Society for Developmental Biology 73rd Annual Meeting  
Univ. of Washington, Seattle, WA  
July 17-21, 2014

Program

Program Committee: Martin Chalfie (Chair, SDB President), Dominique Bergmann, Mary Dickinson, Robb Krumlauf, Mark Q Martindale
Local Organizing Committee: David Kimelman (Chair), Celeste Berg, Cecilia Moens, David Raible

Program numbers are in **bold italics**  
Presenting authors are in **bold**  
Rooms are **underlined**

**Wednesday, July 16**
8am – 9pm  
*SDB 5th Boot Camp for New Faculty* at Univ. of Washington, Dept of Biology.  
Drill Sergeants: Celeste Berg (U Washington, USA) and Aimée Ryan (McGill, Canada)

**Thursday, July 17**
8am – 1pm  
*SDB 5th Boot Camp for New Faculty* (continuation)

8am – 1pm  
Meeting registration preparation and helpers meeting  
**Kane Lobby**

9am – 12pm  
**Joint Session – Stem Cells in Cardiac Development and Repair**  
Special session co-organized by SDB and NAVBO
Co-organizers: Charles Murry (Univ. of Washington, USA) and Mary Dickinson (Baylor Coll. of Med., USA)
Mechanical forces control cardiovascular development. **Mary Dickinson** (Baylor Coll of Med, Houston, USA)
Control of human cardiomyocyte maturation by microRNAs. **Hannele Ruohola-Baker** (Univ. of Washington)
Heart regeneration in zebrafish. **Neil Chi** (Univ. of California San Diego, USA)
Heart regeneration in non-human primates. **Chuck Murry** (Univ. of Washington, USA)

12pm – 4pm  
**Choose Development! Mentors Workshop** (closed session)  
**Kane 234**
Organizers: Graciela Unguez (NMSU), Karen Bennett (U Missouri-Columbia) and Ida Chow (SDB)

1pm – 4pm  
**Satellite Workshop – Using CRISPR/Cas9**  
(Supported in part by *genesis*)  
**Kane 120**
Organizers: Geraldine Seydoux (Johns Hopkins, USA) and Daniel Dickinson (UNC, USA)
Genome scale CRISPR-Cas9 loss-of-function screens: Technology development and applications. **Ophir Shalem** (Broad Institute, USA)
CRISPR-mediated genome engineering in mice. **Haoyi Wang** (The Jackson Laboratory, USA)
1
(Department of Biology and Lineberger Comprehensive Cancer Center, Univ. of North Carolina at Chapel Hill, USA)

**541**
Complex genome engineering of Drosophila with CRISPR/Cas9-catalyzed homology-directed repair. **Scott Gratz**¹, Fiona Ukken², Dustin Rubinstein², Gene Thiede¹, Kate O'Connor-Giles¹²  
¹Lab. of Genetics, Univ. of Wisconsin, Madison, USA; ²Lab. of Cell and Molecular Biology, Univ. of Wisconsin, Madison, USA
CRISPR/Cas9 in Xenopus: Current techniques for gene editing and future prospects. **Robert Grainger**¹, Ken Cho²  
¹UVA, USA; ²UC Irvine, USA
Open discussion

2pm – 4pm  
**Satellite Symposium – Human Development and Disease**  
**Kane 130**
Co-organizers: David Beier and Mark Majesky (Seattle Children’s Research Institute)
Sonic hedgehog signaling in cerebellum development, regeneration and disease. **Alexandra Joyner** (Memorial Sloan-Kettering Cancer Center, USA)
Development and repair of the mammalian kidney. **Andrew MacMahon** (Univ. of Southern California, USA)
From evo-devo to human disease: modulation of signaling in the mammalian dentition. **Ophir Klein** (Univ. of California, San Francisco, USA)
Interrogation of novel genes in cardiovascular and metabolic diseases with genome editing. 
Kiran Musunuru
(Harvard, Brigham and Women's Hospital, USA)

SDB 73RD ANNUAL MEETING

Thursday, July 17

1pm – 6pm
Meeting Registration
Kane Lobby

3pm – 5pm
Exhibits and Poster Session 1 Set-up
HUB Ballroom

5 pm – 8 pm

Presidential Symposium - What have genetics model organisms taught us?
(Sponsored by genesis)

Chair: Martin Chalfie (Columbia, USA)

5:00-5:15 Introduction. Martin Chalfie, SDB President (Columbia, USA)

5:15-5:45 2 Systems Developmental Biology of Cell Migration. Paul Sternberg1, Mihoko Kato1, Srimoyee Ghosh1, Tsui-Fen Chou2, Sang Nguyen1, Wen Chen1, Jonathan Liu1, Olivia Box Power1, Anand Upadhyaya1 (1HHMI and Division of Biology & Biological Engineering, California Institute of Technology, USA; 2Dept. of Pediatrics, Los Angeles Biomedical Res. Inst. at Harbor-UCLA Medical Center, USA)

5:45-6:15 3 Mechanisms of mitochondrial inheritance in germ line stem cells. Ruth Lehmann, Thomas Hurd, Beate Herrmann, Julia Sauerwald (HHMI, Skirball Inst., NYU School of Medicine, USA)

6:15-6:45 4 Development rooted in regulatory networks Philip Benfey1,2 (1Biology Dept., Duke Univ., USA; 2HHMI, Duke Univ., USA)

6:45-7:15 Mouse as a model for understanding of genetics and human diseases. Terry Magnuson (Univ. of North Carolina-Chapel Hill, USA)

7:15-7:45 5 The Pou5f1/Oct4 transcriptional network in control of early zebrafish development. Wolfgang Driever1, Manuel Leichsenring1, Sungmin Song1, Florian Geier2, Bjorn Wendik1, Jens Timmer2, Daria Onichtchouk1 (1Developmental Biology, Univ. of Freiburg, Freiburg, Germany; 2Physics Dept., Univ. of Freiburg, Freiburg, Germany)

8 pm – 11 pm Opening Reception and Poster/Exhibits Session 1 HUB Ballroom
Poster themes: Education ● Stem Cells and Tissue Regeneration ● Morphogenesis ● Cell-cell Signaling

8:00-9:30 Odd Number Poster Board Authors Presentation
9:30-11:00 Even Number Poster Board Authors Presentation

Please see poster assignments at the end of the Meeting Program

Friday, July 18

7:30am – 8:30am Funding Opportunities in Developmental Biology
Kane 220
Moderator: Ida Chow (SDB)
Presenters: Representatives of Federal and private funding agencies

8am – 5pm Meeting Registration
Kane Lobby

8:30am – 12pm Concurrent Sessions

1. Tissue Formation and Engineering
Kane 110

Chair: Guillermo Oliver (St. Jude Children’s Research Hospital, USA)

8:30-9:00 How niches control the behavior of adult stem cells. Matthias Lutolf (EPFL, Switzerland)

9:00-9:15 6 Role of Shh and Wnt signaling pathways in regulation of postnatal mouse intervertebral disc development and aging. Chitra Dahia1, Eric Mahoney2, Sarah Loh1, Chris Wylic2 (1Hospital for Special Surgery, NYC, USA; 2Cincinnati Children's Hospital, Cincinnati, USA)

9:15-9:45 Engineering 3D multicellular environments to direct pluripotent morphogenesis. Todd McDevitt (Georgia Tech, USA)

9:45-10:00 7 Dynamics and shaping of the BMP signaling gradient by the BMP antagonists during DV axial Patterning. Joseph Zinski1, Wei Dou2, David Umulis3, Mary Mullins1 (1Univ. of Pennsylvania, USA; 2Purdue Univ., USA)

10:00-10:30 Coffee Break
10:30-11:00 8 Three-dimensional printing technologies to define the architecture of living tissues. Jordan Miller (Rice Univ., USA)

11:00-11:15 9 Specification of differentiated adult progenitors in the Drosophila trachea. Nareg Djabrayan1,2, Josefa Cruz2, Cristina de Miguel1,3, Xavier Franch-Marro3, Jordi Casanova1,2 (1Institut de Biologia Molecular de Barcelona (CSIC), Spain; 2Institut de Recerca Biomédica de Barcelona, Spain; 3Institut de Biologia Evolutiva (CSIC-UPF), Spain)

11:15-11:45 Mechanisms of tissue development for tissue rebuilding. Jennifer Elisseeff (Johns Hopkins)

11:45-12:00 10 Developmental robustness in the C. elegans embryo. Morris Maduro, Hailey Choi, Cassandra Bennett, Francisco Carranza, Farhad Ghamsari, Gina Broitman-Maduro, Gurjot Walia (Univ. of California, Riverside, USA)

2. Gene Regulatory Mechanisms

Kane 130

Chair: Sally Moody (George Washington Univ., USA)

8:30-9:00 Specialized ribosomes: A new frontier in organismal development, gene regulation and evolution. Maria Barna (Stanford)

9:00-9:15 11 Wound-induced neoblast specialization in Schmidtea mediterranea. Kellie M. Kravarik1,2,3,4, M. Lucila Scimone1,2,4, Sylvain W. Lapan1,2,3,4, Peter W. Reddien1,2,3,4 (1Co-authors, contributed equally; 2Whitehead Institute, USA; 3MIT, USA; 4HHMI, USA)

9:15-9:45 12 Getting to the root of things: spatiotemporal gene regulatory networks in plant roots. Siobhan M. Brady (Univ. of California, Davis, USA)

9:45-10:00 13 Rab23 regulates Nodal signaling in vertebrate left-right patterning independently of the Hedgehog pathway. Jonathan Eggschwiler2, Kimberly Fuller1, Joyce O’Connell1, Julie Gordon2 (1Princeton Univ., USA; 2Univ. of Georgia, USA)

10:00-10:30 Coffee Break

10:30-11:00 14 X-chromosome inactivation: A model to study epigenetic regulation by long noncoding RNA. Jeannie Lee1,2,3, Catherine Cifuentes-Rojas1,2,3, Alfredo Hernandez3, Kathiina Sarma1,2,3 (1HHMI, USA; 2Massachusetts General Hospital, USA; 3Harvard Medical School, USA)

11:00-11:15 15 Transmitotic persistence of Wnt pathway activity diversifies gene expression in C. elegans embryos. Amanda Zacharias1, Travis Walton1, Elicia Preston1, Somdutta Mukherjee2, John Isaac Murray1,3 (1Dept. of Genetics, Perelman School of Medicine, Univ. of Pennsylvania, USA; 2Cell & Molecular Biology Graduate Group, Perelman School of Medicine, Univ. of Pennsylvania, USA; 3Penn Genome Frontiers Institute, Univ. of Pennsylvania, USA)

11:15-11:30 306 Independent regulation of vertebral number and vertebral identity by microRNA-196 paralogs. Vikram Agarwal1,2, Jesus Casanova3, Jennifer Mansfield4,5, Siew Fen Lisa Wong3, Matthew Schwartz5, Haydn Prosser6, David Bartel1,2, Clifford Tabin5, Edwina McGlinn3,5 (1Massachusetts Institute of Technology, USA; 2Whitehead Institute for Biomedical Research, USA; 3Monash Univ., Australia; 4Barnard College, USA; 5Harvard Medical School, USA; 6The Wellcome Trust Sanger Institute, UK)

11:30-11:45 304 Conserved gene regulation during the maternal-to-zygotic transition. Ashley Bonneau1, Miler Lee1, Valeria Yartseva1, Carter Takacs1, Ariel Bazzini1, Florencia del Viso1, Mustafa Khokha1, Hiroyuki Takeda2, Antonio Giraldez1 (1Yale Univ., USA; 2Univ. of Tokyo, Japan)

11:45-12:00 16 Pbx and Six proteins together drive fast skeletal muscle differentiation. Lisa Maves, Gist H. Farr III, Nathan M. Johnson (Seattle Children’s Research Institute, Seattle, WA, USA)

3. Evo-Devo

Kane 120

Chair: Nipam Patel (UC Berkeley, USA)

8:30-9:00 17 Using a new aceloemorph model to study the evolution of animal regeneration. Mansi Srivastava1,2,3, Kathleen Mazza-Curl1,2,3, Peter Reddien1,2,3 (1Whitehead Institute for Biomedical Research, USA; 2Howard Hughes Medical Institute, USA; 3Massachusetts Institute of Technology, USA)

9:00-9:15 18 PIWI-piRNA pathway function in the stem cells of “immortal” Hydra. Celina Juliano1, Adrian Reich5, Na Liu1, Jessica Götzfried1, Mei Zhong1, Selen Uman1, Robert Reenan2, Gary Wessel2, Robert Steele1, Haifan Lin1 (1Yale Stem Cell Center and Dept. of Cell Biology, Yale Univ. School of Medicine, USA; 2Dept. of Molecular Biology, Cell Biology, and Biochemistry, Brown Univ., USA; 3Dept. of Biological Chemistry and the Developmental Biology Center, Univ. of California, Irvine, USA)
9:15 - 9:45 Patterning and post-patterning modes of evolutionary digit loss in mammals. Kimberly Cooper\textsuperscript{1,2}, Karen Sears\textsuperscript{3}, Aysu Uygur\textsuperscript{2}, Jennifer Maier\textsuperscript{1}, Karl Stephan-Backowski\textsuperscript{3}, Margaret Brosnahan\textsuperscript{4}, Doug Antczak\textsuperscript{5}, Julian Skidmore\textsuperscript{2}, Clifford Tabin\textsuperscript{2} (\textsuperscript{1}Univ. of California, San Diego, USA; \textsuperscript{2}Harvard Medical School, USA; \textsuperscript{3}Univ. of Illinois Urbana Champaign, USA; \textsuperscript{4}Cornell Univ., USA; \textsuperscript{5}The Camel Reproduction Centre, United Arab Emirates)

9:45 - 10:00 Binging has its benefits: the genetic basis of the insatiable appetite in the cavefish Astyanax mexicanus. Ariel Aspiras\textsuperscript{1}, Nicolas Rohner\textsuperscript{1}, Richard Borowsky\textsuperscript{2}, Clifford Tabin\textsuperscript{1} (\textsuperscript{1}Harvard Medical School, USA; \textsuperscript{2}New York Univ., USA)

10:00 - 10:30 Coffee Break

11:00 - 11:15 Control of Arabidopsis petal growth. Vivian Irish (Yale Univ., USA)

11:15 - 11:45 The evolution and development of leaves in ferns. Barbara Ambrose, Tynisha Smalls, Alejandra Vasco (The New York Botanical Garden, USA)

11:45 - 12:00 Genetic origins of divergence and convergence in domestic pigeons. Michael Shapiro (Univ. of Utah, USA)

12pm – 1pm Poster Session 1 Tear-down

12pm – 1pm Communal lunch

PUI Faculty luncheon organized by Laura Burrus (SFSU)

Choose Development! Fellows luncheon

1pm – 3:30pm Poster Session 2 Set-up

1pm – 3pm Hilde Mangold Postdoctoral Symposium (Sponsored by Developmental Dynamics)

Co-chairs: Deirdre Lyons (Duke, USA) and Cortney Bouldin (Univ. of Washington, USA)

3:00 -3:15 A Common Developmental Origin of Limbs and External Genitalia in Amniote Evolution. Patrick Tschopp\textsuperscript{1}, Emma Sherratt\textsuperscript{2}, Thomas Sanger\textsuperscript{2}, Anna Groner\textsuperscript{3}, Ariel Aspiras\textsuperscript{1}, Jimmy Hu\textsuperscript{1}, Olivier Pourquié\textsuperscript{1,4}, Jerome Gros\textsuperscript{5}, Clifford Tabin\textsuperscript{1} (\textsuperscript{1}Harvard Medical School, USA; \textsuperscript{2}Harvard Univ., USA; \textsuperscript{3}Dana-Faber Cancer Institute, USA; \textsuperscript{4}IGBMC, France; \textsuperscript{5}Institut Pasteur, France)

3:15 -3:30 E2a diversifies the functions of Nodal signaling in the embryo. Andrea Wills, Se-Jin Yoon, Rakhi Gupta, Julie Baker (Stanford School of Medicine, USA)

3:30 -3:45 Identification of motifs that tune the rate of Aux/IAA degradation. Britney Moss\textsuperscript{1}, Jessica Guseman\textsuperscript{1}, Haibin Mao\textsuperscript{2}, Thomas Hinds\textsuperscript{2}, Amy Lanctot\textsuperscript{1}, Marlies Kovenock\textsuperscript{1}, Anisa Noorassa\textsuperscript{1}, Ning Zheng\textsuperscript{2,3}, Jennifer Nemhauser\textsuperscript{1} (\textsuperscript{1}Dept. of Biology, Univ. of Washington, USA; \textsuperscript{2,3}Howard Hughes Medical Institute, USA)

3:45 -4:00 Tubulogenesis using Wolffian duct as a model: Tubule elongation and cell epithelialization are coordinated by FGF signals. Yuji Atsuta, Yoshiko Takahashi (Kyoto Univ., Japan)

4:00 -4:15 Contact-mediated cell-to-cell signaling during adult pigment pattern formation in zebrafish. Dae Seok Eom, Megan Grout, David Parichy (Univ. of Washington, USA)

4:15 -4:30 The pMN neural precursor pool is maintained by continuous recruitment of cells with dynamic positional identity. Andrew Ravanelli, Bruce Appel (Univ. of Colorado School of Medicine, USA)

4:30 -4:45 Identification of developmental checkpoints in Caenorhabditis elegans regulated by Insulin/IGF and steroid hormone signaling pathways. Adam Schindler, Ryan Baugh, David Sherwood (Duke, USA)

4:45 -5:00 Developmental pathways regulating melanoma cytoskeletal dynamics in vivo. Minna Roh\textsuperscript{1}, Susumu Antoku\textsuperscript{2}, John Condeelis\textsuperscript{1}, Cecilia Moens\textsuperscript{1} (\textsuperscript{1}Fred Hutchinson Cancer Research Center, USA; \textsuperscript{2}Albert Einstein College of Medicine, USA; \textsuperscript{3}Columbia Univ., USA)

3pm – 3:30pm Coffee Break

3:30pm – 5:30pm Plenary Session 1 - Stem Cells and Regeneration

Chair: Dominique Bergmann (Stanford, USA)
Spatial dynamics of stem cells in a simple epithelial organ. Lucy Erin O'Brien (Stanford Univ., USA)

Germ cell development and regeneration in planarians: implications for understanding parasitic Flatworms. Phillip Newmark1,2, Bo Wang1,2, Jim Collins1,2 (1Howard Hughes Medical Institute, USA; 2Univ. of Illinois at Urbana-Champaign, USA)

Patterning plant epidermis: Cell fate and communication. Keiko U. Torii (Howard Hughes Medical Institute and Dept. of Biology, Univ. of Washington, Seattle, USA)

A bioengineering approach to study Wnt-mediated asymmetric stem cell division. Shukry Habib1,2,5, Bi-Chang Chen5, Feng-Chiao Tsai5, Konstantinos Anastasiadis4, Tobias Meyer3, Eric Betzig2, Roel Nusse1 (1Dept. of Developmental Biology, Howard Hughes Medical Institute, Institute for Stem Cell Biology and Regenerative Medicine, Stanford Univ., USA; 2Janelia Farm Research Campus, HHMI, USA; 3Dept. of Chemical and Systems Biology, Stanford Univ., USA; 4BIOTEC, Technische Universität Dresden, Germany; 5Centre for Stem Cells and Regenerative Medicine, King's College London, UK)

6 pm – 7:30 pm Communal dinner The 8 @ McMahon
Theme table: “Biological Databases” led by Paul Sternberg (Caltech) Pompeii

6 pm – 7:30 pm Board of Directors Reception for Students and Postdocs Kane 225 (Walker-Ames)

8pm – 11 pm Poster/Exhibits Session 2 HUB Ballroom
Poster themes: Development and Evolution ● Functional Genomics ● Gene Regulation ● Organogenesis

Saturday, July 19
7:30am – 8:30am Discussion Session Kane 220
Funding and Developmental Biology: The View from the Study Sections/Panels
Moderator: Marty Chalfie (Columbia, USA)
Discussants: Celeste Berg (Univ. of Washington, USA) – NIH/Dev1
Mary Mullins (Univ. of Pennsylvania, USA) – NIH/Dev2
Blanche Capel (Duke, USA) – NSF/Development Cluster

8am – 5pm Meeting Registration Kane Lobby

8:30am – 12pm Concurrent Sessions Kane 130
4. Neural Development

Notch signaling controls lineage decisions during zebrafish sensory hair cell development and Regeneration. Tatjana Piotrowski1, Andres Romero-Carvajal1,2, Agne Kozlowskaja-Gumbriene1 (1Stowers Institute for Medical Research, USA; 2Univ. of Utah, USA)

Amyloid Precursor Proteins as regulators of G protein-dependent neuronal guidance. Philip Copenhaver, Jonathan Zweig, Tracy Swanson, Jenna Ramaker (Oregon Health & Science Univ., USA)

Terminal neuronal differentiation. Oliver Hobert (Columbia, USA)

Hardwired and activity-dependent regulation of fru+ olfactory circuit development underlying sex-specific behaviors. Pelin Cayirlioglu Volkan1,2,4, Doug Olsen1, Catherine Hueston2, Qingyun Li1, Jianni Wu3, Bo Peng3 (1Duke Univ., Dept. of Biology, USA; 2Duke, Dept. of Neurobiology, USA; 3Duke, Undergraduate program in Neuroscience, USA; 4Duke Institute for Brain Science, USA)

Identification of a potent regulator of retrograde mitochondrial transport in axons. Catherine Drerup, Alex Nepochoruk (Oregon Health & Science Univ., USA)
11:15-11:45 31 Regulatory programs controlling serotonin neuron identity. Evan Deneris, Steven Wyler, William Spencer, Lauren Donovan (Case Western Reserve Univ., USA)

11:45-12:00 32 VEGFR1: a developmental link between neuronal migration and vasculogenesis. Ellen M. Flannery1, Duncan Donohue2, Susan Wray1 (1National Institute of Neurological Disorders and Stroke, National Institutes of Health, USA; 2Integrative Systems Biology, US Army Medical Research and Material Command, USACEHR, USA)

