

Keystone Symposia in Daejeon

Small Regulatory RNAs

Daejeon Convention Center | Daejeon, South Korea | April 14–18, 2019

Scientific Organizers:

V. Narry Kim, Institute for Basic Science, South Korea

Gregory J. Hannon, University of Cambridge, UK

Lin He, University of California, Berkeley, USA

Victor R. Ambros, University of Massachusetts, USA

Developed in collaboration with the Institute for Basic Science

Small regulatory RNAs are integral players in eukaryotic gene regulation, and are involved in numerous developmental and pathological pathways. Although the field has been making remarkable progresses in recent years, it still has a number of seminal questions. We need to understand how cell signaling pathways are connected to small RNA pathways, how small RNAs are regulated and function during cell fate transition, how small RNAs interact with subcellular compartments, if and how they are transported between cells, and how small RNAs participate in immune response. We also need to gain a systemic view of small RNAs and their targets in the context of gene network, and to understand their involvements in human diseases, not just cancer but also other genetic and metabolic disorders. This conference brings together scientists studying diverse animal and plant model organisms, which will offer an opportunity to understand the mechanism and function of small RNAs in an evolutionary and physiological context. The symposium will also bridge the gaps between fundamental knowledge, clinical needs and technical development by addressing issues such as small RNA involvement in diseases, in vivo delivery of RNA and technical challenges in RNA detection at single-molecule and single-cell levels. Compared with other conferences on RNA, this conference is unique in that it focuses on small regulatory RNAs, yet it is highly diverse in research approaches and biological systems. It will serve as a central forum for the small RNA community.

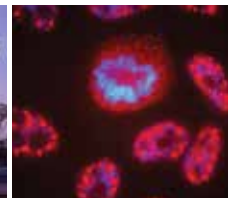
Session Topics:

- MicroRNA Biogenesis and Turnover
- MicroRNA Function in Development and Stem Cells
- MicroRNA Function in Disease
- Small RNAs as Therapeutic and Diagnostic Tools
- Mechanism of RNA Silencing
- Lessons from CRISPR
- Diverse Small RNA Pathways

Scholarship/Discounted Abstract Deadline: Dec 19, 2018; Abstract Deadline: Jan 16, 2019;

Discounted Registration Deadline: Feb 13, 2019

Visit www.keystonesymposia.org/19D7 for more details.



KEYSTONE SYMPOSIA™
on Molecular and Cellular Biology

Accelerating Life Science Discovery

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Left image of RNA in cell nucleus courtesy of National Cancer Institute, NIH

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SUNDAY, APRIL 14

Arrival and Registration

MONDAY, APRIL 15

Welcome and Memorial Speech for Elisa Izaurralde

*V. Narry Kim, Institute for Basic Science, South Korea

Oliver Weichenrieder, Max Planck Institute for Developmental Biology, Germany

Keynote Address

*V. Narry Kim, Institute for Basic Science, South Korea

David P. Bartel, Massachusetts Institute of Technology and Whitehead Institute, USA
MicroRNAs

MicroRNA Biogenesis and Turnover

*Anastasia Khvorova, University of Massachusetts Medical School, USA

Gunter Meister, University of Regensburg, Germany
Regulation of Gene Expression by RNA-Binding Proteins and Non-Coding RNAs

Helge Großhans, Friedrich Miescher Institute - FMI, Switzerland
Promoting Adulthood through One miRNA with a Single Target

Eric C. Lai, Sloan Kettering Institute, USA
Short Talk: Genomic Clustering Aids Nuclear Processing of Suboptimal pri-miRNA loci

Daniel Cifuentes, Boston University, USA
Short Talk: A Negative Feedback Loop Between Dicer and miR-144 Dampens Canonical microRNA Biogenesis and Maximizes the Ago2-Dependent Processing of miR-451 during Vertebrate Erythropoiesis

Poster Session 1

Workshop 1

*Mofang Liu, Shanghai Institutes for Biological Sciences, Chinese Academy of Sciences, China

Séverine Chambeyron, Institute of Human Genetics, France
The NuRD Complex Mediates piRNA-Guided Heterochromatin Formation in Metazoans

Caterina Gasperini, Italian Institute of Technology, Italy
Identification of piRNAs and Functional Investigation of piRNA-Pathway in Adult Mammalian Neural Progenitor Cells

Xin Zhiguo Li, University of Rochester Medical Center, USA
Ribosomes Guide Initial piRNA Processing on Long Single Strand Precursor RNAs

