36th International Society for Heart Research
North American Section Meeting
“HEART FAILURE: 21st CENTURY RESEARCH and THERAPEUTICS”
June 7-10, 2015
Seattle, Washington
Program Co-Chairs: Charles E. Murry, Rong Tian and Michael Regnier
International Society for Heart Research - North American Section

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Acknowledgements

Thank you to our Sponsors

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Special Thanks to Our Meeting Organizers:

Meeting Secretariat: Elizabeth Murphy
Conference Planner: Roselyn Robbins
Executive Secretary: Leslie Anderson Lobaugh
### Sunday June 7, 2015

#### Overview

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2:00 – 3:30 PM Young Investigator Competition (Junior)

4:00 – 5:30 PM Young Investigator Competition (Senior)

6:00 - 7:00 PM – Opening Keynote Speaker

Chair: Charles M. Murry, MD, PhD

Christopher Murray, MD, PhD

*Institute Director, Institute for Health Metrics and Evaluation*

*Professor of Global Health*

*University of Washington*

Talk Title: *The Global Burden of Ischemic Heart Disease*

7:15 - 9:00 PM Welcome Reception

### Monday June 8, 2015

#### Overview

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<td>7:00PM</td>
<td>midnight ECI Social</td>
<td>Tap House Grill</td>
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8:00 AM – 9:00 AM Plenary Talk – Research Achievement Award
Chairs: Rick Moss and Litsa Kranias

Mark Anderson, MD, PhD
Director of the Department of Medicine, Johns Hopkins University
Physician in Chief, The Johns Hopkins Hospital

Talk title: “Is CaMKII essential for coupling oxidative stress to cardiopulmonary disease?”

9:00 AM – 10:30 AM – Interest Group 1 Session – Heart Failure and Signaling
Chair: Rick Kitsis, Albert Einstein College of Medicine

9:00 Art Feldman, Temple University – “The arginine vasopressin V1A receptor: a new target for heart failure therapy”
9:22 Burns Blaxall, Cincinnati Children’s Hospital – “The role of PAR-1 in myocyte dysfunction”
9:44 Kika Sucharov, UC Denver – “Novel mechanisms of heart failure – lessons from the pediatric heart”
10:06 Michael Kapiloff, University of Miami – “RSK3 – a therapeutic target in heart failure”

9:00 AM – 10:30 AM – Interest Group 5 Session – Ischemia and Mitochondria
Chair: Chris Baines, University of Missouri

9:00 David Lefer, Louisiana University School of Medicine – “CAESAR: A consortium for cardioprotection”
9:22 Xin-Liang Ma, Temple University – “Systemic adiponectin malfunction and ischemic heart failure”
9:44 Chris Baines, University of Missouri – “The mitochondrial protein C1qbp binds to cyclophilin D and ATP synthase and regulates the mitochondrial permeability transition in the heart”
10:06 Charles Steenbergen, Johns Hopkins University – “MicroRNA in mitochondria”

10:30 AM – 11:00 AM – Coffee Break

11:00 AM – 12:30 PM – Interest Group 3 Session – Stem Cell and Gene Therapy
Chair: Farid Moussavi-Harami, University of Washington

11:00 Joseph Wu, Stanford University – “iPSCs for cardiac disease modeling and drug discovery”
11:22 Patrick Most, University of Heidelberg – “S100A1 gene therapy for heart failure”
11:44 Li Qian, University of North Carolina – “Reprogramming cardiac fibroblasts into cardiomyocytes”
12:06 Michael Chin, University of Washington – “Tafazzin enzyme replacement therapy in a mouse model of Barth Syndrome”

11:00AM – 12:30 PM – Interest Group 4: Ion Channels, E-C Coupling and Contractile Proteins
Chair: Chris Liu, University of Washington

11:00 Wolfgang Linke, Ruhr University, Bochum: “Posttranslational modifications of the giant protein titin in heart failure: new mechanistic insight and therapeutic implications”
11:22 Ye Chen-Izu, UC Davis: “Mechano-chemo-transduction during cardiomyocyte contraction via localized NOS signaling”
11:44 X Wehrens, Baylor College of Medicine: “Role of protein phosphatases in atrial fibrillation”
12:06 L Kranias, University of Cincinnati: “Hsp20/protein phosphatase 1/SERCA regulatory axis in heart failure”