5. Tension and Mechanical Influences in Development

Chair: Joel Smith (Marine Biological Laboratory, USA)
8:30-9:00 Shaping the embryo: Cellular dynamics in development. Jennifer Zallen (MSKCC, USA)
9:00 -9:15 33 Measuring cellular forces within living embryonic tissues. Otger Campos (Univ. of California, Santa Barbara, USA)
9:15-9:30 Mechano-molecular mechanisms involved in plant growth. Siobhan Braybrook (Cambridge, UK)
9:45-10:00 34 C. elegans FBN-1, a fibrillin-like protein, promotes resistance to biomechanical force during Development. Melissa Kelley1, John Yochem1, Michael Krieg5, Miriam B. Goodman6, Martin Chalfie2, Andrea Calixto2, Alison Frand3, Vijaykumar Meli3, Shai Shaham6, Max Heiman4, David Fay1 (1Univ. of Wyoming, USA; 2Columbia Univ., USA; 3UCLA School of Medicine, USA; 4Harvard Univ., USA; 5Stanford Univ., USA; 6Rockefeller Univ., USA)

10:00-10:30 Coffee Break
10:30-11:00 Forcing form and function. Valerie Weaver (UCSF, USA)
11:00-11:15 35 Anisotropic stress orients remodelling of mammalian limb bud ectoderm. Sevan Hopyan1,4,8, Kimberly Lau1, Hirotaka Tao1, Hajjiao Liu2, Jun Wen3, Kendra Sturgeon1, Natalie Sorfazlian1, Michael Wong3, Savo Lazic1,4, Danyi Li1,4, Steven Deimling1, Ian Scott1,4, Brian Ciruna1,4, R. Mark Henkelman3, Trevor Williams5, Anna-Katerina Hadjantonakis2, Rodrigo Fernandez-Gonzalez1,7, Yu Sun1 (1Program in Developmental and Stem Cell Biology, The Hospital for Sick Children, Canada; 2Dept. of Mechanical and Industrial Engineering, Univ. of Toronto, Canada; 3Mouse Imaging Centre, Hospital for Sick Children, Toronto Centre for Phenogenomics, Dept. of Biomedical Physics, Univ. of Toronto, Canada; 4Dept. of Molecular Genetics, Univ. of Toronto, Canada; 5Program in Molecular Biology, School of Medicine, Univ. of Colorado-Denver, USA; 6Developmental Biology Program, Sloan-Kettering Institute, USA; 7Institute of Biomaterials and Biomedical Engineering, Univ. of Toronto, Canada; 8Division of Orthopaedic Surgery, Hospital for Sick Children and Univ. of Toronto, Canada)

11:15-11:45 Biomechanical control of tissue morphogenesis. Thomas Lecuit (IBDM, France)
11:45-12:00 36 FGF signaling establishes a contractile gradient to drive polarized endoderm movements underlying morphogenesis of the avian hindgut. Nandan Nerurkar, Clifford Tabin (Harvard Medical School, USA)

6. The Development and Evolution of Marine Organisms

Chair: Mark Q. Martindale (Whitney Lab/UFL, USA)
8:30-9:00 Evolution of Wnt pathways in embryonic patterning of sea anemones and sea urchins. Athula Wikramanayake (Univ. of Miami, USA)
9:00-9:15 37 Evolution of ectoderm-mesoderm communication during skeletal patterning in echinoid larvae. Deirdre Lyons, Megan Martik, Julian Kimura, David McClay (Duke Univ., USA)
9:15-9:45 38 Specification, positioning and patterning of the anterior neuroectoderm in sea urchin embryos. Ryan Range (Mississippi State Univ., USA)
9:45-10:00 39 Evolution of miRNA signaling in development: Insights from the hemichordate Saccoglossus Kowalevskii. Jessica Gray1, Robert M. Freeman, Jr.1, John Gerhart2, Marc Kirschner1 (1Harvard Medical School, USA; 2Univ. of California, Berkeley, USA)

10:00-10:30 Coffee Break
10:30-11:00 54 Evolution of embryonic organizing activity. Elaine C. Seaver, Aldine R. Amiel (Whitney Laboratory for Marine Bioscience, USA)
11:00 -11:15 40 Shaping the Ciona notochord. Michael Veeman, Maia Carlson, Wendy Reeves (Division of Biology, Kansas State Univ., USA)
11:15-11:45 546 Mitotic membrane turnover coordinates differential induction of the heart progenitor lineage. Brad Davidson, Christina Cota (Swarthmore College, USA)
11:45-12:00 General approach for in vivo recovery of cell type specific effector gene sets. Julius Barsi (CALTECH)

12pm – 1pm Poster Session 2 Tear-down

12pm – 1pm Communal lunch
The theme table: “Career / Family Choices” led by Elaine Ostrander (NIH)
“On writing/publishing papers” led by Guillermo Oliver (St. Judes)

1pm – 3:30pm Poster Session 3 Set-up

1pm – 3pm Education Symposium – Assessing Teaching and Learning Effectiveness
Co-Chairs: Rebecca Landsberg (St. Rose Univ., USA) and William Anderson (Harvard, USA)
Assessing teaching and learning effectiveness William Anderson5, Sally Shuler1, Virginia Anderson2, Steve Klein3, Charles Sullivan3, Rebecca Landsberg4 (1Washington Informal Science Education (WISE) Consortium, USA; 2Towson Univ., USA; 3National Science Foundation, USA; 4The College of St. Rose, USA; 5Harvard Univ., USA)
Discussants: Sally Shuler (WISE), Virginia Anderson (Towson), Steven Klein (NSF), Charles Sullivan (NSF)
Open discussion

3pm -3:30pm Coffee Break

3:30pm – 4pm SDB Business Meeting

4pm – 6pm Plenary Session 2 – Genomics and Development
Chair: Robb Krumlauf (Stowers, USA)
4:00-4:30 Genetics of morphologic variation between dog breeds Elaine A. Ostrander (National Institutes of Health, USA)
4:30-5:00 A mass-spectrometry-based map of universally-shared animal protein complexes. Edward Marcotte (U Texas-Austin, USA)
5:00 -5:30 Phenotypic variation in individuals Ben Lehner1,2 (1EMBL-CRG Systems Biology, Spain; 2ICREA, Spain)
5:30 -6:00 Genome evolution and development Daniel Rokhsar1,2 (1Univ. of California, Berkeley, USA; 2DOE Joint Genome Institute, USA)

6pm – 7:30pm Communal dinner
The theme table: “Award-winning poster presentation” led by Virginia Anderson (Towson)

8pm – 11pm Poster/Exhibits Session 3
Poster themes: Cell Proliferation ● Intracellular Signaling Pathways ● Patterning and Transcription Factors ● Cell Motility and Guidance ● Cell Fate Specification ● Early Embryo Patterning ●Germ Cells and Gametogenesis ● Molecular Medicine and Development

Sunday, July 20
8am – 5pm Meeting Registration
8am – 9am Exhibits and Posters Tear-down

8:30am – 12:30pm Concurrent Sessions
7. Cell Migration, Differentiation, Invasion and Cancer
Chair: Cecilia Moens (Univ. of Washington, USA)
8:30-9:00  45 Contact-mediated cell polarization during embryogenesis. Jeremy Nance, Diana Klompstra, Dorian Anderson (NYU School of Medicine, USA)

9:00-9:15  46 Surrounding tissues canalize the motility of cardiopharyngeal progenitors towards collective polarity and directed migration. Stephanie Gline, Nicole Kaplan, Lionel Christiaen (NYU, USA)

9:15-9:45  47 The receptor DCC mediates oscillatory, self-organizing polarity to orient invasion towards netrin. David Sherwood, Zheng Wang, Lara Linden, Kalb Naegeli, Quiyi Chi (Duke Univ., USA)

9:45-10:00  48 The neural crest invasive front has a unique molecular signature. Paul Kulesa1, Rebecca McLennan1, Jason Morrison1, Andrew Box1, Craig Semerad1, William McDowell1, Karin Zueckert-Gaudenz2, Jeff Haug1, Karen Stoebling1 (1Stowers Institute for Medical Research, USA; 2Univ. of Kansas Anatomy and Cell Biology, USA)

10:00 am  Coffee Break

10:30-11:00  49 Neural crest cell migration, invasion and differentiation. Carole LaBonne (Northwestern, USA)

11:00-11:15  50 Lattice light sheet imaging of live vertebrate embryos reveals novel processes during olfactory morphogenesis Ankur Saxena1, Bi-Chang Chen2, Eric Betzig2, Marianne Bronner1 (1California Institute of Technology, USA; 2HHMI Janelia Farm Research Campus, USA)

11:15-11:45  51 On the verge of neuronal replacement–cellular pliancy and rethinking age-old dogma. Michael Dyer1,2 (1HHMI, USA; 2St. Jude Children's Research Hospital, USA)

11:45-12:00  52 Investigating the role of the Hippo pathway member Nf2 in inner cell mass specification. Katie Cockburn1,2, Steffen Bielle1,2, Jodi Garner2, Janet Rossant1,2 (1Univ. of Toronto, Canada; 2The Hospital for Sick Children Research Institute, Canada)

8. Morphogenesis and Organogenesis

Chair: David Kimelman (Univ. of Washington, USA)

8:30-9:00  52 The sinus venosus contributes extensively to the coronary blood vasculature through VEGF-C stimulated angiogenesis. Kristy Red-Horse (Stanford Univ., USA)

9:00-9:15  53 The bHLH transcription factor Twist1a functions to limit cardiomyocyte production. Deborah Yelon, Kristina Garske, Yocheved Schindler (Univ. of California, San Diego, USA)

9:15-9:45  54 Molecular control of blood vessel morphogenesis. Ondine Cleaver1, Yeon Koo1, Ke Xu2, Stephen Fu1, Keiji Tanigaki1, Chieko Mineo1, George Davis3 (1UT Southwestern Medical Center, USA; 2Harvard Univ., USA; 3Univ. of Missouri, USA)

9:45-10:00  55 Co-repressor degradation dynamics set the pace for lateral root development. Jessica Guseman1, Antje Hellmuth2, Britney Moss1, Amy Lanctot1, Tamar Feldman1, Luz Irina Calderon Villalobos2, Jennifer Nemhauser1 (1Dept. of Biology, Univ. of Washington, USA; 2IPB-Leibniz Institute of Plant Biochemistry, Germany)

10:00 am  Coffee Break

10:30-11:00  56 New models for studying skeletal development and repair. Francesca Mariani, Jennifer Fogel, Marissa Srou, Nikita Tripurani (Univ. of Southern California, USA)

11:00-11:15  57 Ttc26 is essential for cilia microtubule architecture, developmental patterning and is mutated in the classic hop-sterile mouse. Scott Weatherbee, Daisy Xin, Lewie Zeng, Kasey Christopher, Yong Kong (Yale Univ., School of Medicine, USA)

11:15-11:45  58 Facial neuron migration mechanisms. Vicky Prince, Sarah Wanner, Crystal Love, Anastasia Beiriger (The Univ. of Chicago, USA)

11:45-12:00  59 A Rho-GAP regulates two GTPases during C. elegans embryonic morphogenesis. Andre Wallace, Martha Soto (Rutgers - Robert Wood Johnson Medical School, USA)

9. Cell Shape, Cell Polarity/Asymmetry and Growth Control

Chair: Pamela Hoodless (British Columbia Cancer Agency, Canada)

8:30-9:00  60 Patterning the microtubule cytoskeleton during development: turning things on and off. Jessica Feldman (Stanford Univ., USA)

9:00-9:15  61 cdc25a times the cell cycle to facilitate mesodermal cell differentiation during posterior body formation in zebrafish. Cortney M Bouldin1, Corey D Stelson1, Gist H Farr, III1,2, David Kimelman1 (1Dept. of Biochemistry, Univ. of Washington, USA; 2Center for Developmental Biology and Regenerative Medicine, Seattle Children's Research Institute, USA)

9:15-9:45  62 Small RNAs as morphogen-like signals. Marja Timmermans, Damianos Skopelitis, Anna Benkovics,
Cristina Fernandez-Marco (Cold Spring Harbor Laboratory, USA)  
9:45-10:00  **63** Interplay between cell proliferation, recruitment, and the control of organ size. **Marcos Nahmad,** Arthur Lander (Univ. of California - Irvine, USA)  
10:00-10:30  Coffee Break  
10:30-11:00  **64** Nanotube-mediate communication between stem cells and the niche cells in Drosophila testis. **Yukiko Yamashita**¹,² (¹Univ. of Michigan Ann Arbor, USA; ²Howard Hughes Medical Institute, USA)  
11:00-11:15  **65** Quantitative proteomics screen identifies aldh111 as a potential regulator of positional memory. **Jeremy Rabinowitz**¹,²,³, Aaron Robitaille²,³, Randall Moon¹,²,³ (¹Howard Hughes Medical Institute, USA; ²Univ. of Washington, USA; ³ISCRM, UW Medicine Research, USA)  
11:15-11:45  **66** MicroRNA Regulation of Neural Precursor Maintenance and Specification. **Bruce Appel,** Laura Hudish, Andrew Ravanelli (Univ. of Colorado School of Medicine, USA)  
11:45-12:00  **67** Hippo signaling activation in apolar blastomeres occurs prior to inner positioning in the mouse embryo. **Yojiro Yamanaka**¹,², Shihadeh Anani¹,², Shivani Bhat¹, Dayana Krawchuk¹ (¹Goodman Cancer Research Centre, McGill Univ., Canada; ²Dept. of Human Genetics, McGill Univ., Canada)  
12pm – 1pm  Communal lunch  
Theme table: “How to choose and interview for a Postdoc” led by Geraldine Seydoux

1pm – 3pm  **Concurrent Interactive Workshops**  
**1. New Methods/New Visions**  
Chair: Mary Dickinson  
1:00-1:30  **68** Engineering proteins for visualization and control of signaling networks in vivo **Klaus Hahn** (UNC-Chapel Hill, USA)  
1:30 pm  New tools for imaging development at high resolution in space and time. **Eric Betzig** (Janelia Farm/HHHMI)  
2:00-2:30  **548** Open explorations of the microcosmos **Manu Prakash** (Stanford Univ., USA)  
2:30 pm  Open Discussion

2. A “Speed-dating” Education Session  
**Diana Darnell** (U Arizona) – PDEC Chair will coordinate the session: about 10-12 tables with different topic facilitators, ~15 min at each table

3pm – 3:30pm  Coffee Break  
3:30pm – 6pm  **Awards Lectures**  
3:30pm  FASEB Excellence in Science Award: *Cilia in the mouse embryo.* **Kathryn Anderson** (MSKCC), with presentation by FASEB President Margaret L. Offermann  
4:05pm  Viktor Hamburger Outstanding Educator Prize: *Celebrating Science – Lessons learned.* **Larry Bock** (USA Science and Engineering Festival), with presentation by SDB PDEC Chair Diana Darnell  
4:40pm  Edwin G. Conklin Medal: *All the interesting experiments were not in NIH grants.* **Richard Harland** (UC Berkeley), with presentation by SDB President Martin Chalfie  
5:15pm  Developmental Biology-SDB Lifetime Achievement Award: **Janet Heasman** and **Christopher Wylie** (CCHMC), with presentation by SDB President-elect Lee Niswander

7pm – 10pm  **Closing and Awards Banquet**  
Presentation of winners of Best Student Poster Competition and Best Postdoctoral Presentation  
**The Development Show** – Special presentation by **Morris Maduro** (UC Riverside) and **Curtis Loer** (UCSD)

**Monday, July 21**  
Departure  
8:00am –4pm  SDB Board of Directors Meeting  
HUB 214
ACKNOWLEDGMENTS

Grants: National Science Foundation (IOS-1219629) and Eunice Kennedy Shriver National Institute of Child Health and Human Development (R13-HD-081888-01).


POSTER SESSION ASSIGNMENTS

Dedicated Poster and Exhibit Sessions are held in HUB Ballroom, July 17, 18 and 19, 8pm-11pm, when exhibitors, vendor representatives and poster authors will be present. Open, informal viewing of posters is available all other times. Meeting registrants are encouraged to arrange for special demonstrations or meetings with the exhibitors during the informal hours.

Program numbers are in bold italics
Poster board numbers are in Bold.
The boards are vertical (portrait) in orientation and the dimensions are: width – 4 feet (120 cm) and height – 5 feet (150 cm). Authors should bring their thumb tacks or push pins.

**Poster Session 1**
**Thursday, July 17, 8pm - 11pm**

Author presentation: Odd number poster boards: 8-9:30 pm
Even number poster boards: 9:30-11pm

Set-up: Thursday, July 17, 3-5pm Tear down: Friday, July 18, 12-1pm

Poster themes: Education ● Stem Cells and Tissue Regeneration ● Morphogenesis ● Cell-cell Signaling

**Education**

69 B1 *CHOOSE DEVELOPMENT: An undergraduate research fellowship program bringing SDB members together to diversify the population of young developmental biologists* **Graciela Unguez**1, Karen Bennett3, Ida Chow2 (1New Mexico State Univ., USA; 2Society for Developmental Biology, USA; 3Univ. of Missouri, Columbia/John Hopkins, USA)

70 B2 *PULSE: Partnership for Undergraduate Life Science Education* **Jo Anne Powell-Coffman** (Iowa State Univ., USA)

71 B3 *Flipping back the "flipped classroom": improved learning with traditional lectures?* **Kiran Musunuru**, Zarin Machanda, William Anderson (Harvard Univ., USA)

72 B4 *Sharing is caring: Use of online community forums to extend classroom and laboratory discussions* **Mary K. Montgomery** (Macalester College, USA)

73 B5 *Teaching Developmental Biology Content in Non-Developmental Biology Courses* **Edward Freeman** (St. John Fisher College, USA)

74 B6 *Developing a reverse genetic screen in Caenorhabditis elegans as a model for collaborative, authentic research in college science courses* **Jennifer Tenlen**1, Daihong Chen1, Jennifer Heppert2, Andrew Lumpe1, Derek Wood1 (1Seattle Pacific Univ.; 2Univ. of North Carolina-Chapel Hill, USA)

75 B7 *Use of heart rate monitors to assess student engagement in lecture* **Diana Darnell**, Paul Krieg (Dept. Cellular and Molecular Medicine, Univ. of Arizona College of Medicine, Tucson, USA)

76 B8 *Teaching Evo-Devo Using Case Studies* **Eric P. Ingersoll** (Penn State Abington, USA)

77 B9 *Evo-Devo of the Pharyngeal Apparatus of Bluegill and Pumpkinseed Sunfish* **Kelly Grant**, Greg
Andraso, Nikhil Kanthala (Gannon Univ., USA)

78 B10 Frog Wrangling in Woods Hole at the NXR Cristy Salanga1, Esther Pearl1, Robert Grainger1,2, Marko Horb1 (1Marine Biological Laboratory, USA; 2Univ. of Virginia, USA)

Stem Cells and Tissue Regeneration

79 B11 Selective organ amputation in planaria identifies a FoxA-dependent regeneration program Carolyn E. Adler1, Chris W. Seidel1, Sean A. McKinney1, Alejandro Sánchez Alvarado1,2 (1Stowers Institute for Medical Research, USA; 2Howard Hughes Medical Institute, USA)

80 B12 Identification of HECT E3 ubiquitin ligases involved in regulating regeneration in planarians Jordana Henderson1, Maji Ghulam1, Sean Nisperos1, Ignacio Marin2, Ricardo Zayas1 (1San Diego State Univ., USA; 2Instituto de Biomedicina de Valencia, Spain)

81 B13 Stem cell regulation and signaling pathways in the planarian Schmidtea mediterranea Kai Lei1,2, Alejandro Sánchez Alvarado1,2 (1Howard Hughes Medical Institute, USA; 2Stowers Institute for Medical Research, USA)

82 B14 SUMO Proteins Regulate Cell Fate Decisions During Tissue Maintenance and Regeneration in Planarians. Manish Thiruvalluvan1, Carlos Gomez2, Assaf Tsur2, Limor Broday2, Nestor J. Oviedo1 (1Univ. of California, Merced, USA; 2Tel Aviv Univ., Israel)

83 B15 A SoxB1 gene is required for nervous system regeneration and function in the planarian Schmidtea mediterranea Kelly G. Ross, Katrina L. Cable, Kerilyn C. Omuro, Carlo G. Quintanilla, Ricardo M. Zayas (San Diego State Univ., USA)

84 B16 Acute serotonergic signaling regulates planarian anterior - posterior patterning. John D Chan1, Neal R Jahren1, Jonathan S Marchant1,2 (1Dept. of Pharmacology, Univ. of Minnesota Medical School, USA; 2The Stem Cell Institute, Univ. of Minnesota, USA)

85 B17 Stem cell survival and activation in the C elegans gonadal primordium. Daniel McIntyre (New York Univ. Medical Center, USA)

86 B18 Taranis buffers regenerating tissue against aberrant cell fate changes caused by the endogenous wound response Keaton Schuster, Rachel Smith-Bolton (Univ. of Illinois at Urbana-Champaign, USA)

87 B19 Growth coordination during regeneration in Drosophila occurs through nitric oxide synthase regulation of steroid hormone signaling. Jacob Jaszczak, Jacob Wolpe, Anh Dao, Adrian Halme (Dept. of Cell Biology, Univ. of Virginia School of Medicine, Charlottesville, VA, USA)

88 B20 Morphological Mechanisms of CNS Regeneration in Hemichordates Shawn Luttrell1, Billie J. Swalla1,2 (1Biology Dept., Univ. of Washington, Seattle, USA; 2Friday Harbor Laboratories, Univ. of Washington, Friday Harbor, USA)

89 B21 Role of Abcg2 During Mouse Embryonic Stem Cell Differentiation. Mitchell Rosen1, Kelly Chandler2, Susan Jeffay1, Harriette Nichols1, Maria Hoopes1, E. Sidney Hunter1 (1U.S. EPA, Office of Research and Development, NHEERL, ISTD, SBB, USA; 2NIEHS, Office of Policy Planning and Evaluation, USA)

90 B22 TRIP6 regulates neural stem cell maintenance in the postnatal mammalian subventricular zone Tsu-Wei Wang1,2, Ming-Yang Li1, Yun-Ju Lai1, Cheng-Yao Yang1, Kao-Hua Huang1, Jui-Cheng Tsai1 (1Dept. of Life Science, National Taiwan Normal Univ., Taiwan; 2Brain Research Center, National Yang-Ming Univ., Taiwan)