Kensaku Murano, Keio University, Japan
Nuclear RNA Export Factor Variant Triggers Piwi-piRNA-Mediated Co-Transcriptional Silencing

Yang Yu, Institute of Biophysics, CAS, China
A Pandas Complex Adapted for piRNA-Guided Transposon Silencing

Dong-Hoon Jeong, Hallym University, South Korea
The Role of Small Regulatory RNAs in Rice Epigenetic Regulation

Seung Cho Lee, Cold Spring Harbor Laboratory, USA

21-22 nt easiRNA-Dependent Regulation of Retrotransposition in Arabidopsis

Yuriki Sakurai, University of Tokyo, Japan

In vitro Recapitulation of the Secondary siRNA Biogenesis in Plants

MicroRNA Function in Development and Stem Cells

*Xuemei Chen, University of California, Riverside, USA

Lin He, University of California, Berkeley, USA
Non-Coding RNAs Regulate Cell Fate Potential in Pluripotent Stem Cells

Stefania Nicoli, Yale University, USA

MicroRNA-223 Limits Hematopoietic Stem Cell Production from the Developing Aorta

Anton J. Enright, University of Cambridge, UK
Detection of Subtle microRNA Binding Effects on mRNA Levels using Single-Sum Significance k-mer Analysis

Mollie K. Meffert, Johns Hopkins University School of Medicine, USA
Short Talk: Growth Regulatory miRNAs in Neuronal Function

Aishe Angeletti Sarshad, University of Gothenburg, Sweden
Short Talk: Argonaute-miRNA Complexes Silence Target mRNAs in the Nucleus of Mammalian Stem Cells

TUESDAY, APRIL 16

MicroRNA Function in Disease

*Lin He, University of California, Berkeley, USA

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

Regulation of Argonaute by Posttranslational Modification

Jin Hong Kim, Seoul National University, South Korea
Stress-Activated miR-204 Governs Senescent Phenotypes of Chondrocytes to Promote Osteoarthritis Development

Rui Yi, University of Colorado Boulder, USA
MicroRNA-Mediated Regulatory Network in Hair Follicle Stem Cells

Jun-An Chen, Academia Sinica, Taiwan
The Role of MicroRNA during Motor Neuron Development and Degeneration

Anna Bludau, University of Regensburg, Germany
Short Talk: Lateral Septum miRNA Alterations in Response to Social Fear Conditioning: Functional Involvement of miR-132 in Extinction and Oxytocin-Mediated Reversal of Social Fear

Small RNAs as Therapeutic and Diagnostic Tools

*Phillip D. Zamore, University of Massachusetts Medical School, USA

Anastasia Khvorova, University of Massachusetts Medical School, USA
RNAi-Based Modulation of Gene Expression in Central Nervous System

Karyn Schmidt, Alnylam Pharmaceuticals, USA
Mechanistic Insights and Progress on the GalNAc-siRNA Conjugate Platform for Targeted Delivery of RNAi Therapeutics to the Liver

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Bastian Fromm, Stockholm University, The Wenner-Gren Institute, SciLifeLab, Sweden

