



INTERNATIONAL SOCIETY FOR ANTIVIRAL RESEARCH

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ICAR2020
VIRTUAL
MEETING



33rd International Conference
on Antiviral Research (ICAR)
Hosted by the International Society for Antiviral Research (ISAR)

The Society's main annual event, the International Conference on Antiviral Research (ICAR), is a truly interdisciplinary meeting which attracts the interest of chemists, biologists, and clinicians.

At ICAR, scientists working throughout the world in the areas of basic, applied, and clinical research meet in a collaborative and collegial atmosphere to review recent developments in all areas of antiviral drug discovery and development. Most importantly, ICAR will provide a variety of networking opportunities to allow members to reconnect with old friends and colleagues and establish new scientific relationships with leaders in the antiviral field.

ICAR2020 has gone virtual and will be comprised of weekly webinars that feature invited speakers from the originally planned Seattle conference plus a few new speakers – internationally recognized experts who will address recent progress in antiviral drug development. **ICAR2020** will take place this fall from September-December 2020.

[Click here to view **ICAR2020** flyer](#)

Platinum Grant funding provided by:



GILEAD

Welcome to ICAR2020!



- Exceptional format in response to the COVID-19 pandemic
- Talks from invited speakers and some additions from the originally scheduled ICAR2020 in March
- Scheduled over the Fall as live webinars with access to most talks on-demand following the live event





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ICAR2020 Schedule

Exact dates and times for each **ICAR2020** webinar will be released as that information becomes available.

DATE	TIME	SPEAKER	PRESENTATION
September 10	11:00 am ET	Johan Neyts, PhD	Developing SARS-CoV2 infection models, antiviral strategies and a vaccine View abstract
September 17	10:00 am ET	Ann Kwong, PhD	Lessons learned from the discovery of an HCV protease inhibitor applied to the discovery of an influenza PB2 inhibitor View abstract
September 24	11:00 am ET	Jason McLellan, PhD	Development of vaccine antigens and antibodies for SARS-CoV-2 View abstract
September 29	10:00 am ET	Hugh Watson, PhD	Challenges in the clinical development of a monoclonal antibody against Chikungunya Virus View abstract
October 6	10:00 am ET	Mark Denison, MD	The coronavirus replicase and targets for antivirals
October 7	10:00 am ET	Alina Baum, PhD	Development of REGN-COV2, an anti-spike antibody cocktail for treatment and prevention of COVID-19 View abstract
October 13	11:00am ET	Michael Jacobs, PhD	Evolving treatments for COVID-19
October 15	11:00 am ET	Fabien Zoulim, MD, PhD	The path towards a cure for chronic hepatitis B
October 20	8:00 am ET	Florian Klein, MD	Broadly neutralizing antibodies targeting

			HIV-1 View abstract
October 22	11:00 am ET	Tomas Cihlar, PhD	Update on remdesivir and COVID-19
October 27	10:00 am ET	Davide Corti, PhD	Using human monoclonal antibodies to prevent and treat viral diseases View abstract
October 28	12:00 pm ET	John DeVincenzo, MD	Developing treatment and prevention strategies for RSV infection View abstract
November 3	4:00 pm ET	Keith Jerome, MD, PhD	Gene editing for cure of persistent viral infections View abstract
November 5	11:00 am ET	María-Jesús Pérez-Pérez, PhD	Antiviral drug discovery: a multifactorial challenging endeavor View abstract
November 11	11:00 am ET	Christina Spiropoulou, PhD	Testing drugs and vaccines against viral hemorrhagic fever viruses View abstract
November 16	7:00 pm ET	Mark von Itzstein, PhD	Targeting the multi-functional parainfluenza virus HA-NA for drug discovery View abstract
November 19	10:00 am ET	Daniel Ruzek, PhD	Antiviral therapy of tick-borne encephalitis View abstract
December 3	2:00 pm ET	Zhengqiang Wang, PhD	Toward HIV-1 CA-targeting antivirals: an emerging paradigm View abstract
December 9	12:00 pm ET	Priscilla Yang, PhD	Small-molecule induced protein degradation of antiviral targets View abstract

About ISAR

The International Society for Antiviral Research (ISAR) is an internationally recognized organization for scientists involved in basic, applied, and clinical aspects of antiviral research. The Society main event is the annual International Conference on Antiviral Research (ICAR), a truly interdisciplinary meeting which attracts the interest of chemists, biologists, and clinicians.

