Society for Developmental Biology 69th Annual Meeting

Jointly with the Japanese Society of Developmental Biologists

August 5-9, 2010
Albuquerque Convention Center, Albuquerque, NM

Program Committee: Richard Harland (Chair, SDB President), Hisato Kondoh (Co-Chair, JSDB), Dominique Bergmann, Michael Levine, Alejandro Sanchez-Alvarado, Geraldine Seydoux and Naoto Ueno
Local Organizers: Richard Cripps, Sherry Rogers and Graciela Unguez

Albuquerque Convention Center West Complex – ACC Program Abstract Numbers in ***Italics***

Wednesday, August 4, 2010

8:30 AM – 9 PM **Third SDB Boot Camp for New Faculty** Univ. of New Mexico – Dept. of Biology
Chair: Mary Montgomery, Macalester College

Thursday, August 5, 2010

8:30 AM – 3 PM SDB Board of Directors Meeting Hyatt Regency – Fiesta 1&2

8:30 AM – 12 PM **Third SDB Boot Camp for New Faculty** (continuation) Univ. of New Mexico – Dept. of Biology
Chair: Mary Montgomery, Macalester College

1 – 4:30 PM **Science Outreach** Univ. of New Mexico – Dept. of Biology
Co-Chairs: Sherry Rogers, UNM and Graciela Unguez, NMSU

9 AM – 4:30 PM **Satellite Symposium** (not organized by SDB)
Germ Cells ACC – Ballroom A
Co-Chairs: Yumiko Saga, NIG and Ruth Lehmann, NYU

1 – 6 PM Meeting Registration ACC – Upper level foyer
Exhibits set up ACC – Ballroom C

6 - 8 PM **Presidential Symposium** ACC – Kiva Auditorium
Session sponsored by Developmental Dynamics, genesis, and Wiley-Blackwell

6:00 *Welcome and introduction.* **Richard Harland**, UC Berkeley, USA and **Hisato Kondoh**, Osaka Univ, Japan.

6:30 ***1*** *Genomic level views of novel floral organ morphology.* **Elena M. Kramer**, Bharti Sharma, Faye Rosin, Joshua Puzey, Lynn Holappa. Dept. of Organismic and Evol. Biol., Harvard Univ., Cambridge, MA, USA.

7:00 *Molecular and cellular bases of self-organization in neural development* **Yoshiki Sasai**, RIKEN, Japan

7:30 *Progenitor cells in lung development and repair.* **Brigid Hogan**, Duke Univ, USA

8 – 10 PM **Opening Reception with Exhibits** ACC – Ballroom C
Poster Session 1 set up
Poster Session 1 themes: Education, Morphogenesis, Patterning and Transcription Factors, Early Embryo Patterning, Cell Motility and Guidance, Cell-Cell Signaling
Please see poster assignments in the end of the Meeting Program.

Friday, August 6, 2010

7:30 am – 8:30 am Continental breakfast at Posters ACC – Ballroom C

7:30 am – 8:30 am **Funding Opportunities in Developmental Biology** ACC – Ruidoso
Moderator: Ida Chow, SDB – Participation of representatives from FASEB-MARC, NIH and NSF.

8 am – 5 pm Meeting Registration ACC – Upper level foyer

8:30 AM – 12 PM **Concurrent Sessions**
Concurrent Session 1: Organogenesis ACC – Kiva Auditorium
Co-Chairs: Alexandra Joyner, SDB President-elect, Memorial Sloan-Kettering Cancer Center
Yoshiko Takahashi, Nara Inst

8:30 ***2*** *Liver specification and morphogenesis in zebrafish*. Morgane Poulain, Jordi Cayuso Mas, **Elke A. Ober**. Division of Developmental Biology, NIMR, London, UK.

9:00 ***3*** *Cardiac BAF complex promotes cardiac progenitors in the zebrafish embryo*. **Ian C. Scott**, Xin Lou. Hospital for Sick Children; Dept. of Molecular Genetics, University of Toronto, Toronto, Canada.

9:15 ***4*** *Linking Global Tissue Asymmetry to Cell Polarity on the Plane*. **Tadashi Uemura**. Graduate Sch. of Biostudies, Kyoto Univ., CREST, JST, Japan.

