the pork supply of Montreal in collaboration with one of his most brilliant veterinary students (while teaching at the Montreal Veterinary College), Albert W. Clement. The two concluded, correctly, that thorough cooking of pork was the best protection against humans contracting parasitic illnesses when ingesting this meat. Dr. Clement later became the President of the United States Veterinary Medical Association, now called the American Veterinary Medical Association (AVMA). (1, 2)

Dr. Osler probably would have greatly appreciated today’s 21<sup>st</sup> century American Medical Association (AMA) President Cecil B. Wilson, MD and his visionary ‘Osler-like’ observations and conclusions. Dr. Wilson commented in his January 28, 2011 AMA One Health blog <http://alturl.com/j7svg> that “We are in it together.”

He went on to say “Physicians and veterinarians—as healers—have a lot in common, whether our patients walk on two legs or four. And our patients share a lot of diseases in common, whether they talk, bark, moo, oink, purr...or whinny. I was reminded of this when I participated on a panel last week in Orlando (January 17, 2011) with another physician and two veterinarians at the North American Veterinary Conference. We were talking about opportunities for interdisciplinary action in association with the “[One Health Initiative](#),” which the AMA supports. ...

Here’s why it is important for this interaction:

- ◆ Sixty percent of the nearly 1,500 infectious diseases now recognized in humans are caused by pathogens that have an animal vector [reservoir].
- ◆ Three of every four newly emerging human infectious diseases originate in animals (zoonotic).
- ◆ Many zoonotic diseases pose increasing threats to the human race (Ebola, Lassa fever and the Nipah, Hendra and Marburg viruses).
- ◆ Pollution and environmental contamination affect human and animal health.
- ◆ Many drugs and most medical devices are tested and refined in animals before use in humans.
- ◆ Humans, animals and the environment also intersect at farms, slaughterhouses and processors.
- ◆ Monitoring animal health has led to the discovery that environmental contaminants, such as lead or mercury, can be unhealthy for humans.

We are in it (this world) together, whether man or animal. And sharing information and science through collaboration between the veterinary and medical professions benefits us all.”

*Physicians and veterinarians—as healers—have a lot in common, whether our patients walk on two legs or four.*

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*“Sharing information and science through collaboration between the veterinary and medical professions benefits us all.”*



*The majority of practicing physicians, veterinarians and the general public are still unaware of the potential of the One Health concept to expedite health advances.*

*Some One Health examples include:*

- ◆ *Identification of the Ebola virus*
- ◆ *Invention of the coronary artery stent*
- ◆ *Laboratory grown cartilage to cover joint replacements*

*Implementation of One Health will help to curtail research duplications and expenditures while fast forwarding discoveries for all of us who are “in it together”.*

The movement to promote and eventually implement this One Health concept for expeditiously protecting and saving lives has expanded exponentially in the U.S. and internationally. While it is not a new idea—having been around and actively championed by visionary historic health leaders in the 19<sup>th</sup>, 20<sup>th</sup> and especially the first decade of this 21<sup>st</sup> century—the majority of practicing physicians, veterinarians and the general public are still unaware of this health care tool. This tool, when utilized in the past, expedited many documented health advances. Examples occurred and are happening in public health (infectious diseases) and high profile clinical human and animal conditions like cancer, heart disease, orthopedics and others:

- ◆ The Ebola virus, a horrible hemorrhagic fever disease transmitted to humans by an animal source and mentioned by Dr. Wilson, was discovered and named jointly by eminent virologists, a physician (Karl Johnson) and a veterinarian (Fred Murphy) at the U.S. Centers for Disease Control and Prevention (CDC) in 1976.
- ◆ The coronary artery stent commonly used in heart attack patients was invented in the 1990s by an Australian-trained veterinarian/physician Gary Roubin (now a prominent practicing physician interventional cardiologist in New York), a veterinarian pathologist Peter Anderson (who holds the patent on the device and is now at the University of Alabama Birmingham School of Medicine), and others.
- ◆ Orthopedic surgeons at the University of Missouri, veterinarian James Cook and physician Sonny Bal, have worked collaboratively for the past eight years on comparative medical research efforts to create hip and knee replacements without using commonplace biomechanical metal and plastic materials. The technique, which is being developed by Dr. Cook for dogs initially, involves the use of laboratory grown tissue (cartilage) that can be molded into replicas of joints that require replacement. Drs. Bal and Cook are concomitantly developing a process whereby a similar process can be adapted for humans. Dr. Cook is director of the [Comparative Orthopaedic Laboratory](#) at the MU School of Veterinary Medicine.

This is merely the tip of the potential One Health iceberg, past and present! People need only read the history of this concept to realize that implementation on a grand scale would likely help curtail research duplications and expenditures while fast forwarding discoveries in a sea of change for all of us who are “in it together”.

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2. Bliss, Michael. *William Osler, A Life in Medicine*. Oxford University Press, 1999.

