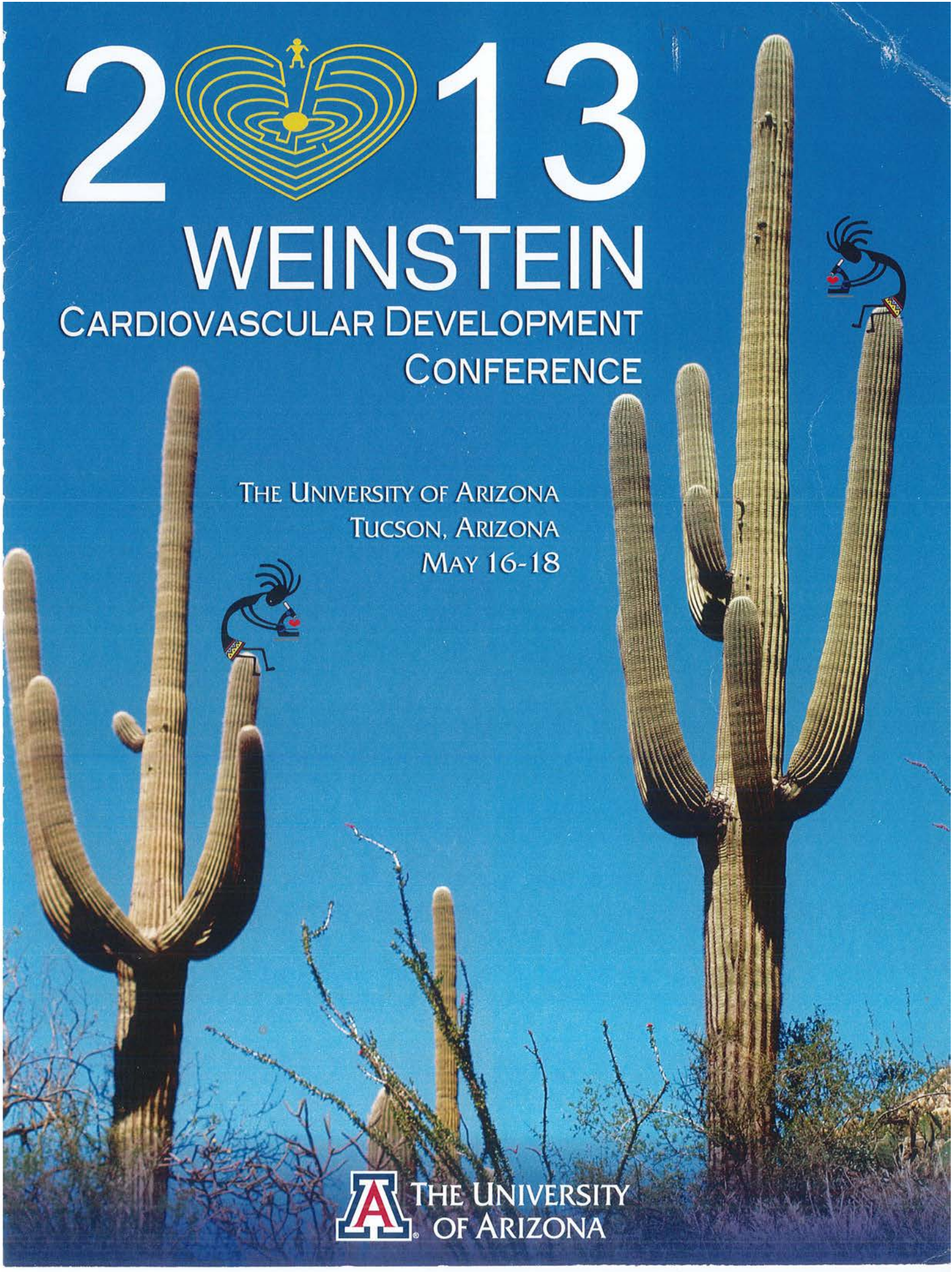
2013
WEINSTEIN
CARDIOVASCULAR DEVELOPMENT
CONFERENCE
THE UNIVERSITY OF ARIZONA
TUCSON, ARIZONA
MAY 16-18
THE UNIVERSITY
OF ARIZONA

Condensed Conference Schedule

Thursday, May 16

11:00 am-6:00 pm	Registration
1:50 pm	Opening Remarks
2:00-4:00 pm	Platform Session 1: Environmental Session
5:00-6:00 pm	Keynote Talk- Chuck Murry
6:00-7:30 pm	Reception
7:30-10:00 pm	Poster Preview and Social

Friday May 17

7:30-9:00 am	Continental Breakfast
8:00-10:15 am	Poster Session 1: (180 posters up for entire meeting; Odd Numbered Posters Present)
8:30-9:30 am	Moderated Poster Discussion 1
9:00-10:00 am	Moderated Poster Discussion 2
10:20-12:00 pm	Platform Session 2 :CHD Models
12:00-1:30 pm	Box Lunch; Business Meeting
1:30-3:30 pm	Platform Session 3: Genomics and Regulation
3:30-3:50 pm	Coffee Break
3:50-5:50 pm	Platform Session 4: Coronaries, Epicardium, Conduction System
	Free evening for dinner and discussions
8:30-10:00 pm	Posters and Social