ISAR

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ICAR2020 Speakers



Development of REGN-COV2, an anti-spike antibody cocktail for treatment and prevention of COVID-19

Alina Baum is a **staff scientist at Regeneron Pharmaceuticals**. She is the lead scientist on the clinical Ebola program that led to production of the triple monoclonal antibody REGN-EB3, which is now being administered as one of two therapies in a clinical trial in the Democratic Republic of the Congo. She received her PhD from the lab of Adolfo Garcia-Sastre at Mount Sinai School of Medicine and performed postdoctoral studies with Charlie Rice at Rockefeller University. Her academic career focused on studying interactions between RNA viruses and the innate immune system. In her current position at Regeneron, she is concentrating on novel therapies for viral diseases including emerging pathogens, influenza and hepatitis B, as well as the development of oncolytic viruses

for cancer immunotherapy.



Update on remdesivir and COVID-19

Tomas Cihlar is **vice president for virology at Gilead Sciences**. After earning his PhD in biochemistry at the Institute of Organic Chemistry and Biochemistry in Prague in 1994, he joined Gilead as a postdoctoral fellow, and has now been with the company for 25 years. During that time, he has played a pivotal role in multiple antiviral programs focusing on HIV, respiratory viruses, viral hepatitis, and more recently emerging viruses, including Ebola. He now oversees Gilead's antiviral research portfolio. In 2006, he received the ISAR Prusoff award.



Using human monoclonal antibodies to prevent and treat viral diseases

Davide Corti is **senior vice president for antibody research at Vir Biotechnology**. He obtained his bachelor's degree in pharmaceutical biotechnology at the University of Milan and his PhD in immunology at the University of Bern, followed by postdoctoral training in Antonio Lanzavecchia's laboratory, where he further developed and optimized two methods for the isolation of human mabs out of memory B cells and plasma cells (Cellclone technologies). In 2009 he became the chief scientific officer at Humabs, leading a research group to isolate mabs against multiple viral and bacterial agents. Starting in 2012, he collaborated with MedImmune to isolate human antibodies against multiple pathogens, which to date has generated three clinical-stage candidates,

MEDI8852 targeting influenza A, mAb114 targeting Ebola virus and anti-CMV antibodies. Humabs was acquired by Vir in 2017 to become its subsidiary in Bellinzona, Switzerland.



The Coronavirus Replicase and Targets for Antivirals

Mark R. Denison, MD is the **Edward Claiborne Stahlman Professor of Pediatrics, Professor of Pathology, Microbiology & Immunology, and Director of the Division of Pediatric Infectious Diseases at Vanderbilt University Medical Center**.

The Denison Lab has been funded by NIH for investigation of coronavirus replication, pathogenesis, evolution, and countermeasures for over 30 years. Mark's group has focused on antiviral development since 2013, initiating and leading preclinical testing of remdesivir and EIDD-2801, and has identified multiple novel targets for antivirals and virus attenuation, including the polymerase and novel proofreading exonuclease. Mark is a fellow of AAAS, the American Academy of Microbiology, and the Association

of American Physicians. He has served on national and international forums and panels regarding development of policies for biosecurity and biosafety, including current membership on the National Science Advisory Board for Biosecurity.



Developing treatment and prevention strategies for respiratory syncytial virus: Protecting the most vulnerable

John DeVincenzo is developing vaccines and antivirals for respiratory syncytial virus infection, from initial conception through proof-of-concept clinical trials, carried out through several academic, foundation, and industry pathways. In 2014 he published the first evidence that treating an established RSV infection in humans can lower the viral load and result in reduced disease. He has since demonstrated proof of therapeutic efficacy for five different antivirals with different modes of delivery and mechanisms of action. He has conducted numerous clinical trials defining the role of prevention and therapeutic applications of monoclonal antibodies targeting RSV in infants and the immune-suppressed. He received his MD from Vanderbilt Medical School. He is a **professor of pediatrics and of molecular sciences at the University of Tennessee School of Medicine and is**

the medical director of the Le Bonheur Children's Hospital virology laboratory and the molecular diagnostics laboratory.