One Health opinions and comments are welcomed by the One Health Initiative website. Please send to [kkm@onehealthinitiative.com](mailto:kkm@onehealthinitiative.com).

**Dr. Bruce Kaplan is a retired veterinarian who lives in Sarasota. He helps operate the One Health Initiative website [www.onehealthinitiative.com](http://www.onehealthinitiative.com) as contents manager in association with Laura H. Kahn, MD, MPH, MPP, Thomas P. Monath, MD, and Jack Woodall, PhD and is Contributing Editor for the Florida Department of Health, Division of Environmental Health’s quarterly online One Health Newsletter <http://www.onehealthinitiative.com/newsletter.php>.**

**Kaplan has held positions in public health with the Centers for Disease Control and Prevention as an epidemiologist, the USDA’s Office of Public Health and Science in Washington, DC and practiced small animal veterinary medicine for over 23 years.**



## One Health Commission, a global comprehensive health organization, locates to ISU

**Roger Mahr**

The One Health Commission, a globally focused organization dedicated to promoting improved health of people, animals, plants and the environment is locating at the Iowa State University Research Park. The commission was formed in 2009 to establish “closer professional interactions, collaborations, and educational opportunities” for physicians, veterinarians, and other health science-related professionals.

Iowa State University is enthusiastic about having the organization headquarters in Ames. “We are excited about the One Health Commission locating at ISU. This partnership will allow us to interact across disciplines to improve the health of people, animals and our environment,” said Sharron Quisenberry, vice president for research and economic development at ISU. Office operations for the One Health Commission will be established with the ISU Nutrition and Wellness Research Center.

The increasing convergence of humans, domestic animals, wildlife and the environment are factors that drove the formation of the commission. According to worldwide statistics, nearly 75 percent of all emerging human infectious diseases originate in animals. “We live in a changing environment populated by interconnected human and animal contact, creating integrated challenges,” said Dr. Roger Mahr, chief executive officer of the One Health Commission. “These challenges require integrated solutions and a call for collaborative leadership.”

While traditionally human and animal health have been studied separately, they are very intertwined, according to Dr. Al Osbahr, chair of the One Health Commission board of directors and the American Medical Association (AMA) representative to the One Health Commission. “The One Health Commission will be a vehicle for various medical professionals to sit down and work together, which really hasn’t happened to any great extent in the past,” said Osbahr. “When we ignore problems in animal health and think they are restricted to animal health, we find these lead to medical problems in humans.”

Mahr, a former president of the American Veterinary Medical Association (AVMA), said Iowa State University is the right fit to be a leading partner for One Health primarily due to the cooperative education, research and outreach tradition at ISU, and the university’s ongoing commitment to the One Health approach. “This significant commitment of interdisciplinary leadership put forth by Iowa State University and its One Health consortium provides the broad foundational support needed by the Commission to become fully operational, to establish a ‘go-to resource’ for all things One Health,” said Mahr.

The One Health Commission will address some of the rising threats to human and animal health:

- ◆ Of the 1,461 diseases now recognized in humans, 60 percent are due to multi-host pathogens that affect multiple species.
- ◆ With the rise of antibiotic resistance, there is a need for a holistic approach and a better understanding of resistance that is related to the use of antibiotic drugs.

*The One Health Commission has located its headquarters at the Iowa State University Research Park. Iowa State University is the right fit to be a leading partner for One Health due to ISU’s tradition of cooperative education, research and outreach.*

*This partnership with the One Health Commission will allow ISU to interact across disciplines to improve the health of people, animals and our environment.*

*“We live in a changing environment populated by inter-connected human and animal contact, creating integrated challenges.”*

*“These challenges require integrated solutions and a call for collaborative leadership.”*

*The One Health Commission will be a vehicle for various medical professionals to sit down and work together.....*

*.....A wide range of entities have already committed to Iowa State’s One Health consortium.*

- ◆ Environmental health may affect human and animal health through contamination, pollution and poor conditions that may lead to new infectious agents.
- ◆ Emerging animal diseases, and food and water borne diseases, threaten human and animal health around the world.

Current member organizations of the One Health Commission are the AMA, AVMA, American Public Health Association (APHA), Association of Academic Health Centers (AAHC), Association of American Medical Colleges (AAMC), Association of American Veterinary Medical Colleges (AAVMC) and the Association of Fish and Wildlife Agencies (AFWA).

Other entities committed to Iowa State’s One Health consortium include the ISU colleges of Veterinary Medicine, Agriculture and Life Sciences, Business, Design, Engineering, Human Sciences, and Liberal Arts and Sciences; the University of Iowa Carver College of Medicine and College of Public Health; the University of Nebraska-Omaha colleges of Medicine and Public Health; the USDA Agricultural Research Service National Animal Disease Center and USDA Animal and Plant Health Inspection Services National Veterinary Services Laboratories; the Center for Food Security and Public Health; the Institute for International Cooperation in Animal Biologics; the Partnerships in Prevention Science Institute; the Plant Sciences Institute; and the Center for Advanced Host Defense and Translational Medicine.