91 B23 Role of Wnt signaling in the adult mouse spinal cord. Liujing Xing, Roel Nusse (Dept. of Developmental Biology, Stanford Univ., USA)

92 B24 In vivo generation and survival of supernumerary hair cells by proliferation and transdifferentiation of Lgr5+ supporting cells by β-catenin and Atoh1 expression in postnatal mouse cochlea. Bryan Kuo1, Emily Baldwin2, Makoto Taketo3, Jian Zuo1 (1St Jude Children's Research Hospital, USA; 2Bath Univ., UK; 3Graduate School of Medicine, Japan)

93 B25 CDX2 controls cell differentiation and stem cells in the mouse intestinal epithelium. Adrianna San
Bashiruddin1, Jessica Barragan1, Chelsea Moriarty1, Rachael Stein1, Michael Parsons3, Jeff Mumm4, O’Neill, David R. Hyde (Sebe
Univ. Surgery, Johns Hopkins Univ., Baltimore, MD 21205, USA; 4Wilmer Eye Institute, Johns Hopkins
spinal cord development in zebrafish. Radial glia are required for specific cell lineages and the maintenance of axonal anatomy during
for Heart and Lung Research, Ludwigstr, Germany)

Diseases Division, Sydney, NSW, Australia; 4Dept. of Developmental
School of Medicine,Indianapolis, IN, USA; 2Dept. of Biochemistry and Biophysics ,Univ. of
zebrafish.
Glucagon signaling is essential for beta cell neogenesis and

Cells and signals coordinating bone regeneration in zebrafish. Kryn Stankunas, Scott Stewart, Alan
Gomez, Benjamin Armstrong, Astra Henner (Univ. of Oregon, USA)

The novel gene LIX1 plays a role in zebrafish development and regeneration. Samantha Berkey
(Univ. of Texas Houston Health Science Center, USA)

Glucagon signaling is essential for beta cell neogenesis and transdifferentiation from alpha cells in
zebrafish. Lihua Ye1, Morgan Robertson4, Daniel Hesselson1,3, Didier Stainier2,4, Ryan Anderson1
(1Wells Center for Pediatric Research and Dept. of Cellular and Integrative Physiology, Indiana Univ. School of Medicine,Indianapolis, IN, USA; 2Dept. of Biochemistry and Biophysics ,Univ. of California San Francisco, San Francisco, CA, USA; 3Garvan Institute of Medical Research, Metabolic Diseases Division, Sydney, NSW, Australia; 4Dept. of Developmental Genetics, Max Planck Institute for Heart and Lung Research, Ludwigstr, Germany)

Radial glia are required for specific cell lineages and the maintenance of axonal anatomy during
spinal cord development in zebrafish. Kimberly Johnson1,2, Victoria von Saucken1, Sarah
Bashiruddin1, Jessica Barragan1, Chelsea Moriarty1, Rachael Stein1, Michael Parsons3, Jeff Mumm4, Stephen Devoto5, Michael Barresi1,2 (1Biological Sciences, Smith College, Northampton MA 01063, USA; 2Molecular and Cellular Biology, Univ. of Massachusetts, Amherst, MA 01003, USA; 3Dept. of Surgery, Johns Hopkins Univ., Baltimore, MD 21205, USA; 4Wilmer Eye Institute, Johns Hopkins Univ., Baltimore, MD 21205, USA; 5Biology Dept., Wesleyan Univ., Middletown, CT, 06459, USA)

Use of the zebrafish lateral line to model glutamate excitotoxicity of hair cell afferent neurons. Joy Sebe, David Raible (Univ. of Washington, Seattle, USA)

Taurine induced rod photoreceptor differentiation in the zebrafish retina Kristin M. Ackerman, Jack O’Neill, David R. Hyde (Univ. of Notre Dame, USA)
111 B43 Gli-1 modulates RPE transdifferentiation Karla Barbosa-Sabanero, Chelsey Judge, Sara Tirell, Brant Center, Trisha Patel, Agustin Luz-Madrigal, Katia Del Rio-Tsonis (Miami Univ., USA)

112 B44 Utilizing oocyte biology to understand nuclear reprogramming Christine Reid (Stanford Univ., USA)

113 B45 FGF2 and noggin promote neural crest induction from hESC-derived embryoid bodies. Barbara Murdoch1, Martin I García-Castro2 (1Eastern Connecticut State Univ., USA; 2Yale Univ., USA)

114 B46 Functional human genetics using human embryonic stem cells. Danwei Huangfu, Zengrong Zhu, Zhong-Dong Shi, Federico Gonzalez (Sloan-Kettering Institute, USA)

115 B47 Prolonged culture yields hiPSC-CMs with enhanced structural and contractile properties. Marita Rodriguez, Charles Murry, Nathan Sniadecki (Univ. of Washington, USA)

116 B48 The function of microRNA-182 in the generation of pluripotent stem cell Hanxiao Hou1,2, Jiuhong Kang1,2 (1Shanghai Key Laboratory of Signaling and Disease Research, Tongji Univ., China; 2School of Life Science and Technology, Tongji Univ., China)

117 B49 Atypical PKC iota controls stem cell self-renewal via the regulation of asymmetric cell division Kyoung Mah1, Rachel Soloff2, Stephen Hedrick2, Francesca Mariani1 (1Univ. of Southern California, USA; 2Univ. of California, San Diego, USA)

118 B50 Early identification of hemogenic and non-hemogenic endothelium in the placental model system permits novel investigation of hematopoietic stem cell development. L. A. Naiche1, Kimberly Klarmann2, Jonathan Keller2, Mark Lewandoski1 (1National Cancer Institute, USA; 2Frederick National Labs, USA)

119 B51 Hematopoietic stem cell specification is regulated by calmodulin-dependent kinase II. Wilson K. Clements, Sarah C. Rothschild (St Jude Children's Research Hospital, USA)

Morphogenesis

120 B52 Reconstructing cell proliferation patterns during monopodial branching in the developing chicken lung. Chibuzo Anojulu1,2, Victor Varner1, Celeste Nelson1 (1Princeton Univ., USA; 2Penn State Univ., USA)

121 B53 Retinoic acid regulates ureteric bud patterning and branching independent of Raldh2. Qinggang Li, Yuansheng Xie, Xiangmei Chen (Dept. of Nephrology, Chinese PLA General Hospital (301 Hospital), Kidney Institute of Chinese PLA, State Key Laboratory of Kidney Diseases (2011DAV00088), National Clinical Research Center for Kidney Diseases (2013BAI09B05), China)

122 B54 Mitosis-associated cell dispersal drives epithelial cell rearrangements within the branching ureteric bud. Adam Packard1, Odysse Michos1, Kylie Georgas3, Jichao Chen2, Melissa Little3, Frank Costantini1 (1Columbia Univ., USA; 2The Univ. of Texas, MD Anderson Cancer Center, USA; 3Institute for Molecular Bioscience, The Univ. of Queensland, Brisbane, Australia)

123 B55 Mammary ducts are elongated by MAPK induced high motility cell clusters. Robert J. Huebner, Andrew J. Ewald (Johns Hopkins School of Medicine, USA)

124 B56 Mesenchymal-free airway branching driven by a growth-induced mechanical instability. Victor Varner, Jason Gleghorn, Celeste Nelson (Princeton Univ., USA)

125 B57 Grhl2 as a suppressor of EMT during murine neural tube closure. Heather Ray, Lee Niswander (Univ. of Colorado Denver Anschutz Medical Campus, USA)

126 B58 Mechanisms of folate action during neural tube formation. Olga A. Balashova1, Olesya Visina2, Laura N. Borodinsky1,2 (1Univ. of California Davis School of Medicine, USA; 2Shriners Hospital for Children, USA)

127 B59 Mechanisms of glutamate action during neural tube formation. Patricio Castro1,2, Eduardo Sequerra1,2, Lin Tian1, Laura Borodinsky1,2 (1Univ. of California Davis School of Medicine, USA; 2Shriners Hospital for Children, USA)

128 B60 Claudins are required for convergent extension and apical constriction during neural tube closure. Amanda Baumholtz, Annie Simard, Aimee Ryan (McGill Univ., Canada)
Functions of p120-Catenin in the establishment of the Antero-Posterior Axis of the Mouse Embryo
Hernández-Martínez, R. and Anderson, K.V. (Sloan-Kettering Institute. Memorial Sloan-Kettering Cancer Center., USA. New York.)

Imaginal disc growth factors regulate tube morphogenesis in the fly ovary Sandra Zimmerman, Celeste Berg (Dept. of Genome Sciences, Univ. of Washington, Seattle, WA, USA)

TGF-β signaling in Ciona notochord morphogenesis Clint Gregory, Wendy Reeves, Samuel Johnson, Rachel Thayer, Michael Veeman (Kansas State Univ., USA)

Cellular dynamics of tissue fusion in the mammalian secondary palate development Seungil Kim, Jeffrey O. Bush (Dept. of Cell and Tissue Biology, Program in Craniofacial and Mesenchymal Biology, Univ. of California, San Francisco, USA)

The zebrafish mutant, moon, regulates cell proliferation and survival in the developing lateral line Hillary McGraw1, Tor Linbo2, Alex Nechiporuk1 (1Oregon Health & Science Univ., Dept. of Cell and Developmental Biology, Portland, OR, USA; 2Univ. of Washington, Dept. of Biological Structure, Seattle, WA, USA)

PDGF signaling coordinates cardiac cell movement during heart tube assembly in zebrafish. Joshua Bloomekatz, Ariel Dunn, Megan Vaughan, Deborah Yelon (Division of Biological Sciences, Univ. of California, San Diego, USA)

The actin cytoskeletal regulator Ena/VASP is required for proper cardiac tube formation in Drosophila melanogaster. Tiffany King (Rutgers Univ. - RWJMS, USA)

Formation of the cephalic furrow during Drosophila gastrulation. Jeffrey Thomas, Allison Spencer, Bilal Siddiqui (Texas Tech Univ. Health Sciences Center, USA)

Characterizing the downstream effectors of DMD-3 induced morphogenesis of the tail tip of C. elegans males. Megan Lesperance1, Antonio Herrera2, Josh Mellor1, Monika Drzymalski1, Rhoda Asimeng1, Racette Sam1, Michele Smith1, Doug Portman3, David Fitch2, D. Adam Mason1 (1Siena College, USA; 2New York Univ., USA; 3Univ. of Rochester, USA)

Frazzled/DCC facilitates cardiac cell outgrowth and attachment during Drosophila dorsal vessel formation. Frank Macabenta1,2, Amber Jensen1,2, Yi-Shan Cheng2, Joseph Kramer2, Sunita Kramer1,2 (1Rutgers Univ., USA; 2Univ. of Medicine and Dentistry of New Jersey, USA)

Raw is a novel membrane protein that regulates terminal dendrite adhesion and dynamics. Jiae Lee, Wen Yang Lin, Jay Parrish (Univ. of Washington, USA)

Mechanisms of primordial germ cell homing in the sea urchin. Megan Martik, David McClay (Duke Univ., USA)

Pitx2c promotes epithelial polarization to drive left-right asymmetric gut looping. Adam Davis, Nanette Nascone-Yoder (North Carolina State Univ., USA)

Hedgehog signaling coordinates the relative length and diameter of the developing gut tube. Jordan Ferguson, Nanette Nascone-Yoder (North Carolina State Univ., USA)

Dynamin acts basally to promote epithelial tube expansion in the Drosophila ovary. Nathaniel Peters, Celeste Berg (Dept. of Genome Sciences, Univ. of Washington, Seattle, WA, USA)

Integrin-mediated cell-ECM adhesion controls morphogenesis through modulation of the biomechanical properties of a tissue. Stephanie J. Ellis, Katie Goodwin, Emily Lostchuck, Sabrina Wistorf, James Feng, Guy Tanentzapf (Univ. of British Columbia, Canada)

Cell division and cell cycle arrest control the size of a basement membrane breach David Q. Matus1,2, Emily Chang2,3, David R. Sherwood2 (1Stony Brook Univ., USA; 2Duke Univ., USA; 3Johns Hopkins School of Medicine, USA)

A hemicentin and plectin-dependent adhesion system links tissues by connecting adjacent basement membranes. Meghan Morrissey, David Sherwood (Duke Univ., USA)

Cadherin 2 orchestrates tissue self-assembly through two opposing and spatially non-overlapping
mechanisms Patrick McMillen, Dörthe Jülich, Scott Holley (Yale Univ., USA)

150 B82 ADAMTS9-mediated extracellular versican remodeling is crucial for the morphogenesis of the mammalian feto-maternal axis

151 B83 Developmental effects of knocking down RECK expression in early Xenopus laevis embryos

152 B84 Developmental regulation of tissue integrity by integrin clustering

153 B85 Role of TMEM2 in organization of the extracellular matrix surrounding cardiac and skeletal muscle.

154 B86 Microvilli unfold to expand the cell surface during Drosophila cellularization

155 B87 A maternal-zygotic module stabilizes F-actin to promote the robustness of morphogenesis

156 B88 Actin-Microtubule Cross-Talk at Rhabdomere Terminal Web in Drosophila Photoreceptor Cell Polarity

157 B89 Role of Rho family GTPases in morphogenetic events during sea urchin embryogenesis

158 B90 The Differential Roles of Evolutionarily Conserved DOCK Family Members in Development

159 B91 dchs1b mediates early morphogenesis and cell fate specification in zebrafish through regulation of actin and microtubule cytoskeleton

160 B92 The DEAD-box helicase Obelus regulates centrosome positioning and epithelial polarity.

161 B93 Modeling redistribution cascade of planar cell polarity that propagates without attenuation.

162 B94 The PTEN/PI3K/PDK1 pathway, independently of pAKT, is required for pseudostratification of cephalic neural plate during development

163 B95 Traffic and mechanics within the neuroepithelium: role and mechanism of the interkinetic nuclear migration

164 B96 FGF, BMP, and SHH signaling pathways regulate inner ear morphogenesis

165 B97 Live imaging of convergence and extension and dynamic cellular activity in the developing
mammalian cochlea Elizabeth Driver, Zoë Mann, Matthew Kelley (Laboratory of Cochlear Development, National Institute on Deafness and Other Communication Disorders, NIH, USA)

EMT during avian gastrulation is independent of Slug function and E-cadherin downregulation. Pricila Khan, James Cooley, Sebastian Zeltzer, Ben Van Maren, Tatiana Yatskievych, Parker Antin (Univ. of Arizona, USA)

Aguaporin-3b is required for tissue boundary formation during gastrulation. Christa Merzdorf, Daniel Van Antwerp, Sean Lujan (Montana State Univ., Bozeman, USA)

The Spadetail/Tbx16 transcription factor regulates zebrafish mesodermal cell migration. Alyssa Manning, David Kimelman (Univ. of Washington, USA)

Discovery of a novel skull defect in a ciliopathy model. Jacqueline Tabler, Christopher Rice, Karen Liu, John Wallingford (Univ. of Texas at Austin, USA; Kings College London, UK)

Role of MID1/2 in regulation of cell adhesion and facial morphogenesis. Catherine Koto, Yongzhao Huang, Nathan Sniadecki, Timothy Cox (Univ. of Washington, USA)

Hypomorphic mutations in the novel GTPase rsg1 cause defects consistent with ciliopathies in zebrafish. Airon Wills, Peter Schoonheim, Eric Brooks, Marcel Schaaf, John Wallingford (Dept. of Molecular Biosciences, The Univ. of Texas at Austin, USA; Institute of Biology, Leiden Univ., Netherlands)

A new mutant mouse lines provides support for the vascular hypothesis underlying Oculo-Auriculo-Vertebral Spectrum. Esra Cameci, Siddarth Vora, Timothy Cox (Univ. of Washington, USA; Seattle Children's Research Institute, USA)

Analysis of clefts missing, a novel mouse mutation with pharyngeal arch, cardiovascular and neural tube defects. Maria J Garcia-Garcia, Barbel Ulmer (Cornell Univ., USA)

Regulation of zebrafish pharyngeal arch morphogenesis by miR-27. Nergis Kara, Chunyao Wei, James G. Patton (Vanderbilt Univ., USA)

Eye and tooth development are linked in a teleost model via Ptx2. Tamara Franz-Odendaal, ADS Atukorala (Mount Saint Vincent Univ., Canada)

Jaw-wide dental patterning in the leopard gecko and its modulation by canonical Wnt signaling. Theresa Grieco, Geoffrey Young, Joy Richman (Life Sciences Institute, Dept. of Oral Health Sciences, Univ. of British Columbia, Canada)

A family of FOX genes determines precise spatial patterns of growth and differentiation within facial bone and cartilage precursors. Bartosz Balczerski, Kristin Louie, Gage Crump (Broad CIRM Center for Stem Cell and Regenerative Medicine, Univ. of Southern California, USA)

Differential effects of Wnt proteins on initiation and maintenance of facial cartilage. Layne Myhre, Joy Richman (Life Sciences Institute, Univ. of British Columbia, Canada)

Mutant forms of human WNT5A expressed in chicken cause craniofacial defects. Adrian Danescu, Sara Farahabadi-Hosseini, Joy Marion Richman (Dept. of Oral Health Sciences, Life Sciences Institute, Univ. of British Columbia, Canada)

Age-related changes of acrodont dentition. Hana Dosedelova, Katerina Stepankova, Karel Novotny, Tomas Zikmund, Jozef Kaiser, Marcela Buchtova (Dept. of Anatomy, Histology and Embryology, Univ. of Veterinary and Pharmaceutical Sciences Brno, Czech Republic; Institute of Animal Physiology and Genetics, v.v.i., Academy of Sciences of the Czech Republic, Brno, Czech Republic; Dept. of Chemistry, Faculty of Science, Masaryk Univ., Brno, Czech Republic; Laboratory of X-Ray Micro CT and Nano CT, CEITEC BUT, Brno, Czech Republic)

Activin-A and Bmp4 act synergistically to regulate the bud-to-cap transition during tooth organogenesis. Hyuk-Jae Kwon, Shihai Jia, Jing Zhou, Han Liu, Yu Lan, Rulang Jiang (Division of Developmental Biology, Cincinnati Children’s Hospital Medical Center, USA)

Cell adhesion through a-E-catenin regulates tooth formation by restricting YAP/TAZ activity. Jimmy Hu, Chunying Li, Ophir Klein (UCSF, USA; Zhongshan Hospital of Dalian Univ., China)

Sall4, the Duane-radial ray syndrome gene, regulates autopod development through defining localized Shh expression in the mouse hindlimb. Ryutaro Akiyama, Hiroko Kawakami, Julia
Peptidase Inhibitor 15 protein induces polydactyly in avian embryos via a SHH-independent mechanism Stephen Drain, Suress Nimmagadda, Joy Richman (Life Sciences Institute, Univ. of British Columbia, Canada)

Leptin promotes limb development in Xenopus laevis Jennifer Cundiff, Sarah Schmidt, Marietta Easterling, Erica Crespi (1) School of Biological Sciences, Washington State Univ., Pullman, WA, 99164, USA; 2 Dept. of Biology, Vasser College, Annondale-on-Hudson, NY, 12504, USA

Homocysteine affects cell-cycle proteins and Pax9 and Sox9 gene products during limb development Evelise Nazari, Gilian Fernando Bourckhardt, Manuela Sozo Cecchini, Dib Ammar, Yara Müller (Universidade Federal de Santa Catarina, Brazil)

Sox11 is required to maintain proper levels of Hedgehog signaling during vertebrate ocular development Lakshmi Pillai-Kastoori, Wen Wen, Stephen Wilson, Mallika Gopalaiahgari, Erin Strachan, Adriana Lo-Castro, Marco Fichera, Sebastiano Musumeci, Ordan Lehmans, Ann Morris (1 Dept. of Biology, Univ. of Kentucky, Lexington, KY 40506-0225, USA, USA; 2 Depts of Ophthalmology and Medical Genetics, Univ. of Alberta, Edmonton, AB T6G 2H7, Canada, Canada; 3 Dept. of Neuroscience, Pediatric Neurology Unit, “Tor Vergata” Univ. of Rome, 00133 Rome, Italy, Italy; 4 Laboratory of Medical Genetics, IRCCS Associazione Oasi Maria Santissima, 94018 Troina, Italy, Italy, and Medical Genetics, Univ. of Catania, 95131 Catania, Italy, Italy; 5 Unit of Neurology, IRCCS Associazione Oasi Maria Santissima, 94018 Troina, Italy, Italy)

Sox4 regulates ocular development upstream of Hedgehog signaling in zebrafish Wen Wen, Lakshmi Pillai-Kastoori, Joanna Ng, Ann Morris (Dept. of Biology, Univ. of Kentucky, Lexington, KY 40506-0225, USA)

Sonic Hedgehog controlled mechanisms of cochlear outgrowth Alex M. Rohacek, Alexander S. Brown, Yao Yao, Yaingtao Zhao, Douglas J. Epstein (Dept. of Genetics, Perelman School of Medicine, Univ. of Pennsylvania, 415 Curie Blvd, CRB 470, Philadelphia PA., USA)

Thyroid hormone regulates differentiation and morphogenesis of adult pigment cells Sarah McMenamin, Emily Bain, Anna McCann, Dae Seok Eom, David Parichy (Dept. of Biology, Univ. of Washington, USA)

Modulation of cell death by the inhibitor of apoptosis proteins is required for appropriate urogenital system morphogenesis Katherine Stewart, Maxwell Shafer, Maya Saleh, Maxime Bouchard (Goodman Cancer Centre, McGill Univ., Canada)

Ultraviolet-B radiation induces DNA damage and affects the expression of cell-cycle proteins during morphogenesis of freshwater prawn Eliane Cristina Zeni, Dib Ammar, Heloisa Schramm, Yara Müller, Evelise Nazari (Universidade Federal de Santa Catarina, Brazil)

Trim33, a novel chromatin reader is required for the lineage potential of myocardial progenitors in the developing heart. Sudha Rajderkar, Kenji Yamoto, Vesa Kaartinen (Univ. of Michigan, Ann Arbor, USA)

Ectoderm-Mediated Nitric Oxide Signal Formation Regulates Epaxial Myotome Formation in Chick Embryos Farzad Ghamsari, Elliot Lozano, Wilfred Denetclaw (San Francisco State Univ., USA)

