

TNQ and the Howard Hughes Medical Institute (HHMI)'s Janelia Research Campus will jointly host the TNQ-Janelia India COVID-19 Seminars in October 2020.

At a time when the world and especially India are still grappling with the unparalleled negative effects of the COVID-19 pandemic, we believe that an understanding of the current state of the science behind the virus SARS-CoV-2, the disease COVID-19, and its epidemiology and amelioration are of vital importance and great public interest.

The TNQ-Janelia India COVID-19 Seminars aim at bringing to Indian clinicians, scientists, and students current research on SARS-CoV-2 and COVID-19. These seminars have been conceived as a live platform for presentation and discussion of the latest research surrounding the COVID-19 pandemic in areas related to the biology of the coronavirus, its variegated impact on the human population, and the state of development of diagnostics, therapeutics, and vaccines.

This set of seminars will be online, in keeping with the restrictions imposed on account of the COVID-19 pandemic. The online format allows these seminars to reach an interested audience across India and worldwide.



The graphic features a dark blue background with a world map pattern. At the top left is the TNQ logo, and at the top right are the hhmi and janelia Research Campus logos. The central title reads "TNQ-JANELIA INDIA COVID-19 SEMINARS". Below this, three seminar cards are displayed. Seminar 1 (October 9, 2020) features Susan Weiss. Seminar 2 (October 16, 2020) features Joseph DeRisi, Ullas Kolthur, and Sandeep Juneja. Seminar 3 (October 23, 2020) features Florian Kramer and Benjamin tenOver.

Seminar 1	Seminar 2	Seminar 3
October 9, 2020 6:30 pm IST	October 16, 2020 6:30 pm IST	October 23, 2020 6:30 pm IST
Coronavirus: Old and New	The CLIAHUB: Student Volunteer-Run COVID Testing Mumbai Serosurvey: Facts and Interpretations	Vaccine and the Therapeutic Landscape for COVID-19 Leveraging Innate Immunity as a First Line Defense against SARS-CoV-2
 Susan Weiss	 Joseph DeRisi  Ullas Kolthur  Sandeep Juneja	 Florian Kramer  Benjamin tenOver
Panelists Satyajit Mayor, Shahid Jameel	Panelists Jacob John, L. S. Shashidhara	Panelists Gagandeep Kang, C. S. Pramesh

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Seminar 1:

October 9, 2020, 6:30 pm IST (Indian Standard Time)

Topic: Coronavirus: Old and New

This talk will present a short history of coronaviruses and a summary of the coronavirus life cycle, followed by a description of virus-host interactions with data from Susan Weiss' lab.

Coronaviruses are highly effective in antagonising host innate immune responses, more specifically interferon (IFN) induction and signalling pathways. This is carried out through expression of multiple viral accessory proteins as well as replicase encoded proteins, sometimes with redundant activities.

Speaker:

Susan Weiss



Susan Weiss obtained her Ph.D. in microbiology from Harvard University working on paramyxoviruses and did postdoctoral training in retroviruses at the University of California, San Francisco (UCSF), USA. She is currently Professor and Vice Chair, Department of Microbiology and Co-Director of the Penn Center for Research on Coronaviruses and Other Emerging Pathogens at the Perelman School of Medicine at the University of Pennsylvania, USA.

Professor Weiss has worked on many aspects of coronavirus replication and pathogenesis over the last forty years, making contributions to understanding the basic biology as well as organ tropism and virulence. She has worked with murine coronavirus (MHV), MERS-CoV and most recently SARS-CoV-2. Her work for the last ten years has focused on coronavirus interaction with the host innate immune response and viral innate antagonists of double-stranded RNA induced antiviral pathways. Her other research interests include activation and antagonism of the antiviral oligoadenylate-ribonuclease L (OAS-RNase L) pathway, flavivirus- primarily Zika- virus-host interactions and pathogenic effects of host endogenous dsRNA.

Panelists:

Satyajit Mayor



Satyajit (Jitu) Mayor is a cell biologist and Director of the National Centre for Biological Sciences (NCBS), Bangalore, India. He is Chairperson of the Bangalore Life Science Cluster, a multi-institutional organisation that he has helped shape since 2015. Professor Mayor studied chemistry at the Indian Institute of Technology, Mumbai, India and was awarded his Ph.D. in life sciences from The Rockefeller University, New York, USA.

At NCBS, a centre of the Tata Institute of Fundamental Research (TIFR), Professor Mayor continues to study the fine structure and the function of the membrane of living cells using methods derived from biology, chemistry, engineering, and physics. This has led him to explore entry routes for the SARS-CoV-2 virus into cells.

