

## **APS WK9: Advances in COVID-19 Prevention and Treatment Enabled by Structural Biology Research**

### **Tuesday, May 11, Morning**

- 10:00 – 10:05 Kay Perry (NE-CAT, Argonne National Laboratory)  
*Opening Remarks*
- 10:05 – 10:25 Jason McLellan (University of Texas-Austin)  
*Structural-based Design of Coronavirus Vaccine Antigens*
- 10:25 – 10:45 Fang Li (University of Minnesota)  
*Cell Entry Mechanisms of SARS-CoV-2*
- 10:45 – 11:05 Nicholas Hurlburt (Fred Hutchinson Cancer Research Center)  
*Structural Basis for Potent Neutralization of SARS-CoV-2 and the Role of Antibody Affinity Maturation*
- 11:05 – 11:25 Ian Wilson (The Scripps Research Institute)  
*Structural Insights into Antibody Responses to SARS-CoV-2 RBD and Escape Mutants*
- 11:25 – 11:45 Q/A, Break
- 11:45 – 12:05 Pamela Bjorkman (California Institute of Technology)  
*Neutralizing Antibodies against Coronaviruses*
- 12:05 – 12:25 Cheng Zhang (University of Pittsburgh)  
*Structural Basis for SARS-CoV-2 Neutralization by Potent and Diverse Nanobodies*
- 12:25 – 12:45 James Davis (Advanced Leadership Computing Facility, Argonne National Laboratory)  
*SARS-Cov-2 in the City of Houston: Insights from the Largest Sequencing Effort in the United States in 2020*
- 12:45 – 1:05 Q/A, Break
- 1:05 – 1:25 Drew Weissman (University of Pennsylvania)  
*Nucleoside-modified mRNA-LNP Vaccine for SARS-CoV-2*
- 1:25 – 1:45 Andrea Carfi (Moderna)  
*Development of Moderna COVID-19 Vaccine (mRNA-1273) and Emerging Variants*
- 1:45 – 2:05 Erica Saphire (La Jolla Institute for Immunology)  
*Antibodies Against SARS-CoV-2: A Global Collaboration*
- 2:05 – 2:25 Q/A, Roundtable

## Wednesday May 12, Morning

- 10:00 – 10:05 Karolina Michalska (SBC-CAT, Argonne National Laboratory)  
*Opening Remarks*
- 10:05 – 10:25 Youngchang Kim (SBC-CAT, Argonne National Laboratory)  
*Overview of SARS-CoV-2 Proteome Structural Study*
- 10:25 – 10:45 Alice Douangamath (Diamond Light Source, UK)  
*The XChem Platform at Diamond Light Source: Addressing Covid-19 with Fragment-based Drug Discovery*
- 10:45 – 11:05 Arvind Ramanathan (Advanced Leadership Computing Facility, Argonne National Laboratory)  
*Accelerating the Discovery of Therapeutics Using Artificial Intelligence (AI) against COVID-19*
- 11:05 – 11:25 Natalie Strynadka (University of British Columbia)  
*Crystallographic Structure of Wild-type SARS-CoV-2 Main Protease Acyl-enzyme Intermediate with Physiological C-terminal Autoprocessing Site*
- 11:25 – 11:45 Q/A, Break
- 11:45 – 12:05 Andrew Mesecar (Purdue University)  
*Structure-based Design of Broad-spectrum Coronavirus Protease Inhibitors*
- 12:05 – 12:25 Robert Hoffman (Pfizer)  
*The Discovery of Ketone-based Covalent Inhibitors of Coronavirus 3CL Proteases for the Potential Treatment of COVID-19*
- 12:25 – 12:45 Yogesh Gupta (University of Texas-San Antonio)  
*Structural Basis of RNA Cap Modification by SARS-CoV-2: An Inside View*
- 12:45 – 1:05 Karla Satchell (Northwestern University)  
*Structural Insights into SARS-CoV-2 mRNA Capping*
- 1:05 – 1:25 Q/A, Break
- 1:25 – 1:45 Haley Dugan (The University of Chicago)  
*Memory B Cells Targeting the SARS-CoV-2 Nucleoprotein Display Endemic Strain Cross-reactivity and Adapt over Time*
- 1:45 – 2:05 Andrzej Joachimiak (SBC-CAT, Argonne National Laboratory)  
*Structures of Human Fabs in Complex with N-protein Nucleocapsid RNA Binding Domain*
- 2:05 – 2:25 Christine Kreuder Johnson (University of California-Davis)

*Catalyzing Innovation for Surveillance of Emerging Pandemic Threats*

- 2:25 – 2:45 Jonna Mazet (University of California-Davis)  
*Transcending Disciplinary Boundaries to Identify and Characterize Risk from Emerging Viruses before They Become Disease X*
- 2:45 – 3:05 Q/A, Roundtable
- 3:05 – 3:10 Michael Becker (GM/CA@APS, Argonne National Laboratory)  
*Closing Remarks*