Identification of a transporter required to support extreme growth in neurons Wen-Yang Lin, Kory Luedke, Connie Yan, Sam Bloomsburg, Nicole Morrison, Jonathon Ahn, Kent Duncan, Charles Kim, Jay Parrish (1 Dept. of Biology, Univ. of Washington, Seattle, WA 98195, USA; 2 Division of Experimental Medicine, Dept. of Medicine, Univ. of California San Francisco, San Francisco, CA 94110, USA; 3 Center for Molecular Neurobiology, Hamburg, D-20251, Germany)

Unraveling the control and regulation of vertebrate muscle cell fusion using the zebrafish model system Kimberly Hromowyk, Sharon Amacher (The Ohio State Univ., USA)

Visualizing lymphatic network morphogenesis in embryonic mouse skin Jennifer James, Yosuke Mukoyama (National Institutes of Health, U.S.A.)
A novel mechanism of spontaneous fractured bone regeneration. Chagai Rot, Tomer Stern, Ronen Blecher, Ben Friesem, Elazar Zelzer (Weizmann Institute of Science, Israel)

Cell-cell Signaling

Frizzled10 mediates Wnt1/3α signaling in the dorsal spinal cord of the developing chick embryo. Laura Burrus, Lisa Galli, Roeben Munji, Susan Chapman, Ann Easton, Lydia Li, Ouma Onguka, Joseph Ramahi, Rowena Suribeni, Linda Szabo, Camilla Teng, Baouyen Tran, Rami Hannouch (San Francisco State Univ., USA; Clemson Univ., USA; Genentech, USA)

Functional role of Annexin A6 in trigeminal ganglia assembly. Ankita Shah, Lisa Taneyhill (Univ. of Maryland College Park, USA)

Frizzled10 mediates Wnt1/3α signaling in the dorsal spinal cord of the developing chick embryo. Laura Burrus, Lisa Galli, Roeben Munji, Susan Chapman, Ann Easton, Lydia Li, Ouma Onguka, Joseph Ramahi, Rowena Suribeni, Linda Szabo, Camilla Teng, Baouyen Tran, Rami Hannouch (San Francisco State Univ., USA; Clemson Univ., USA; Genentech, USA)

Targeting of Cochlear Inner Hair Cells by Type I Spiral Ganglion Neurons is Controlled by Sema3F/Nrp2 Signaling. Thomas Coate, Kevin Isgrig, Matthew Kelley (NIH/NIDCD, USA)

Functional role of Annexin A6 in trigeminal ganglia assembly. Ankita Shah, Lisa Taneyhill (Univ. of Maryland College Park, USA)

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Functional role of Annexin A6 in trigeminal ganglia assembly. Ankita Shah, Lisa Taneyhill (Univ. of Maryland College Park, USA)

R-spondin 3 Regulates Zebrafish Dorsoventral and Anteroposterior Patterning by Inhibiting Zygotic Wntβ-catenin Signaling. Cunming Duan, Xiaozhi Rong, Chen Chen, Pin Zhou, Yun Li, Ling Lu, Yunzhang Liu, Jianfeng Zhou (Ocean Univ. of China, China; Univ. of Michigan, USA)

A role for Fgf8a in neurovasculature signaling in the developing zebrafish retina. Erin E. Wysolmerski, Alicia M. Ebert (Univ. of Vermont, USA)

RA repression of Fgf8 governs cell fate choices of axial stem cells and their progeny. Thomas J. Cunningham, Sandeep Kumar, Thomas Brade, Lisa L. Sandell, Mark Lewandoski, Paul A. Trainor, Gregg Duester (Sanford-Burnham Medical Research Institute, USA; Stowers Institute for Medical Research, USA; NCI-Frederick, USA; Univ. of Louisville, USA)

RAD6 promotes G1-S transition and cell proliferation through upregulation of CCND1 expression. Tian-Fa E, Yuan-Ya Jing, You-Wei Chen, Su Chen (School of Life Sciences and Technology, Tongji Univ., China; Advanced Institute of Translational Medicine, Tongji Univ., China)

Differentiation of F9 Cells into Extraembryonic Endoderm is Accompanied by Metabolic Changes, Increased Levels of Reactive Oxygen Species and Canonical Wnt Signaling. Gregory Kelly, Gurjot Deol, Leanne Sandieson, Eugene Klimov, Benjamin Dickson, Jason Hwang (Univ. of Western Ontario, Canada)

Molecular interplay between BMP4 and Fibrillin in embryonic development and Marfan syndrome. Jan Christian, Autumn McKnite, Hyung-seok Kim, Judith Neugebauer (Univ. of Utah, USA)

Expression of A-type Eph receptors during midfacial development. Puja Agrawal, Michael Wang, Seungil Kim, Jeffrey O. Bush (Dept. of Cell and Tissue Biology and Program in Craniofacial and Mesenchymal Biology, UCSF, USA; Dept. of Molecular and Cell Biology, UC Berkeley, USA)

NPY/NPYR signaling is essential for lacrimal gland development. Jennifer K. Finley, Sarah M. Knox (Univ. of California, San Francisco, USA)

Deletion of the engrailed genes in rhombic lip-derived cerebellar progenitors reduces growth and alters sonic hedgehog expression. Kelsey Roberts, Ryan Willett, Alexandra Joyner (Gerstner Sloan-Kettering Graduate School of Biomedical Sciences, USA; Developmental Biology Program, Sloan-Kettering Institute, USA)
Changes of TRPC6 Channels and Calcium Signaling during Differentiation of Conditionally Immortalized Mouse Podocytes Zhaowei Liu, Jiajia Yang, Zhuo Yang (College of Medicine, Nankai Univ., China)

BMP7-TAK1-JNK-JUN signaling pathway governs the proliferation of nephron progenitor cells Sree Deepthi Muthukrishnan1,2 (Maine Medical Center Research Institute (MMCRI), USA; 2Univ. of Maine, USA)

Regulation of gap junctions during functional differentiation of the mammary gland Rachael Norris, Paul Lampe (Fred Hutchinson Cancer Research Center, USA)

Withaferin A (WFA) - caused the production of reactive oxygen species (intracellular ROS) modulates apoptosis via PI3K/Akt and JNKinase in rabbit articular chondrocytes SongJa Kim (kongju National Univ., Republic of Korea)

The relationship of proteoglycans and cadherins to FGF signaling in Drosophila during gastrulation Nathanie Trisnadi (California Institute of Technology, USA)

Mechanisms of Notch-Src synergy in Drosophila Diana Ho1, SK Pallavi1, Spyros Artavanis-Tsakonas1,2 (1Harvard Medical School, USA; 2Biogen Idec, USA)

Self-association of the APC tumor suppressor is required for the assembly, stability and activity of the Wnt signaling destruction complex Ezgi Kunttas-Tatli1, David M. Roberts2, Brooke M. McCartney1 (1Carnegie Mellon Univ., USA; 2Franklin and Marshall College, USA)

Mad linker phosphorylation controls BMP pathway activation and termination Abigail Aleman, Marilyn Rios, Daniel Lee, Matthew Juarez, Edward Eivers (California State Univ. Los Angeles, USA)

Regulation of metabolism by DBL-1/BMP signaling in C. elegans. Cathy Savage-Dunn1,2, James Clark1,2, Vanessa Almonte1 (1Queens College, CUNY, USA; 2Graduate Center, CUNY, USA)

The WAVE/SCAR complex interacts with the two C. elegans junctional complexes and regulates the levels and localization of alpha-catenin/HMP-1 Maria Agapito, Sailaya Mandalapu, Maryam Honarbakhsh, Falshruti Patel, Yelena Bernadskaya, Martha Soto (Rutgers Univ., USA)

The role of ndst3 in zebrafish development Rebecca Anderson1,2, Jacek Topczewski1,2 (1Northwestern Univ., Feinberg School of Medicine, USA; 2Lurie Children's Hospital of Chicago Research Center, USA)

Exploring the Possible Function of Receptor-like Kinases in Plant Epidermal Development Milan Vu, Julian Avila, Keiko Torii (Univ. of Washington, USA)

Poster Session 2  Friday, July 18, 8pm - 11pm
Author presentation:  Odd number poster boards: 8-9:30 pm
Even number poster boards: 9:30-11pm
Set-up: Friday, July 18, 1-3:30pm  Tear down: Saturday, July 19, 12-1pm
Poster themes:  Development and Evolution ● Functional Genomics ● Gene Regulation ● Organogenesis

Development and Evolution

Gene duplication and neo-functionalization in the APETALA3 lineage of floral organ identity genes in a non-core eudicot Kelsey Galimba, Jesus Martinez-Gomez, Veronica Di Stilio (Univ. of Washington, USA)

Gene duplication in the B-class gene affecting petal and stamen development Jesus Martinez-Gomez, Kelsey Galimba (Univ. of Washington, USA)

Notch signaling is necessary for cell fate conversion in sponge development Nagayasu Nakanishi1, Gemma Richards2, Bernard Degnan1 (1Univ. of Queensland, Australia; 2Sars International Centre for Marine Molecular Biology, Norway)

Evo-devo on coral reefs: evolutionary changes in bone remodeling during late development have been critical to the adaptive radiation of the damselfishes W. James Cooper, Rachel Wirgau, Elly
Determining the Presence of Mesoderm in the Ctenophore P. bachei through Gene Expression Analysis Alexander Fodor, Andrea Kohn, Kevin Kocot, Mathew Citarella, Michael Tassia, Ian McQuillen, Leonid Moroz, Billie Swalla (1Univ. of Washington, USA; 2Univ. of Florida, USA; 3Univ. of Queensland, Australia)

Ionotropic Glutamate Receptors In The Developing Nervous System of Invertebrates Josh Swore, Billie Swalla, Leonid Moroz, Andrea Kohn, Yelena Bobkova, Kevin Kocot (1Univ. of Washington - Friday Harbor Laboratories, USA; 2Univ. of Florida - Whitney Laboratories, USA; 3Univ. of Auburn, USA)

Whole body regeneration in the sea-anemone Nematostella vectensis: A transcriptional blueprint Uri Gat, Amos Schaffer, Karine Levy, Michael Bazarsky (The Hebrew Univ. in Jerusalem, Israel)

Understanding animal polarity: Two phases of partitioning during early embryogenesis of the sea anemone Nematostella vectensis Miguel Salinas-Saavedra, Mark Q. Martindale (Univ. of Florida, USA)

G protein regulation of the actin cytoskeleton in the early sea urchin embryo Andrea Ellis, Silvia Sepulveda, Anne Meyer-Miner, Anthony Alvarez, Charles Stusher (New Mexico State Univ., USA)

The permeability barrier in Pristionchus pacificus nematode embryos is disrupted by its host’s sex pheromone Tess Renahan, Ray Hong (California State Univ., Northridge, USA)

It's all in the timing: pre-hatching juvenile development in the necromenic nematode Pristionchus pacificus Victor M. Lewis, Ray L. Hong (California State Univ. Northridge, USA)

Identification of new genes in the nematode Caenorhabditis briggsae that limit the response to EGF signaling during vulval development Devika Sharanya Premkumar, Cambree J. Fillis, Jaeyoung Kim, Edward M. Zitnik, Kelly A. Ward, Molly E. Gallagher, Helen M. Chamberlin, Bhagwati P. Gupta (1McMaster Univ., Canada; 2Ohio State Univ., USA; 3Univ. of Chicago, USA)

Arthropod segmentation: when does it end? Ryan M. Pace, Matthew S. Stansbury, Jason E. Ilkatt, Lisa M. Nagy (1Dept. of Molecular and Cellular Biology, Univ. of Arizona, USA; 2Center for Insect Science, Univ. of Arizona, USA)

Detection of 18-Wheeler in developing Drosophila melanogaster embryos Timothy Delacruz, Elizabeth Eldon (California State Univ., Long Beach, USA)


Timing and concentration dependent actions of Ultrabithorax during wing development in the red flour beetle, Tribolium castaneum. Ferran Borras-Castells, Yoshinori Tomoyasu (Miami Univ., USA)

Lobes or Gills: Insights into Insect Wing Origin Provided by Functional Analysis of vestigial in Tribolium Courtney Clark-Hachtel, David Linz, Yoshinori Tomoyasu (Miami Univ., USA)

Exploring the molecular basis of insect wing evolution: a transcriptomic approach David Linz, Yoshinori Tomoyasu (Miami Univ., USA)

Allometry and patterning in the polyphenic wings of a true bug David Angelini, Alice Grubb Jones (Colby College, USA)

Transcriptome wide analysis of the effects of temperature on global gene expression and temperature dependent sex determination in the red-eared slider turtle Trachemys scripta elegans embryo. Michael Czerwinsk, Anirudh Natarajan, Lindsey Mork, Loren Looger, Blanche Capel (1Dept. of Cell Biology, Duke Univ. Medical Center, USA; 2HHMI Janelia Farm, USA)

REGULATION OF NEURAL CREST CELL EMIGRATION IN TURTLE EMBRYOS Matthew Smith, Heather Gochnauer, Rivta Rice, Scott Gilbert, Judith Cebra-Thomas (1Millersville Univ., USA; 2Univ. of Helsinki, Finland; 3Swarthmore College, USA)

Evolution of post-embryonic neural crest lineage contribution to adult pigment pattern in Danio fishes JE Spiewak, DM Parichy (Univ. of Washington, USA)
249 B23 Comparative analysis of rudimentary colons in *P. marinus*, *M. glutinosa* and *Polyodon*. **Meaghan Jain**, Nicole Theodosiou (Union College, USA)

250 B24 Developmental constraints on endoderm morphogenesis underlie the evolution of gut length. **Jillian Hattaway**1, Mandy Womble1, Cris Ledon-Rettig 3, Heidi Smith2, Michael Ryan2, Nanette Nascone-Yoder1 (1North Carolina State Univ., USA; 2Univ. of Texas, USA)

251 B25 Betta splendens as a model organism for studying the evolution and development of pigmentation. **Belinda Sly**, Alexis Carey, Ben Lyvers, Sydney Katz, Anne Marie Dumaine (Transylvania Univ., USA)

252 B26 Cellular mechanisms of adult pigment pattern evolution in *Danio* fishes. **Emily Bain**, David Parichy (Univ. of Washington, USA)

253 B27 Pigment cell heterochronies underlying pattern evolution in *Danio* species. **Larissa Patterson**, Emily Bain, David Parichy (Univ. of Washington, USA)

254 B28 Defining the regulatory loci and their target gene interactions for a model developmental and evolutionary trait. **Maxwell Roeseke**1, Claire Konys1, Sumant Grover1, William Rogers1, Mark Rebeiz2, Thomas Williams1 (1Univ. of Dayton, USA; 2Univ. of Pittsburgh, USA)

255 B29 Patterns in Evolution: Tracing the Genetic and Molecular Basis for Convergent Pigmentation Pattern in *Drosophila* species. **Sumant Grover**1, Mark Rebeiz2, Thomas Williams1 (1Univ. of Dayton, USA; 2Univ. of Pittsburgh, USA)

256 B30 The correlated and divergent evolutionary histories for two cis-regulatory elements controlling pigmentation enzyme expression. **Eric Camino**1, John Butts1, Jordan Vellky1, Mark Rebeiz2, Thomas Williams1 (1Univ. of Dayton, USA; 2Univ. of Pittsburgh, USA)

257 B31 Investigating the deep ancestry and the mechanism of co-option for a pleiotropic fruit fly cis-regulatory element. **William Rogers**, Thomas Williams (Univ. of Dayton, USA)

258 B32 The Target Problem in Characterizing Early Metazoan Developmental Sequences. **Paul Nelson** (Biola Univ., USA)

259 B33 Role of semaphorin-1a in the developing visual system of the disease vector mosquito *Aedes aegypti*. **Keshava Mysore**1,2, Ellen Flannery2,3, Matthew T. Leming2,3, Michael Tomchaney2,3, Lucy Shi2,3, Longhua Sun2,3, Joseph E. O’Tousa2,3, David W. Severson2,3, Molly Duman-Scheel1,2,3 (1Dept. of Medical and Molecular Genetics, Indiana Univ. School of Medicine, Raclin-Carmichael Hall, South Bend, Indiana, 46617, USA; 2Eck Institute for Global Health, Galvin Life Sciences, Univ. of Notre Dame, Notre Dame, Indiana, 46556, USA; 3Dept. of Biological Sciences, Galvin Life Sciences, Univ. of Notre Dame, Notre Dame, Indiana, 46556, USA)

260 B34 Macf1 is required for development of the retina. **Helen May-Simera**, Chun Gao, Maria Campos, Nisha Patel, Tiansen Li (NEI, NIH, USA)

261 B35 Pattern of developmentally regulated DNA loss in the sea lamprey. *Petromyzon marinus*. **Jong Park**1,2, Chris Amemiya1,2, Jeramiah Smith3 (1Univ. of Washington, USA; 2Benaroya Research Institute, USA; 3Univ. of Kentucky, USA)

262 B36 Utilizing genome editing to explore the genetic basis of evolution in the cavefish *Astyanax mexicanus*. **Johanna Kowalko**1, Li Ma2, William Jeffery2, Jeff Essner1 (1Iowa State Univ., USA; 2Univ. of Maryland, USA)

263 B37 In situ hybridization during late larval stages of zebrafish development reveal a reverse collinear *hoxA* expression pattern in the paired pelvic fins. **Sophie Archambeault**, Karen D. Crow (San Francisco State Univ., USA)

264 B38 Deep conservation of autopod enhancers in a non-teleost bony fish. **Andrew Gehrke**1, Igor Schneider1, Tetsuya Nakamura1, Mayuri Chandran1, Ingo Braasch2, Johnathan Postlethwait2, Neil Shubin1 (1The Univ. of Chicago, USA; 2The Univ. of Oregon, USA)

265 B39 Fibroblast Growth Factor Diversity in the Developing Bat Limb. **Katrina S. Hofstetter**1, Cynthia Tang2, Aaron Harnsberger1, Justin L. Burnham1, Emilee A. Brown1, John J. Rasweiler IV3, Richard R. Behringer1, Chris J. Cretekos4 (1Idaho State Univ., USA; 2INBRE Undergraduate Summer Research Program, USA; 3State Univ. of New York, Downstate Medical Center, USA; 4Univ. of Texas M. D.
Interdigit BMP signaling directly regulates programmed cell death during mouse limb development
Maria Kaltcheva¹, Brian Harfe², Mark Lewandoski¹ (¹National Cancer Institute, USA; ²Univ. of Florida, USA)

Comparative analysis of developmental modes of vertebrate hypaxial musculature
Rie Kusakabe¹,², Richard Harland³, Kunio Inoue¹, Shigeru Kuratani² (¹Graduate School of Science, Kobe Univ., Japan; ²RIKEN Center for Developmental Biology, Japan; ³Dept. of Molecular and Cell Biology, Univ. of California at Berkeley, USA)

The muscle-specific histone methyltransferase Smyd1 is necessary for myofiber maturation
M. David Stewart¹, Suhujey Lopez¹, Harika Nagandla¹, Tara L. Rasmussen², Haley Tucker², Robert J. Schwartz¹ (¹Dept. of Biology and Biochemistry, Univ. of Houston, Houston, TX, USA; ²Molecular Biosciences and Institute for Cellular and Molecular Biology, Univ. of Texas, Austin, TX, USA)

Conditional deletion of Smyd1 at the myoblast stage results in reduced muscle mass
Harika Nagandla¹, Suhujey Lopez¹, Wei Yu¹, Robert J. Schwartz¹, Tara L. Rasmussen², Haley Tucker², M. David Stewart¹ (¹Dept. of Biology and Biochemistry, Univ. of Houston, Houston, TX, USA; ²Molecular Biosciences and Institute for Cellular and Molecular Biology, Univ. of Texas, Austin, TX, USA)

Scaling Pattern to Variations in Size during Vertebrate Neural Tube Development
Aysu Uygur (Harvard Medical School, USA)

Brain development is accompanied by alterations of neural oscillatory patterns in anaesthetized Wistar rats
Xiaxia Xu, Chenguang Zheng, Tao Zhang (College of Life Sciences, Nankai Univ., PRChina)

A forward genetic screen in zebrafish identifies multiple loci important for normal spine development
Ryan Gray, Lilianna Solnica-Krezel (Washington Univ. in Saint Louis, USA)

Molecular mechanisms underlying craniofacial variation in New World Leaf-Nosed bats
Jasmin Camacho, Alexander Heyde, Sam Smith, Arkhat Abzhanov (Harvard Univ., USA)

Common phenotypes in multiple species identifies an Hmx1 enhancer important for lateral facial development
Wenjie Li¹, Lely Quina⁴, Eric Turner²⁴, Axel Visel⁶, Timothy Cox¹³⁵ (¹Dept.s of Oral Health Sciences, Univ. of Washington, USA; ²Dept. of Psychiatry, Univ. of Washington, USA; ³Dept. of Pediatrics (Craniofacial Medicine), Univ. of Washington, USA; ⁴Centers for Integrative Brain Research, Seattle Children's Research Institute, USA; ⁵Centers for Development Biology & Regenerative Medicine, Seattle Children's Research Institute, USA; ⁶Lawrence Berkeley National Laboratory, USA)

Distinct Pattern of Primary Palate and Nasal Cavity Ontogeny in Reptile Embryos
John Abramyan, Joy Richman (Univ. of British Columbia, Canada)

Tooth replacement patterns and the effect of LiCl in the leopard gecko (Eublepharis macularius)
Andrew C. Wong, Theresa M. Gricco, Joy M. Richman (Univ. of British Columbia, Canada)

Evolution of tail feathers with novel shaping mechanisms for bilateral asymmetry
Ang Li¹, Yung-Chih Lai¹, Seth Figueroa², Ting-Xin Jiang¹, Ping Wu¹, Qing Nie², Randall Widelitz¹, Cheng-Ming Chuong¹ (¹Univ. of Southern California, USA; ²Univ. of California, Irvine, USA)

Toxicological impacts of cypermethrin on Zebrafish (Danio rerio)
Grace Okuthe (Walter Sisulu Univ., South Africa)

Bisphenol A affects early embryonic development in the pond snail Helisoma trivolvis
Skyler Tetreau, Dominic Skinner, Siddharth Ramakrishnan (Dept. of Biology, Univ. of Puget Sound, USA)