9:45 ***5*** *Germline stem cells and sexual identity in C. elegans adults*. **Dyan E. Morgan**, Sarah L. Crittenden, Judith Kimble. Program in Cell. and Mol. Biol., UW-Madison, Madison, WI, USA; Howard Hughes Medical Institute, Madison, WI, USA; Dept. of Biochem., Lab. of Mol. Biol., and Dept. of Genetics, UW-Madison, Madison, WI , USA.

10:00 Coffee Break

10:30 *Predicting gene networks in vasculogenesis*. **Ed Marcotte**, Univ. Texas, USA

11:00 ***6*** *The divergent development of marsupial limbs*. **Karen E. Sears**, Merla Hubler, Carolyn Doroba, Elizabeth M. Kelly. Dept. of Animal Biol., Univ. of IL, Urbana, IL, USA; Inst. for Genomic Biol., Univ. of IL, Urbana, IL, USA.

11:15 ***7*** *Shh signaling regulates adrenocortical development and identifies novel progenitors of steroidogenic lineages*. **Ed Laufer**, Alex Paul, King Peter. Dept of Path., Columbia U, NY, USA; Endocrinology, Queen Mary U of London, London, UK.

11:30 *The genetic circuitry of muscle development*. **Eric N. Olson**, UT Southwestern, USA

Concurrent Session 2: Regulatory Networks ACC – Ballroom A

Co-Chairs: Michael Levine, UC Berkeley
Naoto Ueno, NIBB

8:30 ***8*** *Elucidation of the endoderm gene regulatory network by integrating computational methods and perturbation analyses in Xenopus*. **Ken W. Cho**, William Chiu, Rebekah Charney, Ira L. Blitz, Scott Christley, Qing Nie. Dept. of Dev. & Cell Biol., Univ. of California, Irvine CA, USA; Dept. of Mathematics, Univ. of California, Irvine CA, USA.

9:00 ***9*** *Oct4/Pou5f1 controls differentiation timing in early zebrafish embryo.* **Daria Onichtchouk**, Geier Florian, Bozena Polok, Daniel M. Messerschmidt, Rebecca Mössner, Verdon Taylor, Jens Timmer, Wolfgang Driever. Dept.of Dev.Biol. Uni Freiburg, Germany; D-BSSE, ETH Zürich, Basel, Switzerland; Dept. Mol. Embryol, MPI Immunol, Freiburg, Germany; Dept. Physics, Univ. Freiburg, Germany.

9:15 ***10*** *Bidirectional cell signaling and gene regulation in the root vascular tissue patterning and growth*. **Ji-Young Lee**, Jing Zhou, Jose Sebastian. Boyce Thompson Institute for Plant Research, Cornell University, Ithaca, NY, USA; Graduate Field of Plant Biology, Cornell University, Ithaca, NY, USA.

9:45 ***11*** *Mathematical modeling of gene regulatory network for somite segmentation in mice*. **Daisuke Saito**, Jun Takahashi, Shinji Takada, Atsushi Mochizuki. Theor. Biol., RIKEN ASI, Wako, Japan; Div. Mol. Dev., Okazaki Inst. Integrative Biosci., Okazaki, Japan; Dept. Basic Biol., Sokendai, Hayama, Japan.

10:00 Coffee Break

10:30 ***12*** *Regulation of centrosome orientation in asymmetric division of the Drosophila male germ line stem cells.* **Yukiko M. Yamashita**, Hebao Yuan, Swathi Yadlapalli. Life Sciences Institute, Center for Stem Cell Biology, University of Michigan, Ann Arbor, MI, USA.

11:00 ***13*** *Investigating ChIP-seq derived candidate cis-regulatory regions in two different developmental systems*. **Katherine Fisher**, Anil Ozdemir, Gordon Kwan, Shirley Pepke, Anthony Kirilusha, Gilberto DeSalvo, Angelike Stathopoulos, Barbara Wold. Dept. of Biol., California Inst. of Technology, Pasadena, CA, USA.

11:15 ***14*** *A combinatorial code of transcription factors specify dopaminergic neuron differentiation across phylogeny*. **Oliver Hobert**. Dept. of Biochemistry, Columbia University, HHMI, New York, NY.

11:30 ***15*** *Rewiring of transcription factor network*. **Hitoshi Niwa**, Kenjiro Adachi. Lab. for Pluripotent Stem Cell Studies, RIKEN CDB, Japan.