Evolving treatments for COVID 19

Michael Jacobs is **Clinical Director of Infection at the Royal Free Hospital in London**. He trained at Oxford and London universities before completing a PhD in virology. He is interested in all aspects of clinical infectious diseases, with a special interest in serious viral infections and medical countermeasures. He is director of the UK High Level Isolation Unit and is a member of the UK Advisory Committee on Dangerous Pathogens. He worked at the centre of the UK response to the West Africa Ebola epidemic, and serves on several national and international Ebola advisory committees. He was NHS England Programme Director for High Consequence Infectious Diseases. He was knighted in 2016 for services to the prevention and treatment of infectious diseases.



Gene editing for cure of persistent viral infections

Keith Jerome's clinical focus is on the diagnosis of viral infections and the role of the laboratory in improved patient care. He has published extensively on pathogen-host interactions and immune evasion by herpesviruses. He is now pioneering the use of DNA-editing endonucleases as a potentially curative therapy for previously incurable viral infections including HIV, hepatitis B, human papillomavirus, and herpesvirus infections. He is **head of the Virology Division in the University of Washington Department of Laboratory Medicine and a member of the combined program in Infectious Disease Sciences/Virology at the Fred Hutchinson Cancer Research Center.**

In addition to his basic research efforts, he leads the diagnostic virology program at UW, which has designed and implemented molecular testing for a wide variety of viruses, including HIV, hepatitis B and C, enterovirus, BK and cytomegalovirus. He received his MD and PhD degrees from Duke University and completed postgraduate training in laboratory medicine and virology at UW.



Broadly neutralizing antibodies targeting HIV-1

Florian Klein is **director of the Institute of Virology and full professor at the University of Cologne**. His research focuses on the development of human B lymphocytes and antibodies, with a particular interest in the humoral response to HIV-1 and other viral pathogens. Together with his team, he employs new approaches for single B cell analyses and humanized mouse models. In addition, his team conducts early-phase clinical trials to translate basic laboratory findings into clinical applications. Florian received his MD degree from Cologne University in 2005 following clinical training in internal medicine. In 2009, he joined Michel Nussenzweig's laboratory at the Rockefeller University, where he became Instructor in Clinical Investigation in

2011 and Assistant Professor in 2013. He returned to Cologne University in 2015.



2020 Gertrude Elion Memorial Award Recipient

Lessons learned from discovery of an HCV protease inhibitor applied to discovery of an influenza PB2 inhibitor

Ann Kwong is a recognized pharma industry leader, with over 25 years of experience in drug discovery, development and commercialization at start-ups and established companies, focusing primarily on antivirals. After receiving a PhD in virology from the University of Chicago, she began her industry career at the Schering-Plough Research Institute, where she worked on HIV, HSV and HCV and helped solve the crystal structure of HCV helicase. She subsequently founded the ID group at Vertex Pharmaceuticals and played a leading role in the development of telaprevir (INCIVEK™), a HCV protease inhibitor which received the Prix Galien for Best Pharmaceutical Agent in 2012, and generated the best drug launch in history, until Sovaldi four years later. She was a founding member of the HCV Drug Development Advisory Group, a consortium of industry and clinical trial leaders, community representatives and FDA and EMA regulators, who worked together to optimize HCV drug development. She also designed Vertex's influenza program, which led to the development of pimodivir, which received FDA Fast Track designation and is in Phase 3 development with Johnson & Johnson. She is the **Executive Vice President for Research and Development at Dewpoint Therapeutics**, which was founded to apply the emerging discipline of biomolecular condensates to drug discovery.