**For more information on the One Health Commission, visit**  
<http://www.onehealthcommission.org/>

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## **Physicians, veterinarians learn from each other at first-ever 'Zoobiquity' conference**

**UCLA, UC Davis, L.A. Zoo foster species-spanning approach to medicine**

**Rachel Champeau**



A second-grader and a Shih Tzu dog can both experience separation anxiety when their caregivers leave. A dangerous brain tumor mani-

*Behind the skin, fur and feathers, humans and animals are profoundly alike.*

*They carry vastly similar genetics and have tremendous overlap in their health and disease.*

*Zoobiquity, one of the first conferences of its kind, brought together 200 physicians and veterinarians to give each a better understanding of the global and species-spanning nature of illness.*

fects itself similarly in an alpaca and a school principal. West Nile virus attacks a flamingo in the same way it assails a nursing-home resident.

Behind the skin, fur and feathers, humans and animals are profoundly alike; they carry vastly similar genetics and have tremendous overlap in their health and disease. Yet, while veterinary and human medicine come together periodically to address topics such as food safety and emerging infections, the two fields mostly operate separately. But because they are often confronted with similar clinical challenges, experts say both fields will benefit from more cross-disciplinary interaction.

To that end, [Zoobiquity](#), one of the first conferences of its kind, brought together 200 physicians and veterinarians to give each a better understanding of the global and species-spanning nature of illness and to help forge ways that both fields can work together to further medicine, science and research.

The one-day synergistic effort, which took place on January 29, was organized by the [David Geffen School of Medicine at UCLA](#), the [UC Davis School of Veterinary Medicine](#), the [Los Angeles Zoo and Botanical Gardens](#), and the [One Health Center of the UC Global Health Institute](#).

"Whether examining shared molecular structures or identifying surprising common behaviors, the conference urged physicians and veterinarians to engage in conversations that could lead to new ways to diagnose, model and treat diseases of many kinds," said the conference's chair, Barbara Natterson Horowitz, M.D., director of imaging at the UCLA Cardiac Arrhythmia Center and associate clinical professor of medicine

**UCLA's Barbara Natterson Horowitz, M.D., and Dr. Curtis Eng, chief veterinarian at the Los Angeles Zoo and Botanical Gardens, on a tour of animal cases at the zoo as part of the Zoobiquity conference.**

in the division of

cardiology.

The morning portion of the program was held in the auditorium of the Ronald Reagan UCLA Medical Center, where veterinary and human specialists compared diagnostic and therapeutic approaches to their patients in the areas of cancer, heart disease, psychiatry, and infectious diseases.

*Veterinary and human specialists compared diagnostic and therapeutic approaches in the areas of cancer, heart disease, psychiatry, and infectious diseases.*

*The conference focused on bringing to patients' bedsides the vast knowledge gathered by veterinarians in the barnyard, biologists in the bush, and microbiologists at the lab bench.*

Case studies illustrating similarities between species included obsessive-compulsive disorder in a bull terrier and a video store employee; lead poisoning in a California condor and toddlers; a brain tumor in a Rhodesian Ridgeback dog and a retired school guidance counselor; Lyme disease in a thoroughbred horse and a mother of three; and salmonella in a farm dog and a reptile collector.

Instances like these, which bridge the species divide, abound in nature. More than 70 percent of infectious diseases, such as Ebola, West Nile virus and avian flu, come from the animal world and are transferred to humans, according to Natterson Horowitz.

"Solving these problems on an animal level may help prevent the spread of disease, as well as lead to treatments for humans," she said.

The conference focused on the translational aspects between species and on bringing to patients' bedsides the vast knowledge gathered by veterinarians in the barnyard, biologists in the bush, and microbiologists at the lab bench.

"Veterinary medicine has been at the forefront of comparative medicine, addressing diseases in all species, from aquatic animals to primates," said Bennie I. Osburn, D.V.M., Ph.D., dean of the UC Davis School of Veterinary Medicine. "Our approaches to disease and well-being are similar to those in human medicine. Animals are excellent models for many diseases. Our strategies for the prevention and control of health threats in animals also contribute to human health and food safety, and we also look at disease processes at the environmental-animal-human interfaces. The Zoobiquity conference was an important first for highlighting the teamwork of veterinary medicine and human medicine in the overall improvement of health care delivery and solutions to animal and human diseases."

The afternoon portion of the program was held at the Los Angeles Zoo, where conference participants took part in rounds of animal cases, led by the zoo's veterinary

**Images compare atrial fibrillation, the heart condition mitral regurgitation, lymphoma, and implanted pacemakers in humans and animals.**

Courtesy Mark D. Kittleson, D.V.M., UC Davis School of Veterinary Medicine and UCLA

staff. Experts in both animal and human medicine provided commentary on the important comparative elements in these cases, which included, among others, skin cancer in a rhinoceros horn, diabetes in New World and Old World monkeys, and a heart condition in a lioness.