Saturday May 18

7:30-9:00 am	Continental breakfast
8:00-10:15 am	Poster Session 2 (Even Numbered Posters Present)
8:30-9:30 am	Moderated Poster Discussion 3
9:00-10:00 am	Moderated Poster Discussion 4
10:20-12:00 pm	Platform Session 5: Valve Development
12:00-1:30 pm	Box lunches, NIH Presentations
1:30-3:10 pm	Platform Session 6: Heart Formation and Progenitors
3:10-3:30 pm	Coffee Break
3:30-5:10 pm	Platform Session 7: Cardiac Growth and Regeneration
6:00 pm - ?	Banquet with awards and music

Detailed Conference Schedule

Thursday, May 16, 2013

11:00am - 6:00pm Registration - *Foyer of the Sonoran Ballroom*

1:50pm Opening Remarks, *Sonoran Ballroom*

Thursday Afternoon	**Platform Session 1: Environmental Session** - *Sonoran Ballroom*
Session Chairs	Todd Camenisch and Ching-Pin Chang

2:00-2:20pm **S1.1. Ambient air pollution and traffic exposures and congenital heart defects in the San Joaquin Valley of California**

Amy Padula[1], Ira B Tager[2], Suzan L Carmichael[1], SK Hammond[2], FW Lurmann[1], Gary M. Shaw[1] and Edward J. Lammer[3][1]Department of Pediatrics, Stanford University, Palo Alto, CA, [2]University of California, Berkeley, CA, [3]Children's Hospital Oakland Research Institute, Oakland, CA

2:20-2:40 **S1.2. Environmental risk factors for congenital heart defects, results from the national birth defects prevention study**

Jennita Reefhuis, PhD, for the National Birth Defects Prevention Study, Birth Defects Branch, Division of Birth Defects and Developmental Disabilities, Centers for Disease Control and Prevention, Atlanta, GA

2:40-3:00 **S1.3. Nicotine Inhibits endocardial cushion development through Nfatc and Vegf**

Yiqin Xiong[1], Jin Yang[1], Calvin T. Hang[1], Richard M. Chen[1], Ching-Pin Chang[1]
[1]Department of Medicine, Cardiovascular Medicine, Stanford University School of Medicine, Stanford, CA

3:00-3:20 **S1.4. Mouse model of hypoplastic left heart syndrome shows multigenic etiology and defects in energy Metabolism**

Xiaoqin Liu[1], Shazina Saeed[1], Brian Gibs[1], You Li[1], Richard Francis[1], George Gabriel[1], Linda Leatherbury[2], Kimimasa Tobita[1], Dennis Kostka[1], Cecilia.W. Lo[1]
[1]Dept of Developmental Biology, University of Pittsburgh School of Medicine, Pittsburgh, PA, [2]Children's National Medical Center, Washington, DC

3:20-3:40 **S1.5. The epicardium as a sensor of AHR-mediated heart malformation**

Peter Hofsteen[1], Jess Plavicki[1], Richard E. Peterson[1], and Warren Heideman[1]
[1]Division of Pharmaceutical Sciences, School of Pharmacy University of Wisconsin, Madison, WI

3:40-4:00 **S1.6. Depletion of Retinoic Acid Receptors Initiates a Novel Positive Feedback Mechanism that Promotes Teratogenic Increases in Retinoic Acid**

*Enrico D'Aniello[1] and Joshua S. Waxman[1]**
[1]Department of Molecular Cardiovascular Biology and Developmental Biology Divisions, Cincinnati Children's Hospital Medical Center, Cincinnati, OH

Thursday Evening	Keynote Address and Reception

5:00 - 6:00pm **Keynote Address: Charles Murry, PhD, University of Washington**
Cardiac Regeneration: Lessons from Development

6:00 - 7:30pm **Reception,** *Sonoran Ballroom Rooftop*

7:30-10:00pm **Poster Sessions & Social**, *Santa Catalina Ballroom*

Friday, May 17, 2013

7:30-9:00am Continental Breakfast, *Sonoran Ballroom Rooftop*

8:00-10:15 am	Poster Session 1: Odd Numbered Posters Present

8:30 - 9:30 am **Moderated Poster Discussion 1**
Moderator- Heather Bartlett, MD, University of Iowa

M1.1. The cell cycle kinase Nek2 modulates ciliogenesis and resorption in the development of left right asymmetry
Basudha Bas, Samuel Endicott, Shiaulou Yua, Mustafa Khokha, and Martina Brueckner
Yale University School of Medicine

M1.2. Identification of a role for phosphofructokinase-1 in heterotaxy
Jason Cowan, Ashley Cast, Stephanie M. Ware
Cincinnati Children's Hospital Medical Center

M1.3. Forward genetic screen with mouse ENU mutagenesis reveals a central role for the cilia and left-right patterning in congenital heart disease.
You Li, Nikolas Klena, Richard Francis, Xiaoqin Liu, Kristi Lemke, George Gabriel, Bishwanath Chatterjee[1], Rama Damerla[1], Yu Chen[1], Shane Anderton[1], Caroline Lawhead[1], Laura Reinholdt[2], Kimimasa Tobita[1], Linda Leatherbury[3], Gregory Pazour[4], Cecilia W. Lo[1]
1Department of Developmental Biology, University of Pittsburgh School of Medicine, Pittsburgh, PA, 2Jackson Laboratory, Bar Harbor, ME, 3Children's National Medical Center, Washington, D.C., 4Program in Molecular Medicine, University of Massachusetts Medical School, Worcester, MA

