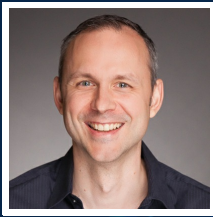


Predicting Emerging Human Viruses



Claus O. Wilke

Professor, Integrative Biology Chair of Undergraduate Education, Integrative Biology

CURRENT RESEARCH

Fundamental research investigates how viruses adapt to humans

Viruses are the primary cause of infectious disease worldwide. Because viruses evolve rapidly, we are exposed to a never-ending stream of new viral diseases or new variants of old viral diseases. It is unlikely that we will ever have a universal antiviral drug that prevents all viral infections. Dr. Claus O. Wilke, of The University of Texas at Austin, studies how viral outbreaks arise and develop, as viruses jump from animals to humans and subsequently adapt to the human population.

Dr. Wilke and his team of graduate students, postdocs, and collaborators work at the interface of evolutionary biology, bioinformatics, biochemistry, and biophysics. With their unique interdisciplinary expertise, members of the Wilke lab develop mechanistic insight into how viruses evolve and adapt to humans and animals. For example, Dr. Wilke and his team model the complex dynamics of human-virus coevolution to elucidate the circumstances under which viruses that infect other animals, such as mice or bats, might one day evolve to infect humans. Dr. Wilke and his team also develop novel modeling frameworks that describe how certain biophysical and biochemical properties of viral proteins constrain the evolution of viruses such as influenza, dengue, and West Nile virus. These models may be used to predict in which regions in viruses mutations are most likely to occur, thus facilitating the development of precisely-targeted vaccines.

In short, through applying a wide range of methods, ranging from statistics to protein biochemistry, Dr. Wilke and his team are generating novel and unique insights into how viruses evolve. These insights into viral evolution ultimately help with the prevention and control of viral infections...

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AFFILIATION



The University of Texas at Austin

EDUCATION

- Ph.D., in Physics, 1999 , Ruhr-University Bochum, Germany

AWARDS

- 2013 Kavli Frontiers of Science Fellow
- 2011 Recognized as a Leading Texas Innovator by The Academy of Medicine, Engineering, and Science of Texas
- 2010 College of Natural Sciences Teaching Excellence Award, The University of Texas at Austin
- 2003 Los Alamos National Laboratory Director's funded Postdoc (declined)
- 1996 Ruth and Gerd Massenberg award for excellence in physics, University of Bochum, Germany

RESEARCH AREAS

Life Science, Infectious, Pediatric

FUNDING REQUEST

Your contributions will support the continued research of Dr. Claus Wilke, of the University of Texas at Austin, as he develops a conceptual framework that allows his team to predict virus evolution, assess the threat from new viral outbreaks, and to develop novel approaches to vaccine design. Donations will fund the necessary personnel and computing equipment. A single graduate student costs approximately \$54K/year and a postdoc \$60K/year. Computing costs run at approximately \$50K every 3-5 years to keep equipment up to date. While donations of larger sums will help to propel Dr. Wilke's team into a future of new discoveries, donations as small as \$200 will help students to travel to scientific conferences or defray the costs of publication. Thus, donations of all sizes are of value to his team.