Developing Novel Heart Failure Therapeutics

International Society for Heart Research
NORTH AMERICAN SECTION MEETING
MAY 22-25TH, 2011

Organizers: Walter Koch (Jefferson) and Steven Houser (Temple)

Speaker List:

Mark Anderson (Univ of Iowa) Sophie Astolf (Jefferson)
Peter Backx (Univ of Toronto) Donald Bers (UC Davis)
Burns Blaxall (Rochester) Roberto Bolli (Univ of Louisville)
Joan Heller Brown (UCSD) Thomas Cappola (Penn)
Ju Chen (UCSD) Xiongwen Chen (Temple)
Joseph Cheung (Jefferson) Neil Chi (UCSD)
Henry Colecraft (Columbia Univ) Mario Delmar (NYU)
Gerald Dorn (Washington Univ) James Downey (UAB)
Jon Epstein (Penn) Arthur Feldman (Jefferson)
Loren Field (Indiana) Henk Granzier (Univ of Arizona)
Robert Gropler (Wash Univ.) Asa Gustafsson (UCSD)
Sandro Gyorke (Ohio St) Roger Hajjar (Mt. Sinai)
Jennifer Hall (UMinn) Joshua Hare (Univ of Miami)
Paul Janssen (Ohio State) David Kass (Hopkins)
Robert Kass (Columbia) Daniel P. Kelly(Sanford Burnham Res Inst)
Richard Kitsis (Einstein) Bjorn Knollmann (Vanderbilt)
Gideon Koren (Brown Univ) Litsa Kranias (Univ of Cinn)
Annarosa Leri (Harvard) E. Doug Lewandowski (Univ Chicago)
Rong-lih Liao (Harvard) Stephen Liggett (Umaryland)
Barry London (University of Pittsburgh) Gary Lopaschuk (Univ Alberta)
Calum MacRae (Brigham) Kenneth Margulies (UPenn)
Beth McNally (Chicago) Joseph Metzger (Univ of Minn)
Daria Mochly-Rosen (Stanford) Peter Mohler (Ohio State Univ)
Jeff Molkentin (Univ of Cinn) Ed Morrissey (Penn)
Elizabeth Murphy (NHLBI) Charles Murry (Univ of Washington)
Jeanne Neronne (Wash U) Brian O’Rourke (Hopkins)
Ken Philipson (UCLA) PeiPei Ping (UCLA)
Glenn Radice (TJU) Natalia Riobo (Jefferson)
Jeffrey Robbins (Univ of Cinn) Howard Rockman (Duke)
Anthony Rosenzweig (Harvard Univ) Abdullah Karim Sabri (Temple)
Michael N. Sack (NHLBI) Jun Sadoshima (UMDNJ)
Fernando Santana (Univ of Wash) Shey-Shing Sheu (Rochester University)
Paul Simpson (UCSF) John Solaro (Univ of Illinois, Chicago)
Jonathan Stamler (Case) Charles Steenbergen (Johns Hopkins)
Mark Sussman (SDSU) Rong Tian (University of Washington)
Jil Tardiff (Einstein College of Medicine) Jennifer Van Eyck (Johns Hopkins)
Matteo Vatta (Baylor College of Medicine) Yimin Wang (UCLA)
Xander Wehrens (Baylor College) James Wilson (Univ. Penn)
Matt Wolf (Duke) Joseph Wu (Stanford)
Lawrence H. Young (Yale University) Katherine Yutzey (Cincinnati)
Mark Ziolo (Ohio State)
Sunday May 22nd

10:00 AM-5:00 PM Registration

1:00-4:00 PM Interest Group Workshops

There will be three one hour sessions with 2 or 3 interest groups (IG) per session. Each of these sessions will have a 30 minute plenary talk followed by questions and answers, and an Interest Group Business meeting to nominate a new Chair and planning committee.