M1.4. Genetic variant located in an intron of SCN10A functionally affects an SCN5A enhancer
Malou van den Boogaard[1,], David E Arnolds[2,3,*], Scott Smemo[4,*], Ozanna Burnicka-Turek[4,*], Petra Klous[5], Harmen J G van de Werken[6], Wouter de Laat[5], Marcelo A Nobrega[4,#], Ivan P Moskowitz[2,3,#], Phil Barnett[1,#] and Vincent M Christoffels[1,#]*
1Department of Anatomy, Embryology and Physiology, Heart Failure Research Center, Academic Medical Center, University of Amsterdam, The Netherlands; 2,3,4Departments of Pediatrics2, Pathology3 and Human Genetics4, University of Chicago, Illinois; 5Hubrecht Institute, KNAW and University Medical Center Utrecht, The Netherlands; 6Department of Cell Biology, Erasmus MC Rotterdam, The Netherlands *,# equal contribution

M1.5. Common genetic variant for conduction system function at *SCN10A* modulates *SCN5A* enhancer activity.

Ozanna Burnicka-Turek[*1,2], *Malou van den Boogaard*[*4], *Scott Smemo*[*3], *David E. Arnolds*[*1,2], *Harmen J.G. van de Werken*[5], *Petra Klous*[5], *Wouter de Laat*[5], *Vincent M. Christoffels*[#4], *Marcelo A. Nobrega*[#3], *Phil Barnett*[#4], *and Ivan P. Moskowitz*[#1,2]

Departments of Pediatrics1, Pathology2, and Human Genetics3, The University of Chicago, Chicago, IL, USA; Department of Anatomy, Embryology and Physiology4 Academic Medical Center, University of Amsterdam, Amsterdam, The Netherlands; Institute-KNAW & University Medical Center Utrecht5, Utrecht, The Netherlands. * authors contributed equally to this work; # authors jointly directed this work

M1.6. A strict lineage boundary between the first and second heart fields is defined by the contribution of the Tbx5 lineage.

Joshua D. Wythe, W. Patrick Devine, Kazuko Koshiba-Takeuchi, Kyonori Togi, Benoit G. Bruneau.

Gladstone Institute of Cardiovascular Disease, University of California, San Francisco, San Francisco, CA, USA.

9:00-10:00 am

Moderated Poster Discussion 2

Moderator- Sylvia Evans. PHD, University of California, San Diego

M2.1. Regional expression of Cyp26 enzymes in the anterior lateral plate mesoderm is required to balance cardiac and vascular lineages

Ariel Rydeen[1,2,3] *and Joshua Waxman*[2,3]

Cincinnati Children's Hospital

M2.2. IGF2 signaling regulates cardiomyocyte proliferation

Hua Shen[1], *Susana Cavallero*[1], *Peng Li*[1], *Kristine Estrada*[1], *Miguel Constancia*[2], *and Henry M. Sucov*[1]

University of Southern California

M2.3. Arterial and venous progenitors of the major axial vessels originate at distinct locations

Vikram Kohli[1], *Jennifer A. Schumacher*[1], *Sharina Palencia Desai*[1,2], *Kira Rehn*[1] *and Saulius Sumanas*[1],

Cincinnati Children's Hospital

M2.4. The role of hippo and Pitx2 signaling in cardiac regeneration

Ge Tao[1], *Todd Heallen*[1], *Yuka Morikawa*[2], *John Leach*[1], *Min Zhang*[1,5], *Ashley Benham*[2], *James T. Willerson*[2], *Robert J. Schwartz*[2,6], *Randy L. Johnson*[3,4] *and James F. Martin*[1,2,3,5]

Baylor College of Medicine

M2.5. Fzd2 mediated non-canonical Wnt signaling in cardiac progenitor development

Ethan David Cohen

University of Rochester

M2.6 YAP1 promotes adult cardiomyocyte proliferation and improves outcome after myocardial infarction

Zhiqiang Lin[1*], *Alexander von Gise*[1*], *Pingzhu Zhou*[1], *Qing Ma*[1], *Jianming Jiang*[2], *Allan Yau*[1], *Jessica Buck*[1], *Jinghai Chen*[1], *Da-zhi Wang*[1] *and William Pu*[1#],

Children's Hospital Boston

Friday Morning	**Platform Session 2: CHD Models,** *Sonoran Ballroom*
	Session Chairs Michiko Watanabe and Kristy Red-Horse

10:20-10:40am **S2.1. Mouse and human CRKL is dosage sensitive for heart morphogenesis**

SE Racedo[1], J Chung[1], DM McDonald-McGinn[2], A Bailey[2], N Meyer[2], E Goldmuntz[2], E Zackai[2], BS Emanuel[2], B Zhou[1], B Funke[3] and BE Morrow[1]

