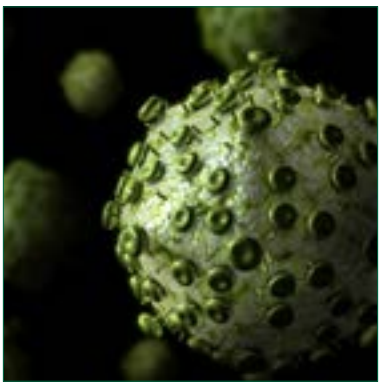
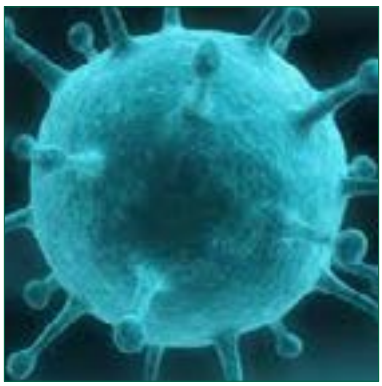
Keynote Forum
March 28, 2018

Emerging Diseases and Case Studies & Influenza 2018





International Conference on

Emerging Diseases, Outbreaks & Case Studies

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16th Annual Meeting on Influenza March 28-29, 2018 | Orlando, USA

Andrew Myers

University of South Florida, USA

Updates on Ebola viral disease breakthroughs since the 2014-2015 epidemic

Ebola hit the population epicenters of three West African countries from 2014 to 2015 and was responsible for over 11,000 deaths across Sierra Leone, Liberia, and Guinea. This Ebola outbreak was facilitated by severe insufficiences in the healthcare system of the affected countries and incredibly high population density with unsanitary living conditions brought on by absolute poverty. I had the honor to work in an Ebola Treatment Unit (ETU) in Port Loko, Sierra Leone during 2015. I stayed for another year after the epidemic to care for Ebola survivors once it was over. While caring for survivors, my clinic was one of the sites conducting semen testing for persistence of Ebola RNA in male survivors' semen. I will discuss several of the landmark studies on Ebola since the outbreak concluded including the persistence of Ebola RNA in human semen, the efficacy of an Ebola vaccine, and the seropositivity rate of asymptomatic contacts of Ebola patients.

Speaker Biography

Andrew Myers has completed his MD in 2011 from the University of South Florida (USF), Morsani College of Medicine and his Residency in Internal Medicine at the George Washington University in Washington, D.C. He is the Director of Quality for the Division of Hospital Medicine at USF and currently working on projects to improve sepsis outcomes and reduce hospital-acquired *C. difficile*. He has an interest in global health and has worked in Botswana, South Africa, Sierra Leone, Dominican Republic, and Thailand. He is a leading Medical student through research projects in up to 15 different countries annually.

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Qingzhong Kong

Case Western Reserve University School of Medicine, USA

Zoonotic potential of chronic wasting disease prions from cervids

Chronic wasting disease (CWD) is the prion disease in cervids (mule deer, white-tailed deer, American elk, moose, and reindeer). It has become an epidemic in North America, and it has been detected in the Europe (Norway) since 2016. The widespread CWD and popular hunting and consumption of cervid meat and other products raise serious public health concerns, but questions remain on human susceptibility to CWD prions, especially on the potential difference in zoonotic potential among the various CWD prion strains. We have been working to address this critical question for well over a decade. We used CWD samples from various cervid species to inoculate transgenic mice expressing human or elk prion protein (PrP). We found infectious prions in the spleen or brain in a small fraction of CWD-inoculated transgenic mice expressing human PrP, indicating that humans are not completely resistant to CWD prions; this finding has significant ramifications on the public health impact of CWD prions. The influence of cervid PrP polymorphisms, the prion strain dependence of CWD-to-human transmission barrier, and the characterization of experimental human CWD prions will be discussed.