Concurrent Session 3: Spatiotemporal Control in Development ACC – Ballroom B

Co-Chairs: Shigeo Hayashi, RIKEN
Carole LaBonne, SDB Midwest Representative, Northwestern Univ.

8:30 ***16*** *Systems biology of spatial organization: autoregulation and competition in BMP-mediated patterning*. Michael Pargett, Robin E. Harris, Hilary L. Ashe, **David M. Umulis**. Dept. of Ag. and Biol. Eng.; Weldon Sch of Biomed. Eng., Purdue Univ., W. Lafayette, IN, USA; Faculty of Life Sciences, Univ. of Manchester, Manchester, UK.

9:00 ***17*** *Beta-catenin primes organizer gene expression by recruiting a histone H3 arginine 8 methyltransferase, Prmt2*. **Shelby A. Blythe**, Sang-Wook Cha, Emmanuel Tadjuidje, Janet Heasman, Peter S. Klein. Dept. of Medicine (Heme/Onc), University of Pennsylvania, Philadelphia, PA, USA; Division of Dev. Biol., Cincinnati Children's Research Foundation, Cincinnati, OH, USA.

9:15 *How plants use simple molecules to process complex information*. **Jennifer Nemhauser**, Univ of Washington, USA

9:45 ***18*** *FoxH1 and Nodal signaling during zebrafish development*. **Christopher E. Slagle**, Tsutomu Aoki, Rebecca D. Burdine. Dept. of Mol. Biol. Princeton Univ. Princeton, NJ USA.

10:00 Coffee Break

10:30 ***19*** *Apoptosis controls the speed of looping morphogenesis in Drosophila male terminalia*. **Erina Kuranaga**, Masayuki Miura. Dept. Genetics, Grad. Sch. Pharmaceu. Sci., The Univ. Tokyo, Tokyo, Japan; CREST, JST.

11:00 ***20*** *MicroRNA Regulation of Lunatic fringe is Essential for Proper Vertebrate Segmentation*. **Maurisa F. Riley**, Susan E. Cole. Dept. of Mol. Gen., The Ohio State University, Columbus, OH, USA.

11:15 ***21*** *Early Neural Crest Development and Skeletogenic Potential*. **Martin I. Garcia-Castro**, E. Uribe-Querol, Y. Liu, S. Vadasz, N. Yardley. Dept. MCDB, Yale Univ. New Haven, CT, USA.

11:30 ***22*** *Elucidating the Genetic Network that Controls the Initiation of the Mammalian Respiratory Lineage*. **Xin Sun**, Eric Domyan, Kelley Harris. Laboratory of Genetics, University of Wisconsin-Madison, USA.

12 – 3 PM **Poster Session 1 with Exhibits and Lunch** ACC – Ballroom C

12-1:30 Odd number board presentation

1:30-3 Even number board presentation

Poster Session 1 themes: Education, Morphogenesis, Patterning and Transcription Factors, Early Embryo Patterning, Cell Motility and Guidance, Cell-Cell Signaling

Please see poster assignments in the end of the Meeting Program.

3 - 5 PM **Education Symposium** ACC – Kiva Auditorium

Session sponsored by Developmental Dynamics, genesis, and Wiley-Blackwell

23 ***A New Biology for the 21st Century: How to Inspire Students and the Public?***

Chair: Karen L. Bennett. Dept. U Missouri-Columbia MO, USA.

The New Biology in the 21st Century. **Vicki Chandler**, Univ of Arizona

Implementing an integrated, conceptual framework in the education of undergraduates. **Susan Singer**, Carleton

Integrating science to health. **Michael Dyer**, St. Jude Children Hosp

3 – 5 PM Poster Session 1 Tear Down

5 – 5:30 PM **SDB Business Meeting** ACC – Kiva Auditorium

5 – 8 PM Poster Session 2 Set Up ACC – Ballroom C

Poster Session 2 themes: Organogenesis, Gene Regulation, Cell Fate Specification, Intracellular Signaling, Germ Cells and Gametogenesis, Functional Genomics

Please see poster assignments in the end of the Meeting Program.