HIF and Notch Noncanonical Pathways Affect the Emergence and Differentiation of Cardiovascular Progenitor Cells
Alexander Calderon¹², Diana Ramirez-Bergeron²³ (¹Case Western Reserve Univ., USA; ²Case Cardiovascular Research Institute, USA; ³Case Western Reserve Univ. School of Medicine, USA)

Postsynaptic Neurobeachin is required for electrical and chemical synaptogenesis
Adam Miller, List
**Functional Genomics**

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283   B57   The genetic basis of molecularly asymmetric electrical synapses in zebrafish  **Alex Whitebirch**, Adam Miller, Arish Shah, Cecilia Moens (Fred Hutchinson Cancer Research Center, USA)

284   B58   Gene Knockout with CRISPR-Cas System  **Guang-Long Wu**\(^{1,2}\), Jian Fei\(^{1,2}\) (\(^1\)Key Laboratory of Molecular Genetics of Arrhythmias Ministry of Education, Tongji Univ., China; \(^2\)School of Life Science and Technology, Tongji Univ., China)

285   B59   Genetic screening using CRISPR/Cas9 in zebrafish  **Arish Shah**, Adam Miller, Cecilia Moens (Fred Hutchinson Cancer Research Center, USA)

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**Gene Regulation**

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289   B63   Whole transcriptome comparisons between stable and unstable CHO cell lines for high level of recombinant protein production  **Lei Huang**, Kaiming Chen, Dong Li, Hongwen Li (School of Life Sciences and Technology, Tongji Univ., China)

290   B64   Transcriptional landscape of the prenatal human brain  **Jeremy Miller**\(^1\), Song-Lin Ding\(^1\), Susan Sunkin\(^1\), Kimberly Smith\(^1\), Lydia Ng\(^1\), Aaron Szafer\(^1\), Amanda Ebbert\(^1\), Joshua Royall\(^1\), Trygve Bakken\(^1\), Michael Hawrylycz\(^1\), Allan Jones\(^1\), John Phillips\(^1\), Paul Wohmutka\(^1\), BrainSpan Consortium (Bruce Fischl, Mark Gerstein, Daniel Geschwind, Ian Glass, Robert Hevner, Hao Huang, Pat Levitt)\(^{1,2,7,8,9,10}\), James Knowles\(^9\), Nad Sestan\(^10\), Chinh Dang\(^1\), Amy Bernard\(^1\), John Hohmann\(^1\), Ed Lein\(^1\) (\(^1\)McLaughlin Institute, USA; \(^2\)Seattle Children’s Research Institute, USA)

291   B65   HNF4A and FOXA2 undergo differentiation-dependent enhancer switching to affect global gene expression during hepatocyte maturation  **Olivia Alder**\(^1\), Rebecca Cullum\(^1\), Sam Lee\(^1\), Misha Bilenky\(^1\), Malachi Griffith\(^1\), A.Sorrana Morrissy\(^2\), Gordon Robertson\(^1\), Nina Thiessen\(^2\), Youngjun Zhao\(^2\), Qian Chen\(^3\), Duojia Pan\(^3\), Steven Jones\(^2\), Marco Marra\(^2\), Pamela Hoodless\(^1\) (\(^1\)BC Cancer Agency, Canada; \(^2\)Michael Smith Genome Sciences Centre, Canada; \(^3\)Johns Hopkins Univ. School of Medicine, USA)

292   B66   Transcriptional Regulation of Gli Target Genes in the Limb Bud  **Steven Vokes**\(^1\), Jordan Lewandowski\(^1\), Marian Powell\(^1\), Fang Du\(^1\), Shilu Zhang\(^2\), Hongkai Ji\(^1\) (\(^1\)Univ. of Texas at Austin, USA; \(^2\)Johns Hopkins Univ. Bloomberg School of Public Health, USA)

293   B67   singles bar, a MEF2 target of myoblast fusion  **Tonya Brunetti**, Brayon Fremin (Univ. of New Mexico, USA)

294   B68   Nuclear Factor One proteins as potential regulators of Hedgehog target genes  **Alexander Brown**\(^1\), James Purzner\(^1\), Eunice Lee\(^1\), Wenxiu Ma\(^1\), Daniel Kilpatrick\(^2\), Richard Gronostajski\(^3\), Michael Piper\(^4\), Matthew Scott\(^1\) (\(^1\)Stanford Univ. School of Medicine, USA; \(^2\)UMASS Medical School, USA; \(^3\)SUNY Buffalo, USA; \(^4\)Univ. of Queensland, Australia)

295   B69   Epigenetic activation of Sox2 enhancer on embryonic neural plate  **Melisa Marini**\(^1\), Santiago
Bouzas¹, Ailín Buzzi¹, Ezequiel Gullermo¹, Marianne Bronner², Pablo Strobl-Mazzulla¹ (¹Laboratory of Developmental Biology (IIB-INTECH, CONICET-UNSAM), Argentina; ²California Institute of Technology, USA)

296 B70 Long-range integration of repressive and patterning inputs at the Drosophila even-skipped locus
Jemma L. Webber, Jie Zhang, Aaron Mitchell-Dick, Ilaria Rebay (Univ. of Chicago, USA)

297 B71 The control of short-stature homeobox (Shox) gene expression in developing limbs by long-range enhancers
John Cobb¹, Jessica Rosin¹, Guillaume Andrey², Samuel Abassah-Oppong¹ (¹Univ. of Calgary, Canada; ²École Polytechnique Fédérale de Lausanne, Switzerland)

298 B72 Machine-learning identifies predictive signatures of enhancer activity in individual cardiac cells
Julian Haimovich¹, Brian Busser¹, Di Huang², Ivan Ovcharenko², Alan Michelson¹ (¹National Heart, Lung, and Blood Institute, USA; ²National Center for Biotechnology Information, USA)

299 B73 Red Light, Green Light: A Novel Approach to Studying Interactions between Enhancers and Gene Promoters
Mary List, Eric Camino, Jordan Vellky, Thomas Williams (Univ. of Dayton, USA)

300 B74 Aret: A novel regulator of alternative splicing in the mRNA of adult muscles in Drosophila
Sandy Duong, Anton Bryantsev, Richard M. Cripps (Univ. of New Mexico, USA)

301 B75 RNA regulons in Hox 5’UTRs confer ribosome specificity to gene regulation and body plan formation
Sifeng Xue, Siqi Tian, Rhiu Das, Maria Barna (Stanford Univ., USA)

302 B76 Hoxa2 ultraconserved element is required for normal expression of neighboring Hox genes
Kristina Buac, Yuzhi Hu (Univ. of Georgia, USA)

303 B77 Identifying regulatory elements in 3’-untranslated regions of mRNAs
Bhavna Tandon, Daniel Wagner (Rice Univ., USA)

305 B79 Plag1 is a maternally provided transcription factor that regulates the expression of Snai1 and Slc6a8
Paulinina Damdimopoulou, Elo Madsisson, Shintaro Katayama, Dario Greco, Outi Hovatta, Juha Kere (Karolinska Institutet, Sweden)

307 B81 miR-34/449 miRNAs are required for motile ciliogenesis in vertebrate mucociliary epithelia by direct repression of cp110 and regulation of basal body function
Peter Walentek¹,5, Rui Song¹,5, Nicole Sponer¹,5, Alexander Klimke², Joon Sub Lee¹, Gary Dixon¹, Richard Harland¹, Ying Wan³, Polina Lishko¹, Muriel Lize⁴, Michael Kessel², Lin He¹ (¹MCB Dept., Univ. of California at Berkeley, USA; ²MCB Dept., Max Planck Institute for Biophysical Chemistry, Germany; ³The Third Military Medical Univ., China; ⁴Molecular Oncology Dept., Univ. of Goettingen, Germany; ⁵Equal Contributing Authors)

308 B82 The Role of Long Noncoding RNAs in Regulating Chicken Limb Patterning
Matthew Schwartz¹, Igor Ulitsky², David Bartel³,⁴,⁵, Clifford Tabin¹ (¹Harvard Medical School, USA; ²Weizmann Institute of Science, Israel; ³Whitehead Institute for Biomedical Research, USA; ⁴Massachusetts Institute of Technology, USA; ⁵HHMI, USA)

309 B83 JmjD2B histone demethylase regulates otic placode invagination via epigenetic control of Dlx3
Pablo Strobl-Mazzulla¹, Ailín Buzzi¹, Rosa Uribe², Marianne Bronner² (¹Laboratory of Developmental Biology (IIB-INTECH, CONICET-UNSAM), Argentina; ²California Institute of Technology, USA)

310 B84 HDAC Inhibition Disrupts Cellular Differentiation and Patterning in the Organ of Corti
Michael Kelly, Matthew Kelley (NIDCD/NIH, USA)

311 B85 Epigenetic alterations by NuRD and PRC2 in the neonatal mouse cochlea
Wanda Layman, Mario Saucedo, Jian Zuo (St. Jude Children’s Research Hospital, USA)

312 B86 Tissue Specific Regulation of Igf2r/Airn Imprinting During Gastrulation
Jesse Mager, Chelsea Marcho, Ariana Bevilacqua, Swarna Veeramani (Univ. of Massachusetts, USA)

313 B87 Deciphering the regulatory mechanism of Fgf8 repression by retinoic acid signaling
Sandeep Kumar, Thomas J. Cunningham, Gregg Duester (Development, Aging and Regeneration Program, Sanford-Burnham Medical Research Institute, USA)
The role of Wnt signaling in temporal and spatial patterning of mes-r1 in zebrafish

Amy Whitener (Texas A&M Univ., USA)

Characterization of murine cranial neural crest cell culture models for investigating pathways of chondrogenic and glial differentiation

Maria R. Replogle, Dena R. Hammond-Weinberger, Ava J. Udvadia (Univ. of Wisconsin - Milwaukee, USA; Univ. of California - San Diego, USA)

Gene transcription regulation of anterior hypothalamic development in mouse

Abdullah Al Mahmud, Jacques L. Michaud (Univ. of Montreal, Canada; CHU-Sainte Justine, Canada)

Splicing of a Specific Intron is Required for Protein but not RNA Expression of a Neurofilament Reporter Gene in the Developing Nervous System

Ben G. Szaro, Chen Wang (State Univ. of New York at Albany, USA)

DBL-1 Target Gene Regulation By SMA-2, SMA-3, and SMA-4

Uday Madaan, Cathy Savage-Dunn (Queens College, USA)

Germline cosuppression requires the nuclear RNAi pathway in C. elegans

Nicole Miller, Michael Waltman, Mary K. Montgomery (Macalester College, USA)

Roles of Brg1 during retinal development and tumorigenesis

Issam Aldiri, Itsuki Ajioka, Jiakun Zhang, Dianna Johnson, Michael Dyer (St. Jude Children's Research Hospital, USA; Tokyo Medical and Dental Univ., Japan; Univ. of Tennessee Health Science Center, USA)

EWS/FLI Utilizes NKX2-2 to Repress Mesenchymal Features of Ewing Sarcoma

John Fadul, Russell Bell, Laura Hoffman, Mary Beckerle, Michael Engel, Stephen Lessnick (Huntsman Cancer Institute, School of Medicine, the Univ. of Utah, USA; Dept. of Biology, the Univ. of Utah, USA; Center for Children’s Cancer Research, School of Medicine, the Univ. of Utah, USA; Division of Pediatric Hematology/Oncology, School of Medicine, the Univ. of Utah, USA)

Elucidating the transcriptional regulation of the zebrafish col2a1a gene

Rodney Dale, Sonja Dabizjevic, Peter Lyson, Daniel Brissette (Loyola Univ. Chicago, USA)

ACTH knockout frog model to gain insights into glucocorticoid mediated signaling during development

Leena Shewade, Saurabh Kulkarni, Daniel Buchholz (Univ. of Cincinnati, USA; Yale School of Medicine, USA)

The role of thyroid hormone receptor alpha in frog development

Jinyoung Choi, Ken-ichi Suzuki, Tetsushi Sakuma, Leena Shewade, Takashi Yamamoto, Daniel R Buchholz (Dept. of Biological Sciences, Univ. of Cincinnati, USA; Dept. of Mathematical and Life Sciences, Graduate School of Science, Hiroshima Univ., Japan)

BioTapestry: Modeling Gene Regulatory Networks for Development

William Longabaugh, Suzanne Paquette, Kalle Leinonen (Institute for Systems Biology, USA)

Organogenesis

Tropomyosin regulates myofiber elongation prior to sarcomere assembly

Aaron Johnson, Jessica Williams, Nathan Boin, Juliana Valera (Univ. of Colorado Denver, USA)

Reexamining the role of titin in muscle thick filament assembly and maintenance using zebrafish

Dave Pilgrim, J. Layne Myhre, Kendal Prill (Univ. of Alberta, Canada)

Characterization of a dsRNA-binding protein involved in gastric smooth muscle determination and proliferation

Jennifer McKey, Pascal de Santa Barbara, Sandrine Faure (INSERM U1046, France; Univ. Montpellier 1, France)

The novel zebrafish mutant sea squirt is a suppressor of heart size in retinoic acid deficient embryos

Amrita Mandal, Joshua Waxman (Molecular and Developmental Biology Graduate Program, College of Medicine, Univ. of Cincinnati, USA; Cincinnati Children’s Hospital and Medical Center, Cincinnati, USA)

The serotonin receptor Htr2a plays a critical role during atrioventricular canal patterning in zebrafish

Andrew Houk, Grant Miura, Richard Shehane, Paulina Delgado Cuenca, Deborah Yelon (Division of Biological Sciences, Univ. of California, San Diego, USA)
Shear stress as a factor affecting embryonic cardiac development in zebrafish Deborah Garrity, Brennan Johnson, Molly Zeller, Lakshmi Prasad Dasi (Colorado State Univ., USA)

Hey2 acts to restrict second heart field progenitor contribution to the zebrafish heart Ian Scott¹,², Savo Lazic¹,², Ashish Deshwar¹,², Natalie Gibb¹ (¹The Hospital for Sick Children, Canada; ²The Univ. of Toronto, Canada)

Dissecting the roles of the proepicardium and Fgf10 in cardiac development Lisa Urness¹, Steven Bleyl¹, Anne Moon¹,², Suzanne Mansour¹ (¹Univ. of Utah, USA; ²Weis Center for Research, Geisinger Clinic, USA)

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The Apelin Receptor (Aplnr) enhances Nodal signaling for proper cardiac progenitor development. Ashish R. Deshwar¹,², Ian C. Scott¹,² (¹The Hospital for Sick Children, Canada; ²Univ. of Toronto, Canada)

Controlling the pace of cardiac differentiation: Cell adhesion molecule 4 restricts the production of outflow tract progenitor cells Xin-Xin Zeng, Deborah Yelon (Univ. of California, San Diego, USA)

Wnt signaling has distinct and dynamic roles in semilunar and atrioventricular canal valve development Fernanda Bosada¹, Vidusa Devasthali¹, Kimberly Jones¹, Brynn Akerberg¹, Andrew McKay¹, Yujung Choi¹, Ching-Pin Chang², Calvin Kuo³, Bin Zhou⁴, Kryn Stankunas¹ (¹Univ. of Oregon, USA; ²Indiana Univ. School of Medicine, USA; ³Stanford Univ. School of Medicine, USA; ⁴Albert Einstein College of Medicine of Yeshiva Univ., USA)

SOX9 regulates the Mecom/Evi1 locus during valve mesenchyme condensation in heart valve development. Victoria C. Garside¹,², Rebecca Cullum¹, Pamela A. Hoodless¹,²,³ (¹Terry Fox Laboratory, BC Cancer Agency, Canada; ²Cell and Developmental Biology Program, Univ. of British Columbia, Canada; ³Dept. of Medical Genetics, Univ. of British Columbia, Canada)

The Na-dependent phosphate cotransporter PiT-1 is required for early vascular development. Mary Wallingford, Cecilia Giachelli (Univ. of Washington, Dept. of Bioengineering, USA)

Development of a Zebrafish Port-Wine Stain Model David Lakomy, Bhavna Tandon, Daniel Wagner (Rice Univ., USA)

Individual disparate cell decisions define the balance between expansion and endocrine differentiation in the pancreas Hjalte List Larsen¹, Yung Hae Kim¹,², Laurence Anne Lemaire¹, Jorge Ferrer³, Anne Grapin-Botton¹,² (¹DanStem, Univ. of Copenhagen, Denmark; ²Ecole Polytechnique Fédérale de Lausanne, Switzerland; ³Endocrinology, Hospital Clinic de Barcelona, Spain)

Pdx1-driven epithelial morphogenesis contributes to pancreatic cell fate specification Leilani Marty-Santos, Ondine Cleaver (The Univ. of Texas Southwestern Medical Center, USA)

Role of Yap/Taz in Pancreas morphogenesis and cell specification Anant Mamidi, Henrik Semb (The Danish Stem Cell Center (DanStem), Univ. of Copenhagen, Denmark)

Loss of ΔNp63 impairs thymic epithelial progenitor survival and differentiation Virginia Bain¹, Kaitlin Reeh¹, Carla Carter¹, Elsa Flores², Ellen Richie¹ (¹M.D. Anderson Cancer Center, Smithville, USA; ²M.D. Anderson Cancer Center, Houston, USA)

Extinction of Tbx1 expression in 3rd pp endoderm is required for thymus organogenesis Kaitlin Reeh¹, Kim Cardenas², Virginia Bain¹, Julie Gordon³, Nancy Manley³, Ellen Richie¹ (¹The Univ. of Texas MD Anderson Cancer Center, Science Park Research Division, USA; ²The Univ. of Texas, USA; ³Univ. of Georgia, USA)

Hypodysplasia and glomerular cysts in a new mouse model of CAKUT generated by ENU mutagenesis Maxime Bouchard, Yaned Gaitan, Katherine Stewart, Di Hu, Mathieu Tremblay, Richa Sharma, Maxwell Shafer, Sylvia Vidal, Michael Marcotte, Daniela Stanga, Sami Boualia (Goodman Cancer Research Centre, McGill Univ., Canada)

Osr1 interacts synergistically with Wt1 to regulate metanephric kidney formation Jingyue Xu¹, Ok Hee Chai¹, Han Liu¹, Yu Lan¹,², Rulang Jiang¹,² (¹Division of Developmental Biology, Cincinnati Children’s Hospital Medical Center, USA; ²Division of Plastic Surgery, Cincinnati Children’s Hospital Medical Center, USA)
B121  Modeling Congenital Anomalies of the Kidney and Urinary Tract: a Role for Wnt5a/Ror2 Signaling in Duplex Kidney/Ureter Formation  

Kangsun Yun1, Rieko Ajima1, Nirmala Sharma1, Frank Costantini2, Susan Mackem1, Mark Lewandoski1, Terry P. Yamaguchi1, Alan O. Perantoni1  

(1National Cancer Institute - Frederick, USA; 2Columbia Univ. Medical Center, USA)

B122  The Role of Flanking and Paralogous Abdominal-B Hox Genes During Kidney Development  

Bliss Magella, Mike Adam, Anna Raines, Steve Potter (Cincinnati Children's Hospital Medical Center, USA)

B123  Mosaic Analysis with Double Markers reveals Ret activity is essential to coordinating the behavior of “tip” cells as progenitors of the renal collecting system  

Paul Riccio1, Hideki Enomoto2, Frank Costantini1  

(1Columbia Univ., USA; 2Riken Center for Developmental Biology, Japan)

B124  Rudhira controls actin organization to regulate ultrafiltration in insect nephrocytes and kidney podocytes.  

Simi Muraleedharan1, Barry Denholm2, Nan Hu2, Helen Skaer2, Maneesha Inamdar1  

(1Jawaharlal Nehru Centre for Advanced Scientific Research, India; 2Univ. of Cambridge, UK)

B125  Novel insight into the development of left-right asymmetry in the Xenopus liver  

Mandy Womble, Nanette Nascone-Yoder (North Carolina State Univ., USA)

B126  YY1 is required in the definitive endoderm for hepatoblast migration and VEGF maintenance  

Kimberly Tremblay, Siyeeon Rhee, Jesse Mager (Univ. of Massachusetts, Amherst, USA)

B127  A Novel Non-Neuronal role for Acetylcholinesterase in Gut Morphogenesis  

Melissa Pickett, Nanette Nascone-Yoder (North Carolina State Univ., USA)

B128  Temporal mapping of enteric development and villus morphogenesis.  

