RNA-Based Approaches in Cardiovascular Disease

March 26–30, 2017 | Keystone Conference Center | Keystone, Colorado | USA

Scientific Organizers:
Thomas Thum, Medical School Hannover, Germany
Roger J. Hajjar, Mount Sinai School of Medicine, USA

Joint with the meeting on Molecular Mechanisms of Heart Development

Cardiac diseases are the leading cause of death worldwide. RNA-based mechanisms and therapeutic approaches are emerging fields in cardiovascular science. This meeting will present and discuss latest developments using both coding RNA and noncoding RNA (such as microRNAs, long noncoding RNAs and circular RNAs) -based approaches to better understand and develop new therapeutic strategies for cardiac diseases. Attendees will benefit from workshops, specific sessions and industrial perspectives covering everything from basic science to clinical translation employing RNA therapeutics in cardiovascular medicine.

Session Topics:
• Common RNA-Based Mechanisms in Cardiovascular Development and Pathology (Joint)
• Workshop 1: Basic and Novel Tools for RNA Research
• Fundamentals in RNA Diagnostics and Paracrine Effects
• Noncoding RNA Therapeutics: What Have We Learned?
• Novel Approaches in RNA Detection and Networks
• Noncoding RNAs Going Looooong…
• Preclinical Approaches Using RNA Therapeutics
• Mechanisms of Cardiovascular Regeneration (Joint)
• Workshop 2: Cardiovascular Repair Mechanisms (Joint)
• RNA Therapeutics in Clinical Translation

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

Note: Scholarships are available for graduate students and postdoctoral fellows and are awarded based on the abstract submitted.

Meeting Hashtag: #KSrnacardio
www.keystonesymposia.org/17X8
SUNDAY, MARCH 26
Arrival and Registration

MONDAY, MARCH 27
Welcome and Keynote Address (Joint)
Eric N. Olson, University of Texas Southwestern Medical Center, USA

Common RNA-Based Mechanisms in Cardiovascular Development and Pathology (Joint)
Stefanie Dimmeler, University of Frankfurt, Germany
Non-Coding RNAs in Cardiovascular Repair and Aging
William C. Sessa, Yale University School of Medicine, USA
Vascular Therapeutic Approaches Using miRNAs
Laurie A. Boyer, Massachusetts Institute of Technology, USA
Long Noncoding RNAs in Heart Development and Differentiation
Tilman Ziegler†, Klinikum rechts der Isar der TU München, Germany
Short Talk: LNA Mediated Inhibition of mir-132 Prevents Hypertrophy Induced Cardiomyopathy in Pigs

Workshop 1: Basic and Novel Tools for RNA Research (X8)
Esther E. Creemers, Academic Medical Center, Netherlands
Circular RNA Profiling and Implications for Cardiac Disease
Mark Mercola, Stanford University, USA
High Throughput Screening as a Massive Omics Approach to Understand the Heart
Lior Zangi, Icahn School of Medicine at Mount Sinai, USA
Gene Therapy Approach For Cardiac Regeneration Using Modified mRNA
Hamid el Azzouzi†, Maastricht University, Netherlands
Targeted Deletion of ADAR1 in the Adult Heart Causes Severe Cardiac Dysfunction and Increased Lethality
Cristina Espinosa-Diez, Oregon Health and Science University, USA
A microRNA Regulated Incoherent Feedforward Loop Drives Vascular Senescence

Workshop 1: Gene Regulatory Mechanisms (X7)
Short Talks 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 Lipid Metabolism

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

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
Chheaf1: A Novel lncRNA Regulating Cardiac Hypertrophy and Failure
Elizabeth M. McNally, Northwestern University, USA
Targeting Muscular Dystrophy