5:30 – 7:30 PM **Plenary Session I** ACC – Kiva Auditorium

Co-Chairs: Marianne Bronner-Fraser, SDB Past-President. Caltech

Nori Satoh, OIST

5:30 ***L1*** *The genetic control of complex cell shapes.* **Maria Leptin**, Univ of Koeln, Germany

6:00 *Origin of body axes in the mouse embryo*. **Hiroshi Hamada**, Osaka Univ, Japan

6:30 *Polarization of the C. elegans zygote*. **Geraldine Seydoux**, Johns Hopkins, USA

7:00 *Transcriptional precision in the Drosophila embryo*. **Michael Levine**, UC Berkeley, USA

7:30 – 8:30 PM **Meet the Directors Reception for Students and Postdocs** ACC – Ruidoso and San Miguel

7:30 PM Dinner on your own

8:30 – 10:30 PM **Education Workshop** Hyatt Regency Enchantment Ballroom

Bench Scientists CAN do Science Outreach

Chair: Steve Farber, Carnegie Institution for Science

8:30 *Introduction*. **Steve Farber**, Carnegie Institution for Science

8:45 ***24*** *Impacting K-12: What makes Project BioEYES work?* **Jamie Shuda**, Susan Artes, Steven A. Farber. Inst. for Reg. Med., Univ of Penn., Phila., PA, USA; Dept. of Embryol., Carnegie Inst., Baltimore, USA

9:05 ***25*** *Bridge to ReBIO: Partnering Universities and High Schools for Science Outreach*. **Jennifer Skirkanich**, Jamie R. Shuda, Jackie Anzaldo, Dan Kessler. Ins for Regenerative Medicine, Univ. of Pennsylvania, Philadelphia, USA.

9:30 Discussion with refreshments

<u>Saturday, August 7, 2010</u>

7:30 – 8:30 AM Continental breakfast at Posters ACC – Ballroom C

7:30 – 8:30 AM **Breakfast Technical Roundtable on Morpholinos** ACC – Ruidoso

Facilitator: Jon Moulton, Gene Tools, LLC

8 AM – 5 PM Meeting Registration ACC – Upper level foyer

8:30 AM – 12 PM **Concurrent Sessions**

Concurrent Session 4: Signaling in Regeneration ACC – Kiva Auditorium

Co-Chairs: Hisato Kondoh, Osaka Univ
Sally Moody, SDB Treasurer, George Washington Univ

8:30 *Zebrafish heart regeneration*. **Ken Poss**, Duke, USA

9:00 ***26*** *Control of Cell Proliferation and Differentiation in the Developing and Regenerating Lateral Line System in the Zebrafish*. **Miguel L. Allende**, Leonardo Valdivia, Rodrigo Young, Rosario Villegas, Cristian Undurraga, Pablo Sandoval, Viviana Gallardo, Camila Mardones, Stephen Wilson. CGC, Facultad de Ciencias, Universidad de Chile. Santiago, Chile; Dept. Anat. & Dev. Biol. University College London. London, UK.

9:15 ***27*** *Metalloprotease-dependent regulation of nerve regeneration*. **Atsuko Sehara-Fujisawa**. Department of Growth Regulation, Institute for Frontier Medical Sciences, Kyoto University, Japan.

9:45 ***196*** *BMP-switching regulates lineage specification and migration of neural crest cells*. **Daisuke Saito**, Emi Ohata, Hidetaka Murai, Yuta Takase, Yoshiko Takahashi. Grad. Sch. of Biol. Sci., Nara Inst. of Sci. and Tech,, Nara, Japan.

10:00 Coffee Break – *Session sponsored by Molecular Reproduction and Development*

10:30 *Growth control during axolotl tail regeneration*. **Elly Tanaka**, EMBL, Germany

11:00 ***29*** *The Retinal Homeobox (Rx) gene is necessary for retinal regeneration in Xenopus laevis tadpoles*. **Heithem M. El-Hodiri**, Reyna I. Martinez-De Luna, Yi Pan, Lisa E. Kelly. Ctr for Molecular and Human Genetics, Nationwide Children's Hospital Research Institute; MCDB Program, Ohio State University, Columbus, OH USA.

11:15 ***30*** *The mechanism underlying the switching of reproductive strategies in planarian: pluripotent stem cell transplantation using microsatellite markers to identify donor-derived cells*. **Hanae Nodono**, Midori Matsumoto. Dept. of Biosci. & Info., Fac. of Sci. & Tech., Keio Univ., Japan.