Speaker Biography

Qingzhong Kong has completed his PhD from the University of Massachusetts at Amherst and Post-doctoral studies at Yale University. He is currently an Associate Professor of Pathology, Neurology and Regenerative Medicine. He has published over 50 original research papers in reputable journals (including *Science Translational Medicine, JCI, PNAS* and *Cell Reports*) and has been serving as an Editorial Board Member on seven scientific journals. He has multiple research interests, including public health risks of animal prions (CWD of cervids and atypical BSE of cattle), animal modeling of human prion diseases, mechanisms of prion replication and pathogenesis, etiology of sporadic Creutzfeldt-Jacob disease (CJD) in humans, normal cellular PrP in the biology and pathology of multiple brain and peripheral diseases, proteins responsible for the α-cleavage of cellular PrP, as well as gene therapy and DNA vaccination.

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Masafumi Seki

Tohoku Medical and Pharmaceutical University, Japan

Mechanisms and characteristic management of influenza and its related Pneumococcal pneumonia in Japan

Influenza-related pneumonia is an important complication of influenza, and it has been suggested that excessive inflammatory reactions, including "cytokine storm", may contribute to the mechanisms underlying severe pneumonia. Human data and mouse model which co-infected with influenza virus and *Streptococcus pneumoniae* show increased severity of illness caused by the elevation of cytokines/chemokines, and mice with genetic knock-out of immune molecules such as Toll-like receptor-related IRAK-M also show hyper-immune responses and reduced survival following influenza virus infection. Such findings suggest that innate immune responses and excessive neutrophil activation might be related to severe inflammatory changes in the lungs, and immune-modulatory therapy, including macrolides, may thus be effective against severe influenza-related pneumonia. In Japan, we have five anti-influenza agents and can choose each agent dependent on influenza and pneumonia severity. Among them, peramivir can be administered by drip infusion, and used not only for the most severe patients, but also for the ambulatory outpatients who have some medical issues. The insurance system supports early administration of them with antibiotics, and as a results, we might be able to have very low influenza-related mortality Today, our management style for influenza, including vaccination and infection control team activity, will be introduced.

Speaker Biography

Masafumi Seki has completed his graduation in Medicine from Nagasaki University, with the specialties including Internal Medicine, Infectious Diseases, and Infection Control. Later on, he has obtained his Post-graduation and started working at Osaka University. Presently, he is working at the Tohoku Medical and Pharmaceutical University, Sendai City, Japan.

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Rajatava Basu

University of Alabama at Birmingham, USA

All disease begins in the gut: A story of the warrior T helper cells and the invading microbes of the gut

A human body can harbour 5-10 times more microbes than the total number of cells and 90% of all these microbes enter our body through the intestine. Intestine contains the largest compartment of our entire immune system. CD4 T helper cells, arguably the most important cells in our immune system are required to protect the intestine against daily invasion of millions of microbes. Besides combating pathogens, CD4 T helper cells also play a critical role in various inflammation, autoimmune disorders and allergic diseases. While, a class of CD4 T helper cell, known as regulatory T cells (iTreg), encourages infection while suppressing autoimmune responses; another class of T helper cells, known as T helper 17 (Th17), fights infection while promoting autoimmune response. Interestingly, the intestinal immune system doesn't react to commensal microbes due to production of a Vitamin A metabolite- retinoic acid. This 'Vitamin A' metabolite helps to maintain homeostasis in gut as it promotes differentiation of iTreg cells, which in turn promote tolerance so that the intestinal immune cells don't react to commensal bacteria unnecessarily. During invasion of pathogenic microbes, the homeostasis is broken and other classes of CD4 T cells differentiate to take over the role of the warrior and thwart the pathogens from invading our body. One of the most important classes of effector cells that protect against bacterial invasion are the Th17 cells, whose differentiation is opposed by Vitamin A present abundantly in the gut. Interestingly both iTreg and Th17 cellular differentiations require a common signalling pathway that intrinsically links their developmental axis. The talk will briefly focus on the roles of differentiation of these 2 types of T helper subsets on protection against an enteropathogenic bacteria *Citrobacter rodentium*, a murine gut bacteria that closely mimics enterohemorrhagic *Escherichia coli* infection of humans and serves as a useful model for studying intestinal immune response; and briefly discuss the mechanism of their orchestration to confer protective immunity to the enteropathogenic bacteria. This talk will also highlight the emerging role of intestinal immune system in human health and focuses on dynamics of intestinal immune system capable of thwarting the microbial onslaught from trillions of microbes.