Short Talk: The Metazoan MicroRNA Complement

Yun Sang Cho, Animal and Plant Quarantine Agency, South Korea

Short Talk: Safety and Efficacy of Double Strand RNA against

Sacbrood Virus Infection in Apis cerana

Gaspere La Rocca, Memorial Sloan Kettering Cancer Center, USA

Short Talk: Development of a Novel Mouse Model for the Reversible,

Temporally and Spatially Controlled Inhibition of miRNA Activity in vivo

Bing Yang, National Institute of Health, USA

Identifying Essential mir-35 Targeting Sites in C. elegans

Doowon Huh, Rockefeller University, USA

An Adaptive Stress-Induced tRNA Depletion Response Mediates

Codon-Based Translational Repression and Growth Suppression

Jian Lu, Peking University, China

Drosophila tsRNAs Preferentially Suppress General Translation

Machinery via Antisense Pairing and Participate in Cellular Starvation

Response

Poster Session 2

WEDNESDAY, APRIL 17

Mechanism of RNA Silencing

***Mikiko C. Siomi**, University of Tokyo, Japan

Xuemei Chen, University of California, Riverside, USA

TREX-2 and A Nuclear Pore Protein in MicroRNA Biogenesis in

Arabidopsis

Yukihide Tomari, University of Tokyo, Japan

The 3'-End Formation Mechanism of Silkworm piRNAs

Phillip D. Zamore, University of Massachusetts Medical School, USA

An Unexpected Function for a Eubacterial Argonaute Protein

Mofang Liu, Shanghai Institutes for Biological Sciences, Chinese

Academy of Sciences, China

Multiple Roles of MIWI/piRNAs in Regulating Spermiogenesis in Mice

Daehyun Baek, Seoul National University, South Korea

Short Talk: Most RNA-Binding Proteins are microRNA Targeting

Enhancers

Shu-Huei Hsiao, National Chung Cheng University, Taiwan

Short Talk: Loss of PIWIL4 and L1TD1 Disrupts Somatic piRNA,

Methylome and Genome Stability

Larissa Nitschke, Baylor College of Medicine, USA

Short Talk: MicroRNA 760 Regulates the Expression of Atn1 via

Interaction with its 5'untranslated Region

Poster Session 3

Workshop 2

***Martin J. Simard**, CRCHU de Québec-Université Laval, Canada

Lu Ya-Lin, Washington University in St. Louis, USA

Bifunctional Role of miR-124 during Neuronal Reprogramming of

Human Fibroblasts

Tuan Anh Nguyen, Hong Kong University of Science and

Technology, Hong Kong

Novel Players Regulate pri-miRNA Processing

Lei Wang†, Chinese Academy of Sciences, China

RNA helicase AQR Cooperates with the DROSHA-DGCR8 Complex

to Promote Primary microRNA Processing

Claudia Lang, Plant and Food Research, New Zealand

A Randomized, Controlled, Cross-Over Clinical Study Investigating

the Bioavailability of Dietary Fruit microRNAs (miRNAs) in Humans

Lessons from CRISPR

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

Yanli Wang, Chinese Academy of Sciences, China

Class 2 CRISPR-Cas RNA-Guided Endonucleases and Inhibitors

Jin-Soo Kim, Institute for Basic Science, South Korea

CRISPR Genome Editing

Chirlmin Joo, Delft University of Technology, Netherlands

Single-Molecule Analysis of Fast and Accurate Target Recognition by

Small RNAs

Dinshaw J. Patel, Memorial Sloan Kettering Cancer Center, USA

Structure-based Mechanistic Insights into CRISPR-Cas Surveillance

Complexes

Hidetoshi Hasuwa, Keio University School of Medicine, Japan

Short Talk: PIWIL3 Plays an Important Role in Early Embryogenesis

of Golden Hamsters

THURSDAY, APRIL 18

Diverse Small RNA Pathways I

***Helge Grobthans**, Friedrich Miescher Institute - FMI, Switzerland

Mikiko C. Siomi, University of Tokyo, Japan

piRNA Biogenesis and Functions in Drosophila

Katalin Fejes-Tóth, California Institute of Technology, USA

The SUMO Ligase Su(var)2-10 Links piRNA-Guided Target

Recognition to Chromatin Silencing and Controls Gene Expression via

Establishment of H3K9 Trimethylation and Negative Feedback

Regulation

Yijun Qi, Tsinghua University, China

Transcriptional Activation by Small RNAs in Plants

JP T. Ouyang, Johns Hopkins University School of Medicine, USA

Short Talk: Loss of Germ Granule Integrity during the

Oocyte-to-Embryo Transition Disrupts Small RNA Homeostasis in

Caenorhabditis elegans

Jan Schreier, Institute for Molecular Biology, Germany

Short Talk: A Novel Sperm-Specific Compartment Secures an

Argonaute Protein for Paternal Epigenetic Inheritance

Xiaorong Zhang, Chinese Academy of Science, China

Short Talk: Exploring Active RNAi in Mitochondria to Reveal Epistatic

Translational Control of mtDNA-Encoded Cytochrome C Oxidase

Subunits

Meet the Editors

Steve Mao, Science, AAAS, USA

Angela K. Eggleston, Nature Publishing Group, USA

Diverse Small RNA Pathways II

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***Jun-An Chen**, Academia Sinica, Taiwan

Victor R. Ambros, University of Massachusetts, USA

Developmental Regulation and Function of Let-7a microRNA in C. elegans

V. Narry Kim, Institute for Basic Science, South Korea

MicroRNA Arm Switching Regulated by Uridylation

Martin J. Simard, CRCHU de Québec-Université Laval, Canada

Short Talk: microRNAs form Distinct Silencing Complexes to Regulate their Target mRNAs Differently

Closing Keynote Address

***Victor R. Ambros**, University of Massachusetts, USA

Phillip A. Sharp, Massachusetts Institute of Technology, USA

Networks of microRNA in Normal and Cancer Cell States

Meeting Wrap-Up: Outcomes and Future Directions (Organizers)

FRIDAY, APRIL 19

Departure