He is a Margdarshi Fellow of the India Alliance of the DBT-Wellcome Trust, and a JC Bose National Fellow. Professor Mayor was elected a Fellow of TWAS, Trieste, Italy. He is a Foreign Member of the US National Academy of Science, a Foreign Fellow of EMBO, a Fellow of the Indian National Science Academy and the National Academy of Science, India. Professor Mayor was awarded the National Order of Merit, France, the TWAS Prize in Biology, the Infosys Prize in Life Sciences, and the Shanti Swarup Bhatnagar Award.

Shahid Jameel



Shahid Jameel is the Founding Director of the Trivedi School of Biosciences, Ashoka University, India. He studied chemistry at the Aligarh Muslim University and the Indian Institute of Technology, Kanpur, India. He was awarded his Ph.D. in biochemistry at Washington State University, USA. His postdoctoral work was in virology at the University of Colorado Health Sciences Center, Denver, USA.

Dr Jameel set up the Virology Group at the International Centre for Genetic Engineering and Biotechnology (ICGEB), New Delhi, India, where his research focused on human viruses. From 2013-2020 he served as the CEO of the DBT/Wellcome Trust India Alliance, a biomedical research charity based in India. Dr Jameel is a Fellow of all the science academies in India, and a recipient of the Shanti Swarup Bhatnagar Prize in Medical Sciences.

Seminar 2:

October 16, 2020, 6:30 pm IST (Indian Standard Time)

Topic 1: The CLIAHUB: Student Volunteer-Run COVID Testing

This talk will describe the efforts of the Chan Zuckerberg Biohub in bringing high throughput nucleic acid testing to the San Francisco Bay Area through the work of graduate student and postdoc volunteers.

Speaker:

Joseph DeRisi



Joseph DeRisi received a B.A. in biochemistry and molecular biology from the University of California, Santa Cruz, and a Ph.D. in biochemistry from Stanford University, USA. He is now Professor of Biochemistry and Biophysics at the University of California, San Francisco (UCSF), USA, and Co-President of the Chan Zuckerberg Biohub, a non-profit medical research organisation affiliated with the UCSF, UC Berkeley, and Stanford University.

Professor DeRisi employs an interdisciplinary approach combining genomics, bioinformatics, biochemistry, and bioengineering to study parasitic and viral infectious diseases in a wide range of organisms, for the purpose of discovering and studying novel or unrecognised biothreats. Early work in the DeRisi lab contributed to the identification of the SARS coronavirus in 2003. In a parallel effort, Professor DeRisi studies *P. falciparum*, the causative agent of the most deadly form of human malaria, in order to develop faster, better therapeutic options. He was one of the early pioneers of DNA microarray technology and whole genome expression profiling and is recognised for his efforts to make this technology accessible and freely available.

Professor DeRisi is continuing to pursue efforts toward data-driven diagnostics for infectious disease, as well as for autoimmune disorders. He led the development of a new diagnostic tool, the Virochip, a computer chip that contains DNA from every virus ever discovered. The Virochip can scan blood or spinal fluid for evidence of infection.

Topic 2: Mumbai Serosurvey: Facts and Interpretations

This talk will cover the methodology, implementation, results, and some interpretations of the findings of the Mumbai Serosurvey. It will help understand the spread of infection and the factors that contribute to it. Studies such as this provide information that is useful to clinicians, epidemiologists, and policy makers and will help design interventions to better fight this pandemic.

NITI-Aayog, the Brihanmumbai Municipal Corporation (BMC), the Tata Institute of Fundamental Research (TIFR) and partner organisations organised a serosurvey in Mumbai, India in early July 2020. This survey measured antibodies against SARS-CoV-2 in both the general population and amongst health care workers in specific wards of the Municipal Corporation of Greater Mumbai. A unique aspect of this study was the capturing of population density-driven prevalence and possible socio-economic factors that were correlated with infection in slums and non-slums.

The key highlight of the survey design was its large sample size and its random and unbiased selection of volunteers. It found that while prevalence in the slums was high, it was lower in the non-slums. Another key observation was the implied low infection fatality rate inferred from the prevalence estimates.

Speakers:

Ullas Kolthur



Ullas Kolthur-Seetharam is Professor in the Department of Biological Sciences at the Tata Institute of Fundamental Research (TIFR), Mumbai, India. He obtained his Ph.D. from the Indian Institute of Science (IISc), Bengaluru, India, and was initially trained as a biochemist and a molecular biologist. He then worked as a postdoctoral fellow at the Institut de Genetique et de Biologie Moleculaire et Cellulaire (IGBMC) in France before returning to India in 2008 to start his independent research group at TIFR.