12:30 PM – 2:00 PM Lunch & Posters
2:00 PM - 3:30 PM – Interest Group 2 Session: Cardiac Metabolism
Chair: Lawrence Young, Yale University

2:00 Ira Goldberg, Columbia University – “Understanding cardiac lipotoxicity”
2:22 Jun Ren, University of Wyoming – “Cardiac autophagy in obesity”
2:44 Qinghang Liu, University of Washington – Oral Abstract – “A critical TAK1 signaling pathway regulating programmed necrosis, myocardial remodeling, and heart failure propensity”
3:06 Dale Abel, University of Iowa – “Mechanisms of diabetic cardiomyopathy”

2:00 PM - 3:30 PM Session I: Hypertrophy and Cardiomyopathy
Chair: Joan Heller Brown, UC San Diego

2:00 John Seidman, Harvard – “Deep sequencing to understand cardiomyopathy genotype and phenotype”
2:20 Jeff Towbin, Cincinnati Children’s Hospital – “Final common pathways of cardiomyopathies and overlapping phenotypes”
2:50 Jun Sadoshima, Rutgers University – “Maladaptive signaling in cardiomyopathy and failure”
3:10 Jenny van Eyk, Cedars-Sinai – “Cross talk between PTMs: the regulation of PKG and GSK 3beta pathways”

3:30 PM - 4:00 PM – Coffee Break

4:00 PM - 5:30 PM Session II: Cardiac Epigenetics
Chair: Matt Hartman, University of Washington

4:00 Benoit Bruneau, Gladstone Institute – “Chromatin dynamics during cardiogenesis”
4:20 Dazhi Wang, Harvard University – “Non-coding RNAs in cardiac development and diseases”
4:40 Yiqiang Zhang, University of Washington – Oral Abstract - “Transcriptomic and Epigenomic Reprogramming of Adult Cardiomyocyte-Derived Cardiac Progenitor Cells”
4:50 John Stamatoyannopoulos, University of Washington – “Regulatory DNA elements that define cell history”
5:10 Robb MacLellan, University of Washington – “Epigenetic control of the cardiac cell cycle”

4:00PM - 5:30 PM Session III: Multi-Scale Modeling of the Heart
Chair: Mike Regnier, University of Washington

4:00 Jil Tardiff, University of Arizona – “Cardiac thin filament models”
4:20 C. David Williams – “Multi-filament models of cardiac sarcomeres”
4:40 Jeffrey Erickson, University of Otago – Oral Abstract - “A novel mechanism for modulation of cardiac CaMKII activity by nitric oxide”
4:50 Dan Beard, University of Michigan – “The metabolic contribution to whole-organ mechanical dysfunction in heart failure”
5:10 Andrew McCulloch, UC San Diego – “Patient-specific multi-scale modeling of dis-synchronous heart failure”

5:30 – 7:00 PM Posters and Reception

7:00 - 10:00 PM Evening Entertainment
Tuesday – June 9, 2015

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8:00 AM - 8:45AM Plenary Lecture
Chair: Michael Regnier, PhD

**Lee Hood, MD, PhD**

*President & Co-Founder, Institute for Systems Biology*

*Member of the National Academy of Science*

*Member of the National Academy of Engineering*

*Member of the Institute of Medicine*

Talk Title: “Proactive P4 Medicine: Catalyzing a Revolution in Healthcare through Wellness”

9:00 AM – 10:30 AM Session IV: Cardiovascular Bioengineering
Chair: Ying Zheng, University of Washington

9:00 Beth Pruitt, Stanford – “Micromechanical systems to study force dynamics and mechanotransduction in cardiomyocytes”

9:20 Ying Zheng, University of Washington – “Engineering Human Organ-Specific Microcirculations”

9:40 Sumit Kar, University of Wisconsin – Oral Abstract – “Phosphorylation of cardiac myosin binding protein C is a dominant determinant of diastolic function in engineered cardiac tissue”

9:50 Farid Moussavi-Harami – Oral Abstract – “2-deoxy adenosine triphosphate improves contraction and length-dependent activation in human end-stage heart failure”

10:00 Deok-Ho Kim, University of Washington – “Cardiomyocyte maturation through nanopatterning”

9:00 AM – 10:30 AM Session V: Novel Regulatory Mechanisms of Cardiac Metabolism
Chair: Stephen Kolwicz, University of Washington

9:00 Tish Murphy, NIH – “MCU and mitochondrial calcium flux”

