

# KEYSTONE SYMPOSIA

on Molecular and Cellular Biology

## Noncoding RNAs: Mechanism, Function and Therapies (A1)

January 12-16, 2020 • Fairmont Chateau Whistler • Whistler, BC, Canada

Scientific Organizers: Howard Y. Chang, Frank W. Rigo and Lynne E. Maquat

Sponsored by Ionis Pharmaceuticals, Inc. and Moderna

Discounted Abstract & Scholarship Deadline: September 24, 2019 / Abstract Deadline: October 10, 2019 / Discounted Registration Deadline: November 12, 2019

### SUNDAY, JANUARY 12

#### Arrival and Registration

### MONDAY, JANUARY 13

#### Welcome and Keynote Address

\*Howard Y. Chang, Stanford University, USA

\*Lynne E. Maquat, University of Rochester Medical Center, USA

Joan A. Steitz, Yale University, USA

*Viral Noncoding RNAs: Approaching Answers*

#### LncRNA Mechanisms

\*Joshua T. Mendell, University of Texas Southwestern Medical Center, USA

Lynne E. Maquat, University of Rochester Medical Center, USA  
*3'UTR-Mediated Post-transcriptional Effects on Human Gene Expression via Staufen and SINES*

Montserrat Anguera, University of Pennsylvania, USA  
*X-Chromosome Inactivation Maintenance in Immune Cells*

Elsa R. Flores, Moffitt Cancer Center, USA  
*Pan-Cancer Analysis Reveals Alternate Mechanisms for AKT Activation through Tap63 Regulated Oncogenic lncRNAs (TROLLs)*

Nicolas Jaé, Goethe-University Frankfurt, Germany  
*Short Talk: Control of Vessel Permeability by the Splicing-Regulatory lncRNA NTRAS*

Amanda J. Whipple, Harvard University, USA  
*Short Talk: Imprinted Maternally-Expressed MicroRNAs Antagonize Paternally-Driven Gene Programs in Neurons*

#### Regulatory RNA Physiologic Functions

\*Lynne E. Maquat, University of Rochester Medical Center, USA

Alena Shkumatava, Institut Curie-Centre de Recherche, France  
*lncRNA in Vertebrate Development*

Upasna Sharma, University of California, Santa Cruz, USA  
*Intergenerational Epigenetic Inheritance by Sperm Small RNAs*

Tamer Sallam, University of California, Los Angeles, USA  
*lncRNA in Cardiometabolic Disease*

Sathya Puthanveetil, The Scripps Research Institute, USA  
*Short Talk: Activity Dependent Synaptic Targeting of Intronic lncRNA for Long-Term Memory Storage*

Daniel Kim, University of California, Santa Cruz, USA  
*Short Talk: Noncoding RNA Landscape of Mutant KRAS-Driven Cellular Transformation*

#### Poster Session 1

### TUESDAY, JANUARY 14

#### LncRNA Mechanisms

\*Karissa Y. Sanbonmatsu, Los Alamos National Laboratory, USA

Howard Y. Chang, Stanford University, USA  
*Genome Regulation by Long Noncoding RNAs*

Susan B. Carpenter, University of California, Santa Cruz, USA  
*Characterization of the Conserved lncRNA, GAPLINC, and Its Role in Endotoxic Shock*

Joshua T. Mendell, University of Texas Southwestern Medical Center, USA

*Regulation and Function of Mammalian Noncoding RNAs*

John L. Rinn, University of Colorado Boulder, USA  
*Differential Contribution of Steady-State RNA and Active Transcription in Chromatin Organization*

Nadya Dimitrova, Yale University, USA  
*Short Talk: Investigation of the Mechanisms of lncRNAs in Tumorigenesis*

Adam Schmitt, Memorial Sloan Kettering Cancer Center, USA  
*Short Talk: Cancers Escape Tumor Suppression through Loss of the Long Noncoding RNA Dino*

Prasanth V. Kannanganattu, University of Illinois, USA  
*Short Talk: A Family of Nucleolus-Enriched ncRNAs Regulate rDNA Expression by Coating the NOR-Containing Autosomes in a Monoallelic Fashion*

#### Workshop

\*Robert Spitale, University of California, Irvine, USA

Chen Davidovich, Monash University, Australia  
*RNA Mediates Context-Specific Regulation of Gene Repression through Interactions with the Regulatory Centre of the Histone Methyltransferase PRC2*

Simon A. Hardwick, Weill Cornell Medicine, USA  
*High Resolution Analysis of Long Non-Coding RNA Isoforms in Mouse Cortex*

Tim Vierbuchen, University of Massachusetts Medical School, USA  
*Regulation of Type I Interferon Responses in Human Phagocytes by the Long Non-Coding RNAs LUCAT1 and lncRNA-CMPK2*

Ryan Alexander Flynn, Stanford University, USA  
*Mammalian Small RNAs Are Modified at Discrete Guanosine Residues with N-Glycans*

Tasha Alease Morrison, National Institutes of Health, USA  
*Identification of a Long Noncoding RNA within an NK-Specific Super-Enhancer Uncovers Critical Role Ugcg Plays in NK Cells*

