

# KEYSTONE SYMPOSIA

on Molecular and Cellular Biology

## Proteomics in Cell Biology and Disease (EK2)

September 21-23, 2020 • Virtual at your computer

Scientific Organizers: Jennie R. Lill, Forest M. White and Kathryn S. Lilley

Part of the Keystone Symposia Global Health Series, supported by the Bill & Melinda Gates Foundation

### MONDAY, SEPTEMBER 21

**Welcoming Remarks (8am Denver/Mountain Time Start)**

**Keynote Address (8:10am Denver/Mountain Time Start)**

\***Jennie R. Lill**, Genentech, Inc., USA

**Alice Y. Ting**, Stanford University, USA  
*Proximity Labeling for Mapping Spatial Proteomes and Transcriptomes in Living Cells*

**Studying the Cell Surfaceome (8:40am Denver/Mountain Time Start)**

\***Nadia Martinez-Martin**, Regeneron, USA  
*Mapping the Human Immunoglobulin Superfamily Receptome to Identify Novel Cancer-Relevant Pathways*

**Bernd Wollscheid**, ETH Zürich, Switzerland  
*Light-Mediated Discovery of Surfaceome Nanoscale Organization and Inter-Cellular Receptor Interaction Networks*

\***Gavin J. Wright**, Wellcome Sanger Institute/University of York, UK  
*Large-Scale Systematic Approaches to Identify Novel Receptor-Ligand Pairs that Initiate Intercellular Signaling*

**Sofia Massaro Tiede**, Yale University, USA  
*Short Talk: Identification of Palmitoyl Protein Thioesterase Substrates Defines Roles for Synaptic Depalmitoylation*

**Monika Vishnoi**, Houston Methodist Research Institute, USA  
*Short Talk: Matrisome Signatures in GBM Heterogeneity*

**Lightning Talks (10:35am Denver/Mountain Time Start)**

\***Kathryn S. Lilley**, University of Cambridge, UK

**Emma Borgeson**, University of Gothenburg, Sweden  
*Advanced Multiplex Protein Analysis of Obesity-Related Cardiometabolic Biomarkers in Human Plasma and Serum*

**Dustin T. King**, Simon Fraser University, Canada  
*Ultraviolet Photodissociation Mass Spectrometry Enables Precise Mapping of O-GlcNAc Sites in Proteins*

**Josie Amber Christopher**, University of Cambridge, UK  
*Spatial Dynamics of the DNA Damage Proteome*

**Daniel Hornburg**, Seer, USA  
*Proteograph™, a Multi-Nanoparticle Platform, Enables Plasma Proteomics Profiling at Scale and Speed, Significantly Improving Coverage and Scalability versus Traditional Deep fractionation methods*

**Justin McKetney**, University of Wisconsin-Madison, USA  
*Proteomic Analysis of Cerebrospinal Fluid in Alzheimer's Disease*

**Nicolas Hartel**, University of Southern California, USA  
*Deep Protein Arginine Methylation Profiling by LC-MS Proteomics*

**Samuel B. Pollock**, Genentech, Inc., USA  
*Semi-Automated MHC-I Enrichment and TOMAHAQ Mass Spectrometry for the Sensitive and Quantitative Detection of Neoepitopes*

**Poster Session (12pm Denver/Mountain Time Start)**

**Dissection of Complex Data Sets: Informatic and Statistical Tools of the Trade (2pm Denver/Mountain Time Start)**

**Jyoti Choudhary**, Institute of Cancer Research, UK  
*Integrative Proteogenomics Deconvoluting the Landscape of Lung Adenocarcinoma in Never-Smokers*

\***Lennart Martens**, Ghent University, Belgium  
*Machine Learning Powered Next-Generation Proteomics*

\***Olga Vitek**, Northeastern University, USA  
*Challenges in Large-Scale Computational Mass Spectrometry and Multiomics*

**Mikhail Savitski**, European Molecular Biology Laboratory, Germany  
*Phenotyping Cellular States with Functional Proteomics*

**Kevin Drew**, University of Illinois at Chicago, USA  
*Short Talk: Hu.MAP2.0: Integration of over 15,000 Proteomic Experiments Builds a Global Compendium of Human Multiprotein Assemblies*

**Nader Morshed**, Massachusetts Institute of Technology, USA  
*Short Talk: Quantitative Phosphoproteomics Uncovers Dysregulated Kinase Networks in Alzheimer's Disease*

**Devin K. Schweppe**, University of Washington, USA  
*Short Talk: Millisecond Informatics: Real-Time Analytics for Quantitative Proteomics*

**Nicholas M. Riley**, Stanford University, USA  
*Short Talk: Designing Methods and Software to Suit the needs of O-glycopeptide Characterization*

### TUESDAY, SEPTEMBER 22

**Working Towards Single Cell Proteomics (8am Denver/Mountain Time Start)**

\***Jennie R. Lill**, Genentech, Inc., USA

\***Matthew S. Bogyo**, Stanford University School of Medicine, USA  
*Chemical Proteomic Tools for Identification and Imaging of Enzymes Involved in Cancer and Infectious Disease*