Moving fields, at TIFR, Professor Kolthur initiated work on unravelling molecular mechanisms that link metabolic or dietary inputs to cellular and organismal physiology, with a specific emphasis on ageing, and age-associated and non-communicable diseases. Uniquely, his group studies both nuclear and mitochondrial mechanisms using evolutionarily diverse organisms or systems (flies, rodents and human derived cells). His work has provided a comprehensive systems level

understanding of the molecular components involved in metabolic-sensing and their role in metabolic/energy homeostasis at cellular and organismal levels with implications on ageing, diabetes, obesity, and neuro-degeneration.

Professor Kolthur is invested in revealing underlying mechanisms, associated with both under-nutrition and over-nutrition, that cause long term detrimental impact on health-span and life-span. He is also an Associate Faculty Member at TCIS-TIFRH, Hyderabad, India and an Adjunct Professor/Faculty at Translational Health Science and Technology Institute (THSTI), Faridabad, India.

Sandeep Juneja



Sandeep Juneja is Professor and Dean at the School of Technology and Computer Science in the Tata Institute of Fundamental Research (TIFR), Mumbai, India. He received his B.Tech. in mechanical engineering from IIT Delhi, India and his M.S. in statistics and his Ph.D. in operations research from Stanford University, USA. He has been with TIFR since 2003. He is currently on the editorial board of Stochastic Systems.

Professor Juneja's research interests lie in applied probability, including sequential learning, mathematical finance, Monte Carlo methods, and game theoretic analysis of queues. Lately, he has been exploring some aspects of modelling epidemic spread.

Panelists:

Jacob John



Jacob John is Professor of Community Medicine at the Christian Medical College (CMC), Vellore, India, where he teaches infectious disease epidemiology. He received his M.D. in Community Medicine from CMC Vellore and his Ph.D. in public health from Imperial College London, UK.

As part of the COVID-19 response in India, Professor Jacob supports research groups examining the epidemiology of the pandemic in multiple settings using a combination of mathematical modelling, clinical, and sero-epidemiological studies.

Professor John's research and public health focus are on the prevention and control of paediatric infectious diseases. Prior research includes work on the epidemiology and control of poliovirus, hemophilus influenza B, and rotavirus in India. Currently, he leads a research network that estimates the burden of enteric fever in India. His other interests include examining reasons for the poor performance of orally administered vaccines in developing countries, and developing information systems to support health policy.

L. S. Shashidhara



L. S. Shashidhara is an Indian geneticist and developmental biologist. Currently, he is Dean (Research) and Professor of Biology at Ashoka University. He is on lien from the Indian Institute of Science Education and Research (IISER), Pune. He did his undergraduate and post-graduate studies at the University of Agricultural Sciences (UAS), Dharwad, India and has a Ph.D. from the University of Cambridge, UK. Professor Shashidhara is a Foreign Member of EMBO since 2018 and member of Indian National Science Academy as well as the Indian Academy of Science. His main outreach interests include research-based pedagogical training of undergraduate teachers and climate change education. He is involved in many COVID-19 related projects in India.

Seminar 3:

October 23, 2020, 6:30 pm IST (Indian Standard Time)

Topic 1: Vaccine and the Therapeutic Landscape for COVID-19

This talk will provide an overview of the current COVID-19 vaccines and therapeutics.

Speaker:

Florian Krammer



Florian Krammer, Ph.D., graduated from the University of Natural Resources and Life Sciences, Vienna, Austria. He received his postdoctoral training in the laboratory of Dr Peter Palese at the Icahn School of Medicine at Mount Sinai, New York, USA, working on hemagglutinin stalk-based immunity and universal influenza virus vaccines. He is currently Professor of Vaccinology at the Icahn School of Medicine, Mount Sinai, USA.

Dr Krammer's work focuses on understanding the mechanisms of interactions between antibodies and viral surface glycoproteins and on translating this work into novel, broadly protective vaccines and therapeutics. The main target is the influenza virus but he is also working on coronaviruses, flaviviruses, hantaviruses, filoviruses, and arenaviruses.

Topic 2: Leveraging Innate Immunity as a First Line Defence against SARS-CoV-2

The emergence of SARS-CoV-2 and the pandemic of COVID-19 have resulted in significant global morbidity, mortality, and societal disruption. This talk covers the systemic response to SARS-CoV-2 infection as initiated by fomite transmission, contact transmission, or direct infection through the eye or respiratory tract. The data demonstrates a wave of inflammation that trails replication and spreads to distal uninfected tissues.

Immunohistochemistry of the respiratory tract reveals extensive viral staining and immune cell infiltration which failed to completely clear disease pathology despite a transcriptional footprint comprised of high chemokines and a muted type I interferon (IFN-I) signature. I show that

enhancing the antiviral response with the addition of recombinant IFN-I reduced viral disease and prevented inflammation in both a small animal model and in COVID-19 patients. This seminar should provide a molecular basis for the symptoms encompassing SARS-CoV-2 infection and support the use of intranasal IFN-I as an effective means of treatment.