9:20 Gary Lopaschuk, University of Alberta – “Protein acetylation and fatty acid oxidation”

9:40 Chi Fung Lee, University of Washington – Oral Abstract – “Restoration of NAD Redox Balance Ameliorates Heart Failure through Regulation of Cytosolic and Mitochondrial Protein Acetylation”
9:50  Wang Wang, University of Washington – “Beta adrenergic signaling on single mitochondria”
10:10  Doug Lewandowski, University of Illinois Chicago – “Regulation of endogenous lipid metabolism”
Speaker chosen from the abstracts

10:30 AM – 10:45 AM – Coffee Break

10:45 AM - 12:15 PM Session VI: Stem Cells I: Basic and small animal studies
Chair: Eric Adler, UC San Diego

10:45  Mike Laflamme, University of Washington – “Electrical integration of pluripotent stem cell-derived cardiac grafts”
11:05  Jop van Berlo, University of Minnesota – “Lineage tracing of adult cardiac stem cells”
11:35  Lior Gepstein, Technion University – “Disease modeling with human induced pluripotent stem cells”
11:55  Loren Field, Indiana University – “Gene pathways controlling cardiomyocyte renewal”

10:45 AM - 12:15 PM Session VII: Ion Channels and Heart Disease
Chair: Susan Howlett, Dalhousie University

10:45  Fernando Santana, University of Washington – “Ca²⁺ handling dysfunction in heart failure”
11:03  Steve Houser, Temple University – “Altered Ca²⁺ regulation in pathological cardiac hypertrophy”
11:21  Bjorn Knollman, Vanderbilt University – “Ca²⁺ triggered arrhythmias”
11:39  Jeanne Nerbonne, Washington University in St. Louis – “Mechanisms contributing to electrical remodeling in hypertrophy and failure”
11:57  Bertil Hille, University of Washington – “Phosphoinositide lipids regulate ion channels and excitability”

12:15 PM – 2:40 PM Lunch

2:40 PM – 4:10 PM Session VIII: Metabolism/Metabolomics: cancer vs. heart failure
Chair: Heinrich Taegtmeyer, UT Houston

2:40  Mohit Jain, UC San Diego – “Targeting cancer metabolism for therapy”
3:00  Daniel Raftery, University of Washington – “Metabolite profiles: cancer vs. heart”
3:20  Maenjo Kim, University of Washington – Oral Abstract – “Genetic Deletion of the γ2-subunit of AMPK Aggravates Cardiac Dysfunction During Pathological Hypertrophy”
3:30  Daniel Kelly, Sanford-Burnham Institute – “A systems approach to identify new targets in heart failure”
3:50  Peter Rabinovitch, University of Washington – “Extending cardiac healthspan by enhancing mitochondrial function”

2:40 PM – 4:10 PM Session IX: Proteotoxicity and Heart Failure
Chair: Loren Wold, Ohio State University

2:40  Federica Del Monte, Harvard University – “Cofilin and protein aggregates in human heart failure”
3:00  X. J. Wang, University of South Dakota – “Protein degradation and heart failure”
3:20  Monte Willis, University of North Carolina – Oral Abstract – “MuRF1 inhibits Cardiac Thyroid Hormone Signaling by TRα Mono-Ubiquitination and Localization to CAP350”
3:30  Ronglih Liao, Harvard University – “Amyloid cardiomyopathy”
3:50  Jeff Robbins, Cincinnati Children’s Research Institute – “Protein aggregates and autophagy: friend or foe”

4:10 PM – 4:25 PM Coffee Break
4:25 PM - 5:55 PM Session X: Cardiac Gene Therapy  
Chair: Zejing Wang, Fred Hutchinson Cancer Research Center  

4:25 Wally Koch, Temple University - “GRK2 inhibition for heart failure”  
4:45 Mike Regnier, University of Washington – “Ribonucleotide reductase gene therapy for heart failure”  
5:05 Chi Keung Lam, University of Cincinninati – Oral Abstract – “HAX-1 is a new regulator of cyclophilin-D expression and the mitochondria permeability transition pore in the heart”  
5:15 Hee-Cheol Cho, Cedars-Sinai Medical Center – “Creation of cardiac pacemakers via Tbx18 gene transfer”  
5:35 Jeff Chamberlain, University of Washington – “Dystrophin/utrophin gene therapy for muscular dystrophy”  

4:25 PM – 5:55 PM Session XI: Cardiovascular Genomics  
Chair: Sarah Franklin, University of Utah  