"Such collaborations between veterinary and human medicine are helpful in developing new ways to diagnose and treat health conditions to provide the absolute best care possible," said Curtis Eng, D.V.M., chief veterinarian for the Los Angeles Zoo and Botanical Gardens. "We are delighted to have partnered with UC Davis and UCLA in presenting the Zoobiquity conference."

*The Los Angeles Zoo has a longstanding working relationship with specialists at both UC Davis and UCLA .*

*"Veterinary medicine has been at the forefront of comparative medicine, addressing diseases in all species, from aquatic animals to primates."*

The Los Angeles Zoo has a longstanding working relationship with specialists at both universities. Natterson Horowitz, in her role as director of imaging at the UCLA Cardiac Arrhythmia Center, assists in monitoring common heart issues that can also affect animals. Her work with the zoo helped spark her interest in the commonalities between species and led to her spearheading the Zoobiquity conference.

Zoobiquity is a term coined by Natterson Horowitz and medical author Kathryn Bowers to describe a species-spanning approach to health that draws expertise from veterinary and human medicine — to the advantage of both.

"The Zoobiquity conference crossed disciplines, species and campuses to help expand the scope and reach of medicine and science for mutual benefit," said A. Eugene Washington, M.D., UCLA vice chancellor for health sciences and dean of the Geffen School of Medicine. "It brought together not only established field leaders but also younger physicians and veterinarians-in-training who will develop the future of medicine with new hypotheses and approaches."

A special project called the Zoobiquity Research Initiative was also launched at the conference. As part of the project, interdisciplinary teams of veterinary students from UC Davis and medical students from UCLA will work together on timely projects of importance to both animal and human health, including the effects of obesity, geriatrics and environmental toxic exposure. Experts from both fields of medicine will mentor the teams.

"The Zoobiquity conference and the initiative focus on the many similarities, both genetic and physiological, between species which are vast and often underappreciated," said the conference's co-chair, Patricia A. Conrad, D.V.M., Ph.D., co-director of the UC Global Health Institute's One Health Center and a professor of parasitology at the UC Davis School of Veterinary Medicine.

The proceedings from the conference will be submitted for publication in both human and veterinary journals.

***Rachel Champeau is Assistant Director at UCLA Health Sciences Media Relations***



## The Harvard-Brazil Collaborative Course

The Harvard-Brazil Collaborative Course brings together 15 Harvard and 15 Brazilian students (from many parts of Brazil) for almost three weeks in Brazil for a learning experience that includes working together in teams. Students from multiple disciplines work together in teams of six (along with faculty support) to identify research questions that need to be answered to inform policy and public health interventions to reduce the burden from five infectious diseases. During the course students visit urban favelas, rural areas, laboratories, an infectious disease hospital, and spend an afternoon with the vector control teams in Salvador who work to control *Aedes aegypti*, the main vector for the dengue virus. Students learn to appreciate the environmental, socio-economic, and public policy factors associated with the geographic locations and populations affected by these infections, and the need to have a broad understanding of many disciplines to develop effective, sustainable interventions to improve health. We have now completed four years of the course. Detailed information about the course is available at the David Rockefeller Center for Latin American Studies (DRCLAS) at Harvard website: <http://www.drclas.harvard.edu/brazil/publichealth-salvador-2011>. Three students from three different countries who participated in the January 2011 course write about their experience and how this type of learning experience can support the One Health goals and initiatives below.

**Mary Elizabeth Wilson, MD, is Associate Professor of Global Health and Population at the Harvard School of Public Health.**

### Collaborative experience in Brazil: Interdisciplinary education and a diagonal approach

**Melina Érica Santos, Annie Li and Aastha Sharma**

*One of the major challenges of public health throughout the world is to prevent and control infectious diseases. In order to solve basic public health issues, it is essential that professionals from different backgrounds think about ways to improve public health and work together on projects that take into consideration the community, economy, and legislation. Working in teams across disciplines and across countries and cultures can help improve understanding in solving these practical problems. To achieve our public health goals, interdisciplinary work must begin early in educational programs that focus on preparing pre-professionals for work in multi-skilled teams.*

#### **Infectious diseases: Still a threat**

Approximately 5.5 billion people, comprising 82% of the world's population, live in developing countries (1) where one in every two deaths is due to infectious diseases (including zoonotic, parasitic, respiratory, and diarrheal diseases). Every year, 13.3 million people die from infectious diseases, and approximately 25% of all deaths globally are due to infectious diseases, many of which affect children (2).