[1]Department of Genetics, Albert Einstein College of Medicine, Yeshiva University, Bronx, NY, [2]Children's Hospital of Philadelphia, University of Pennsylvania, Philadelphia, PA, [3]Laboratory for Molecular Medicine, Partners HealthCare Center for Personalized Genetic Medicine, Cambridge, MA

10:40-11:00 **S2.2. A Dominant Negative JUN mutant is associated with human congenital heart disease and alters a physical and functional interaction with TBX1**

Hua Pan[1], Tao Zhang[1], Julie De Mesmaeker[2], Anuja Neve[2], Matthew A. Benson[2], Brande C. Latney[3],Petra Werner[3], Elizabeth Goldmuntz[3], Shoumo Bhattacharya[2], and Jason Z. Stoller[1]

[1]Division of Neonatology, Department of Pediatrics, Children's Hospital of Philadelphia, Philadelphia, PA, [2]Department of Cardiovascular Medicine, The Wellcome Trust Centre for Human Genetics, University of Oxford, Roosevelt Drive, Oxford, UK, [3]Department of Pharmacology and the Institute for Translational Medicine and Therapeutics, Perelman School of Medicine at the University of Pennsylvania, Philadelphia, PA, [4]Division of Cardiology, Department of Pediatrics, Children's Hospital of Philadelphia, PA

11:00-11:20 **S2.3. Mechanisms of Gene Haploinsufficiency: Chromatin factors and phenotypic rescue in a mouse model of DiGeorge syndrome**

F. Gabriella Fulcoli[1], Monica Franzese[2], Claudia Angelini[2], Antonio Baldini[1,3]

1) Institute of Genetics and Biophysics, CNR; 2) Istituto Applicazioni del Calcolo, CNR; 3).University Federico II, Napoli, Italy

11:20-11:40 **S2.4. Composition and function of the TBX5 cardiac transcriptional complex**

Lauren Waldron[1,2], Kerry Dorr[1,2], Ileana M. Cristea[4], Ivan Moskowitz[5] and Frank L. Conlon[1,2,3]

(1) McAllister Heart Institute, School of Medicine, UNC-Chapel Hill, Chapel Hill, NC, (2) Department of Genetics, School of Medicine, UNC-Chapel Hill, Chapel Hill, NC (3) Department of Biology, UNC-Chapel Hill, Chapel Hill, NC, (4) Department of Molecular Biology, Princeton University, NJ, (5) Departments of Pediatrics and Pathology, The University of Chicago, Chicago, IL

11:40-12:00 **S2.5. Foxf genes integrate Tbx5 and Hedgehog pathways in second heart field cardiac progenitors for atrial septation**

Andrew Hoffmann[1], Holly Yang[1], Ozanna Burnicka-Turek[1], Josh Bosman[1], Yufang Zhang[2], StevenVokes[3], Andrew McMahon[4], Vladimir Kalinichenko[2], Ivan Moskowitz[1]

[1]Departments of Pediatrics and Pathology, The University of Chicago, Chicago, IL, [2]Cincinnati Children's Hospital Medical Center, Cincinnati, OH [3]Section of Molecular Cell & Developmental Biology, Institute for Cellular and Molecular Biology, Austin, TX, [4]Department of Stem Cell and Regenerative Biology, Department of Molecular and Cellular Biology and Harvard Stem Cell Institute, Harvard University, Cambridge, Massachusetts

12:00 - 1:30 Box Lunch; Weinstein Conference Business Meeting

Friday Afternoon	**Platform Session 3: Genomics & Regulation,** *Sonoran Ballroom*
	Session Chairs Tom Doetschman and Kryn Stankunas

1:30-1:50pm **S3.1. Whole-exome Sequencing Identifies Novel Genes for Autosomal Recessive Heterotaxy**

Muhammad Tariq[1],Ashley E. Cast[1] and Stephanie M. Ware[1, 2]
Divisions of [1]Molecular Cardiovascular Biology, [2]Human Genetics, Cincinnati Children's Hospital Medical Center, Cincinnati, OH

1:50-2:10 **S3.2. Altered enhancer usage between fetal and adult cardiac transcriptional programs identified by genome-wide GATA4 ChIP-seq**

Aibin He[1], Fei Gu[1], Qing Ma[1], Len A. Pennacchio[3], William T. Pu[1,2].
[1]Department of Cardiology, Boston Children's Hospital and Harvard Medical School, Boston, MA, [2]Harvard Stem Cell Institute, Harvard University, Cambridge, MA, [3]Genomics Division, MS 84-171, Lawrence Berkeley National Laboratory, Berkeley, CA

2:10-2:30 **S3.3. microRNA-1 is required for normal cardiac sarcomere formation and function**

Amy Heidersbach, Karen Carver-Moore, Yu Huang, Kathryn Ivey, and Deepak Srivastava
Gladstone Institute of Cardiovascular Disease, University of California, San Francisco CA

2:30-2:50 **S3.4. Direct differentiation from pluripotent stem cells tocardiac lineages by defined factors**

Yuika Morita[1,2], Kazuko Koshiba-Takeuchi[2] and Jun K. Takeuchi[1,2,3]
[1]:Graduate School of Biological Sciences, the University of Tokyo, [2]:Division of Cardiovascular Regeneration, IMCB, the University of Tokyo, [3]:JST PRESTO, Understanding life by iPS cells technology

