

# KEYSTONE SYMPOSIA

on Molecular and Cellular Biology

## Molecular Mechanisms of Heart Development (X7)

Scientific Organizers: Benoit G. Bruneau, Brian L. Black and Margaret E. Buckingham

Supported by the Directors' Fund

## RNA-Based Approaches in Cardiovascular Disease (X8)

Scientific Organizers: Thomas Thum and Roger J. Hajjar

March 26-30, 2017 • Keystone Resort • Keystone, Colorado, USA

Supported by the Directors' Fund

Abstract & Scholarship Deadline: November 30, 2016 / Abstract Deadline: January 11, 2017 / Discounted Registration Deadline: January 26, 2017

### SUNDAY, MARCH 26

#### Arrival and Registration

### MONDAY, MARCH 27

#### Welcome and Keynote Address (Joint)

**Eric N. Olson**, University of Texas Southwestern Medical Center, USA  
*Mechanistic Aspects of Noncoding RNAs in Cardiovascular Development and Disease*

#### Common RNA-Based Mechanisms in Cardiovascular Development and Pathology (Joint)

**Stefanie Dimmeler**, University of Frankfurt, Germany  
*Long Noncoding RNAs in Cardiovascular Cell Decisions and Aging*  
**Leon Johannes De Windt**, Maastricht University, Netherlands  
*Fetal miRNAs Play Large at Heart Failure*

**Laurie A. Boyer**, Massachusetts Institute of Technology, USA  
*Long Noncoding RNAs in Heart Development and Differentiation*

#### Short Talk(s) Chosen from Abstracts

#### Workshop 1: Gene Regulatory Mechanisms (X7)

##### Short Talks Chosen from Abstracts

#### Workshop 1: Basic and Novel Tools for RNA Research (X8)

**Stuart A. Cook**, Duke-NUS Graduate Medical School Singapore, Singapore  
*Combined Sequencing of all RNA Species and Genetic Studies of Human Heart Cells*

**Mark Mercola**, Stanford University, USA  
*Massive Omics Approaches to Understand the Heart*

#### Short Talks Chosen from Abstracts

#### Cardiac Lineages (X7)

**Margaret E. Buckingham**, Institut Pasteur, France  
*Early Cardiac Lineage Determination*

**Lionel Christiaen**, New York University, USA  
*Regulation of Cardiopharyngeal Cell Fates and Behaviors in a Simple Chordate*

**Caroline E. Burns**, Harvard Medical School, Massachusetts General Hospital, USA  
*Zebrafish Cardiovascular Development*

#### Short Talk Chosen from Abstracts

#### Fundamentals in RNA Diagnostics and Paracrine Effects (X8)

**Carlos Fernandez-Hernando**, Yale School of Medicine, USA  
*Non-Coding RNAs as Paracrine Players in Vascular Inflammation and Metabolism*

**Denise Hilfiker-Kleiner**, Medizinische Hochschule Hannover, Germany

*Modulation of miR146 and Therapeutic Approach in Post Partum Cardiomyopathy*

#### Short Talk Chosen from Abstracts

#### Poster Session 1

### TUESDAY, MARCH 28

#### Keynote Address (X8)

**Manuel Mayr**, King's College, University of London, UK  
*A Systems Biology Approach: Circulating Non-Coding RNAs as Innovative Diagnostic and Prognostic Markers of Cardiovascular Disease*

#### Epicardium and Coronaries (X7)

**Kristy Red-Horse**, Stanford University, USA  
*Progenitor Cell Differentiation during Coronary Vessel Development*

**Bin Zhou**, Albert Einstein College of Medicine, USA  
*Developmental Mechanisms of Coronary Angiogenesis and Arteriogenesis*

**Paul R. Riley**, University of Oxford, UK  
*The Epicardium in Cardiac Regeneration*

**Nadia Mercader**, Institut of Anatomy, University of Bern, Switzerland  
*Epicardial Lineages in the Zebrafish*

#### Short Talk(s) Chosen from Abstracts

#### Noncoding RNA Therapeutics: What Have We Learned? (X8)

**Susmita Sahoo**, Icahn School of Medicine at Mount Sinai, USA  
*Exosomes as a Diagnostic and Therapeutic Tool in Cardiovascular Disease*

**Eva van Rooij**, Hubrecht Institute, Netherlands  
*Advances in Targeting miRNAs in the Heart*

**Gianluigi Condorelli**, Humanitas University, Italy  
*Epigenetic Approaches to Treat Heart Failure*

**Elizabeth M. McNally**, Northwestern University, USA  
*Targeting Muscular Dystrophy*

#### Short Talk Chosen from Abstracts

#### Gene Regulatory Mechanisms (X7)

**Vincent M. Christoffels**, Academic Medical Center, Netherlands  
*Three-Dimensional Organization of Cardiac Genes*

**Benoit G. Bruneau**, Gladstone Institute of Cardiovascular Disease, USA

*Transcriptional Regulation of Heart Development*

**Brian L. Black**, University of California, San Francisco, USA  
*Endothelial Gene Regulation*

#### Short Talk Chosen from Abstracts

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### Novel Approaches in RNA Detection and Networks (X8)