#### **Bringing change through multiple disciplines**

The upside of this dismal situation is that most of these diseases are preventable if very basic services are put in place in developing countries. Ensuring access to

*The Harvard-Brazil Collaborative Course brings together Harvard and Brazilian students to identify research questions that need to be answered to inform policy and public health interventions*

*Interdisciplinary education is essential in training students to think outside the box, gain skills and knowledge in other areas, and work together with other disciplines to fulfill a common goal.*

*Schistosomiasis is not a health problem; it's essentially a sanitation problem.*

*It is important that various players, in addition to medical professionals, be involved in responding to public health challenges.*

clean drinking water, sanitation, basic hygiene, and vaccinations have the potential to solve many of these problems. However, while there is rapid development and use of advanced technologies in developed countries, 2.6 billion people (half of the developing world) still do not have access to improved sanitation (3). It is these basic linkages between human health and its underlying determinants that remind us about the need to work together to prevent infectious disease. To provide essential services, it is important that various players, in addition to medical professionals, be involved in responding to these public health challenges. As people become more specialized in their fields, there is a greater need for people with different expertise to work together and seek innovative solutions. To identify and implement effective interventions, there is an urgent need to include professionals from multiple disciplines—veterinarians, urban planners, geographers, demographers, engineers, statisticians, politicians, and social scientists, amongst others.

### **The diagonal approach**

In addition, our work to control infectious disease needs to go beyond the physician-based approach so that there is not only a collaboration amongst multiple disciplines, but also the adoption of what we call a diagonal approach. Infectious diseases have long been subject to vertical treatment in many countries, where diseases are narrowly and separately addressed without looking at the larger context that people live in or the groups of diseases that can all be controlled together. Critics of the vertical approach believe that this approach results in parallel and overlapping programs that are inefficient and ignore available resources that can be combined to solve similar problems. They instead believe that strengthening health systems as a whole would be of greater importance by automatically addressing many health concerns together in a horizontal fashion. Recently proposed is a novel approach that combines both the horizontal and vertical approaches into one that is diagonal. Jaime Sepulveda and colleagues explain, "...because both interventions need to coexist in what could be called a diagonal approach, that is, the proactive, supply-driven provision of a set of

**Participants of the Harvard-Brazil Collaborative Public Health Field Course at Salvador, Jiquirica, Brazil.**

*highly cost-effective interventions that bridge health clinics and homes" (4).* The diagonal approach opens perspectives to the big picture by simultaneously dealing with multiple factors: people, their problems, the environment, available resources, and those who can help solve them.

### **Early interdisciplinary education using the diagonal approach**

One of the ways in which this integration can be brought about is by revamping the medical and public health education system early on through changes in the course contents and curriculum, so that future professionals understand the significance of broad-based teamwork and learn to implement it as part of their training. Interdisciplinary education is essential in training students to think outside the box, gain skills and knowledge in other areas, and work together with other disciplines to fulfill a common goal. The interdisciplinary approach can be especially effective in improving public health and overcoming the challenges associated with controlling infectious diseases, such as dealing with social conditions and health problems linked to a lack of sanitation. Together, they can address issues that involve understanding different cultures, socio-economic factors, and health problems.

Effective interdisciplinary education and cross disciplinary collaborations must be introduced early on in the classroom and continued into the career field. Education that



*The diagonal approach opens perspectives to the big picture and dealing with multiple factors: people, their problems, the environment, available resources, and those who can help solve them.*

incorporates interdisciplinary work can help students identify their individual interests while teaching them how to work as a team. Understanding the roles of different professions and the essential components of interdisciplinary practice, such as communication, mutual respect, and dynamic interactions, are essential in preparing individuals on how to work together and overcome their different backgrounds. Collaborative coursework and fieldwork is one way we can teach students how to practice different skills and acquire complementary knowledge. Early education is fundamental in our current system as a way to prepare professionals for future interdisciplinary work, and to effectively tackle public health challenges.

With the increasingly complex environment we live in, cooperative field courses in global health have taken interdisciplinary approaches to overcome the challenges of solving infectious disease problems. The Harvard-Brazil Collaborative Public Health Field Course is an example of early educational collaboration that brings together students and professionals with different skills, backgrounds, and country origins to study selected infectious diseases in Brazil and think of innovative ways to control these problems. The students and professors are diverse with backgrounds in areas such as geography, demography, anthropology, biology, nutrition, environmental health, policy, biostatistics, medicine, nursing, veterinary medicine, and social work. The students and professionals from multiple disciplines interact and learn to apply their practical skills to solve problems. Furthermore, the course activities and objectives compel the group of students and the staff to use a diagonal approach to integrate health interventions. During the course, the focus was on five diseases: HIV/AIDS, dengue, leptospirosis, leishmaniasis, and schistosomiasis.