Session I (1-2 PM)

IG1 Signaling in Hypertrophy and Failure (Jeffrey Molkentin, Chair)
Yibin Wang (UCLA)
   Signaling Pathways that Protect the Heart From Injury

IG2 Cardiac Metabolism (Douglas Lewandowski, Chair)
Robert Gropler, MD, Washington University, St. Louis, MO
   Metabolic Imaging of the Heart: Visualizing Dynamic Processes within a Dynamic Organ

Session 2 (2-3 PM)

IG4 Contractile and Regulatory Proteins (John Solaro, Chair)
Paul Janssen (Ohio State)
   Functional Abnormalities of Mutated Contractile Proteins

IG5 Excitation-Contraction Coupling (Joseph Rabinowitz, Chair)
Litsa Kranias (Univ of Cinn)
   Human Phospholamban Mutations and Cardiac Dysfunction

Session 3 (3-4 PM)

IG6 Ion Channels and Arrhythmias (Barry London, Chair)
Barry London (University of Pittsburgh)
   Mechanisms of Acquired Long QT in Heart Failure

IG7 Ischemia, Cardioprotection and Mitochondria (Charles Steenbergen, Chair)
Jennifer Van Eyk (Johns Hopkins)
   Proteomic Identification of Heart Failure Therapy Targets

4:00-5:45 PM Young Investigators Competition

Junior YIA Finalist

Mark Kohr (Johns Hopkins)
   Redox modifications play a critical role in myocardial ischemic precondition

Tiffany Nguyen (NIH)
   Cysteine 203 of cyclophilin D is critical for Cyclophilin D activation of the mitochondrial permeability transition pore

Laetitia Pereira (Univ CA Davis)
   Epac2 mediates beta1-adrenergic induced cardiac SR Ca leak via CaMKI-dependent RyR2 phosphorylation
Domenico Taglieri (Univ of Illinois)

*P21-activated kinase-1 and protein phosphatase 2A prevent the development of Isoproterenol-induced cardiac hypertrophy by inhibiting Erk1/2*

Senior YIA Finalist

Shinichi Oka (UMDNJ)

*PPARα-Sirt1 complex mediates cardiac hypertrophy and failure through direct suppression of ERR response element*

Sanjeewa Goonasekera (Cinc Childrens Hospital)

*Decreased cardiac L-type Ca2+ channel activity induces hypertrophy and heart failure in mice*

Jeffrey Erickson (UC Davis)

*The novel FRET sensor Camui provides new insight into mechanisms of CaMKII activation in cardiomyocytes*

6:00-8:00 PM Opening Reception

Monday May 23rd

7:00-8:00 Breakfast Buffet

7:00a -5:00p Registration

8:00-8:15 Opening Remarks: Drs Houser and Koch

8:15-9:00 Plenary Talk:
Howard Rockman (Duke University)

*Novel Approaches to Identify and Test Heart Failure Therapies.*

9:00-12:00 Morning Sessions

10:20-10:40 Coffee Break

Session 1: Novel Signaling Pathways that Induce Pathological Hypertrophy: (IG1)
(Moderator: Abdelkarim Sabri, Temple University)

Anthony Rosenzweig (Harvard University)

*SGK1 in adverse electrical and mechanical remodeling?*

Peter Backx (Univ of Toronto)

*New Insights into K+ regulation in controlling Ca2+ hypertrophy pathways*

Jeff Molkentin (Univ of Cinn)

*Membrane Ca2+ channels as microdomain regulators of hypertrophy*

Joan Heller Brown (UCSD)

*Evidence that CaMKII regulates hypertrophy*

Fernando Santana (Univ of Wash)

*Ca2+ that activates Calcineurin-NFAT in the heart*

Paul Simpson (UCSF)

*Novel adrenergic signaling pathways initiating cardiac hypertrophy.*
Session 2: Metabolic Defects in the Failing Heart: (IG2)
(Moderator: Gary Lopa Schuck, Univ of Alberta)

Daniel P. Kelly (Burnham Research Institute)
   *Fuel Metabolic Derangements in Heart Failure: Friend or Foe?*