2:50-3:10 **S3.5. Heart field origin of great vessel precursors relies on nkx2.5-mediated vasculogenesis**

*Noëlle Paffett-Lugassy[1,2,3], Reena Singh[4], Burcu Guner-Ataman[1,2], Richard P .Harvey[4], C. Geoffrey Burns[1,2,3] * & Caroline E. Burns[1,2,3] **
[1]Cardiovascular Research Center, Massachusetts General Hospital, Charlestown, MA, [2]Harvard Darlinghurst, New South Wales, Australia

3:10-3:30 **S3.6. ETS factors regulate the Vegf-dependent, arterial-specific expression of Dll4.**

Joshua D. Wythe[1,2,3], Lan T. H. Dang[4,5,6], W. Patrick Devine[1,3,7], Emilie Boudreau[4,5,6], Stanley T. Artap[8], William Schachterle[3], Didier Y.R. Stainier[3,9], Peter Oettgen[8], Brian L. Black[3], Benoit G. Bruneau[1,2,3], Jason E. Fish[4,5,6]

1. Gladstone Institute of Cardiovascular Disease, San Francisco, CA, 2. Department of Pediatrics, University of California, San Francisco CA, 3. Cardiovascular Research Institute, University of California, San Francisco, CA, 4. Toronto General Research Institute, University Health Network, Toronto, Canada, 5. Department of Laboratory Medicine and Pathobiology, University of Toronto, Toronto, Canada, 6. Heart and Stroke Richard Lewar Centre of Excellence in Cardiovascular Research, Toronto, Canada, 7. Department of Pathology, University of California, San Francisco, CA, 8. Divisions of Cardiology and Molecular and Vascular Medicine, Center for Vascular Biology Research, Beth Israel Deaconess Medical Center, Harvard Medical School, Boston, MA. 9. Department of Developmental Genetics, Max Planck Institute for Heart and Lung Research, BadNauheim, Germany

3:30 - 3:50pm coffee break

Friday Afternoon **Platform Session 4: Coronaries, Epicardium, Conduction System**
Sonoran Ballroom
Session Chairs Stacey Rentschler and Chris Brown

3:50-4:10pm **S4.1. Epicardial CXCL12 and Coronary Vessel Development**

Susana Cavallero, Hua Shen, Henry M. Sucov,
Broad Center for Regenerative Medicine and Stem Cell Research, Keck School of Medicine, University of Southern California, Los Angeles, CA

4:10-4:30 **S4.2. Efficient Differentiation of Human Pluripotent Cells into Wt1 Epicardium through an Isl1+ Primitive Mesoderm Intermediate**

Miranda Hayworth[1,2], David Reynolds[1,2], Laura Menendez[1,2], Tatiana Yatskievych[3,4], Parker Antin[3,4] and Stephen Dalton[1,2]
[1]Paul D. Coverdell Center for Biomedical and Health Sciences and [2]Department of Biochemistry and Molecular Biology, Franklin College of Arts and Sciences, University of Georgia, Athens , GA, [3]Department of Cellular and Molecular Medicine and [4]Department of Molecular and Cellular Biology, College of Medicine, The University of Arizona, Tucson AZ

4:30-4:50 **S4.3. Coronary artery stems are patterned by aorta specific myocardial development**

Heidi Chen[a], Aruna Poduri[a], Brian Raftrey[a], Andrew S. McKay[a], Kirk Willmarth[b], Jared[c] Churko, Joseph Wu[c], and, Kristy Red-Horse[a,d]
Department of Biological Sciences, [b]Department of Developmental Biology, [c]Department of Medicine, Division of Cardiology, Stanford University, Stanford CA

4:50-5:10 **S4.4. Locus-confined combinatorial regulatory elements control Tbx3 expression in the cardiac conduction system**

Henk van Weerd[1], Ileana Badi[1]*, Malou van den Boogaard[1], Corrie de Gier-de Vries[1],Harmen J van de Werken[2], Wouter de Laat[2], Phil Barnett[1], Vincent M*

Christoffels[1] **equal contribution*
[1]Dept. of Anatomy, Embryology & Physiology, Academic Medical Center, Amsterdam, The Netherlands, [2]Hubrecht Institute-KNAW and University Medical Center Utrecht, Utrecht, The Netherlands

5:10-5:30 **S4.5. A Pitx2-microRNA pathway that delimits sinoatrial node development and inhibits predisposition to atrial fibrillation**

Jun Wang[1], *Yan Bai*[1,4], *Na Li*[1], *Stephanie B. Greene*[1], *Min Zhang*[1,4], *Ye Tao*[1], *Xander H.T. Wehrens* [1,5], *and James F. Martin*[#,1,2,3,4]
[1] Department of Molecular Physiology and Biophysics, Baylor College of Medicine, Houston, Texas, [2] Texas Heart Institute, Houston, Texas , [3] Program in Developmental Biology, Baylor College of Medicine, Houston, Texas , [4] Institute of Biosciences and Technology, Texas A&M Health Science Center, Houston, Texas , [5] Department of Medicine, Division of Cardiology, Baylor College of Medicine, Houston, Texas