**Examples from the Harvard-Brazil Collaborative Field Course - Looking at the sources of infectious disease and finding solutions drawing from multiple perspectives:**

In parts of rural areas of Brazil, the parasitic infection schistosomiasis remains common in neighborhoods that lack sewage systems. Pipes with untreated waste run directly from homes into rivers, contaminating water with infected feces. This water is where children swim and adults complete their daily chores, all which present risks for infection through contact with their skin. Schistosomiasis can cause acute and chronic infection and infects more than 50% of residents in some villages causing disability and some deaths ( 5 ). Professor John David, team leader of the schistosomiasis group, states that “schistosomiasis is not a health problem; it’s essentially a sanitation problem.” If we can prevent untreated human feces from reaching the water that people use everyday, we can essentially break the cycle of transmission. But the complex nature of the disease requires experts from fields outside medical professions, such as experts in sanitation, engineering, and parasitology.

Another water-borne illness remains a problem in the urban favelas ( local slums ) of Brazil, where lack of sanitation makes it difficult to control the zoonosis leptospirosis. During heavy rains, people living in favelas must wade through unsanitary pools of water contaminated with animal urine to salvage their personal belongings and escape their ruined homes. Rodent populations are abundant, unvaccinated dogs become infected reservoirs, and the combination of the two results in people becoming exposed to animal urine and infected with leptospirosis.

When designing the layout of cities, it is especially important for urban planners

*When designing the layout of cities, it is especially important for urban planners to take public health into consideration.*

*Engineers are needed to build proper drainage systems and supply safe water.*

*These problems are multi-dimensional and must be viewed from many different perspectives.*

to take public health into consideration, but this is often not the case. By building homes in valleys (within the favelas), people place themselves at risk of exposure to contaminated water and of natural disasters, including mud slides. Engineers are needed to build proper drainage systems and supply safe water. Pest controllers are needed to control rodent populations, which multiply in trash and garbage that goes uncollected. Veterinarians become important in controlling pet populations. Finally, politicians are faced with problems on how to stop impoverished people from illegally building properties without paying taxes.

These problems are multi-dimensional and must be viewed from many different perspectives. Perhaps the disease that has caught the most intense public attention over the last few decades has been HIV/AIDS. This disease has spread globally, with 33.2 million persons currently estimated to be living with HIV/AIDS worldwide (6). Funds have poured in to form innovative interventions from health promotion, early diagnosis and treatment, to abstinence and condom usage. Currently an incurable though treatable infection, prevention in HIV may be the key intervention. However, this involves health promotion from multiple levels that stem from media, social workers, teachers, and health professionals.

Other diseases of focus at our Brazil-Harvard Field Course are described below:

All infectious diseases above should involve the work of physicians, pharmacists, researchers, public health workers, epidemiologists, geographers, educators, social workers, politicians, and other professionals. The list above is not meant to be inclusive of all disciplines needed and may change with time.

While infectious diseases remain a global threat, we need to think about new ways to prevent and control epidemics. Every individual has the right to a healthy life, including having access to some of the most basic determinants of health: clean water, adequate sanitation, and vaccinations. However, as populations grow and cities expand, the health of individuals also becomes threatened, especially in places like urban slums, where people live in inadequate housing and often have no access to clean water or sanitation. Today, we face many challenges in controlling infectious diseases that require multi-skilled public health teams. Although medical practitioners can treat diseases, prevention and control requires the combination of different skill-sets and knowledge-bases. We need to think critically about health systems, health economics, and health policies and work together towards a unified goal. By fostering early interdisciplinary education, forming groups of diverse experts, utilizing advanced technologies, and promoting public health, we believe that global health can be achieved and "one-health" made a reality.

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We need to think critically about health systems, health economics, and health policies and work together towards a unified goal.

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**This news article is an academic collaboration between three participants from the Harvard-Brazil Field Course – a Brazilian physician (Melina Érica Santos, Resident Student on Social and Preventive Medicine at the University of São Paulo Medical School), a Chinese American veterinarian (Annie Li, MPH Global Health Candidate '11 at Harvard University), and an Indian health researcher and activist (Aastha Sharma, MS Global Health and Population Candidate '12 at Harvard University) - who believe in the importance of strengthening global networks and thinking in novel ways about the fight against infectious diseases.**

Comments or questions can be addressed to [AnnieLi@hsph.harvard.edu](mailto:AnnieLi@hsph.harvard.edu).

## Non-Surgical Sterilization of Dogs: A Tool in the Fight to Eradicate Rabies

Infectious Disease (Brazil)	Source of transmission for humans	Interdisciplinary work for prevention and intervention
Dengue	Mosquitoes	Entomologists, water sanitation specialists, urban planners, architects
HIV/AIDS	Sex, bodily fluids	Demographers, nutritionists, media, teachers
Leishmaniasis ( <i>L. braziliensis</i> )	Sandflies infected from animals	Entomologists, veterinarians, community health workers, farmers
Leptospirosis	Animal urine	Urban planners, veterinarians, physicians, engineers, geographers, sanitation and waste disposal specialists
Schistosomiasis ( <i>S. mansoni</i> )	Fecal contamination in water infested with snails	Water sanitation specialists, engineers, entomologists, sanitation specialists

