



*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)

**5th 2014 Weekly Session - Tuesday, February 11th**  
5:30 – 7:30 p.m.

## **Primates and their Parasites: Disease Ecology in a Changing World**

**Charles L. Nunn Ph.D**

**Professor, Department of Evolutionary Anthropology  
and the Global Health Institute, Duke University**

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](http://www.ncbiotech.org/directions)

Suggestions? Ideas? Contact NC OHC Co-Chairs: Bill Stokes [williamstokes.asg@gmail.com](mailto:williamstokes.asg@gmail.com) or  
Julie Casani [julie.casani@dhhs.nc.gov](mailto:julie.casani@dhhs.nc.gov)

Add yourself to the listserv with Listserv Manager Liz Selisker, [liz\\_selisker@ncsu.edu](mailto:liz_selisker@ncsu.edu)

For Speaker Cancellation notices and additional background on One Health and the NC OHC:

<http://nconehealthcollaborative.weebly.com/index.htm>

<http://onehealtheducation.blogspot.com/>

For more information on the course option contact: Mamie Harris at UNC [msharris@med.unc.edu](mailto:msharris@med.unc.edu)

Chris Woods at Duke [chris.woods@duke.edu](mailto:chris.woods@duke.edu)

At NCSU Barrett Slenning [barrett\\_slenning@ncsu.edu](mailto:barrett_slenning@ncsu.edu) or Suzanne Kennedy-Stoskopf  
[suzanne\\_stoskopf@ncsu.edu](mailto:suzanne_stoskopf@ncsu.edu)





### **Charles L. Nunn , Ph.D**

Charles Nunn is an evolutionary anthropologist with interests in disease ecology, behavior, and global health. Charlie received his Ph.D. from Duke University in 1999, and he has held positions at Harvard University, the University of California Berkeley and Davis, the Max Planck Institute for Evolutionary Anthropology, and the University of Virginia. Charlie joined Trinity College of Arts and Sciences at Duke University last fall as Professor of Evolutionary Anthropology and Global Health.

Charlie's research focuses on the ecology and evolution of infectious diseases in wildlife, particularly among primates and other mammals. His work addresses basic questions about wildlife diseases as well as zoonotic disease risks and the conservation of biodiversity. He conducts large-scale studies on parasites that infect mammals to understand patterns of disease risk in natural systems, especially at the ecological interface between humans and wildlife. He also models and studies the spread of infectious agents in wild populations, including through fieldwork that he is launching in Madagascar.

Charlie has published more than 100 journal articles and book chapters, one edited volume, and two books: *Infectious Diseases of Primates: Behavior, Ecology and Evolution* and *The Comparative Approach in Evolutionary Anthropology and Biology*.

#### **Abstract:**

An incredible diversity of parasites and pathogens infect primates, including sexually transmitted viruses and bacteria, mosquito-borne protozoa that cause malaria, and helminths that inhabit the primate gut. In this talk, I show how research that integrates theoretical modeling and broad evolutionary comparisons is providing new insights to infectious disease ecology, and also increases our understanding of disease risks to humans. I focus on three main issues, and relate each issue to understanding disease risks in human populations. First, I consider how understanding of parasite sharing in wild primates gives insights to the parasites that infect humans. Evolutionary and ecological methods are central to this effort. Second, I consider how group size influences parasitism in wild primates, and I introduce meta-analysis techniques for this purpose. I link the meta-analysis results to the extraordinarily diverse parasite community of humans, and to the wildlife sources of many emerging diseases in humans. Finally, I consider how human alterations of ecological communities may influence disease risk. To do so, I use meta-analysis techniques to investigate the links between habitat disturbance and parasitism in wild primates. The overall take-home message is that ecology and evolution are essential for making sense of infectious disease risks in humans.

#### **Recommended Readings:**

Keesing, Felicia, et al. "Impacts of biodiversity on the emergence and transmission of infectious diseases." *Nature* 468.7324 (2010): 647-652.

Wood, Chelsea L., and Kevin D. Lafferty. "Biodiversity and disease: a synthesis of ecological perspectives on Lyme disease transmission." *Trends in ecology & evolution* (2012).

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