ONE WORLD, ONE MEDICINE, ONE HEALTH

One Health Intellectual Exchange

Weekly Discussions / Course: Philosophy to Practical Integration of Human, Animal and Environmental Health

A weekly discussion series, sponsored by the **North Carolina One Health Collaborative** within the NCBC IEG Program to enhance collaborations between physicians, veterinarians, researchers and other local/global/environmental health professionals by increasing public awareness of the interconnectedness of people, animals and the environment.

(Available each spring for credit if desired)

16th 2013 Weekly Session - Tuesday, April 23

5:30 – 7:30 p.m.

"Weekly One Health Series Capnote Speaker"

Emerging Zoonotic Viruses:
What's Special about Bats?

Linfa Wang, PhD, Director - Emerging Infectious Diseases, Duke-NUS, Singapore & OCE Science Leader, CSIRO Australian Animal Health Laboratory

Meets Tuesdays, 5:30 – 7:30 p.m. at the North Carolina Biotechnology Center
15 T.W. Alexander Drive Research Triangle Park, NC 27709
Directions: www.ncbiotech.org/directions

Suggestions? Ideas? Contact Cheryl Stroud, Steering Comm. Chair cms7earth@gmail.com
Add yourself to the listserve with Listserv Manager Liz Selisker, liz_selisker@ncsu.edu
For Speaker Bio's, Suggested Readings, Cancellation notices and additional background
http://nconehealthcollaborative.weebly.com/index.htm http://onehealtheducation.blogspot.com/

For more information on the course option contact: Course TA Anne Stine anne.stine@duke.edu
Mamie Harris at UNC msharris@med.unc.edu
Chris Woods at Duke chris.woods@duke.edu
At NCSU Barrett Slenning barrett_slenning@ncsu.edu or Suzanne Kennedy-Stoskopf suzanne_stoskopf@ncsu.edu

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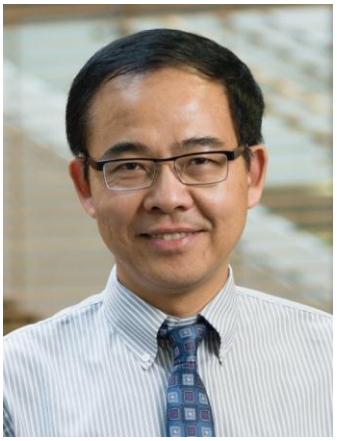

Dr Linfa Wang obtained his PhD at the University of California, Davis, USA and then moved to the Monash University Centre for Molecular Biology and Medicine, Australia. In 1990, he joined the Commonwealth Scientific and Industrial Research Organization (CSIRO), Australian Animal Health Laboratory (AAHL) and now holds dual positions at CSIRO and Duke-NUS, Singapore. Prof Wang is the director of the Program in Emerging Infectious Diseases at Duke-NUS, Singapore and an OCE Science Leader at the CSIRO Australian Animal Health Laboratory (AAHL). He is an international leader in the field of emerging zoonotic viruses and serves as a member of the WHO SARS Scientific Research Advisory Committee, playing a key role in identification of bats as the natural host of SARS-like viruses. His research group also played a major role in the discovery and molecular analysis of Hendra virus, Nipah virus, Melaka virus, and many other novel bat-borne viruses. Prof. Wang has more than 250 scientific publications, including papers in Science, Nature Review of Microbiology, PNAS, etc. He is currently serving on seven editorial boards for publications in the areas of virology and infectious diseases and is the Editor-in-Chief for *Virology Journal*. Prof. Wang is an elected fellow of the Australian Academy of Technological Sciences and Engineering.

Viruses and bats: What's Special?

Approximately 75% of emerging infectious diseases are zoonoses. The rate of emergence of zoonotic viruses appears to be increasing and/or our ability to detect new viruses is improving. Bats are increasingly being recognized as an important reservoir of zoonotic viruses of different families, including SARS coronavirus, Nipah virus, Hendra virus and Ebola virus. Several recent studies hypothesized that bats, an ancient group of flying mammals, are the major reservoir of several important RNA virus families from which most (if not all) other known mammalian viruses of livestock, animal,s and human were derived. Although this hypothesis needs further proof, the fact that bats carry a large number of viruses is commonly accepted. The question of whether bats have unique biological features making them ideal reservoir hosts is the focus of Dr. Wang's research group as well as other groups around the world. His recently published work on comparative analysis of two bat genomes has revealed positively selected genes shared by the DNA damage checkpoint pathway and innate immunity, raising the interesting possibility that flight-induced evolutionary selection may have had an inadvertent effect on bat immune function and possibly also on life expectancy.

Suggested Readings:

1. Jones KE, Patel NG, Levy MA, Storeygard A, Balk D, Gittleman JL, Daszak P: **Global trends in emerging infectious diseases.** *Nature* 2008, **451**:990–3. http://www.nature.com/nature/journal/v451/n7181/full/nature06536.html

2. Calisher CH, Childs JE, Field HE, Holmes KV, Schountz T: **Bats: important reservoir hosts of emerging viruses.** *Clinical microbiology reviews* 2006, **19**:531–45. http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1539106/

3. Wang LF, Walker PJ, Poon LL: **Mass extinctions, biodiversity and mitochondrial function: are bats "special" as reservoirs for emerging viruses?** *Curr Opin Virol* 2011, **1**:649–657. http://www.ncbi.nlm.nih.gov/pubmed/22440923

4. Wong S, Lau S, Woo P, Yuen KY: **Bats as a continuing source of emerging infections in humans.** *Rev Med Virol* 2007, **17**:67–91. http://www.ncbi.nlm.nih.gov/pubmed/17042030

5. Li W, Shi Z, Yu M, Ren W, Smith C, Epstein JH, Wang H, Crameri G, Hu Z, Zhang H, et al.: **Bats are natural reservoirs of SARS-like coronaviruses.** *Science* 2005, **310**:676–9. http://www.ncbi.nlm.nih.gov/pubmed/16195424

Watch For the Return of Monthly One Health Discussion Sessions on June 11

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