5:30-5:50 **S4.6. Engineered Epicardium Activates Cardiac Regeneration**

Vahid Serpooshan[1], *Ke Wei*[2], *Mingming Zhao*[1], *Scott A. Metzler*[1], *Parisha B. Shah*[1], *Paul J. Kim*[1], *Yuka Matsuura*[1], *Wenqing Cai*[2], *Alex Savtchenko*[2], *Andrew Wang*[1], *Marta Diez-Cuñado*[2], *Wenhong Zhu*[2], *Morteza Mahmoudi*[3],*Manish J. Butte*[1], *Phillip C. Yang*[1], *Daniel Bernstein*[1], *Mark Mercola*[2,4], *and Pilar Ruiz-Lozano*[1]
[1] Stanford University School of Medicine, Stanford, CA, [2] Sanford-Burnham Medical Research Institute, La Jolla, CA , [3] University of Illinois at Urbana-Champaign, Urbana, IL , [4] Department of Bioengineering, University of California, San Diego, La Jolla, CA

Free Evening for Dinner and Discussions

8:30 - 10:00pm **Posters and Social, *Santa Catalina Ballroom***

Saturday, May 18, 2013

7:30-9:00 am Continental Breakfast, *Sonoran Ballroom Rooftop*

8:00-10:15 am Poster Session 2 Even Numbered Posters Present

8:30 - 9:30 am **Moderated Poster Discussion 3**
Moderator- Christopher Wendler, PhD., University of Florida

M3.1. TGFβ and Hedgehog signaling in flow-induced EndoMT;Role of endothelial primary cilia.

Beerend P Hierck[1], *Gonzalo Sánchez-Duffhues*[3], *Marie-José Goumans*[3], *Peter ten Dijke*[3], *Robert E Poelmann*[1], *Anastasia D Egorova*[1,2]
Leiden University Medical Center

M3.2. Endocardial Brg1 loss-of-function studies distinguishbetween origins of semilunar valve defects and mechanisms of disease progression

Brynn N. Simek[1], *Maithri Sarangam*[1], *Vidusha Devasthali*[1], *Ching-Pin Chang*[2],*Bin Zhou*[3], *Kryn Stankunas*_University of Oregon

M3.3. TGFβ2 non-canonical effectors, Src and p38 MAPK, can mediate epicardial EMT.
Patrick Allison[1], Derrick Broka[1], Todd Camenisch[1,2,3,4]
University of Arizona

M3.4. A novel role for Class II Small Leucine Rich Proteoglycans (SLRP) in maturation of the Cardiovascular ECM During Valvulogenesis
Loren E. Dupuis[1], Matthew G. Berger[1], Vennece Fowlkes[1], Shukti Chakravarti[2], Marian F. Young[3], and Christine B. Kern[1]
Medical University of South Carolina

M3.5. YAP1 is required for endothelial-mesenchymal transition of the atrioventricular cushion
Hui Zhang[1], Alexander von Gise[2,6], Tianyuan Hu[1], Qiaozhen Liu[1], Xueying Tian[1], Xiuzhen Huang[1], Liang He[1], Bin Zhao[3], Chen-Leng Cai[4], Fernando D. Camargo[5], William Pu[2], Bin Zhou[1]
Chinese Academy of Sciences, Shanghai

M3.6. Bmp signaling and epicardial contribution to the atrioventricular function
Marie M. Lockhart[1], Aimee L. Phelps[1], Maurice J. van den Hoff[2], John B. Burch[3], Andy Wessels[1]
Medical University of South Carolina

9:00-10:00 **Moderated Poster Discussion 4**
Moderator- Tony Firulli, PhD, Indiana University

M4.1. Role of PINK1 in mitochondrial homeostasis and cardiac aging
Sreehari Kalvakuri, Takeshi Akasaka and Rolf Bodmer
Sanford-Burnham Medical Research Institute

M4.2. A Bmp-responsive *Hand1 cis*-regulatory element drives gene expression in the developing outflow tract
Joshua W. Vincentz and Anthony B. Firulli
Indiana University

M4.3. Venous endothelium-derived endothelin directs sympathetic innervation of the heart
Eleana Manousiouthakis, Monica Mendez, and Takako Makita
UCLA Keck School of Medicine

M4.4. Cardiac laterality, migration and morphogenesis depend upon small heat shock proteins

Mark Springel[1], Jonathan Wosen[1], Yongchang Ji[3], Jonah Zuflacht[1], Paloma Marin[1], Jamie Lahvic[1], Lara Hutson[1], Jeff Amack[3] and Martha Marvin[2]

[1]Department of Biology and [2]Neuroscience Program, Williamstown, MA
[3] Department of Cell and Developmental Biology, State University of New York Upstate Medical University, Syracuse, NY

M4.5 Interrogating translating RNAs and cell-type specific gene expression using Cre- activated translating ribosome affinity purification

Pingzhu Zhou[1], Yijing Zhang[1], Qing Ma[1], Fei Gu[1], Daniel S. Day[2,3], Aibin He[1], Bin Zhou[4], Jing Li[5], Sean Stevens[1], Daniel Romo[5] and William T. Pu[1,6]
Boston Children's Hospital