**Edward M. Marcotte**, University of Texas at Austin, USA  
*Single Molecule Protein Sequencing*

**Ryan Kelly**, Brigham Young University, USA  
*One Cell at a Time: Nanodroplet Sample Preparation Enables In-Depth Single Cell Proteomics*

**Joseph Gogain**, SomaLogic, Inc, USA  
*Discovery and Validation of a Blood-Based Protein Signatures for Assessing Human Health*

**Laura Muehlbauer**, University of Wisconsin-Madison, USA  
*Short Talk: Global Phosphoproteome Analysis using FAIMS on a Hybrid Orbitrap Mass Spectrometer*

**Mahmoud-reza Rafiee**, Francis Crick Institute, UK  
*Short Talk: SPACE Exploration of RNA-Binding Proteins Reveals Diminished Chromatin-Binding of Mutant VCP in a Human Stem Cell Model of Neurodegeneration*

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### Poster Session (12pm Denver/Mountain Time Start)

#### Integrative Multidimensional Omics (2pm Denver/Mountain Time Start)

\***Nathalie Agar**, Brigham and Womens Hospital, USA  
*Mass Spectrometry Imaging Methodologies, to Study Neuro-Oncology in Brain Cancer*

**Jonathan S. Weissman**, Whitehead Institute, HHMI, and MIT, USA  
*Multidimensional Omics - Harnessing Ribosomal Profiling and Proteomics to Investigate Non Canonical Translation Events in Disease*

**Claudia Andrea Escher**, Biognosys AG, Switzerland  
*Proteomics for Precision Medicine: A High-Throughput Platform for Proteome and Phospho-Proteome*

**Aditya Murthy**, Genentech, Inc., USA  
*Short Talk: Multiplexed Proteomics in Macrophages Uncovers Novel Roles of Autophagy in Anti-Microbial Immunity*

**Roberta Migale**, Francis Crick Institute, UK  
*Short Talk: Dynamics of FOXL2 Gene Regulation in the Mouse Ovary*

**Liang Zhang**, City University of Hong Kong, Hong Kong  
*Short Talk: Dissect RNA-Protein Interactome in Living Cells Using CRISPR-Assisted Proximity Labeling*

**Carlos Cruchaga**, Washington University School of Medicine, USA  
*Short Talk: Genomic and Multi-Tissue Proteomic Integration for Understanding the Biology of Disease and other Complex Traits*

\***Christine Vogel**, New York University, USA  
*Short Talk: Integrative Systems Profiling Identifies New Signatures of Neurodegeneration – and Novel Roles of the Core Proteasome*

**Anne-Claude Gingras**, Lunenfeld-Tanenbaum Research Institute, Canada

**Marcus Bantscheff**, GlaxoSmithKline, Germany

**Nathalie Agar**, Brigham and Womens Hospital, USA

#### Elucidation of in vivo Signaling Networks (2pm Denver/Mountain Time Start)

\***Forest M. White**, Massachusetts Institute of Technology, USA  
*Phosphoproteomics for Characterization of Therapeutic Resistance Pathways*

**Jennie R. Lill**, Genentech, Inc., USA  
*Hippo Pathway Deregulation in Cancer*

**David E. James**, University of Sydney, Australia  
*Personalised Phosphoproteomics – Studying the Exercise Response in Individuals*

\***Marcus Bantscheff**, GlaxoSmithKline, Germany  
*Chemoproteomics for the Elucidation of Signaling Networks*

**Xiaoyu Zhang**, The Scripps Research Institute, USA  
*Short Talk: Electrophilic PROTACs that Degrade Nuclear Proteins by Engaging DCAF16*

**Nida Haider**, Joslin Diabetes Center/ Harvard Medical School, USA  
*Short Talk: Distinct Male and Female Phosphoproteomic Signatures Underlie Human Insulin Resistance*

**Brendan Floyd**, University of Texas at Austin, USA  
*Short Talk: Systematic Identification of Protein Phosphorylation-Mediated Interactions*

#### Closing Remarks (4:45pm Denver/Mountain Time Start)

### WEDNESDAY, SEPTEMBER 23

#### Spatial Proteomics (8am Denver/Mountain Time Start)

\***Kathryn S. Lilley**, University of Cambridge, UK  
*Spatial Organization of the Transcriptome and Proteome*

**Anne-Claude Gingras**, Lunenfeld-Tanenbaum Research Institute, Canada  
*Tracking Spatiotemporal Proteomics in Complex Systems using Proximity Tagging*

\***Matthias Trost**, Newcastle University, UK  
*Proteome Analysis Identifies Novel Roles for Ubiquitylation in the Innate Immune Response from the Phagosome*

**Cecilia Lindskog**, Uppsala University, Sweden  
*The Human Protein Atlas – Integrated Omics for Single Cell Analysis*

**Xinying Zong**, St. Jude Children's Research Hospital, USA  
*Short Talk: Dynamic cis-Proteomics Comprehensively Reveals Signal-Dependent Regulators*

**Ashley Frankenfield**, George Washington University, USA  
*Short Talk: A Specific and Sensitive Proximity-labeling Proteomics Approach for Studying Protein-Protein Interactions of the Lysosome Membrane*

#### Career Roundtable (12:30pm Denver/Mountain Time Start)