2nd Global Congress on

BACTERIOLOGY AND INFECTIOUS DISEASES

June 12-13, 2019 | Bangkok, Thailand

INFECTIOUS DISEASES CONGRESS 2019



KEYNOTE FORUM
DAY 1

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Sujit K Bhattacharya, J Bacteriol Infec Dis 2019, Volume 3

Sujit K Bhattacharya

Glocal Hospital, India

BIOGRAPHY

Sujit K Bhattacharya graduated from Calcutta University in 1959 and completed his internship and House-man ship from Nilratan Sircar Medical College Hospital, Kolkata, India. After graduation, he joined the National Institute of Cholera and Enteric Diseases, Kolkata of the Indian Council of Medical Research (ICMR) and became Director in 1994. He is a Fellow of the prestigious academies in India (FNA, FNASc, FAMS and FIPHA). He has worked at WHO, about a little less than three years and was looking after the elimination of Visceral Leishmaniasis in the Indian Subcontinent. His areas of interest are NTDs, particularly Kala-azar, HIV/AIDS and Diarrhoeal diseases. He has published more than 450 papers. Some of his publications appeared in *NEJM, The Lancet Infectious Diseases, Journal of Infectious Diseases, Journal of Antimicrobial Agents and Chemotherapy* and many other prestigious journals. He was temporary advisers in a number of WHO meetings. He attended a large number of international conferences. He was associated with development of anti-kala-azar drugs like miltefosine and paromomycin.

sujitkbhattacharya@yahoo.com

KALA-AZAR ELIMINATION PROGRAMME IN SOUTH-EAST ASIA REGION

Visceral Leishmaniasis or Kala-azar is characterized by fever (>14 days), anaemia, loss of body weight and most importantly splenomegaly. The disease is endemic in many parts of the world. In the South-East Asia region, the disease is prevalent in localized pockets of India, Bangladesh, Nepal and few indigenous cases in Bhutan. Kala-azar is a disease of poverty, causes stigmatization, retards economic growth and enhances malnutrition. The disease if not treated the patient dies in about two years due to undercurrent infection. Tuberculosis and worm infestations are common in kala-azar infection. At one time Sodium Stibogluconate was the sheet anchor of treatment of kala-azar (last 60-70 years). Over the years, the parasite called *Leishmania donovani* became resistant to the drug. Escalation of dosage was associated with cardiotoxicity and death. In the recent past, an international collaboration in India facilitated development of several safe and effective drugs. The most suitable drug was miltefosine, the first ever oral drug developed for kala-azar. This was followed by paromomycin, an injectable aminoglycoside. Amphotericin B and then lipid amphotericin were developed. Lipid amphotericin B is the safest and most effective drug for the treatment of kala-azar. A phase IV community trial showed that miltefosine may be used in the outpatient's treatment of kala-azar. rK39, a rapid diagnostic test, was developed and vector control methods were in place. As the disease is localized and *Phlebotomus argentepis* was the only vector and man is the only reservoir, it was considered possible to eliminate the disease from the region. Currently, the incidence of kala-azar in all the three countries have come down drastically and approaching elimination target (less than 1 case per 10000 populations in endemic areas). This programme is viewed as "Poverty alleviation programme".

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Desineni Subbaram Naidu, J Bacteriol Infec Dis 2019, Volume 3

Desineni Subbaram Naidu

University of Minnesota Duluth, USA

BIOGRAPHY

Desineni Subbaram Naidu received MTech and PhD Degrees in Electrical Engineering (with specialization in Control Systems Engineering), from Indian Institute of Technology (IIT), Kharagpur, INDIA in 1979. Since August 2014, he has been with University of Minnesota Duluth as Minnesota Power Jack Rowe Endowed Chair and Professor of Electrical Engineering. He received twice the Senior National Research Council (NRC) Associateship award from the US National Academy of Sciences (NAS) and is an elected Fellow of the Institute of Electrical and Electronic Engineers (IEEE) since 1995 (now Life) and an elected Fellow of the World Innovation Foundation, UK in 2003. His teaching and research interests are in Electrical Engineering (Power and Energy); Control systems; Optimal control: Theory and applications; biomedical sciences and engineering (Prosthetics and infectious diseases); Large scale systems and singular perturbations and time scales (SPaTS): Control theory and applications; guidance and control of aerospace systems: Aeroassisted orbital transfer for mars mission and Uninhabited aerial vehicles (UAVs); Advanced control strategies for heating, Ventilation, & air-conditioning (HVAC); Modeling, Sensing and control of gas metal arc welding (GMAW) and has over 200 journal and conference publications including nine books.