John Hatch, Yosuke Mukoyama (National Heart, Lung, and Blood Institute, USA)

B129  Hoxb5b Controls the Midline Convergence of the Foregut Endoderm  

Gokhan Dalgin, Victoria E Prince (The Univ. of Chicago, Dept. of Organismal Biology and Anatomy, USA)

B130  Meis3 is required for the proper specification and efficient migration of enteric neural crest cells to the primitive gut  

Rosa Uribe (California Institute of Technology, USA)

B131  The Hippo pathway during mammalian brain development: growth, morphogenesis, and wiring  

Xinwei Cao (St. Jude Children's Research Hospital, USA)

B132  Parasympathetic gangliogenesis is initiated by Sprouty1/2-regulated Wnt signals from epithelial progenitors  

Wendy M. Knosp1, Sarah M. Knox2, Candace L. Haddox1, Isabelle M. A. Lombaert1, Matthew P. Hoffman1  

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B133  Junctional protein Cingulin play a potential important role in cilia  

Chuan Chen, Tao Zheng, Ying Cao (School of Life Science and Technology, Tongji Univ., China)

B134  The role of primary cilia in neural development and disease  

Rolf Stottmann, Megan Nichols, Aria Attia, John Snedeker, Milene Donlin, Robert Kassinger (Cincinnati Children's Hospital Medical Center, USA)

B135  A spatial analysis of hair cell development in the mouse crista  

Amber D. Slowik, Olivia Bermingham-McDonogh (Univ. of Washington, USA)

B136  Sonic hedgehog gradient regulates the tonotopic patterning of the vertebrate cochlea  

Ji Hyun Ma1, Eun Jin Son2, Harinarayana Ankanreddy1, HongKyung Kim1, Jae Young Choi1, Doris K. Wu1, Jinwoong Bok1,2  

(1Dept. of Anatomy, Yonsei Univ. College of Medicine, Republic of Korea; 2Dept. of Otorhinolaryngology, Yonsei Univ. College of Medicine, 3National Institute on Deafness and other Communication Disorder, USA)

B137  Maintenance of cochlear sensory progenitor population via FGF-FGFR dependent epithelial-mesenchymal crosstalk  

Sung-Ho Huh, David Ornitz (Washington Univ. in St. Louis, USA)

B138  Temporal requirement of TGF-beta and Hedgehog signaling during middle ear ossicle formation  

Harinarayana Ankanreddy1, Jeong-Oh Shin1, Xiao Yang2, Eui-Sic Cho1, Jinwoong Bok1,2  

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Hedgehog effectors Gli2 and Gli3 are redundantly required for respiratory epithelium specification
Lu Han1,2, Chris Anglin1, Scott Rankin1, Aaron Zorn1,2 (1Cincinnati Children's Hospital, US; 2Univ.
of Cincinnati, US)

Mechanisms of FGF signaling in lung development reveal a link between Dicer1 loss and the
pathogenesis of pleuropulmonary Blastoma David M. Ornitz1, Yongjun Yin1, Angela Castro1, D.
Ashley Hilf (1Washington Univ. School of Medicine, USA; 2Children's National Medical Center, USA)

Dissecting Roundabout receptor function in a mouse model of Congenital Diaphragmatic Hernia
Kelsey Branchfield1, Eric Domyan5, Daniel Gibson2, L.A. Naiche3, Mark Lewandoski3, Marc
Tessier-Lavigne4, Le Ma2, Xin Sun1 (1Univ. of Wisconsin-Madison, USA; 2Univ. of Southern
California, USA; 3National Cancer Institute, USA; 4The Rockefeller Univ., USA; 5The Univ. of Utah,
USA)

“Endodermal Wnt signaling directs dorsal-ventral patterning of developing trachea”.
Debora Sinner1,2, John Snowball1, Manoj Ambalavanan1, Jeffrey Whitsett1,2 (1Cincinnati Children's Hospital
Research Center, USA; 2Univ. of Cincinnati, College of Medicine, USA)

Hedgehog signaling is required for dental papilla formation in zebrafish teeth William Jackman,
Jeffrey Yu, Zachary Fox, James Crimp, Hana Littleford, Andrea Jowdry (Bowdoin College, USA)

Involvement of region-distinctive expressed Rac1 during palatal shelves elevation Qinghuang Tang1,
Li-Wen Li1, Jong-Min Lee1, Han-Sung Jung1,2 (1Division in Anatomy and Developmental Biology,
Dept. of Oral Biology, Oral Science Research Center, BK21 PLUS Project, Yonsei Univ. College of
Dentistry, Seoul, Korea; 2Oral Biosciences, Faculty of Dentistry, The Univ. of Hong Kong, Hong Kong SAR, China)

A splice-site mutation in Pitf1 causes bilateral cleft lip and palate in mice Seungshin Ha1, Robert M.
Kao1, Kelly George2, Jabier Gallego-Llamas1, Jagesh V. Shah2, Timothy C. Cox1, David R. Beier1,2
(1Center for Developmental Biology and Regenerative Medicine, Seattle Children's Hospital, Seattle,
WA, USA; 2Dept. of Medicine, Brigham and Women's Hospital, Harvard Medical School, Boston,
WA, USA)

Novel mechanisms in frontal bone ossification Heather Szabo-Rogers, Bansari Amin, Brian Cusack,
Sabrina Schulze, Cecilia Lo (Univ. of Pittsburgh, USA)

Modifier Gene Discovery Using a Novel ENU Mutagenesis Approach Krista Geister1, Seungshin
Ha1, Robert Lipinski2, David Beier1 (1Seattle Children's Research Institute, USA; 2Univ. of
Wisconsin-Madison, USA)

Adrenergic signaling regulates long bone growth and chondrocyte function in vivo Dylan Faltine-
Gonzalez1, Alberto Roselló-Díez2, Alexandra Joyner2 (1Univ. of Hawaii at Manoa, USA; 2Sloan
Kettering Institute, USA)

The dynamics of BMP signaling in digit differentiation and polydactyly Jacqueline L. Norrie1,
Courtney M. Bouldin2, Jordan P. Lewandowski1, Qiang Li1, Smita Amarnath1, Martha S. Vokes1,
Lauren I. Ehrlich1, Brian D. Harfe2, Steven A. Vokes1 (1The Univ. of Texas at Austin, USA; 2The
Univ. of Florida, USA)

RNA-Seq analysis of tendon development Han Liu1, Jingyue Xu1, Lindsey Aschbacher-Smith1,
Rulang Jiang1,2 (1Division of Developmental Biology, Cincinnati Children's Hospital Medical Center,
USA; 2Division of Plastic Surgery, Cincinnati Children's Hospital Medical Center, USA)

c-myc regulates cell proliferation during lens development Gabriel Cavalheiro, Gabriel Rodrigues,
Anielle Gomes, Paulo Rodrigues, Rodrigo Martins (Biomedical Sciences Institute, Federal Univ. of
Rio de Janeiro, Brazil)

Hormonal induction and roles of Disabled-2 during mammary gland lactation and involution Robert
Moore, Wensi Tao, Elizabeth R. Smith, Xiang-Xi Xu (Univ. of Miami School of Medicine, USA)
miR-137 regulates mammary gland morphogenesis and breast carcinogenesis Jong-Min Lee, Eun-Jung Kim, Kyoung-Won Cho, Qinghuang Tang, Cheryll Tickle, Han-Sung Jung (Division in Anatomy and Developmental Biology, Dept. of Oral Biology, Yonsei Univ. College of Dentistry, Korea; Oral Biosciences, Faculty of Dentistry, The Univ. of Hong Kong, China; Dept. of Radiology, Seoul National Univ. Hospital, Korea; Dept. of Biology and Biochemistry, Univ. of Bath, UK)

Drosophila melanogaster: an emerging model system in lipid metabolism research Vinzenz Hofferek (Max Planck Institute for Biophysical Chemistry, Germany; Max Planck Institute for Molecular Plantphysiology, Germany)

Fibroblast growth factor signaling influences ovary morphogenesis in Drosophila Jihyun Irizarry (California Institute of Technology, U.S.)

MAF-3 and DMD-3, two DM-domain transcription factors, direct the development of the somatic gonad in C. elegans males. Clements Kristen, Megan Lesperance, Michele Smith, Alyssa Herrmann, Virjee Haani, Robert Pacheco, Emily Kivelhan, Lauren Whipple, Asher Cherian, Althea Porter, Richard Pacheco, Doug Portman, D. Adam Mason (Siena College, USA; Univ. of Rochester, USA)

Elucidating the mechanism by which mechanical force stabilizes Cell-ECM adhesion during development. Pablo López Ceballos, Guðlaug Katrín Hákonardóttir, Stefan Czerniecki, Alejandra Herrera Reyes, Raibatak Das, Daniel Coombs, Guy Tanentzapf (Cellular and Physiological Sciences, Univ. of British Columbia, Vancouver, BC, Canada; Mathematics, Univ. of British Columbia, Vancouver, BC, Canada; Integrative Biology, Univ. of Colorado Denver, Denver, CO, USA)

Examining cell cycle gene regulation in different states of G0 Laura Buttitta, Kerry Flegel, Dan Sun, Yiqin Ma (Univ. of Michigan, USA)

Nutrient/TOR kinase signaling controls body growth, size and development via stimulation of tRNA and rRNA synthesis and enhanced insulin signalling. Savraj Grewal, Abhishek Ghosh, Elizabeth Rideout (Univ. of Calgary, Canada)

Comparation of cell polarity formation between repair of porcine tubular necrosis and embryogenesis Yuansheng Xie, Shanshan Shen, Xuyan Li, Zhong Yin, Jianzhong Wang, Qinggang Li, Xiangmei Chen (Dept. of Nephrology, Chinese PLA General Hospital (301 Hospital), Kidney Institute of Chinese PLA, State Key Laboratory of Kidney Diseases (2011DAV00088), National Clinical Research Center for Kidney Diseases (2013BAI09B05), China)

Understanding Dlx-mediated effects on cell proliferation Andrew J. Bendall, R. Katie MacKenzie (Dept. of Molecular and Cellular Biology, Univ. of Guelph, Canada)

Ciliary localization of Gli2 is critical for its activation by Hedgehog signaling Aimin Liu, Jinling Liu, Huiqing Zeng (The Pennsylvania State Univ., USA)

Effects of IGF1-RUNX2 pathway activation on traction force and focal adhesion distributions in...
single suture craniosynostosis Andrea Leonard1, Zeinab Al-Rekabi1, Sarah S. Park2, Christine Clarke2, Michael L. Cunningham2,3, Nathan J. Sniadecki1 (1Dept. of Mechanical Engineering, Univ. of Washington, USA; 2Center for Tissue and Cell Sciences, Seattle Children’s Research Institute, USA; 3Division of Craniofacial Medicine and the Dept. of Pediatrics, USA)

391 B7 Dual antagonistic signaling during C. elegans vulval fate patterning promote developmental fidelity David J. Reiner1,3, Kimberly B. Monahan1, Christian Braendle2, Rebecca E. W. Kaplan1, Tanya P. Zand1, Channing J. Der1 (1Lineberger Comprehensive Cancer Center and Dept. of Pharmacology, Univ. of North Carolina, Chapel Hill, USA; 2Institute of Biology Valrose, CNRS & Univ. of Nice, France; 3Institute of Biosciences & Technology, Texas A&M Health Science Center, Houston, USA)

392 B8 The COP9 signalosome restricts EGFR signaling through regulation of Capicua degradation in the developing fly Annabelle Suisse1, Kevin Legent2, Jessica Treisman1 (1Skirball Institute of Biomolecular Medicine - NYU Langone Medical Center, USA; 2Institut Jacques Monod - Universite Paris Diderot, France)

393 B9 tRNA modification and TOR kinase: something new to consider Diego Rojas-Benitez, Alvaro Glavic (Centro FONDAP de Regulación del Genoma. Facultad de Ciencias – Universidad de Chile, Chile)

394 B10 Src42A Modulates Tumor Invasion and Cell Death via Ben/dUev1a-JNK Signaling in Drosophila Yingyao Shao1,2, Yu Zhao1,2, Lei Xue1,2 (1Dept. of Interventional Radiology, Shanghai Key Laboratory of Signaling and Disease Research, Shanghai 10th People’s Hospital, School of Life Science and Technology, Tongji Univ., China; 2Dept. of Interventional Radiology, Shanghai Key Laboratory of Signaling and Disease Research, School of Life Science and Technology, Shanghai 10th People’s Hospital, Tongji Univ., China)

396 B12 Recapitulation of the auxin response pathway in yeast Edith Pierre-Jerome, Seunghee Jang, Kyle Havens, Jennifer Nemhauser, Eric Klavins (Univ. of Washington, USA)

397 B13 Identifying the Roles of Individual Wnt Ligands in Neural Tube Closure Christopher Pineda, Carl Grim, Shea Feeney, Gina Pay, Lisa Galli, Laura Burrus (San Francisco State Univ., USA)

398 B14 Investigation of the Wnt1 residues required for palmitoylation by Porcupine Matilde Miranda1, Lisa Galli1, Michael Enríquez1, Linda Szabo1, Xinxin Gao2, Rami Hannoush2, Laura Burrus1 (1San Francisco State Univ., USA; 2Genentech, Inc., USA)

399 B15 Gphp2 destabilizes Axin and is required for embryonic Wnt signalling William Gillis, Arif Kirmizitas, Jonathan Wyrick, Gerald Thomsen (Stony Brook Univ., USA)

400 B16 Investigation of Wnt Secretion Jeff Brown, Rachel Van Nes, John Reardon, Matt LaPlante, Patrick Throckmorton, Katie Bates (Univ. of Portland, USA)

401 B17 Reelin regulates Schwann cell migration by activating the Rho GTPase Rac1 Consuelo Pasten2, Ignacio Jausoro2, Alfredo Caceres1, Maria Paz Marzolo2 (1Laboratory of Neurobiology; Instituto Mercedes y Martin Ferreyra (INIMEC) CONICET, Córdoba, Argentina; 2Laboratory of Intracellular Trafficking and Signaling; Facultad de Ciencias Biológicas; Pontificia Universidad Católica de Chile, Santiago, Chile)

402 B18 Mutation of the Kif5Aa tail domain leads to mitochondrial deficits and axonal degeneration of peripheral sensory neurons in larval zebrafish Philip D. Campbell1, Kimberle Shen2, Matthew Sapio1, Thomas D. Glenn2, William S. Talbot2, Florence L. Marlow1 (1Albert Einstein College of Medicine, USA; 2Stanford Univ. School of Medicine, USA)

403 B19 Studying the mechanisms of mesenchymal to epithelial transitions in lateral line primordium Uma Neelathi (National Institutes of Health, USA)

Patterning and Transcription Factors

404 B20 Role of Lhx9 in the development of amacrine cell subtype and its dendritic stratification Revathi Balasubramanian, Andrew Bui, Lin Gan (Univ. of Rochester, USA)

405 B21 Notch signaling differentially regulates Atoh7 and Neurog2 in the distal mouse retina Nadean L.
Brown¹,², Kate A. Maurer¹, Amy N. Riesenberge¹ (¹Cincinnati Children's Research Foundation, USA; ²Univ. of California, Davis, USA)


407 B23 prdm12b specifies the p1 progenitor domain of the ventral neural tube and reveals a role for V1 interneurons in swim movements Denise Zannino¹, Gerald Downes², Charles Sagerstrom³ (¹Univ. of Massachusetts Medical School, USA; ²Univ. of Massachusetts, Amherst, USA)

408 B24 Sequential posteriorization by FGF signaling in the Ciona anterior neural plate T. Blair Gainous, Eileen Wagner, Mike Levine (Univ. of California, Berkeley, USA)

409 B25 SOX21 regulates the progression of neuronal differentiation in a dose-dependent manner. Niteace Whittington, Doreen Cunningham, Elena Silva Casey (Georgetown Univ., USA)

410 B26 Characterizing the roles of Sox2 and Sox3 in sensory/neural patterning during zebrafish inner ear development Bruce Riley, Yunzi Gou, Hye-Joo Kwon (Texas A&M Univ., USA)

411 B27 Candidate co-factors for vertebrate Six family transcription factors are required for otic development Sally A. Moody¹, Karen M. Neilson¹, Kristy L. Kenyon², Josephine Stout³, Allison Wilcox⁴, Dominique Alfandari⁵ (¹George Washington Univ., USA; ²Hobart and William Smith Colleges, USA; ³Univ. of Massachusetts, Amherst, USA)

412 B28 Restriction of cartilage condensations by Jagged1 differentiates the upper from the lower facial skeleton Gage Crump¹, Lindsey Mork¹, Elizabeth Zuniga¹, Camilla Teng¹, Robert Maxson², Dan Meulemans Medeiros³ (¹Univ. of Southern California Keck School of Medicine, USA; ²Univ. of Colorado, Boulder, USA)

413 B29 Identify target genes regulated by Osr2 transcription factor during palate development Jing Zhou¹, Yu Lan¹,², Han Liu¹, Shihai Jia¹, Joo-Seop Park¹,², Bing Li¹, Bruce Aronow⁵, Sunhee Oh⁶, Rulang Jiang¹,² (¹Division of Developmental Biology, Cincinnati Children’s Hospital Medical Center, USA; ²Division of Plastic Surgery, Cincinnati Children’s Hospital Medical Center, USA; ³Divisions of Pediatric Urology and Developmental Biology, Cincinnati Children's Hospital Medical Center, USA; ⁴Dept. of Molecular, Cell and Developmental Biology, Univ. of California Los Angeles, USA; ⁵Division of Biomedical Informatics, Cincinnati Children’s Hospital Medical Center, USA; ⁶Division of Human Genetics, Cincinnati Children’s Hospital Medical Center, USA)

414 B30 Retinoic acid regulates size, pattern and alignment of neural and mesodermal tissues at the head-trunk transition Isaac Skromme, Keun Lee (Univ. of Miami, USA)

415 B31 Tbx6, Rippy1, and Mesp-b in dermomyotome development Stephen Devoto¹, Stefanie Windner¹, Chantal Fergusson¹, Rosemarie Doris¹, Guillaume Valentin¹, Andrew Oates³, Fiona Warde² (¹Wesleyan Univ., USA; ²King’s College London, UK; ³National Institute for Medical Research, UK)

416 B32 Characterization of the TBX5 interactome provides mechanistic insight into Holt-Oram Syndrome Lauren Waldron¹,², Junghun Kweon⁵, Kerry Dorr¹,², Todd Greco⁴, Ileana Cristea⁴, Ivan Moskowitz⁵, Frank Conlon¹,²,³ (¹McAllister Heart Institute, School of Medicine, UNC-Chapel Hill, USA; ²Dept. of Genetics, School of Medicine, UNC-Chapel Hill, USA; ³Dept. of Biology, College of Arts and Sciences, UNC-Chapel Hill, USA; ⁴Dept. of Molecular Biology, Princeton Univ., USA; ⁵Dept. of Pathology, Pediatrics, Univ. of Chicago, USA)

417 B33 Musculoskeletal patterning by Hox: analysis of Hox function in stromal fibroblasts Kyriel Pineault (Univ. of Michigan, USA)

418 B34 The Iroquois transcription factors Irx7 and Irx5a promote the zebrafish hyoid joint by arresting chondrocytes at an early state of maturation Amjad Askary, Xinjun He, Lindsey Mork, Andrew McMahon, Gage Crump (Univ. of Southern California, USA)

419 B35 Modulation of FGF signaling influences anterior-posterior patterning during zeugopod development Marcela Buchtova¹, Petra Cela¹,², Pavel Krejcí³ (¹Institute of Animal Physiology and Genetics, Academy of Sciences of the Czech Republic, Czech Republic; ²Dept. of Animal Physiology and Immunology, Institute of Experimental Biology, Masaryk Univ., Czech Republic; ³Dept. of Biology,
Sp6 and Sp8 transcription factors control AER formation and dorsoventral patterning in limb development. Marian Ros
1,2, Endika Haro1, Irene Delgado1, Marisa Junco1, Yoshihiko Yamada3, Ahmed Mansouri4, Kerby C Oberg5 (1Instituto de Biomedicina y Biotecnología de Cantabria (CSIC-UC-SODERCAN), Spain; 2Departamento de Anatomía y Biología Celular. Facultad de Medicina, Universidad de Cantabria, Spain; 3Laboratory of Cell and Developmental Biology, NIDCR, National Institutes of Health, USA; 4Max Planck Institute for Biophysical Chemistry, Dept. of Molecular Cell Biology, Germany; 5Dept. of Pathology and Human Anatomy, Loma Linda Univ., USA)

The measure of a morphogen - SHH quantitation, and roles in pre-axial polydactyly and evolutionary digit loss Edward Johnson1, David Neely1, Lynn McTeir1, Ian Dunn1, Laura Lettice2, Robert Hill2, Megan Davey1 (1The Roslin Institute, Univ. of Edinburgh, UK; 2MRC Genetics Unit IGMM, Univ. of Edinburgh, UK)

Investigating the transcriptional response of forelimb and hindlimb cells to the Sonic Hedgehog morphogen gradient Martin Carkett1,2, Malcolm Logan2 (1MRC National Institute for Medical Research, United Kingdom; 2King's College London, United Kingdom)

Not too high, not too low: a sweet spot in timing and level of Shh pathway activity regulates two distinct progenitor populations in limb development Olena Zhulyn1,2 (1Univ. of Toronto, Canada; 2The Hospital for Sick Children, Canada)

Genetic analysis of Pitx2 function in zebrafish Yongchang Ji, Jeffrey Amack (SUNY Upstate Medical Univ., USA)

Defining Novel Gene Regulatory Networks in the Arabidopsis Root Colleen Drapek (Duke Univ., USA)

Identification of lineage-specific regulators by automated lineage tracing in C. elegans. John Murray, Travis Walton, Elicia Preston, Amanda Zacharias, Joshua Burdick (Perelman School of Medicine, Univ. of Pennsylvania, USA)

The dADX proteins: The Drosophila orthologs of the amino-terminus of the ATRX vertebrate protein. Brenda Araceli López Falcón Piza, Silvia Meyer Nava, Benjamín Hernández Rodriguez, Daniel Montero Barrera, Adam Andrés Campos, Enrique Rudiño, Martha Vázquez, Mario Zurita, Viviana Valadez Graham (Institute of Biotechnology, UNAM, México)

Carotid body glomus cells develop from autonomic neurons and share a differentiation pathway with adrenal chromaffin cells Dorit Hockman1,6, Perrine Barraud1, Tomoki Otani1, Adam Hunt1, Patrik Ernfors2, Marthe J. Howard3, Jeffrey Reese4, Elisabeth Sock5, Clare V. Baker (1Univ. of Cambridge, Dept. Physiology, Development & Neuroscience, U K; 2Karolinska Institute, Division of Molecular Neurobiology, Sweden; 3Univ. of Toledo, Dept. Neurosciences and Program in Neurosciences & Neurodegenerative Diseases, USA; 4Vanderbilt Univ. Medical Center, Dept. of Pediatrics, Cell and Developmental Biology, Nashville, TN, USA; 5Universität Erlangen-Nürnberg, Institut für Biochemie, Erlangen, Germany; 6Univ. of Oxford, Weatherall Institute of Molecular Medicine, Oxford, UK)

Cell Motility and Guidance

The diencephalic glial bridge represents a heterogeneous population of astroglial cells that support commissure formation in the zebrafish forebrain Michael Barresi1, Caitlin Schneider1, Sarah Bashiruddin1, Carla Velez1, Risha Sinha1, Kristin Alligood1, Rachael Stein1, Stephen Devoto2, Chi-Bin Chien6, Michael Parsons3, Jeffery Mumm4 (1Biological Sciences, Smith College, USA; 2Biology Dept., Wesleyan Univ., USA; 3Dept. of Surgery, Johns Hopkins Univ., USA; 4Wilmer Eye Institute, Johns Hopkins Univ., USA; 5Dept. of Neurobiology and Anatomy, Univ. of Utah, USA)

A dosage-sensitive genetic interaction between the Trio GEF and Sequoia transcription factor influences a Drosophila larval behavior Eric Liebl (Denison Univ., Biology, USA)

Integrin alpha6 Function Is Necessary For Neuronal Migrations and Neurovascular Formations In
Stl is an ADAMTS extracellular protease required for proper neuronal migration in the Drosophila embryo Afshan Ismat, Tashi Lhamo (Franklin and Marshall College, USA)