**Silke R. Sperling**, Charité - Universitätsmedizin Berlin, Germany  
*Cardiac Transcription Networks – A System Biology Approach to Understand Heart Failure*

**Stefan Engelhardt**, Institut für Pharmakologie & Toxikologie der TUM, Germany  
*Library based Approaches to Identify Crucial miRNA Players in Cardiac Function*

Short Talk Chosen from Abstracts

### Poster Session 2

### WEDNESDAY, MARCH 29

#### Congenital Heart Disease: Genes and Pathways (X7)

**Christine E. Seidman**, Harvard Medical School, USA  
*Genetics of Human Congenital Heart Disease*

**Ivan P. Moskowitz**, University of Chicago, USA  
*Modeling Human Disease Pathways*

**William T. Pu**, Children's Hospital, Harvard Medical School, USA  
*Cellular Models of Congenital Heart Disease*

**Richard P. Harvey**, University of New South Wales, Victor Chang Cardiac Research Institute, Australia  
*Transcriptional Targets and Off-Targets in Congenital Heart Disease*

Short Talk(s) Chosen from Abstracts

#### Non-Coding RNAs Going Looooong.... (X8)

**Gerald W. Dorn, II**, Washington University School of Medicine, USA  
*Long Noncoding RNAs Orchestrating Cardiac Development*

**Yibin Wang**, University of California, Los Angeles, USA  
*An LncRNA Dependent Epigenetic Check-Point for Cardiac Hypertrophy and Remodeling*

**Thomas Thum**, Medical School Hannover, Germany  
*lncRNAs in Cardiac Fibrosis*

Short Talk(s) Chosen from Abstracts

#### Mechanisms of Cardiac Growth and Morphogenesis (X7)

**Anthony B. Firulli**, Wells Center for Pediatrics Research, USA  
*Hand Gene Dosage Requirements in Left Ventricular Morphogenesis*

**Katherine E. Yutzey**, Cincinnati Children's Hospital Medical Center, USA  
*Mechanisms of Valvulogenesis*

**James F. Martin**, Baylor College of Medicine, USA  
*The Hippo Pathway in Heart Development and Regeneration*

Short Talk Chosen from Abstracts

### Preclinical Approaches Using RNA Therapeutics (X8)

**William S. Marshall**, miRagen Therapeutics, USA  
*Pharmacokinetic/Dynamic Aspects of Oligonucleotide Therapeutics*

**Brian Sproat**, Chemconsilium GCV, Belgium  
*Synthesis of RNA and Analogues applicable to the Therapy of Cardiovascular Disease*

**Christian Kupatt**, Technical University Munich, Germany  
*Micro-RNAs based Therapeutics in Porcine Cardiac Disease Models*

Short Talk Chosen from Abstracts

### Poster Session 3

### THURSDAY, MARCH 30

#### Mechanisms of Cardiovascular Regeneration (Joint)

**Deepak Srivastava**, Gladstone Institute of Cardiovascular Disease and University of California, San Francisco, USA  
*Mechanisms of Cardiac Reprogramming*

**Kenneth D. Poss**, Duke University Medical Center, USA  
*Cardiac Regeneration*

**William C. Sessa**, Yale University School of Medicine, USA  
*Vascular Therapeutic Approaches Using miRNAs*

**Andrew H. Baker**, University of Edinburgh, UK  
*Non Coding RNA Therapeutics in Cardiovascular Pathophysiology*

Short Talk(s) Chosen from Abstracts

#### Workshop 2: Cardiovascular Repair Mechanisms (Joint)

Short Talks Chosen from Abstracts

#### Workshop 2: Cardiovascular Repair Mechanisms (Joint)

#### Modeling Human Heart Development (X7)

**Christine L. Mummery**, Leiden University Medical Center, Netherlands  
*iPS Cell Models of Heart and Blood Vessel Disease*

**Charles E. Murry**, University of Washington, USA  
*Networks Underlying Human Cardiomyocyte Differentiation*

**Gordon M. Keller**, University Health Network, MaRS Centre, Canada  
*Programming Cardiovascular Cell Types in vitro*

#### RNA Therapeutics in Clinical Translation (X8)

**Roger J. Hajjar**, Mount Sinai School of Medicine, USA  
*SERCA2a: Pitfalls and Chances*

**Patrick Most**, University of Heidelberg, Germany  
*S100: Targeting Calcium Handling in the Cardiomyocyte*  
Speaker to be Announced

#### Meeting Wrap-Up: Outcomes and Future Directions (Organizers) (X7)

#### Meeting Wrap-Up: Outcomes and Future Directions (Organizers) (X8)

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**FRIDAY, MARCH 31**

**Departure**