Denise Hilfiker-Kleiner, Medizinische Hochschule Hannover, Germany
Pathophysiology of Peripartum Cardiomyopathy Links Prolactin to the PAI-1/uPAR System: Modulation of NF-kB Signaling and miR146a as Therapeutic Options
Paula da Costa Martins†, Maastricht University, Netherlands
Short Talk: Cardiomyocyte-Derived Exosomes Mediate Pathological Cardiac Microvascular Remodeling
Yuri D’Alessandra†, Centro Cardiologico Monzino, Italy
Short Talk: Circulating microRNAs as biomarkers of Long-Term Doxorubicin-induced Cardiotoxicity
Stefanie Novakowski†, University of British Columbia, Canada
Short Talk: Engineering Platelets for the Delivery of RNA
Christa L. Treator†, University of Colorado at Boulder, USA
Short Talk: Cardiomyocyte Function and Gene Expression are Influenced by Biological Sex

Cardiac Lineages (X7)
Margaret E. Buckingham, Institut Pasteur, France
Cardiac Cell Lineages and the Second Heart Field
Lionel Christiaen, New York University, USA
Regulation of Cardiopharyngeal Multipotency and Early Fate Specification in a Simple Chordate
Caroline E. Burns, Harvard Medical School, Massachusetts General Hospital, USA
Development of the Cardiopharyngeal Lineage in Zebrafish
Short Talk Chosen from Abstracts

Poster Session 1

For the most up-to-date details, visit www.keystonesymposia.org/17X8 and www.keystonesymposia.org/17X7.
Molecular Mechanisms of Heart Development (X7)
Scientific Organizers: Benoit G. Bruneau, Brian L. Black and Margaret E. Buckingham
March 26-30, 2017 • Keystone Resort • Keystone, Colorado, USA
Supported by the Directors’ Fund


Robin Verjans†, Maastricht University, Netherlands
Short Talk: Downregulation of the microRNA-221/222 Family Upon Heart Failure Contributes to Adverse Cardiac Fibrotic Remodeling

Christine Wahlquist†, Stanford University, USA
Short Talk: Modulation of Cardiomyocyte Physiology by Stretch-Induced miRNAs

Epicardium and Coronaries (X7)

Kristy Red-Horse, Stanford University, USA
Cell Fate Decisions During Coronary Artery Development

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

Bin Zhou, Albert Einstein College of Medicine, USA
Developmental Mechanisms of Coronary Artery Formation

Paul R. Riley, University of Oxford, UK
Developmental Programming of the Cardiac Lymphatics

Short Talk(s) Chosen from Abstracts

Novel Approaches in RNA Detection and Networks (X8)

Silke R. Sperling, Charité - Universitätsmedizin Berlin, Germany
System Biology for Cardiac Transcription Networks

Stefan Engelhardt, Institut für Pharmacologie & Toxicologie der TUM, Germany
Approaches to Identify Crucial miRNA Mechanisms of Action

Arthur A. Levin, Avidity Biosciences, USA
Toxicological Considerations in Oligonucleotide Therapeutics Development

Gene Regulatory Mechanisms (X7)

Vincent M. Christoffels, Academic Medical Center, Netherlands
Transcriptional Regulation of the Electrical Activity Pattern of the Heart

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

POSTER SESSION

Non-Coding RNAs Going Looooong…. (X8)

Gerald W. Dorn, II, Washington University School of Medicine, USA
Orchestration of Smoothened/Hedgehog/GATA Transcriptional Activity by GRKs 2, 5, and 6 in Developing Mouse Hearts

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 Remodeling

Venkata Naga Srikanth Garikipati†, Temple University, USA
Short Talk: Long Non-Coding Circular RNA mmu_circ_008396 Modulates Cardiac Repair After Myocardial Infarction

Da-Zhi Wang†, Children's Hospital Boston, USA
Short Talk: Genome-Wide Identification and Characterization of Cardiac Hypertrophy-Related Long Noncoding Rnas

Samir Ounzain†, University of Lausanne, Switzerland
Short Talk: Transposable Elements Contribute to the Functional and Regulatory Characteristics of Cardiovascular lncRNAs