4:25 Tom Vondriska, UCLA – “Epigenomic control of the failing heart”  
4:45 Dan Garry, University of Minnesota – “Systems approaches to understanding cardiovascular and blood development”  
5:05 Christoph Rau, UCLA – Oral Abstract – “Network-based Approaches to Identify Novel Regulators of Heart Failure”  
5:15 Junhui Sun, NIH/NHLBI – Oral Abstract – “Synergistic cardioprotection induced by pharmacological postconditioning with H₂S and NO donors: S-sulfhydration (SSH) vs S-nitrosylation (SNO)”  
5:25 Cole Trapnell, University of Washington – “Genomics at the single-cell level”  

6:45PM – 11:00 PM Blake Island Cruise & Dinner

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Wednesday June 10, 2015

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8:00 AM – 8:45 AM Plenary Talk – Keith Reimer Lecture  
Chair: Elizabeth Murphy and Chuck Murry

Gerald Dorn, MD  
*Philip & Sima K Needleman Professor of Medicine*  
*Departments of Internal Medicine and Pharmacogenomics*  
*Division of Biology & Biomedical Sciences*  
*Washington University in St. Louis*

Talk Title: “Ancestry vs Ambiance: The evolutionary underpinnings of cardiac hypertrophy signaling”
9:00 AM – 10:30 AM Session XII: Mitochondria and Cardioprotection
Chair: Rong Tian, University of Washington

9:00 Peipei Ping, UCLA – “Maintenance and turnover of the mitochondrial proteome”
9:20 Asa Gustafsson, UC San Diego – “Mitophagy and heart failure”
9:40 Moshi Song, Washington University, Saint Louis – Oral Abstract – “Interdependence of mitochondrial fission and mitophagy in adult mouse hearts”
9:50 Sheu-shing Shey, Jefferson University – “Dynamic mitochondrial Ca²⁺ and ROS signaling in cardiac muscle cells”
10:10 Robbie Gottlieb, Cedars Sinai Medical Center – “Mitophagy and biogenesis”

9:00 AM - 10:30 PM Session XIV: Stem Cells II: Large animal and clinical studies
Chair: April Stempien-Otero, University of Washington

9:00 Eduardo Marban, Cedars-Sinai – “Cardiosphere-derived cells: How they work and what they can do”
9:20 Joshua Hare, University of Miami – “Mesenchymal stem cells: How they work and what they can do”
9:40 Tromondae Feaster, Vanderbilt University – Oral Abstract – “Comparable calcium handling of human iPSC-derived cardiomyocytes generated by multiple laboratories”
9:50 Jay Zhang, Univ. of Minnesota – “Epicardial patches for heart repair: How they work and what they can do”
10:10 Chuck Murry, University of Washington – “Human cardiomyocytes: How they work and what they can do”

10:30 AM – 11:00 AM Coffee Break

11:00 AM – 12:30 PM Session XV: Cardiac Signaling Pathways
Chair: Mark Sussman, San Diego State University

11:00 Jeff Molkentin, Cincinnati Children’s Research Institute – “Hypertrophic signaling”
11:20 Howard Rockman, Duke University – “GPCR signaling in the heart”
11:40 Joan Heller Brown, UCSD – Oral Abstract – “Selective coupling of the S1P₃ receptor subtype to S1P-mediated RhoA activation and cardioprotection”
11:50 Yibin Wang, UCLA – “Control of fetal gene expression by alternative splicing”
12:10 Lorrie Kirshenbaum, University of Manitoba – “protective mechanisms against cell death”

11:00 AM - 12:30 AM Session XIII: Cardiac Myofilament Proteins
Chair: John Solaro, University of Illinois, Chicago

11:00 Richard Moss, University of Wisconsin – “cMyBP-C & diastolic dysfunction in inherited and acquired cardiomyopathies”
11:20 J.P. Jin, Wayne State University – “Regulation & function of troponin in cardiac adaptation & heart failure”
11:40 Ilka Lorenzen-Schmidt, University of Guelph – Oral Abstract – “Crossing the line: A decrease in the Z-line protein CapZ worsens function after ischemia-reperfusion injury”
11:50 Glen Tibbits, Simon Frasier University – “Troponin and cardiomyopathies”
12:10 Henk Granzier, University of Arizona – “Titin and/or Nebulin and cardiomyopathies”

12:30 PM Meeting Closed