2020 William Prusoff Memorial Award Recipient

Development of vaccine antigens and antibodies for SARS-CoV-2

Jason McLellan seeks to translate structural information on host-pathogen interactions into therapeutic interventions for infectious diseases. This highly collaborative work has led to substantial advances in our understanding of the structure, function, and antigenicity of viral proteins from important human pathogens, as well as to the development of novel vaccine antigens and therapeutic antibodies. He received a BS in chemistry from Wayne State University and his PhD from the Johns Hopkins University School of Medicine in the laboratory of Dr. Daniel Leahy, then carried out postdoctoral research at the NIH Vaccine Research Center in the laboratory of Dr. Peter Kwong and in collaboration with Dr. Barney Graham. In 2013, he joined the department of biochemistry at Dartmouth Medical School, and in January 2018 he moved his laboratory to the **Department of Molecular Biosciences at the University of Texas at Austin**.



Developing SARS-CoV2 infection models, antiviral strategies and a vaccine

Johan Neyts is a **full professor of virology at the University of Leuven, Belgium**, teaching in the medical school and at the school of dentistry. His lab has long-standing expertise in the development of antiviral strategies and drugs against emerging and neglected viral infections, such as dengue and other flaviviruses, chikungunya and other alphaviruses, enteroviruses, noroviruses, coronaviruses, hepatitis E and rabies virus. A number of classes of antivirals discovered in his laboratory have been licensed to major pharmaceutical companies. A second focus of Johan's lab is the development of novel vaccines based on the 17D yellow fever vaccine virus as a vector, which his team has used to develop a potent SARS-CoV-2 vaccine candidate that requires only a single dose to protect hamsters against an aggressive SARS-CoV-2 challenge. His laboratory also developed the PLLAV (plasmid-launched live attenuated virus) vaccine technology platform, which enables rapid engineering of highly thermostable vaccines against multiple viral pathogens. He has published ~500 papers in peer-reviewed journals, has given >200 invited lectures and >200 interviews to national and international news agencies. He is past-president of the International Society for Antiviral Research.

Antiviral drug discovery: a multifactorial and challenging endeavour

María-Jesús Pérez-Pérez is **Research Professor at the Medicinal Chemistry Institute of the Spanish National Research Council in Madrid**. Her research is principally devoted to antiviral and antitumor chemotherapy, from a medicinal chemistry perspective. She has also worked to develop selective inhibitors against therapeutically relevant nucleoside processing enzymes, such as thymidine phosphorylase and nucleoside kinases, as well as the identification and optimization of antivirals against HIV, enteroviruses and alphaviruses. One of her current projects involves the study of heterocyclic compounds that interfere with the capping process of alpha and flaviviruses. She has been Head of Department and Director of the Medicinal Chemistry Institute, and is also the coordinator of the Spanish network for antivirals against arboviral diseases (Rearbovir).



Antiviral therapy of tick-borne encephalitis: current options and challenges



Daniel Ruzek is **head of the Department of Virology in the Veterinary Research Institute, Brno, Czech Republic**, and also **directs the Laboratory of Arbovirology in the Institute of Parasitology of the Czech Academy of Sciences in Ceske Budejovice**. His research is mainly devoted to understanding pathogenesis and developing antiviral strategies against tick-borne encephalitis virus and other neurotropic flaviviruses. He received his PhD degree in molecular and cellular biology and genetics from the University of South Bohemia and the Czech Academy of Sciences in 2008. In 2008-2009, he was a postdoctoral scientist at the Texas Biomedical Research Institute in San Antonio, Texas. In 2009, he received the Sinnecker-Kunz Award for young scientists in the field of ticks and tick-borne pathogens.



Testing drugs and vaccines against viral hemorrhagic fever viruses

Christina Spiropoulou is **deputy chief of the Viral Special Pathogens Branch at the US Centers for Disease Control and Prevention** in Atlanta and lead scientist for the Molecular Pathogenesis and Therapeutics Team. For the past 25 years, her research interests have focused on hemorrhagic fever viruses, a diverse group of zoonotic RNA viruses that includes Ebola, Lassa, Nipah, Crimean-Congo hemorrhagic fever, Rift Valley fever, and tick-borne encephalitis viruses. During her tenure at CDC, she participated in the discovery of the pathogenic New World hantaviruses and has deployed to numerous VHF outbreaks. Her team's current projects focus on scientific questions with the potential to lead to development of prototype vaccines and identification of targets for antivirals or immunotherapeutics.