Speaker Biography

Rajatava Basu received his Doctoral training from India and Germany and is working at Indian Institute of Chemical Biology, India and Charité Medical School, Humboldt University, Germany where he characterized immuno-dominant epitopes by proteomic analysis to develop an effective DNA vaccination strategy against infectious diseases. After completing a stint at Charité – Universitätsmedizin in Berlin as a Visiting Scientist, he visited USA and joined the laboratory of Prof. Casey Weaver at UAB for pursuing his Post-doctoral training on the area of cellular and molecular mechanisms controlling T cell-mediated immune regulation during autoimmune inflammation. Currently, he is an Assistant Professor of Pathology at UAB School of Medicine and a Crohn's and Colitis Foundation (CCFA, USA) fellow. He has published in leading journals like *Nature Immunology, Immunity* and *Immunological* Reviews. He has received prestigious international scholarships and has been awarded Alexander von Humboldt fellowship and Volkswagen Stiftung fellowship.

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Keynote Forum
March 29, 2018

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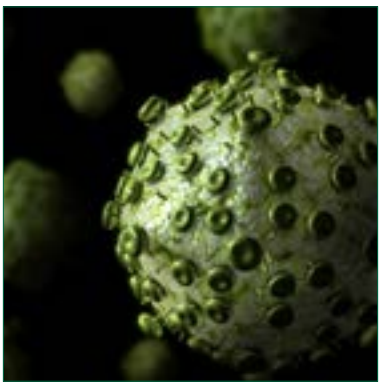

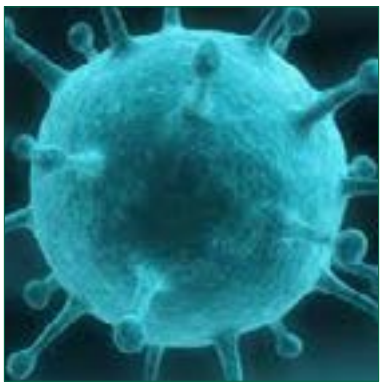

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Valeriy D Perminov

BioTeckFarm Ltd., Russia

Agent-based models for influenza epidemic dynamics and its decision-making capability

Agents-based models (ABMs) had become more and more popular in applied mathematics. During last 15 years large number of ABMs have been created and used in different scientific areas (ecology, economy, epidemiology, human behavior to name a few), but in this talk I am going to tell only about ABMs for influenza epidemic/pandemic dynamics in cities. Because of our only partial knowledge of agents' rules for interaction with each other and with environment, such models contain unknown parameters. For our special ABMs these parameters are probabilities of getting infected in different age groups of citizens. These parameters usually are evaluated with the help of several numbers extracted from available patterns and/or external considerations (for example, cumulated illness attack rates in age groups). Being integrals over lower level of agent population such numbers do not have unique and exact relationship with model's parameters. So, the evaluation based on such numbers is carried out by a no unique selection of model parameters' values that correspond to these numbers. I will tell about a new approach to creation of ABMs together with mathematical substantiation of a correct method for evaluation of model's parameters. Using this approach we get: a) a numerical assessment of the model's and patterns' proximity and b) capability (under some conditions) to estimate a level of coming pandemic in the city under consideration and choose administrative and interventional measures before and during future outbreak and evaluate their efficiency and cost.

Speaker Biography

Valeriy D Perminov worked as a Senior Researcher of Central Aerohydrodynamic Institute in Moscow for a long time. His research interests include rarefied gas dynamics, ill-posed problems, agent-based models and its application to infectious diseases spreading.

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