**Katy Palfrey, BA, and Shirley D. Johnston, DVM, PhD**

Each year, rabies kills more than 55,000 people worldwide. In 99% of fatal cases, humans contracted the disease through exposure to rabid dogs ( 1 ). While the disease has been successfully eradicated in many developed countries, rabies poses an ongoing challenge to public health and veterinary professionals in numerous developing countries where stray dog populations remain unchecked. Animal Birth Control- Anti Rabies (ABC-AR) programs that catch, surgically sterilize and vaccinate, and return stray dogs to their environment are currently employed in many countries to control dog population and incidence of rabies. Though rabies cases consistently decline where ABC-AR programs are implemented ( 2 ), barriers exist to more widespread implementation that would be overcome by the availability of a low cost, non-surgical sterilant that could be administered in a field setting.

In order to reduce the population of stray dogs and incidence of rabies in an area,

*By fostering early interdisciplinary education, forming groups of diverse experts, utilizing advanced technologies, and promoting public health, we believe that global health can be achieved and “one-health” made a reality.*

*Each year, rabies kills more than 55,000 people worldwide.*

it is reported that sterilization of at least 70% of dogs must be achieved (3).

Surgical sterilization on such a large scale is costly and poses logistical challenges, including the need for trained veterinarians. Animal welfare experts contend that a non-surgical sterilant would make all the difference in this fight.

According to Merritt Clifton of Animal People, “The biggest impediment to rapid sterilization progress in most of the world now, apart from the lack of access to injectible immune-contraceptives and chemosterilants which could eliminate the need for time-consuming surgery, is lack of sterilization skill among veterinarians who have rarely been formally trained to operate on small animals, and have not learned the high-speed techniques which now prevail in the U.S.” Though there has been ongoing research in the pursuit of a non-surgical method of cat and dog sterilization since the 1960s, such a product has yet to emerge. Research funding towards this goal was limited until 2008, when Found Animals Foundation announced the \$75 million available through the Michelson Prize & Grants in Reproductive Biology.

The \$25 million Michelson Prize will be awarded to the first entity to provide the foundation with a safe, effective, practical and permanent single dose non-surgical sterilant for dogs and cats. Scientists interested in applying for the Michelson Prize are urged to apply first for the companion Michelson Grants (\$50 million in funding available), in order to fund their research in pursuit of the sterilant. Found Animals plans to commercialize the successful product for provision, at low cost, to shelters and NGOs, and will award the monetary prize in exchange for commercialization rights. The Foundation is prepared to take the successful product through regulatory approval and manufacturing processes to ensure that a low cost product is brought to market as soon as possible.

By offering the Michelson Prize & Grants, Found Animals Foundation hopes to encourage researchers from a variety of scientific disciplines to take on the challenge of non-surgical sterilization for dogs and cats. Research studies in the areas of gene



silencing, immunization against gonadotropin-releasing hormone, and targeted delivery of cytotoxins to pituitary or gonadal cells have been funded by the Michelson Grants. Applications for funding in these and other areas, such as biotechnology, nanotechnology, and materials science engineering, are encouraged by the Foundation. Information on the application process is available at <http://michelson.foundanimals.org/>.

A non-surgical means of sterilizing dogs promises to be an invaluable tool for veterinarians and public health officials involved in efforts to reduce human rabies fatalities worldwide. With the Michelson Prize & Grants funding innovative research towards this goal, we are closer than ever before to the emergence of such a product.

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**Katy Palfrey ([kpalfrey@foundanimals.org](mailto:kpalfrey@foundanimals.org)) is Program Manager, and Dr. Shirley Johnston ([sjohnston@foundanimals.org](mailto:sjohnston@foundanimals.org)) is Director of Scientific Research of the Michelson Prize & Grants in Reproductive Biology, a program of the Found Animals Foundation, Los Angeles, CA.**

*Rabies remains an ongoing challenge to public health and veterinary professionals in numerous developing countries where stray dog populations remain unchecked.*

*By offering the Michelson Prize & Grants, Found Animals Foundation hopes to encourage researchers from a variety of scientific disciplines to take on the challenge of non-surgical sterilization for dogs and cats.*

*The \$25 million Michelson Prize will be awarded to the first entity to provide the foundation with a safe, effective, practical and permanent single dose non-surgical sterilant.*

## WHER: The Wildlife Health Event Reporter

**Megan Hines**

Two new tools that enable the public to report sick or dead wild animals could also lead to the detection and containment of wildlife disease outbreaks that may pose a health risk to people. The [Wildlife Health Event Reporter \(WHER\)](#) is a new website that enables anyone with an Internet connection to report sightings of sick or dead wildlife. The other tool is a mobile phone application, "[Outbreaks Near Me](#)," that was developed by [HealthMap.org](#) and has enhanced its functionality to accept and relay wildlife health reports to the [WHER](#) site. The application continues to accept reports of human illness.