Congenital Heart Disease: Genes and Pathways (X7)

Christine E. Seidman, Harvard Medical School, USA
Steps and Missteps in Building the Heart

Ivan P. Moskowitz, University of Chicago, USA
A Timing Switch for Cardiac Progenitor Differentiation

William T. Pu, Children’s Hospital, Harvard Medical School, USA
iPSC-CM 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

Preclinical Approaches Using RNA Therapeutics (X8)

Rusty Montgomery, miRagen Therapeutics, Inc., USA
Pharmacokinetic/Dynamic Aspects of Oligonucleotide Therapeutics

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

Rabea Hinkel†, Klinikum rechts der Isar, TUM, Germany
Short Talk: Cardio-Protective Potential of miR-92a Inhibition in Myocardial Ischemia

Dongtak Jeong†, Ichsan School of Medicine at Mount Sinai, USA
Short Talk: AAV9 miR-25 Tough Decay Transfer Improves Cardiac Function in HF and Aged MDX/UTRN KO Mice

Adam E. Mullick†, Ionis Pharmaceuticals, Inc., USA
Short Talk: Characterization of Cardiac Gen 2.5 Antisense Oligonucleotide Activity

Deepak Prabhru Ramanujam†, Inst. f Pharmakologie und Toxikologie, Technische Universität München, Germany
Short Talk: Inhibition of microRNA-21 Prevents Myocardial Remodeling in a Pig Model of Ischemia/Reperfusion Injury
Mechanisms of Cardiac Growth and Morphogenesis (X7)

Anthony B. Firulli, Wells Center for Pediatrics Research, USA
Characterization of a Hand1 left ventricular enhancer and development of a left ventricular specific Cre driver

Katherine E. Yutzey, Cincinnati Children’s Hospital Medical Center, USA
Developmental Mechanisms of Heart Valve Disease

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

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
Cellular Reprogramming Approaches for Cardiovascular Disease

Nadia Mercader, Institut of Anatomy, University of Bern, Switzerland
Plasticity of Cardiomyocyte Fate during Heart Regeneration in Zebrafish

Leon Johannes De Windt, Maastricht University, Netherlands
Fetal miRNAs Play Large at Heart Failure

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

Chen Gao†, University of California, Los Angeles, USA
Short Talk: Cytosolic RBFox1 In Cardiac Fibrosis Regulation

Workshop 2: Cardiovascular Repair Mechanisms (Joint)

Monika M. Gladka†, Hubrecht Institute, Netherlands
Zeb2 Protects the Heart from Ischemic Damage

Ajit Magadum†, Icahn School of Medicine, Mount Sinai Hospital, USA
Cardiomyocyte-Specific Expression of Cell Cycle Inducer modRNA Induces Cardiac Regeneration

Shin Watanabe†, Icahn School of Medicine at Mount Sinai, USA
miR-146a Regulates Cardiac Function by Targeting SUMO1/SERCA2a Pathway

RNA Therapeutics in Clinical Translation (X8)

Roger J. Hajjar, Mount Sinai School of Medicine, USA
Gene Therapy & Genome Editing for Heart Failure

Patrick Most, University of Heidelberg, Germany
Development of Nucleic-Acid Therapeutics for Cardiac and Vascular Disorder Treatment

Mauro Giacca, International Center for Genetic Engineering, Italy
Small RNA therapy for cardiac regeneration

Modeling Human Heart Development (X7)

Christine L. Mummery, Leiden University Medical Center, Netherlands
Developmental Patterning of Human Pluripotent Stem Cells: From Beating Cardiomyocytes to Heart Disease Models

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

Gordon M. Keller, University Health Network, MaRS Centre, Canada
Modeling Cardiovascular Development with Human Pluripotent Stem Cells

Meeting Wrap-Up: Outcomes and Future Directions (Organizers) (X8)
Meeting Wrap-Up: Outcomes and Future Directions (Organizers) (X7)

FRIDAY, MARCH 31

Departure