E. Doug Lewandowski (University of Illinois at Chicago)
   *Lipid dynamics and contractile function of the heart*

Rong Tian (University of Washington)
   *Signaling mechanisms regulating cardiac energy production*

Michael N. Sack (NHLBI)
   *Regulation of cardiac mitochondrial function*

Elizabeth Murphy (NHLBI)
   *Role of mitochondrial function in ischemic protection*

Lawrence H. Young (Yale University)
   *Metabolic adaptations of cardiomyocytes to coronary artery disease*

12:00-1:30 Lunch and Poster Session I

12:00-1:00 Council Meeting I

1:30-2:30 IG3: Stem Cell and Gene Therapy Interest Group
James M. Wilson (Univ Penn)
   *Novel Gene Therapy approaches for Cardiovascular Disease*

2:30-5:30 Afternoon Sessions

3:40-4:00 Coffee Break

Session 3: Model Organisms for Heart Failure Discovery
(Moderator: Ju Chen (UCSD))

Matt Wolf (Duke)
   *Drosophila screen to identify new heart failure genes*

Gerald Dorn (Washington Univ)
   *Drosophila cardiomyopathies: Flying to the heart of mitochondrial fusion.*

Neil Chi (University of CA San Diego)
   *Zebrafish Models of Cardiovascular Development and Disease*

Calum MacRae (Brigham)
   *Zebrafish to identify new arrhythmia genes*

Loren Field (Indiana)
   *Mouse models and cardiac regeneration*

Gidean Koren (Brown Univ)
   *Using transgenic rabbits with long QT to identify mechanisms of Arrhythmias*

Session 4: Omic Solutions to Heart Failure
(Moderator: Richard Kitsis, Einstein)

Stephen Liggett (Umaryland)
   *Use of Founder Population GWAS of Cardiac Traits for Identifying Heart Failure Modifying SNPs*

Jennifer Hall (UMinn)
   *Early Detection of CV Disease: Omic Approaches*

PeiPei Ping (UCLA)
   *Cardiac Mitochondria: one protein family from two genomes*
5:30-7:00 PM Poster Session 1

Dinner on your own or Faculty Dinner

Tuesday May 24th

7:00-8:00 Breakfast Buffet

7:00a -5:00p Registration

8:00-9:00 AM Plenary Lecture:
Roger Hajjar
Translating Heart Failure Targets into Therapy

9:00-12:00 Morning Sessions

10:20-10:40 Coffee Break

Session 5: Heart Failure Insights from Developmental Biology
(Moderator: Natalia Riobo, Jefferson)

Jon Epstein (Penn)
Insights into Heart Failure Therapy from Development

Glenn Radice (TJU)
Cadherins in the embryonic and adult heart

Joseph Wu (Stanford)
Biological insights from molecular imaging of pluripotent stem cell therapy

Sophie Astrof (Jefferson)
Role of Fibronectin in the Development of the Neural Crest

Ed Morrisey (UPenn)
Regulation of Cardiac Progenitor Expansion and Differentiation by Wnt Signaling

Katherine Yutzey (CCHMC)
Molecular mechanisms of heart valve development and disease

Session 6: Defective Ca Handling in the Failing Heart (IG5)
(Moderator: Xiongwen Chen, Temple University)

Ken Philipson (UCLA)
NCX: Surprises from Gene Ablation

Sandor Gyorke (Ohio St)
Mechanisms of RYR-Mediated Cardiac Dysfunction

Xander Wehrens (Baylor University)
RyR2 Phosphorylation and Heart Failure

Henry Colecraft (Columbia Univ)
Beta subunit regulation of of the L-type Ca Channel
Shey-Shing Sheu (Rochester University)  
*Mitochondrial Ca and Myocyte Death Signaling*

Peter Mohler (Ohio State Univ)  
*Ankrin Mediated Cardiomyopathies*

12:00-1:30 Lunch and Poster Session 2

12:00-1:00 Council Meeting 2

1:30-2:30 Plenary Lecture

David Kass (Johns Hopkins)  
*Novel Therapies to Reverse Structural and Functional Defects in the Failing Heart*