Targeting the multi-functional parainfluenza virus HA-NA for drug discovery

Mark von Itzstein is the **director of Griffith University's Institute for Glycomics**, one of the few translational centers for glycomics research in the world. The institute's researchers collaborate with leading scientists around the globe to build a critical mass around carbohydrate-based research in areas of clinically significant diseases. Mark has major research efforts in the areas of drug discovery for influenza and other viruses, drug-resistant bacteria and cancer. In the early 1990s he led the chemical biology research program that discovered the anti-influenza drug zanamivir (®Relenza). More recently he has published a number of studies on the development of sialic acid-based inhibitors of human parainfluenza virus. He obtained his undergraduate and graduate degrees in chemistry and biochemistry from Griffith University and was awarded a von Humboldt fellowship to undertake

research at the University of Marburg, Germany. He is an elected Fellow of the Australian Academy of Science, the Australian Academy of Health and Medical Sciences and the Royal Australian Chemical Institute. In 2019, Mark was awarded the prestigious appointment as an Officer (AO) of the Order of Australia, for his distinguished service to medical research and education in the field of structural biology and glycochemistry.



Toward HIV-1 CA-targeting antivirals: an emerging paradigm

Zhengqiang Wang is **professor and program director of chemistry at the Center for Drug Design, University of Minnesota**. He received his PhD in organic chemistry and learned medicinal chemistry via a postdoctoral appointment with Robert Vince on the design of antivirals against HIV-1. Since starting his independent career in 2008, he has researched and published extensively on medicinal chemistry targeting some of the most important human viral pathogens, including HIV-1, hepatitis B and human cytomegalovirus. His lab also leads medicinal chemistry efforts targeting the 5' tyrosyl DNA phosphodiesterase (TDP2), a host cellular DNA repair enzyme likely implicated in the genome repair of some viruses.



Challenges in the Clinical Development of a Monoclonal Antibody against Chikungunya Virus

Hugh Watson currently addresses translational medicine issues in viral diseases at **Evotec ID in Lyon, France**. Since obtaining a BSc in Pharmacology and PhD in Medical Science from the University of Bath in the UK, he has been involved in clinical trial design and endpoint definition in several therapeutic areas ranging from rheumatology to hepatology. Current projects encompass chikungunya infection and viral hepatitis B. He sits on the scientific advisory boards of major clinical studies in arbovirus research and chronic liver disease, and holds an honorary position as Associate Professor in Clinical Pharmacology, Hepatology and Gastroenterology at the University of Aarhus in Denmark.



Small-molecule induced protein degradation of antiviral targets

Priscilla L. Yang is a chemical biologist whose science is driven towards understanding mechanisms of viral replication and development of new strategies to combat viral pathogens. A unifying theme has been the development of new tools to explore questions that have been inaccessible using conventional methods. She earned BS and MS degrees in molecular biophysics and biochemistry from Yale University and a PhD from the University of California at Berkeley. Her work began during her postdoctoral training at the Scripps Research Institute, where she developed the hydrodynamic injection model of HBV replication, which subsequently became a leading model for the evaluation of HBV antiviral agents. As a **faculty member in the Department of Microbiology at Harvard Medical School**, her work has focused on pharmacological validation of new antiviral targets and strategies and the development of chemical tools to interrogate the role of lipid membranes in RNA virus replication.



The path towards a cure for chronic hepatitis B

Fabien Zoulim is **medical director of the hepatology department at the Hospices Civils de Lyon and scientific director of the department of immunology and virology of INSERM Unit 1052**, where he leads the team on "Hepatitis viruses and pathobiology of chronic liver diseases". He obtained his MD degree in gastroenterology and hepatology from Lyon Medical School and a PhD in molecular and cellular biology, and trained as a post-doctoral researcher at Fox Chase Cancer Center in Philadelphia. He has been a professor of medicine at Lyon I University since 1997. He is currently coordinating the ANRS "HBV cure" program in France and the IP-cure-B project within the EU H2020 work program. He received the William Prusoff award from ISAR in 2004.



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