The role of planar cell polarity in directed cell migration Andrew Mathewson1,2, Crystal Davey1,2, Cecilia Moens1,2 (Fred Hutchinson Cancer Research Center, USA; Univ. of Washington, USA)

Regulation of motor neuron migration by the planar cell polarity pathway Crystal Davey1,2, Andrew W. Mathewson1,2, Cecilia B. Moens1,2 (Fred Hutchinson Cancer Research Center, Division of Basic Science, USA; Univ. of Washington, Molecular and Cellular Biology Program, USA)

Ephrin-B2 expression in the vascular endothelium is necessary and sufficient for normal neural crest guidance Ace E. Lewis, Jeffrey O. Bush (Dept. of Cell and Tissue Biology and Program in Craniofacial and Mesenchymal Biology, UCSF, USA)

The role of microRNA-206 in the distribution of HNK-1 positive cells in Xenopus laevis Nicole Galicia, Julio Ramirez, PhD, Carmen Domingo, PhD (San Francisco State Univ., USA)

Loss of Robo receptor Enhances Trunk Neural Crest Cell Migration Nora Zuhdi, Michelle Reyes, Darwin Martinez, Maria Elena de Bellard (California State Univ. Northridge, USA)

Challenging the Cell Induced Gradient Model of Neural Crest Migration Rebecca McLennan1, Linus Schumacher2, Jason Morrison1, David Kay3, Ruth E. Baker3, Philip K. Maini2,4, Paul M. Kulesa1,5 (Stowers Institute for Medical Research, Kansas City, USA; Center for Mathematical Biology, Mathematical Institute, Univ. of Oxford, UK; Dept. of Computer Science, Univ. of Oxford, UK; Oxford Center for Integrative Systems Biology, Dept. of Biochemistry, Univ. of Oxford, UK; Dept. of Anatomy and Cell Biology, Univ. of Kansas School of Medicine, USA)

Investigating the novel role of cdon in Prdm1a-regulated neural crest migration Davalyn Powell, Christy Cortez Rossi, Jason Williams, Kristin Artinger (Univ. of Colorado Anschutz Medical Campus, USA)

protocadherin10a is required for migration of neural crest-derived melanocyte precursors Kristin Bruk Artinger, Jason Williams, Christy Cortez Rossi, Ana-Laura Hernandez-Lagunas (Univ. of Colorado School of Dental Medicine, USA)

Molecular cloning of the white mutant axolotl: correspondence to endothelin-3 and the feasibility of genetic and genomic analyses for studying development and regeneration in the salamander. David Parichy1, Jessica Spiewak1, Naomi Hayes2, Kevin Kump2, Randal Voss2 (Univ. of Washington, USA; Univ. of Kentucky, USA)

Proteolytic control of cranial neural crest cell migration. Dominique Alfandari1, Genevieve Abbruzzese1, Helene Cousin1, Lilian Kaufmann2, Anne Gorny2, Herbert Steinbeisser3 (Univ. of Massachusetts, USA; Univ. of Heidelberg, Germany)

Myosin 10 motor protein plays an essential role in craniofacial development Cole Yancey, Vinoth Sittaraman, PhD (Georgia Southern Univ., College of Science and Mathematics, Biology, USA)

Cell intercalation and migration mediated by actin contractility contribute to fusion of the mammalian secondary palate Jeffrey Bush, Seungil Kim (Dept. of Cell and Tissue Biology and Program in Craniofacial and Mesenchymal Biology, Univ. of California, San Francisco, USA)

Activation of IGF1-RUNX2 pathway demonstrates changes in cellular phenotype in single suture craniosynostosis. Zeinab Al-Rekabi1, Andrea Leonardi, Sarah S. Park2, Christine Clarke2, Michael L. Cunningham3, Nathan J. Sniadecki1 (Dept. of Mechanical Engineering, Univ. of Washington, USA; Center for Tissue and Cell Sciences, Seattle Children’s Research Institute, USA; Division of Craniofacial Medicine and the Dept. of Pediatrics, Univ. of Washington, USA)

Prickle1 Mutant Mice Exhibit Congenital Heart Defects and Multiple Other Birth Defects due to Disruption of Planar Cell Polarity Brian Gibbs1,2, Rama Damerla1, Bishwanath Chatterjee1, George Gabriel1, Kristi Lemke1, Richard Francis1, Xiaqin Liu1, You Li1, Cecilia W. Lo1 (1Dept. of Developmental Biology, Univ. of Pittsburgh School of Medicine, USA; 2Dept. of Physiology and...
Cell Biology, Univ. of North Carolina at Chapel Hill School of Medicine, USA)

448 B64 DDR2 coordinates signaling between the cardiac gene regulatory network and cell trafficking to promote directed migration of precardiac cells. Yelena Bernadskaya, Lionel Christiaen (New York Univ., USA)

449 B65 ATP-binding cassette transporters mediate small micromere migration and left/right coelomic pouch segregation in the purple sea urchin, Strongylocentrotus purpuratus Joseph P. Campanale, Jose A. Espinoza, Tufan Gokirmak, Amro Hamdoun (Scripps Institution of Oceanography, Univ. of California San Diego, USA)

450 B66 Characterizing the role of CDC-42 in cell invasion through basement membrane Lauren Lohmer¹, Matthew Clay¹, Quiyi Chi¹, Stephen Armenti², Jeremy Nance², David Sherwood¹ (¹Duke Univ., USA; ²NYU School of Medicine, USA)

451 B67 PMR-1/SPCA is important for cell migration during gastrulation in C. elegans Vida Praitis¹, Jeff Simske², Sarah Kniss³, Rebecca Mandt¹, Leah Imlay¹, Charlotte Feddersen¹, Michael Miller¹, Juliet Mushí¹, Walter Liszewski¹, Rachel Weinstein¹, Adityarup Chakravorty¹, Dae-Gon Ha¹, Angela Schacht¹, Alexander Sullivan-Wilson¹, Tyson Stock¹ (¹Grinnell College, Grinnell IA., USA; ²Rammelkamp Center for Education and Research, Case Western Reserve Univ., Cleveland, OH., USA; ³Molecular Genetics and Cell Biology, Univ. of Chicago, Chicago, IL., USA)

452 B68

453 B69 MT-1 MMP protein levels affect how this multifunctional protease changes the behaviour of breast cancer cells Mario Cepeda, Jessica Willson (Western Univ., Canada)

454 B70 Toddler/Apela regulates germ layer migration during vertebrate gastrulation Megan L. Norris, Andrea Pauli, Alexander F. Schier (Harvard Univ., USA)

455 B71 p120 Catenin is an Essential Protein in the Development of Vertebrate Embryos Merrill B Hille, Kathleen M Voss, Christopher M Stafford, Hiroko Nakahara, Grace H Sheridan, Hua Yu Sun, Miranda M Early (Univ. of Washington, Seattle WA, USA)

456 B72 Structure function analysis of Tre1 GPCR Michelle LeBlanc, Ruth Lehmann (NYU School of Medicine, USA)

Cell Fate Specification

457 B73 miR-219 regulates neural precursor differentiation by direct inhibition of apical Par polarity proteins Laura Hudish, Bruce Appel (Univ. of Colorado School of Medicine, USA)

458 B74 Requirement of Prdm13 in specification of inhibitory dorsal interneurons Ana C. Uruena¹, Joshua C. Chang¹, Mark D. Borromeo¹, Robert E. Hammer², Jane E. Johnson¹ (¹Dept. of Neuroscience, UT Southwestern Medical Center, USA; ²Dept. of Biochemistry, UT Southwestern Medical Center, USA)

459 B75 Asymmetric specification of motile cells in Drosophila oogenesis. Lathiena A. Manning, Anne Marie Weideman, Bilal. Moiz, Bradford Peercy, Michelle Starz-Gaiano (Univ. of Maryland Baltimore County, USA)

460 B76 Wnt signaling genes are required to specify fate in C. elegans central body serotonergic neurons Curtis Loer, Erin Williams (Univ of San Diego, USA)

461 B77 Characterization of mouse otic sensory lineage specific genes and investigation of mechanisms of otic gene regulation Byron Hartman, Roman Laske, Robert Durruthy-Durruthy, Stefan Heller (Dept. of Otolaryngology – Head & Neck Surgery, Stanford Univ. School of Medicine, USA)

462 B78 Cdx4 regulates onset of spinal cord neurogenesis. Piyush Joshi (Univ. of Miami, USA)

463 B79 Environmental regulation of spinal cord development Kira A. Spencer¹², Yesser H. Belgacem¹², Laura N. Borodinsky¹² (¹Univ. of California Davis School of Medicine, USA; ²Shriners Hospital for Children, USA)

464 B80 Rorschach: The brain is never right Heather Stickney Zimmermann¹², Ana Faro², David Raible¹, Steve Wilson² (¹Univ. of Washington, USA; ²Univ. College London, UK)

465 B81 An atoh1 proneural domain at the mid-hindbrain boundary is subfunctionalized for ventral isthmic
neuron specification in zebrafish. Chelsea Kidwell1,2, Chen-Ying Su1, Cecilia B. Moens1,2 (1Fred Hutchinson Cancer Research Center, Division of Basic Science, USA; 2Univ. of Washington, Dept. of Biology, USA)

466 B82 Elucidating the Lineage Relationships between Neurons and Oligodendrocytes in the Forebrain
Santos Franco, Caitlin Winkler, Brett Dwyer (Univ. of Colorado School of Medicine, USA)

467 B83 Making a brain in a dish: how vascular cells influence cortical neural stem cell fate decisions
Stephanie Snyder, Jake Cain, Natalie Crawford, Diane Darland (Univ. of North Dakota, USA)

468 B84 Zic1 controls cranial placodes formation by regulating retinoic acid production Maria Belen
Jaurena, Arun Devotta, Jean-Pierre Saint-Jeannet (New York Univ., College of Dentistry, USA)

469 B85 Differential Neural Ectoderm Plasticity During X. laevis Embryogenesis Krissie Tellez, Brigette
Jong, Carmen Domingo (San Francisco State Univ., USA)

470 B86 Sox5 is essential for BMP-mediated plasticity and patterning in the early embryonic ectoderm Kara
Nordin1, Carole LaBonne1,2 (1Northwestern Univ., USA; 2Robert H. Lurie Comprehensive Cancer
Center, USA)

471 B87 Paladin is an antiphosphatase that reveals phosphoregulation of neural crest development Julaine
Roffers-Agarwal, Edward J. Stronge, Laura S. Gammill (Univ. of Minnesota, USA)

472 B88 Nf2-Yap signaling controls the expansion of DRG progenitors and glia during DRG Development
Yelda Serinagaoglu1, Joshua Paré1, Marco Giovannini2, Xinwei Cao1 (1Dept. of Developmental
Neurobiology, St. Jude Children’s Research Hospital, USA; 2Dept. of Head and Neck Surgery, David
Geffen School of Medicine, Univ. of California Los Angeles, USA)

474 B90 Deficits in neural crest lineage segregation and GI motility in the Sox10Dom mouse model of
Hirschsprung disease. Melissa Musser, Michelle Southard-Smith (Vanderbilt Univ. Medical Center, USA)

475 B91 cAMP-protein kinase A dependent iridophore development requires mitfa in zebrafish Cynthia
Cooper1, Scott Yin1, Trevor Moravec1, Steve Erickson1, Kevin Curran2 (1Washington State Univ
Vancouver, USA; 2Salk Institute for Biological Studies, USA)

476 B92 Precise restriction of BMP and Wnt signaling is required for articular cartilage differentiation Ayan
Ray1, Pratik Singh1, Mike Sohaskey2, Richard Harland1, Amitabha Bandyopadhyay1 (1Indian Institute
of Technology, Kanpur, India; 2Univ. of California, Berkeley, USA)

477 B93 The SR-like protein Tra2b is required for somitogenesis and regulates a novel inhibitory wnt11b
isoform. Darwin Dicmann, Peter Walentek, Richard Harland (Univ. of California, Berkeley, USA)

478 B94 Canonical Wnt, FGF, and BMP signaling interact to pattern axial stem cell derived mesoderm
Benjamin Martin, Brian Kinney, Richard Row (Stony Brook Univ., USA)

479 B95 Nr2f1a Act Downstream of RA Signaling to Promote Pharyngeal Muscle at the Expense of
Ventricular Cardiomyocytes in Zebrafish Tracy Dohn1,2, Joshua Waxman2 (1Molecular and
Developmental Biology, College of Medicine, Univ. of Cincinnati, USA; 2Cincinnati Children’s
Hospital Medical Center, Cincinnati, OH, USA)

480 B96 TCF acts as a transcriptional switch to regulate fate choice in cardio-pharyngeal progenitors in the
ascidian species, Ciona intestinalis Nicole Kaplan, Dylan Iannitelli, Lionel Christiaen (New York
Univ., USA)

481 B97 In vitro Titration of Wnt/β-catenin Signaling Enables Efficient Fate Specification of Lateral Plate
Mesoderm Derivatives Nathan Palpant1, Lil Pabon1, Meredith Roberts1, Brandon Hadl1,2, Daniel
Jones1, Walter Ruzzo1, Irwin Bernstein1,2, Ying Zheng1, Charles Murry1 (1Univ. of Washington, USA;
2Fred Hutchinson Cancer Research Center, USA)

482 B98 Evidence of a lineage shift between natural (NK) killer cells and T lymphocytes in the spleen and
blood of neonatally thymectomized, young adult C3H mice. Di Hu, Sandra C. Miller (McGill Univ.,
Canada)

483 B99 Investigating the Role of Transmembrane Voltage Potentials During Embryogenesis Emily Pitcairn,
Kelly McLaughlin (Tufts Univ., USA)
The Hippo pathway controls border cell migration through distinct mechanisms in border and polar cells of the Drosophila ovary Jenn-Yah Yu¹, Tzu-Huai Lin¹, Tsung-Han Yeh¹, Tsu-Wei Wang² (¹Dept. of Life Sciences and Institute of Genome Sciences, National Yang-Ming Univ., Taiwan; ²Dept. of Life Science, National Taiwan Normal Univ., Taiwan)

Transcriptional regulation of Nodal during endoderm differentiation Yukio Saijoh², Ranajeet Saund¹ (¹Dept. Oncological Sciences, Huntsman Cancer Institute, Univ. of Utah, USA; ²Dept. Neurobiology and Anatomy, Univ. of Utah, USA)

Hypoblast/posterior visceral endoderm drives formation of the mammalian fetal-umbilical connection Ka Yi Ling, Adriana Rodriguez, Karen Downs (Univ. of Wisconsin-Madison, USA)

Neurogenin3-directed differentiation of endoderm to insulin-expressing cells Matthew Salanga¹, Leonid Peshkin², Marko Horb¹ (¹Marine Biological Laboratory, USA; ²Harvard Medical School, USA)

The Developmental Origin of Two Populations of Ureteric Pacemaker Cells Meghan M. Feeney¹,², Norman D. Rosenblum¹,² (¹Program in Developmental and Stem Cell Biology, Hospital for Sick Children, Canada; ²Dept. of Laboratory Medicine and Pathobiology, Univ. of Toronto, Canada)

PI3K signalling coordinates tubulogenesis and cell fate specification Zarah M Löf-Öhlin¹, Thomas U Greiner¹, Katja Hess¹, Jacqueline Ameri¹, Ulrike Voss², Fredrik Wolfhagen-Sand¹, Gokul Kesavan¹, Nils Wierup², Henrik Semb¹ (¹The Danish Stem Cell Center - Copenhagen Univ., Denmark; ²Neuroendocrine Cellbiology - Lund Univ., Sweden)

Structure-function analysis of lin-42, the C. elegans period homolog Theresa Edelman¹, Katherine McCulloch¹, Christian Frøkjaer-Jensen², Erik Jorgensen², Ann Rougvie¹ (¹Univ. of Minnesota, USA; ²Univ. of Utah, USA)

Early Embryo Patterning

BMP signaling regulates cell cleavage in preimplantation mouse embryos Nabora Reyes de Mochel¹, Mui Luong¹, Michael Chiang¹, Elizabeth Luu¹, Anna L Javier¹, Toshikiko Fujimori², Grant MacGregor¹, Olivier Cinquin¹, Ken Cho¹ (¹Univ. of California, Irvine, USA; ²National Institute for Basic Biology, Japan)

Dynamic sorting and morphogenesis of primitive endoderm in mouse embryos and embryoid bodies Yue Meng, Robert Moore, Jeffrey Tse, Wensi Tao, Elizabeth Smith, Xiangxi Xu (Univ. of Miami Miller School of Medicine, USA)

Dorsalventral patterning mechanisms of the Pacific oyster early embryo You Wu, Weiyang Shi (School of Life Sciences and Technology, Tongji Univ., China)

Split top: A maternal regulator of dorsal-ventral patterning and cell migration in zebrafish Yvette Langdon¹, Tripti Gupta¹, Florence Marlow³, Elliott Abrams¹, Mary Mullins¹ (¹Univ. of Pennsylvania, USA; ²Harvard Univ., USA; ³Albert Einstein College of Medicine, USA)

DNA topoisomerase III alpha interacts with the BMP-Smad pathway to specify dorsoventral patterning during early embryogenesis Shyh-Jye Lee²,³, Wan-Jung Lai¹, Tsai-Kun Li¹,³ (¹Dept. and Graduate Institute of Microbiology, College of Medicine, National Taiwan Univ., Taiwan; ²Dept. of Life Science, National Taiwan Univ., Taiwan; ³Center for Biotechnology, National Taiwan Univ., Taiwan)

Role of chemokine ligand Ccl19.1 and calcium signaling in zebrafish axis formation Jiakun Chen, Jimann Shin, Lila Solnica-Krezel (Washington Univ. in St. Louis, USA)

Wnt8a post-transcriptional regulation and vertebrate axis development Arne Lekven¹, Annika Wylie², Jo-Ann Fleming¹, Amy Whitener¹ (¹Texas A&M Univ., USA; ²Univ. of Texas Southwestern Medical Center, USA)

Loss of ripply1 restores mesp-ba expression in the absence of foxc1a during somitogenesis Rotem Lavy, W. Ted Allison, Fred B. Berry (Univ. of Alberta, Canada)

Conserved transcriptional regulatory modules in mouse, chicken and zebrafish somitogenesis
networks. **Andrzej Kudlicki**, Bernard Fongang (Univ. of Texas Medical Branch, USA)

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**B117** Apolipoprotein C-I mediates Wnt/Ctnnb1 signaling during neural border formation and is required for neural crest development **Chika Yokota**¹, Carolina Astrand¹, Shuji Takahashi², Jan Stenman¹ (¹Ludwig Institute for Cancer Research Ltd, Stockholm, Sweden; ²Institute for Amphibian Biology, Graduate School of Science, Hiroshima Univ., Japan)

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**B118** Polarity proteins regulate the localization of a spindle-positioning mediator, LET-99 **Eugenel Espiritu**, Jui-Ching Wu, Ella Richardson, Hyeon Kyu Kwon, Lesilee Rose (Univ. of California, Davis, USA)

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**B119** Investigating the role of the G-protein regulator LET-99 in cytokinesis **Kari Price** (Univ. of California-Davis, USA)

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**B120** Determining the mechanism of EMS spindle positioning in response to Wnt and Src polarity cues **Malgorzata Liro**, Lesilee Rose (UC Davis, USA)

**505**

**B121** Developing an approach for single molecule analysis of PAR protein complexes during cell polarization **Daniel J. Dickinson**, Bob Goldstein (Dept. of Biology and Lineberger Comprehensive Cancer Center, Univ. of North Carolina at Chapel Hill, USA)

**506**

**B122** Localization of the C. elegans polarity regulator PAC-1 by components of the cadherin-catenin complex **Davys Lopez**¹, Diana Klompstra², Dorian Anderson², Jeremy Nance² (¹Univ. of Florida, USA; ²New York Univ. School of Medicine, Skirball Institute for Biomolecular Medicine, USA)

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**B123** Instructive polarization of early embryonic cells by the cadherin-catenin complex and the RhoGAP PAC-1 **Diana Klompstra**, Dorian Anderson, Jeremy Nance (NYU School of Medicine, USA)

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**B125** Cyp26 enzymes are required within the anterior lateral plate mesoderm to balance cardiac and vascular lineages **Ariel Rydeen**¹,²,³, Joshua Waxman²,³ (¹Molecular Developmental Biology Grad Program, Univ. of Cincinnati College of Medicine, USA; ²The Heart Institute and Molecular Cardiovascular Biology Division, USA; ³Cincinnati Children’s Hospital Medical Center, USA)

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**B126** Live dynamic imaging and analysis of developmental cardiac defects in mouse models with optical coherence tomography **Andrew Lopez**¹, Shang Wang², Kirill Larin², Irina Larina¹ (¹Baylor College of Medicine, USA; ²Univ. of Houston, USA)

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**B127** Rapid inhibitor expression in response to excess Nodal signaling **Katherine Rogers**, Julien Dubrulle, James Gagnon, Alexander Schier (Harvard Univ., USA)

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**B128** Studies of Cyclopia: Cloning and characterization of the Daphnia magna hedgehog gene **Matthew L. Beckman**, Michelle Graftel (Augsburg College, USA)

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**B129** Temporal expression of trunk Hox genes in embryos of the freshwater prawn Macrobrachium olfersi (Decapoda, Palaemonidae) **Dib Ammar**, Michael Jaramillo, Christian Paese, Evelise Nazari, Yara Müller (Universidade Federal de Santa Catarina, Brazil)

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**B130** Trends in Gene Expression Dynamics within the Drosophila Early Embryo Identified using **NanoString Jeremy Sandler**, Angelike Stathopoulos (California Institute of Technology, USA)

**Germ Cells and Gametogenesis**

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**B131** Role of Syntabulin in Xenopus Primordial Germ Cell Formation **Denise Oh**, Douglas W. Houston (Dept. of Biology, Univ. of Iowa, USA)

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**B132** Vasa and Nanos Protein Localization within the Germ Line in Penaeid Shrimp **Kristin Karasiewicz**, Philip Hertzler (Central Michigan Univ., USA)

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**B133** Gap junction-mediated signalling regulates the proliferation and differentiation of somatic cyst cells in the Drosophila testis **Christopher Smendziuk**, Fayeza Islam, Anat Messenberg, Guy Tanentzapf (Univ. of British Columbia, Canada)

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**B134** Profilin and septate junctions are required in the soma for the formation a permeability barrier
Regulated cell cycle dependent transcriptional silencing promotes germline stem cell differentiation. 