Speaker:

Benjamin R. tenOever



Benjamin R. tenOever completed his postdoctoral training in biochemistry from Harvard University, USA, after receiving a Ph.D. in medicine from McGill University, Montreal, Canada. In 2007, he began his own independent research group at the Icahn School of Medicine, Mount Sinai, New York, USA, in the Department of Microbiology where he presently is an Arthur and Irene Fishberg Professor of Medicine and the Director of the Virus Engineering Center for Therapeutics and Research (VECToR).

Professor tenOever's research interests centre on the biology of virus infections. The tenOever lab is interested in the way cells defend themselves against viruses. More specifically, the lab focuses on what constitutes different cellular defence systems, how these systems evolve, and how viruses circumvent them and cause disease. Knowledge pertaining to these cellular defences are then used to develop new biological tools, technologies, and therapeutics.

Panelists:

Gagandeep Kang

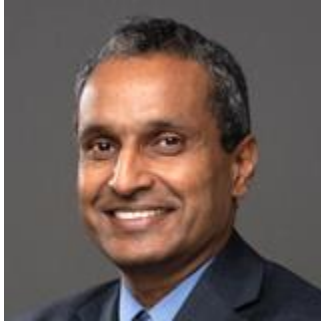


Gagandeep Kang is a clinician-scientist at the Christian Medical College (CMC), Vellore, India where she received her training in medicine and microbiology. She is Professor of Microbiology in the Department of Gastrointestinal Sciences at CMC. Dr Kang is the first woman from India to be elected a Fellow of the Royal Society. She is also the first Indian woman to be elected to a Fellowship of the American Academy of Microbiology and the only physician-scientist to receive the Infosys Award in Life Sciences.

Professor Kang works on enteric infections in children, particularly on transmission and immune responses, in order to design effective interventions. Current studies include active hospital and

community-based surveillance and clinical trials of new and existing vaccines, with use of molecular-based assays to study the diversity of pathogens and the immune response of children with viral and parasitic enteric infections.

C. S. Pramesh



C. S. Pramesh is the Director of the Tata Memorial Hospital and Professor and Head of Thoracic Surgery at the Tata Memorial Centre (TMC), Mumbai, India. He is a Visiting Professor at the Division of Cancer Studies, King's College, London, UK and the Institute of Cancer Policy, King's Health Partners, London, UK. Dr Pramesh is the convener for the National Cancer Grid, a large network of 217 cancer centres in India (<https://tmc.gov.in/ncg>).

Professor Pramesh has strong interests in clinical trial designs, surgical trials, comparative effectiveness research, promoting collaborative research, health technology assessment, and cancer policy. He is a Post Graduate Diplomate in Clinical Trials offered by the London School of Hygiene and Tropical Medicine, University of London, UK. He is keen on promoting training in clinical research methods and conducts several courses on clinical research methodology, biostatistics, and scientific writing. He serves on the advisory boards of several national and international research organizations and granting agencies.

The mandate of the National Cancer Grid is to provide uniform standards of cancer care across the country. Dr Pramesh is committed to efforts towards reducing inequities in cancer care and making cancer treatment accessible to all geographic regions and all strata of society.

His clinical interests include the management of esophageal and lung cancers and minimally invasive surgery. He is the Secretary of the Indian Society for Diseases of the Esophagus and Stomach. Professor Pramesh is Principal Investigator in several investigator-initiated research studies, including randomised trials on cancer screening, surgical techniques, neoadjuvant and adjuvant treatment of thoracic canolicy.

About HHMI and Janelia Research Campus

The [Janelia Research Campus](#) in Ashburn, Virginia, USA, headed by its Executive Director and HHMI Vice-President, Ronald Vale, is a pioneering scientific research centre set up by HHMI. It believes in cracking open scientific fields by breaking through technical and intellectual barriers. Its integrated teams of lab scientists and tool-builders pursue a small number of scientific questions with potential for transformative impact. To drive science forward, it shares its methods, results, and tools with the scientific community.

About TNQ

TNQ Technologies is a publishing technology and services company based in Chennai and Coimbatore. TNQ's technology products and services are widely used by leading publishers of scientific, technological, and medical (STM) books and journals worldwide and through them by several million researchers. They form a comprehensive suite covering authoring, manuscript submission, peer review, proofing, and paging. [Author Cafe \(www.authorcafe.com\)](http://www.authorcafe.com), a part of this suite, is a knowledge management system used by more than 10,000 students and faculty at Indian academic institutes to create, collaborate, and circulate reports, theses, and dissertations. TNQ has collaborated with Professor Ron Vale on the development of XBio, The Explorer's Guide to Biology.

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