2:30-5:30 Afternoon Sessions

3:40-4:00 Coffee Break

Session 7: Recent Advances in Cell-Based Therapies for Heart Failure  
(Moderator: Kenneth Margulies, UPenn)

Annarosa Leri (Harvard)  
*New Insights Into Cardiac Progenitor Cells*

Mark Sussman (SDSU)  
*Pim-1 and Cardiac Progenitor Cells*

Rong-lih Liao (Harvard)  
*Side Population Cardiac Progenitor Cells for Heart Failure*

Roberto Bolli (Univ of Louisville)  
*Translational and Clinical Studies of Cardiac Progenitor Cells*

Joshua Hare (Univ of Miami)  
*Angiogenesis in Heart Failure using Endothelial Progenitor Cells*

Kenneth Margulies (UPenn)  
*Factors Regulating Stem Cell Engraftment in the Heart*

Session 8: Signaling between Sarcomeric Protein, Cardiac Metabolism and Cardiac Ion Channels. (IG4)  
(Moderator: Mark Ziolo: Ohio State)

Jil Tardiff (Einstein College of Medicine)  
*Thin Filament Mutations and Disrupted Ca²⁺ handling*

Matteo Vatta (Baylor College of Medicine)  
*Cytoskeletal Disruption and Cardiac Arrhythmias*

Jeffrey Robbins (Univ of Cinn)  
*Contractile Protein Mutations and Cardiac Dysfunction*

John Solaro (Univ of Illinois, Chicago)  
*Sarcomeric Protein Mutations and Sudden Death*

Joseph Metzger (Univ of Minn)  
*Improving Contractile Protein Function in the Ischemic Heart*

Henk Granzier (Univ of Arizona)  
*Titin Mutations and Cardiac Dysfunction*
5:30-6:30PM ISHR 2011 Outstanding Investigator Award lecture

Walter Koch (Jefferson)

*Is it Translation or Perseverance? GRK2 and S100A1 as Targets for Heart Failure Gene Therapy*

6:30-7:30 Reception and Poster session 2

7:30- Banquet

*Wednesday May 25th*

7:00-8:00 Breakfast Buffet

7:00a -12:30p Registration

8:00-9:00 AM Reimer lecture: Charles Murry (Univ of Washington)

*Regenerating the Heart: A Case for Rational Optimism*

9:00-12:00 Morning Sessions

10:20-10:40 Coffee Break

Session 9: Ion Channels and Arrhythmias in Heart Failure (IG6)
(Moderator: Joseph Cheung: Jefferson University)

**Mario Delmar (NYU)**

*Connexins and cardiac arrhythmias*

**Jeanne Nerbonne (Wash U)**

*K+ channels and cardiac arrhythmias*

**Mark Anderson (Univ of Iowa)**

*CaMKII and cardiac arrhythmias*

**Bjorn Knowlmann (Vanderbilt)**

*Genetic and acquired mechanisms of long QT*

**Robert Kass (Columbia)**

*Protein Interactions producing Long QT*

**Donald Bers (UC Davis)**

*SR Ca^{2+} overload and Cardiac Arrhythmias*

**Session 10: Cardioprotection for the Failing Heart (IG7)**
(Moderator: Art Feldman, Jefferson)

**James Downey (UAB)**

*Adenosine A2b receptors in cardioprotection*

**Asa Gustafsson (UCSD)**

*Autophagy in ischemic heart disease*

**Jun Sadoshima (UMDNJ)**

*Nicotinamide Phosphoribosyltransferase, autophagy, and ischemia-reperfusion injury*

**Brian O'Rourke (Hopkins)**

*Mitochondrial ion transport and ischemia-reperfusion injury*
Daria Mochly-Rosen (Stanford)
*PKC and Cardioprotection*

Jonathan Stamler (Case)
*Endogenous S-nitrosothiols and cardioprotection*

Closing Remarks: Drs Houser and Koch