Prashanth Rangan, Pooja Flora, Sean Schowalter (Dept. of Biological Sciences, Univ. at Albany, SUNY, USA)

The Drosophila Deadbeat protein reveals a new link between a sperm nuclear basic protein and paternal chromosome maintenance in early embryogenesis Taku Yamaki1, Glenn Yasuda2, Barbara Wakimoto1 (1Univ. of Washington, USA; 2Seattle Univ., USA)

Novel domains of expression for orphan receptor tyrosine kinase Ror2 in the human and mouse reproductive system Ripla Arora, Eran Altman, Nam Tran, Diana Laird (Ob/Gyn & Reproductive Sciences, Univ. of California San Francisco, USA)

Mouse antral NSN oocytes developmental arrest is due to lack of MATER and cytoplasmic lattices Manuela Monti1, Alberto Calligaro2, Pierluigi Mauri3, Carlo Alberto Redi1 (1Research Center for Regenerative Medicine, Fondazione IRCCS Policlinico San Matteo, Pavia, Italy; 2Dept. of Experimental Medicine, Histology and Embryology Unit, Univ. of Pavia, Italy; 3Proteomics and Metabolomics Unit, Institute for Biomedical Technologies (ITB-CNR), Italy)

Role of the inhibitory kinase WEE-1.3 in regulating the meiotic cell cycle and fertility in C. elegans. Anna Allen1,2, Ruby Boateng1, Jessica Nesmith3, Andy Golden2 (1Howard Univ., USA; 2National Institutes of Health, USA; 3Univ. of North Carolina, USA)

A Novel Function for the C. elegans Torsin OOC-5 in Nuclear Pore Function Michael J.W. VanGompel1, David H. Hall2, William T. Dauer1, Lesilee S. Rose1 (1Dept. of Molecular and Cellular Biology, Univ. of California, Davis, USA; 2Center for C. elegans Anatomy, Albert Einstein College of Medicine, Bronx, NY, USA; 3Dept.s of Neurology and Cell and Developmental Biology, Univ. of Michigan Medical School, Ann Arbor, MI, USA)

ERK dependent Dicer Phosphorylation Coordinates Oocyte-to-Embryo Transition in Caenorhabditis elegans Swathi Arur1, Melanie Drake1, Tokiko Furuta1, Kin Suen Man1, Gabriel Gonzalez2, Awadhesh Kalia1, John Ladbury1, James Skeath2 (1UT MD Anderson Cancer Center, USA; 2Washington Univ. in Saint Louis, USA)

Characterization of xnd-1 function during Caenorhabditis elegans germline development Naiga Cottingham1,2, Mainpal Rana2, Judith Yanowitz1,2 (1Univ. of Pittsburgh, USA; 2Magee-Womens Research Institute and Foundation, USA)

Specification and differentiation of the nematode germ line are regulated by the chromatin associated factor XND-1 Judith Yanowitz1,2, Mainpal Rana1,2 (1Magee-Womens Research Institute, USA; 2U. Pittsburgh School of Medicine, USA)

Sequencing and Visualizing Germline miRNAs in C. elegans Karen Bennett1, Tamara McEwen3, Qiuming Yao1, Chih-Yung Lee2, Geraldine Seydoux2 (1Univ. of Missouri, USA; 2Johns Hopkins Univ., USA; 3Southwestern College, USA)

The role of TGFβ signaling in C. elegans germline stem cells development Olga Pekar, E. Jane Albert Hubbard (New York Univ., School of Medicine, Skirball Institute, USA)

H3K27 methylation and PRC2 epigenetically transmit a memory of repression across generations and during development Laura Gaydos1, Wenchao Wang2,3, Susan Strome1,2 (1Dept. of Molecular, Cell and Developmental Biology, Univ. of California, Santa Cruz, CA, USA; 2Dept. of Biology, Indiana Univ., Bloomington, IN, USA; 3High Magnetic Field laboratory, Chinese Academy of Sciences, Anhui, China)

Chemical biology in the embryo: Imaging sulfur in cartilage matrix of proteoglycan mutants Brian F. Eames2, Mark J. Hackett1,2, Graham N. George1, Ingrid J. Pickering1 (1Dept. of Geology, Univ. of Saskatchewan, Canada; 2Dept. of Anatomy & Cell Biology, Univ. of Saskatchewan, Canada)

Mechanism of maxillary suture fusion and midfacial hypoplasia in Apert syndrome Kai Yu1,2,
Timothy Cox\textsuperscript{1,2} (\textsuperscript{1}Division of Craniofacial Medicine, Dept. of Pediatrics, Univ. of Washington, Seattle, WA, USA; \textsuperscript{2}Center for Developmental Biology and Regenerative Medicine, Seattle Children's Research Institute, Seattle, WA, USA)

533 B149 Modeling aberrant progenitor cell segregation in the X-linked neurocristopathy craniofrontonasal syndrome Audrey O'Neill, Andrew Larson, Seungil Kim, Jeffrey Bush (Univ. of California, San Francisco, USA)

534 B150 Effect of maternal glucocorticoid exposure on sex-specific changes in mouse embryonic development Hyo Jung Yun\textsuperscript{1}, Ji-Yeon Lee\textsuperscript{2}, Myoung Hee Kim\textsuperscript{1} (\textsuperscript{1}Embryology Laboratory, Dept. of Anatomy, and Brain Korea 21 PLUS Project for Medical Science, Yonsei Univ. College of Medicine, Korea; \textsuperscript{2}Embryology Laboratory, Dept. of Anatomy, Yonsei Univ. College of Medicine, Korea)

535 B151 a-melanocyte-stimulating hormone protects developing chicken retina from glutamate-induced excitotoxicity via MCR/miR194 pathway Qian Han\textsuperscript{1,2,3}, Qiyu Bo\textsuperscript{1,2,3}, Guangwei Yu\textsuperscript{1,2,3}, Lijie Dong\textsuperscript{1,2,3}, Xun Liu\textsuperscript{1,2,3}, Mian Liu\textsuperscript{1,2,3}, Xiaorong Li\textsuperscript{1,2,3}, Yan Zhang\textsuperscript{1,2,3} (\textsuperscript{1}Tianjin Medical Univ. Eye Hospital, China; \textsuperscript{2}Tianjin Medical Univ. Eye Institute, China; \textsuperscript{3}College of Optometry and Ophthalmology, Tianjin Medical Univ., China)

536 B152 Genetic Influences on Zebrafish Enteric Nervous System Development Julia Ganz, Ellie Melancon, Angel Amores, Peter Batzel, Marie Strader, Ingo Braasch, John Postlethwait, Judith Eisen (Institute of Neuroscience, 1254 Univ. of Oregon, Eugene OR 97403, USA)

537 B153 Coiled-coil domain containing protein 103 regulates myeloid development Sarah Beckman, Joshua Waxman (Cincinnati Children's Hospital Medical Center, USA)

538 B154 A novel model of oxidative heart disease in Xenopus laevis Kyle Jewhurst, Kelly McLaughlin (Tufts Univ., USA)

539 B155 Expression of FGF9/16/20 and Foxp1 in Larval, Juvenile and Adult Ciona intestinalis Brittany Prioleau (Winthrop Univ., USA)

540 B156 Chemical screening in Drosophila reveals a side effect of chemotherapy that induces stem cell hyper proliferation Michele Markstein\textsuperscript{1}, Samantha Dettorre\textsuperscript{1}, Julio Cho\textsuperscript{2}, Ralph Neumuller\textsuperscript{2}, Soren Craig-Müller\textsuperscript{1}, Norbert Perrimon\textsuperscript{1} (\textsuperscript{1}Univ. of Massachusetts - Amherst, USA; \textsuperscript{2}Harvard Medical School, USA)

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Satellite Workshop – Using CRISPR/Cas9
Thursday, July 17, 1:00 – 4:00pm
Kane 120
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Presidential Symposium -
What have genetics model organisms taught us?
Thursday, July 17, 5:00pm – 8:00pm
Meany
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Hilde Mangold Postdoctoral Symposium
Friday, July 18 1:00pm – 3:00pm
Meany
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Theme Tables: Informal conversation on different topics of interest led by an invited speaker or SDB Board member during meals - Sign up at Meeting Registration Desk.

Limited seating, first come first serve.
Exclusive for Students and Postdoctoral Fellows
Friday July 18, 6:00 - 7:30 pm @ Walker Ames (Kane 225)
Reception to meet SDB Board of Directors and Committee Chairs, and the new SDB Fellows of the CHOOSE Development! Program

SDB Business Meeting
Saturday, July 19, 3:30 – 6:00 pm @ Meany Theater
Come find out what YOUR society has been doing and planning for, and offer your comments. Be an Active Member and Volunteer!

SDB Fellows of the Choose Development! Program

Chibuzo Anojulu, Pennsylvania State University  PS 1, 120, B52
Alexander Calderon, Case Western University      PS 2, 281, B55
Naiga Cottingham, University of Pittsburgh       PS 3, 526, B142
Dylan Faltine-Gonzalez, University of Hawaii at Manoa PS 2, 374, B148
Edgar Gutierrez, College of The Sequoias          PS 1, 164, B96
David Lakomy, Rice University                    PS 2, 339, B113
Davys Lopez, University of Florida               PS 3, 506, B122
Jesus Martinez-Gomez, University of Washington   PS 2, 228, B2
Christopher Pineda, San Francisco State University PS 3, 397, B13
Brittany Prioleau, Winthrop University           PS 3, 539, B155
Krissie Tellez, San Francisco State University   PS 3, 469, B85
2014 SDB Awards

*Edwin G. Conklin Medal*
Richard Harland, Department of Molecular and Cell Biology, University of California, Berkeley, CA

*Developmental Biology-SDB Lifetime Achievement Award*
Janet Heasman and Christopher Wylie, Cincinnati Children’s Developmental Biology Center, OH

*Viktor Hamburger Outstanding Educator Prize*
Lawrence Bock, USA Science and Engineering Festival

**Regional Meeting Best Presenters**

**Southwest**
- Postdoc: Andrew Ravanelli, U Colorado-Denver
- Student: Davalyn Powell, U Colorado-Denver

**Northwest**
- Postdoc: Cort Bouldin, U Washington
- Student: Jessica Guseman, U Washington

**Northeasat**
- Postdoc (shared): Denise Zannino, U Massachusetts
- Postdoc (shared): Celina Juliano, Yale
- Student: Katherine Rogers, Harvard

**Southeast**
- Postdoc: Kristina Buac, U Georgia
- Student: Lauren Waldron, U North Carolina

**Mid-Atlantic**
- Postdoc: Amanda Zacharias, U Pennsylvania
- Student: Lathiena A. Manning, U Maryland at Baltimore County
- Student (2013): Joseph Zinski, U Pennsylvania

**Midwest**
- Postdoc: Ankur Saxena, Caltech
- Student: Kara Nordin, U Northwestern
- Student (2013): Joseph Zinski, U Pennsylvania

**Canada**
- Student: Katie Cockburn, U Toronto, Canada
- Student: Katherine Stewart, McGill, Canada

*Latin America-Caribbean Student Scholarship*

**LASDB 7th International Meeting Poster Winner**
Diego Rojas, Universidad de Chile, Chile, Glavic lab

**SDB-BSDB  Best Student Poster Competition Exchange**

**BSDB poster winner**
Zarah M. Löf-Öhlin, Copenhagen U, Denmark

**SDB-FASEB/MARC 2013 ABRCMS Best Developmental Biology Poster Winners**
Francisco Galdos, Harvard
Timothy Delacruz, California State University at Long Beach

**SDB Teaching Faculty Travel Grants**
Anna Allen, Howard University, Washington, DC
Michael Barresi, Smith College, Northampton, MA
Cynthia Cooper, Washington State University, Vancouver, WA
Rodney Dale, Loyola University, Chicago, IL
Edward Freeman, St. John Fisher College, Rochester, NY
Afshan Ismat, Franklin and Marshall College, Lancaster, PA
Barbara Murdoch, Eastern Connecticut State University, Willimantic, CT
Vinoth Sittaramane, Georgia Southern University, Statesboro, GA
Nicole Theodosiou, Union College, Schenectady, NY
SDB Student-Postdoc Travel Awards
Kristin Ackerman, University of Notre Dame
Puja Agrawal, UC Berkeley
Virginia Bain, MD Anderson
Revathi Balasubramanian, University of Rochester
Sarah Beckman, Cincinnati Children's Hospital Medical Center
Bridget Biersmith, University of Missouri - Kansas City
Fernanda Bosada, University of Oregon
Tonya Brunetti, University of New Mexico
Jasmin Camacho, Harvard University
Philip Campbell, Albert Einstein College of Medicine
Martin Carkett, King's College London, United Kingdom
Jinyoung Choi, University of Cincinnati
Michael Czerwinski, Duke University
Ashish Deshwar, University of Toronto
Sandy Duong, University of New Mexico
Theresa Edelman, University of Minnesota
Zoltan Ferjentsik, University of Nottingham, United Kingdom
Lauren Figard, Baylor College of Medicine
Jennifer Finley, UCSF
Julia Ganz, University of Oregon
Andrew R. Gehrke, The University of Chicago
Farzad Ghamsari, San Francisco State University
Brian Gibbs, University of North Carolina at Chapel Hill
Rebecca Green, University of Colorado
Carl Grim, San Francisco State University
Dorit Hockman, University of Oxford, United Kingdom
Katrina Hofstetter, Idaho State University
Robert Huebner, Johns Hopkins University School of Medicine
Sung-Ho Huh, Washington University in St. Louis
Meaghan Jain, Union College
Kyle Jewhurst, Tufts University
Yongchang Ji, SUNY- upstate medical university
Edward Johnson, The Roslin Institute, United Kingdom
Piyush Joshi, University of Miami
Seungil Kim, UCSF
Johanna Kowalko, Iowa State University
Ezgi Kunttas-Tatli, Carnegie Mellon University
Victor Lewis, Leaving Cal St Univ Northridge, Entering Univ. Washington, Seattle
Ang Li, University of Southern California
Lauren Lilley Lohmer, Duke University
Bliss Magella, Cincinnati Children's Hospital Medical Center
Abdulllah Al Mahmud, CHU Sainte-Justine, University of Montreal, Canada
Amrita Mandal, Cincinnati Children's Hospital Medical Center
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Simi Muraleedharan, Jawaharlal Nehru Centre for Advanced Scientific Research, India
Keshava Mysore, Indiana University School of Medicine at Notre Dame
Harika Nagandla, University of Houston
Sumeda Nandadasa, Cleveland Clinic, Lerner Research Institute
Denise Oh, University of Iowa
Ryan Pace, University of Arizona
Adam Packard, Columbia University
Devika Sharanya Peraiyur Premkumar, McMaster University, Canada
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Lakshmi S. Pillai, University of Kentucky
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Ayan Ray, Indian Institute of Technology, Kanpur, India
Heather Ray, University of Colorado Denver
Maria R. Replogle, University of Wisconsin - Milwaukee
Paul Riccio, Columbia University
Silvia Sepulveda, New Mexico State University
Leena Shewade, University of Cincinnati
Stephanie Snyder, University of North Dakota
Mandy Womble, North Carolina State University
Xiaxia Xu, Nankai University, China
Lihua Ye, Indiana University School of Medicine
Liuliu Zheng, Baylor College of Medicine

FASEB MARC Travel Awards

Poster/Oral Presenters
Timothy Delacruz, California State University, Long Beach (2013 ABRCMS)
Andrea Ellis, New Mexico State University
Francisco Galdos, Harvard University (2013 ABRCMS)
Tiffany King, Rutgers University - Robert Wood Johnson Medical School
Matilde Miranda, San Francisco State University
Kaitlin Reeh, MD Anderson Cancer Center
Rosa Uribe, California Institute of Technology
Niteace Whittington, Georgetown University

Faculty/Mentor & Students/Mentees
Edwin Traverso, University of Puerto Rico
Theodor Zbinden, University of Puerto Rico

genesis Best Student Poster Competition Awards
at LASDB 7th International Meeting
Brenda Araceli López Falcon Piza, Universidad Nacional Autonoma de Mexico
Mario Eduardo Sánchez Rubio, Universidad de Chile

Developmental Dynamics Postdoctoral Travel Awards
at Hilde Mangold Postdoctoral Symposium
Yuji Atsuta, Kyoto University, Japan
Dae Seok Eom, University of Washington
Britney Moss, University of Washington
Andrew Ravanelli, University of Colorado School of Medicine
Minna Roh, Fred Hutchinson Cancer Research Center
Adam Schindler, Duke University
Patrick Tschopp, Harvard Medical School
Andrea Wills, Stanford School of Medicine
ACKNOWLEDGMENTS

GRANTS

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www.nsf.gov
Award # IOS-1219629

Eunice Kennedy Shriver National Institute of
Child Health and Human Development (NICHD)
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Rockville, MD 20852
www.nichd.nih.gov
Award # R13-HD-081888-01

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T-SHIRT ARTWORK
By: Jill Hoyt
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EXHIBITS

AT

POSTER SESSIONS
### Exhibit Hours

**HUB Ballroom**

- **Thursday, July 17**: 8 pm - 11 pm
- **Friday, July 18**: 8 pm - 11 pm
- **Saturday, July 19**: 9 pm - 11 pm

The exhibit hall will be open for posters viewing throughout the meeting: 9am – 8pm

### Exhibitor

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<td>eMouseAtlas</td>
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Poster Session 1  8:00pm – 11:00pm
Poster Session 2  8:00pm – 11:00pm
Poster Session 3  8:00pm – 11:00pm
Carl Zeiss is a leading provider of light, electron and ion beam microscopes and imaging solutions for biomedical, life science, materials research and industry. Its light microscope product line includes routine microscopes, stereomicroscopes, research microscopes, digital cameras, confocal systems, super resolution and software solutions. The ZEISS charged particle systems span from SEMs, FESEMs, energy filtering TEMs and FIB workstations along with the newly invented helium ion microscopes.

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The eMouseAtlas project (www.emouseatlas.org) is a free online resource for mouse developmental biology. It comprises EMAP (a series of 3D models of mouse embryos across development with associated anatomical painting and descriptive ontology) and EMAGE (a repository of 2D and 3D gene expression data mapped to the 3D embryo models enabling multiple query options). All of the data and information is freely available and constitutes a unique resource for visualizing mouse development and gene expression.

Eppendorf is a leading life science company that develops and sells instruments, consumables, and services for liquid-, sample-, and cell handling in laboratories worldwide. Its product range includes pipettes and automated pipetting systems, dispensers, centrifuges, mixers, spectrometers, and DNA amplification equipment as well as ultra-low temperature freezers, fermentors, bioreactors, CO2 incubators, shakers, and cell manipulation systems. Consumables such as pipette tips, test tubes, microtiter plates, and disposable bioreactors complement the range of highest-quality premium products.

FASEB MARC Program provides a variety of activities to support the training of minority students, postdoctorates, faculty and scientists in the biomedical and behavioral sciences. We offer travel awards for scientific meetings, research conferences, and student summer research opportunities programs. We also sponsor Career Development Programs including grantsmanship training seminars.

Gene Tools manufactures Morpholino oligos for blocking translation, modifying splicing or inhibiting miRNA activity. Morpholinos are used in cell cultures, embryos or, as Vivo-Morpholinos, in adult animals. Morpholinos are effective, specific, stable and non-toxic. Backed by Ph.D.-level customer support, Gene Tools designs and synthesizes Morpholinos and offers cytosolic delivery options.

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The RIKEN Center for Developmental Biology (CDB) was established in 2000 to investigate the mechanisms underlying animal development and develop applications of pluripotent stem cells for regenerative medicine. The center consists of approximately 30 laboratories pursuing research in a wide range of areas, including cell differentiation, organogenesis, epigenetics, and stem cells. We continuously have positions open for young and successful scientists from around the world. Visit our booth for more information.

St Jude Children's Research Hospital is a non-profit biomedical research institution in Memphis, TN, where 190 basic science and clinical researchers investigate the molecular basis of both normal cellular and diseased processes. Visit our booth to discuss and apply for Postdoctoral Fellowship positions.

The Company of Biologists is a UK-based charity. Established in 1925, the company’s aims are to promote research and study across all branches of biology. The Company publishes the well-established, international journals: Development: For advances in developmental biology and stem cells
Journal of Cell Science: The science of cells
The Journal of Experimental Biology: At the forefront of comparative physiology and integrative biology as well as two open access journals: Disease Models & Mechanisms: Basic research with translational impact and Biology Open: Facilitating rapid peer-review for accessible research. The Company hosts the Node, a community website for developmental biologists. In addition to publishing, The Company makes an important contribution to the scientific community providing grants for scientific meetings, workshops and conferences. The Company also provides fellowships for students allowing skill-acquiring and collaborative visits to other laboratories and attendance at research conferences. Additionally, The Company runs a series of trans-disciplinary workshops. [www.biologists.com](http://www.biologists.com)
Joe Tringali

In the career corner – Resumé critique
Sponsored by FASEB Career Resources/MARC Program

Joe Tringali is Managing Director of Tringali & Associates, Inc., a recruitment consulting practice based in Manchester, New Hampshire. He has over 25 years of progressive experience in the field of Human Resources and is particularly well-qualified in the design and implementation of creative staffing programs and executive search practices within the Life Sciences.

Joe has held positions as an Executive Search Consultant, Corporate Employment Manager, and Outplacement Counselor. He has provided recruiting and career coaching services to a diverse client base within the pharmaceutical/biotechnology industries and academia, including Pfizer, Eisai, Millennium Pharmaceuticals, Biogen Idec, Genzyme, Infinity Pharmaceuticals, Harvard University, Dartmouth College, and the University of Nebraska Medical School.

Come by Kane Hall near registration to reserve your spot and drop off your CV on Thursday, July 17, 2014 between the hours of 12:00-4:00pm.

Resume critiquing will be available by appointment only. Dates & times are as follows:

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<th>Thursday, July 17, 2014</th>
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<td>Friday, July 18, 2014</td>
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<td>9:00am-Noon</td>
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Snowbird, Utah
July 9 – 13, 2015
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