M4.6 Conserved requirements for Hsp23/Hspb1 in cardiac tolerance to ischemia/reperfusion

Sarah Piloto and Rolf Bodmer
Sanford-Burnham Medical Research Institute

Saturday Morning Platform Session 5: Valve Development, *Sonoran Ballroom*

Session Chairs Mohamad Azhar and Andrea Ladd

10:20-10:40 **S5.1. Genetic and Cellular Determinants of Mitral Valve Prolapse in Humans**

Kimberly Sauls[1], Annemarieke de Vlaming[1], Katherine Williams[1], Roger Markwald[1], Ken Irvine[2], David Peal[3], David Milan[3], Ronen Durst[4], Robert Levine[5], Susan Slaugenhaupt[6], Chip Norris[1]
[1]- Department of Regenerative Medicine and Cell Biology, College of Medicine, Medical University of South Carolina, Charleston, SC,[2]- Department of Molecular Biology and Biochemistry, Waksman Institute & Howard Hughes Medical Institute, Rutgers University, Piscataway, NJ, [3]- Cardiovascular Research Center, Cardiology Division, Boston, Massachusetts General Hospital, Boston, Massachusetts, , [4]- Department of Cardiology, Hadassah Hospital, Israel, [5]- Department of Cardiology, Massachusetts General Hospital, Boston, Massachusetts, [6]- Center for Human Genetic Research, Massachusetts General Hospital/Harvard Medical School, Boston, Massachusetts

10:40-11:00 **S5.2. Endocardial Loss of Hand2 Function Disrupts Notch Signaling Causing Hypotrabeculation and Tricuspid Atresia**

Nathan J. VanDusen[1], Joshua W. Vincentz[1], Beth A. Firulli[1], Joaquim Grego Bessa[3], Hanying Chen[1], Wenjun Zhang[1], Bin Zhou[2], José Luis De La Pompa[4], Weinian Shou[1], and Anthony B. Firulli[1]

[1] Riley Heart Research Center Department of Pediatrics, Wells Center for Pediatric Research, Indiana University, Indianapolis, IN, [2]Department of Genetics, Albert Einstein College of Medicine, New York, NY , [3]Department of Developmental Biology, Memorial Sloan Kettering Cancer Center, New York, NY, [4]Cardiovascular

Developmental Biology Program, Cardiovascular Development and Repair Department, Centro Nacional de Investigaciones Cardiovasculares (CNIC), Madrid, Spain

11:00-11:20 **S5.3. MEF2C regulates expression of components of the Nodal signaling pathway in the outflow tract and is required for proper alignment of the aorta and pulmonary artery**

Ralston M. Barnes[1], Ian S. Harris[1], Eric J. Jaehnig[1], William Schachterle[1], David J. McCulley[1], Anabel Rojas[1], Linh H. Vong[2], John J. Schwartz[2], and Brian L. Black[1]
[1]Cardiovascular Research Institute, University of California, San Francisco, San Francisco, CA , [2]Albany Medical College, Albany, NY USA

11:20-11:40 **S5.4. The bHLH transcription factor Twist1a functions to limit cardiomyocyte production in zebrafish**

Kristina M. Garske, Yocheved L. Schindler, and Deborah Yelon
Division of Biological Sciences, University of California, San Diego, La Jolla, CA

11:40-12:00 **S5.5. Olfactomedin-1 activity identifies a cell invasion checkpoint during epithelial-mesenchymal transition in the embryonic heart**

Alejandro Lencinas[1,2], Danny C. Chhun[1], Kelvin P. Dan[1,3], Kristen D. Ross[1], Elizabeth A. Hoover[1], Parker B. Antin[1] and Raymond B. Runyan[1]. Departments of Cellular and Molecular Medicine[1], Pharmacology and Toxicology[2] and Program in Physiological Sciences[3]. The University of Arizona, Tucson Arizona

12:00 - 1:30 pm Box lunch with NIH Presentation by Charlene Schramm (NHLBI)
Sonoran Ballroom

Saturday Afternoon Platform Session 6: Heart Formation and Progenitors
Sonoran Ballroom
Session Chairs Eric Small and Paul Krieg

1:30-1:50pm **S6.1. Numb family proteins are essential for cardiac morphogenesis and progenitor differentiation**

Hua Guo[1]; Chen Zhao[1]; Thomas Myint[1]; William Pittman[1]; Le Yang[1]; Sheng Wei[2]; Duan Ma[2]; John Schwarz[1]; Weimin Zhong[3]; Robert J. Schwartz[4]; Harold Singer[1]; Michelle Tallquist[5]; and Mingfu Wu[1].
[1]Cardiovascular Science Center, Albany Medical College, Albany N, [2] Key Laboratory of Molecular Medicine, Fudan University, Shanghai, China; [3]Molecular, Cellular and Developmental Biology, Yale University, New Haven, CT; [4]Biology and Biochemistry, University of Houston, Houston, Texas; [5]JABSOM, Center for Cardiovascular Research, University of Hawaii, Honolulu, HI

1:50-2:10 **S6.2. Notch Activation by Delta4 and Jagged1 Ligands in the Heart: A Story through Time and Space**

Gaetano D'Amato[1], Gonzalo del Monte[2], Stanislao Travisano[1], Guillermo Luxán[1] and José Luis de la Pompa[1]