Researchers at the [Nelson Institute for Environmental Studies](#) at the University of Wisconsin-Madison and the U.S. Geological Survey's [National Wildlife Health Center](#) in Madison, partnered together with the NBII Wildlife Disease Information Node to create [WHER](#), an experimental application, which allows users around the world the ability to easily share information about possible health threats to wildlife and humans.

Users of the WHER create accounts online to register sightings of sick or dead wildlife. Anyone can visit the site to see what others have reported and can subscribe to an RSS feed to receive new reports via e-mail. Reports can be limited to specific states, and data can be readily exported or sent through special feeds to other websites.

Both the [WHER](#) and "[Outbreaks Near Me](#)" applications are designed to advance [One Health](#), a worldwide initiative to expand interdisciplinary collaborations and communications in all aspects of health care for humans, animals, and the environment. The new tools also are examples of "citizen science," which capitalizes on the public's ability to help record and map natural phenomena, providing timely information to researchers. Additional background information, a short video overview, and printable materials for distribution are available at this link: <http://about.wher.org>.

***Megan Hines is Technical Manager for the NBII Wildlife Disease Information Node (WDIN).***



*Two new tools that enable the public to report sick or dead wild animals could also lead to the detection and containment of wildlife disease outbreaks that may pose a health risk to people.*

*The new tools also are examples of “citizen science,” which capitalizes on the public’s ability to help record and map natural phenomena, providing timely information to researchers.*

*Both applications are designed to advance One Health and expand interdisciplinary collaborations and communications among health professionals and scientists.*





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*Continued.....*



*The One Health Newsletter is interested in publishing articles from a variety of view points and perspectives, and thus any opinions or statements made in the Newsletter's articles belong solely to the respective author(s),*

### Coming Events:

#### ISID- NTD 2011

International Society for Infectious Diseases  
Neglected Tropical Diseases Meeting

**Boston, Massachusetts, USA**

**July 8-10, 2011**

<http://ntd.isid.org/>

#### American Veterinary Medical Assoc. Convention

**St. Louis, Missouri, USA**

**July 16-19, 2011**

[https://www.avmaconvention.org/avma11/public/MainHall.aspx?  
&ID=3275&sortMenu=101000](https://www.avmaconvention.org/avma11/public/MainHall.aspx?&ID=3275&sortMenu=101000)

**One World – One Health: The power of  
collaboration through Inter-professional Education  
(IPE)**

**Vienna, Austria**

**August 28, 2011**

This meeting will be held in association with  
the [AMEE 2011 conference](#)

<http://www.veteducation.org/view2011.html>



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## Coming Events:

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### Global Conference on Rabies Control: Towards Sustainable Prevention at the Source

Seoul, Republic of Korea

September 7- 9, 2011

[http://www.oie.int/eng/A\\_rabies/intro.htm](http://www.oie.int/eng/A_rabies/intro.htm)

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### WORLD VETERINARY CONGRESS 2011

*Caring for animals: healthy communities*

Cape Town, South Africa

October 10-14, 2011

<http://www.worldvetcongress2011.com/>

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### GRF One Health Summit 2012 (GLOBAL RISK FORUM)

*One Health - One Planet - One Future  
Risks and Opportunities*

Davos, Switzerland

February 19-23, 2012

[http://www.grforum.org/pages\\_new.php/one-health/938/1/](http://www.grforum.org/pages_new.php/one-health/938/1/)

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### International Conference on Emerging Infectious Diseases

#### ICEID 2012

Atlanta, Georgia, USA

March 12 -14, 2012

<http://www.iceid.org/index.php/registration>

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# One Health Newsletter

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## Coming Events:

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### 15th International Congress on Infectious Diseases (ICID)

Bangkok, Thailand

June 13-16, 2012

<http://www.isid.org/icid/index.shtml>

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### 13th ISVEE Conference, 2012 The International Society for Veterinary Epidemiology and Economics

*“Building Bridges - Crossing Borders”*

Maastricht, Netherlands

August 20-24, 2012

<http://isvee13.org/>

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## Recent One Health Publications:

- ◆ **One health: The importance of companion animal vector-borne disease**, Michael J. Day, BSc, BVMS (Hons), PhD, *Parasites & Vectors* April 13, 2011 4:49

<http://www.parasitesandvectors.com/content/4/1/49>

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- ◆ **1st International One Health Congress—Official Summary Report**, Martyn Jeggo, BVetMed, PhD, Released May 3, 2011.

<http://www.onehealthinitiative.com/publications/Report%20on%201st%20One%20Health%20Congress.pdf>

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## Recent One Health Publications:

- ◆ **Man's best friend: A joint tumor marker in man and dog**  
University of Veterinary Medicine Vienna (Vetmeduni Vienna),  
Veterinärplatz 1, A-1210 Vienna, Austria

<http://www.vetmeduni.ac.at/en/research/top-news/mans-best-friend-a-joint-tumour-marker-in-man-and-dog/>

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