dsnaidu@d.umn.edu

CONVERGENCE AND INTEGRATION OF LIFE SCIENCES AND ENGINEERING- INFECTIOUS DISEASES

Based on recent research theme of the "convergence" of life sciences, physical sciences, engineering and the "integration" of Humanities and arts with sciences, engineering and medicine, designing and evaluating the treatment strategies for infectious diseases are addressed. The infectious diseases addressed are human immunodeficiency virus (HIV) and measles, whose behaviour is modeled and described by a set of dynamical differential equations amenable for "integrating" with engineering (i.e. optimal control theory and applications. However, when detailed models for infectious diseases are considered for devising treatments, the resulting optimal control laws result in treatment plans for infectious diseases complex and unfeasible for practical implementation. These recent research investigations present a feasible long term optimal control treatment through the application of singular perturbation and time scales (SPaTS) methods. A nonlinear HIV model is decoupled into lower order, slow and fast subsystems based on its inherent time scale behaviour. Distinct slow and fast linear quadratic regulator (LQR) based optimal control laws are designed and applied in a conventional long term optimal treatment plan. The extensive simulation results manifest the effectiveness of the proposed method.

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Durgesh Sinha, J Bacteriol Infec Dis 2019, Volume 3

Durgesh Sinha
Temple University, USA

BIOGRAPHY

Durgesh Sinha did her PhD in Applied Mathematics, MSc in Mathematics, and BSc in Mathematics honors in 2000, 1996 and 1994 respectively from Vinoba Bhave University, India. Apart from this she did MSc from Civil and Environmental Engineering Department, Temple University, Philadelphia, USA in 2008 to enhance skill on applied sciences. She started teaching at Temple University since 2008, Rowan College at Burlington County in 2009, Strayer University in 2010, Community College of Philadelphia in 2014 and Mercer County Community College in 2014 till now as an Adjunct Assistant professor. Meanwhile she involved in research of Computer virus and infectious diseases modeling and she published three papers in reputed Journals like *Nature, and Journal of Immunological Techniques & Infectious Diseases* in 2016 to 2018. Her current research goal is in Epidemics and cyber-crime.

durgeshsinha4@gmail.com

MATHEMATICAL MODELING OF ZIKA VIRUSES WITH VERTICAL TRANSMISSION

This research investigates an infectious disease caused by an RNA virus called Zika, both in mosquitoes and humans. The Zika arbovirus transmitted by the Aedes aegypti mosquitoes has been shown to be capable of infecting humans via two routes: the bites of infected vectors and through sexual contacts involving infected and non-infected persons. Zika virus can cause influenza in effected humans and several diseases in infants of infected pregnant women. Author has formulated a mathematical model SEIPRRbRib for human population and SEI for vector population to see effect of Zika virus on the human, pregnant women, zika infected newborn baby from infected pregnant women and mosquito population. They computed the basic reproduction number for both human and mosquito population. They have used data of real cases in the United States. Author's aim is to show the rate of transmission and consequences in new born infants with brain disorder and to help taking precautions against this disease.

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Istvan Toth, J Bacteriol Infec Dis 2019, Volume 3

Istvan Toth

The University of Queensland, Australia

BIOGRAPHY

Istvan Toth is a Chemical Engineer and an internationally recognized expert in drug delivery. His major research interests lies in immunoadjuvants, carbohydrates, lipids, peptides, nucleosides and nucleotides. He is a Fellow of the Royal Australian Chemical Institute, The Queensland Academy of Science and Art and The Hungarian Academy of Sciences.

i.toth@uq.edu.au

SELF-ADJUVANTING LIPOPEPTIDE NANOPARTICULATE VACCINE CANDIDATES FOR THE INDUCTION OF PROTECTIVE IMMUNE RESPONSES

Adjuvants are essential for enhancing and directing the adaptive immune response to vaccine antigens. The relationship between a vaccines physicochemical property and the type of immune response acquired is critical for the advancement of vaccine adjuvants. This underpins researcher's goal to study the structure-activity relationship between self-adjuvanting lipid-based vaccine candidates containing ovalbumin (OVA) CD4 and CD8 peptide epitopes to determine the optimal architecture for stimulation of potent cell-mediated immune responses. Constructs that formed small nanoparticles showed higher cytolytic activity and enhanced tumour growth inhibition. Overall the investigation of the relationship between physicochemical properties self-assembled nanoparticles and immune response for new vaccine candidates is very important.