[1]Department of Cardiovascular Developmental Biology, Centro Nacional de Investigaciones Cardiovasculares (CNIC), Madrid SPAIN, [2]Department of Developmental and Stem Cell Biology, The Victor Chang Cardiac Research Institute, Darlinghurst NSW

2:10-2:30 **S6.3. GalNt11, identified in congenital heart disease, is a novel glycosylator of Notch and specifies cilia type in left-right patterning**

Marko T. Boskovski[1], Shiaulou Yuan[1]*, Nis Borbye Pedersen[2], Christoffer Knak Goth[2] Svetlana Makova[1], Henrik Clausen[2], Martina Brueckner[1], Mustafa K. Khokha[1]* [1]Program in Vertebrate Biology, Department of Pediatrics and Genetics, Yale University, School of Medicine, 333 Cedar Street, New Haven CT, [3]Copenhagen Center for Glycomics, Department of Cellular and Molecular Medicine, Faculty of Health Sciences, University of Copenhagen, Copenhagen, Denmark

2:30-2:50 **S6.4. Unilateral Dampening of Bmp Activity by Nodal Generates Cardiac Left-Right Asymmetry**

Justus Veerkamp[1], Franziska Rudolph[1], Zoltan Cseresnyes[1,2], Florian Priller[1], Cécile Otten[1], Marc Renz[1] and Salim Abdelilah-Seyfried[1]

[1]Cardiovascular and Metabolic Disease Program, Max Delbrück Center for Molecular Medicine, Berlin, Germany, [2]German Rheumatism Research Center (DRFZ), a Leipniz Institute, Berlin, Germany

2:50-3:10 **S6.5. hERG/*seizure* K+-channel mutants exhibit Wnt/Pygopus-associated cardiac remodeling in *Drosophila***

Karen Ocorr[1], Alex Zambon[2], Yoav Nudell[1], Min Tang[3], Xiushan Wu[3], Rolf Bodmer[1]

[1]Development and Aging Program, Sanford-Burnham Medical Research Institute , [2]Dept. of Pharmacology, University of California San Diego, La Jolla, CA, [3]The Center for Heart Development, College of Life Science, Hunan Normal University, Changsha, P.R.China.

3:10-3:30 Coffee Break

Saturday Afternoon Platform Session 7: Cardiac Growth & Regeneration, *Sonoran Ballroom*

Session Chairs Caroline Burns and Chuck Murry

3:30-3:50pm **S7.1. miR-17-92 cluster is required for and sufficient to induce cardiomyocyte proliferation in postnatal and adult hearts**

*Jinghai Chen[1], Zhan-Peng Huang[1], Hee Young Seok[1], Jian Ding[1], Masaharu Kataoka[1], Zheng Zhang[1], Xiaoyun Hu[1], Gang Wang[1], Zhiqiang Lin[1], Si Wang[1], Willam T. Pu[1,2], Ronglih Liao[2,3] and Da-Zhi Wang[1,2]** [1]Department of Cardiology, Boston Children's

Hospital, Harvard Medical School, Boston, 2Harvard Stem Cell Institute ,Harvard University Cambridge, 3Brigham and Women's Hospital, Boston

3:50-4:10 **S7.2. Notch Signaling Regulates Cardiomyocyte Proliferation during Zebrafish Heart Regeneration**

*Long Zhao1, Burcu Guner-Ataman1, Kazu Kikuchi2, Kenneth D. Poss2, Caroline E. Burns*1,3,4, & C. Geoffrey Burns*1,3,4*
1Cardiovascular Research Center, Massachusetts General Hospital, Charlestown, MA 2Department of Cell Biology and Howard Hughes Medical Institute, Duke University, Durham, NC 3Harvard Medical School, Boston, MA 4Harvard Stem Cell Institute, Cambridge, MA

4:10-4:30 **S7.3. Identification of chemical modifiers of heart regeneration**

Wen-Yee Choi, Jennifer Holdway, and Kenneth Poss Department of Cell Biology, Howard Hughes Medical Institute, Duke University Medical Center, Durham, NC

4:30-4:50 **S7.4 The Mesp1 Lineage of Cardiac Progenitor Cells Contribute to Neovascularization and Functional Improvement in Post-MI Mouse Hearts**

Yu Liu1, Li Chen1, Andrea Diaz Diaz2, Xueping Xu3, Austin Cooney3, Bradley McConnell2, and Robert Schwartz1, 4
[1]Department of Biology and Biochemistry, [2]Department of Pharmacological and Pharmaceutical Sciences, University of Houston, Houston TX, [3]Department of Molecular and Cellular Biology, Baylor College of Medicine, Houston TX, 4Stem Cell Engineering, Texas Heart Institute, Houston TX

4:40-5:10 **S7.5 Wnt6 and sfrp1 regulate heart development and cardiomyocyte differentiation via a negative-feedback regulatory loop**

Natalie Gibb and Stefan Hoppler
Aberdeen Developmental Biology Group and Cardiovascular Research Programme, Institute of Medical Sciences, Foresterhill Health Campus, University of Aberdeen, Scotland, UK

6:00 - Banquet w/ Awards and Music by Code Orange