Christiane Olivero, Yale University, USA  
*p53 Activates the lncRNA Pvt1b to Inhibit Myc and Suppress Tumorigenesis*

#### RNA Structure and Function

\*Christine Mayr, Memorial Sloan Kettering Cancer Center, USA

Yue Wan, Genome Institute of Singapore, Singapore  
*Studying RNA Structures Using Direct RNA Sequencing on Nanopores*

Karissa Y. Sanbonmatsu, Los Alamos National Laboratory, USA  
*Zinc-Finger Protein CNBP Alters the 3-D Structure of lncRNA Braveheart in Solution*

Robert Spitale, University of California, Irvine, USA  
*Emergent Chemical Methods for Probing RNA Structure Inside Living Cells*

Allison Marly Porman, University of Colorado Anschutz Medical Campus, USA

*Short Talk: N6-Methyladenosine and YTHDC1 Regulate Long Noncoding RNA HOTAIR Function in Breast Cancer*

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**Hala Abou Assi**, Duke University, USA

*Short Talk: Investigating the Impact of Epitranscriptomic Modifications on RNA Structural Dynamics*

**Chase Weidmann**, University of North Carolina at Chapel Hill, USA

*Short Talk: RNP-MaP: RNA-Protein Interaction Networks in Living Cells*

### Poster Session 2

### WEDNESDAY, JANUARY 15

#### RNA Technologies

\***Sara R. Cherry**, University of Pennsylvania, USA

**Gene W. Yeo**, University of California, San Diego, USA

*RNP Discovery and Manipulation*

**J. Mauro Calabrese**, University of North Carolina at Chapel Hill, USA

*Studying lncRNAs through K-Mer Based Methods of Sequence Comparison*

**Mitchell Guttman**, California Institute of Technology, USA

*A Widespread Role for RNA in Demarcating Distinct 3D Spatial Territories within the Nucleus*

**Mitchell R. O'Connell**, University of Rochester Medical Center, USA

*Programmable RNA-Targeting by CRISPR-Cas Enzymes*

**Hyaeyeong Kim**, Weill Cornell Medicine, USA

*Short Talk: Chemogenetic Control of Phase Separations in Live Cells Templated by Small Molecule-Regulated RNA Dimerization*

**Kengo Sato**, Keio University, Japan

*Short Talk: A Max-Margin Training of RNA Secondary Structure Prediction Integrated with the Thermodynamic Model*

#### Circular RNAs and RNA Modification

\***Nadya Dimitrova**, Yale University, USA

**Chuan He**, University of Chicago, USA

*RNA Methylation in Gene Expression Regulation*

**Dimitrios Papaioannou**, Ohio State University, USA

*Short Talk: CircPCMTD1: A Protein-Coding Circular RNA That Regulates DNA Synthesis in Leukemia*

**Rui Zhou**, Johns Hopkins University School of Medicine, USA

*Short Talk: Function and Regulation of the Circular RNA Edis in Innate Immunity and Neurodevelopment*

**Christopher Lee Holley**, Duke University, USA

*Short Talk: Modification of Messenger RNA by 2'-O-Methylation Regulates Gene Expression*

**Tristan R. Grams**, University of Florida, USA

*Short Talk: Targeting the Viral lncRNA LAT of Herpes Simplex Virus 1 Reduces Reactivation in vivo*

### THURSDAY, JANUARY 16

#### RNA Therapeutics

\***Frank Rigo**, Ionis Pharmaceuticals, USA

**Sven Diederichs**, University of Freiburg, Germany

*RNA-Dependent Proteins and Non-Coding RNAs in Cancer*

**Sara R. Cherry**, University of Pennsylvania, USA

*Defining the Landscape of Antiviral Long Noncoding RNAs*

**Scott A. Ribich**, Accent Therapeutics, USA

*The RNA Editor ADAR1 is a Therapeutic Target in Cancers with Intrinsic Elevated Type I Interferon Signaling*

**James Barsoum**, Arrakis Therapeutics, USA

*Targeting RNA Structures with Drug-Like Small Molecules*

**Timothy Bredy**, University of Queensland, Australia

*Short Talk: RNA Modifications and Experience-Dependent Plasticity*

**Chun-Kan Chen**, Stanford University School of Medicine, USA

*Short Talk: Structured Elements Drive Circular RNA Translation and Expand the Human Proteome*

#### Regulatory RNA in Development

\***Alena Shkumatava**, Institut Curie-Centre de Recherche, France

**Christine Mayr**, Memorial Sloan Kettering Cancer Center, USA

*Enhancer-Mediated Control of 3'UTR Ratios Regulates PTEN Phosphatase Activity*

**Jason Shepherd**, University of Utah, USA

*Virus-Like Intercellular RNA Transfer in the Nervous System*

**Kevin G. Nyberg**, Northwestern University, USA

*Short Talk: Investigation of the Role of a Pair of Divergent lncRNAs in Drosophila Eggshell Development*

**Haruna Yamashiro**, University of Tokyo, Japan

*Short Talk: Molecular Mechanism underlying Inter-Organelle Translocation of piRNA Precursor*

#### Meeting Wrap-Up: Outcomes and Future Directions

**Frank Rigo**, Ionis Pharmaceuticals, USA

### FRIDAY, JANUARY 17

#### Departure