11:30 ***31*** *Genetic and Cellular Studies of Regeneration in the Planarian Schmidtea mediterranea.* **Alejandro Sánchez Alvarado**. Howard Hughes Medical Institute, Univerity of Utah School of Medicine, Department of Neurobiology & Anatomy, Salt Lake City, USA

Concurrent Session 5: Cellular Contact in Growth and Differentiation ACC – Ballroom A

Co-Chairs: Ken Cho, UC Irvine
Tadashi Uemura, Kyoto Univ

8:30 ***32*** *Regulation of adherens junctions components during chick neural crest cell migration*. **Lisa A. Taneyhill**, Sharon Jhingory, Chyong-Yi Wu. Department of Animal Sciences, University of Maryland, College Park, MD, USA.

8:45 ***33*** *Stability control of ATF4 protein is involved in the promotion of neural crest EMT*. **Yoshio Wakamatsu**, Takashi Suzuki, Noriko Osumi. Div. of Dev. Neurosci., Tohoku Univ. Grad. Sch. of Med., Sendai, Japan.

9:00 ***34*** *Control of skin pattern formation by gap junction in zebrafish*. **Masakatsu Watanabe**, Shigeru Kondo. FBS, Osaka Univ, Japan.

9:15 *The role of invasive podosomes in fusion pore formation during myoblast fusion*. **Elisabeth Chen**, Johns Hopkins

9:45 ***35*** *Cytoskeletal polarity mediates localized induction of the heart precursor lineage*. **Brad Davidson**, James Cooley, Stacia Whitaker, Sarah Sweeney. MCB, University of Arizona, Tucson, AZ; Keck Imaging Center, Cal-Tech, Pasadena, CA, USA.

10:00 Coffee Break – *Session sponsored by Molecular Reproduction and Development*

10:30 ***36*** *Mechanisms of trophectoderm fate specification in preimplantation mouse embryos*. **Hiroshi Sasaki**. RIKEN Ctr. for Dev.Biol., Kobe, Hyogo, Japan.

11:00 ***37*** *Expression of Oct4, Cdx2 and Yap1 during blastocyst formation in the marsupial, Monodelphis domestica*. **Yolanda P. Cruz**, Jeremy T. Morrison, Niels S. Bantilan. Dept. of Biol., Oberlin Coll., Oberlin, OH, USA.

11:15 ***38*** *Communication between nonadjacent blastomeres in early Xenopus embryos*. **Michael V. Danilchik**, Betsy Brown, Melissa Williams. Dept Integr Biosci OHSU, Portland, OR.

11:30 *Unraveling the physical mechanics of morphogenesis*. **Lance Davidson**, Univ Pittsburgh, USA

Concurrent Session 6: Generation of Asymmetry ACC – Ballroom B

Co-Chairs: Mitsuyasu Hasebe, NIBB
Oliver Hobert, SDB NE Representative, Columbia Univ

8:30 ***39*** *The role of PCP signaling, fluid flow and cytoskeletal dynamics in orienting motile cilia.* **Brian J. Mitchell**. Dept. of Cell and Molecular Biology, Northwestern Univ., Chicago, IL, USA.

9:00 ***40*** *Establishment of left-right asymmetry in zebrafish: surprising predictions from a modeling approach*. **Rebecca D. Burdine**, Bo Xu. Dept. of Mol Biol, Princeton University, Princeton NJ, USA

9:15 ***41*** *Asymmetry, fate and self-renewal in stomatal development.* **Dominique C. Bergmann**. Biology Dept., Stanford University, Stanford, CA, USA

9:45 ***42*** *The Par6 complex is required for both early and late orientation of the left-right axis in Xenopus*. **Laura N. Vandenberg**, Michael Levin. Department of Biology, Tufts University, Medford, MA, USA.

10:00 Coffee Break – *Session sponsored by Molecular Reproduction and Development*

10:30 *Sfrp controls apicobasal polarity and oriented cell division in developing gut epithelium*. **Akihiko Shimono**, Nat Univ of Singapore, Singapore

11:00 ***43*** *Mechanism of Asymmetric Meiotic Divisions in Mouse Oocytes*. **Manqi Deng**. OB/GYN, Brigham and Women's Hospital, Harvard Medical School, Boston, MA, USA.

11:15 ***44*** *Wnts regulate asymmetric spindle to generate asymmetric cell fates in C. elegans*. **Kenji Sugioka**, Kota Mizumoto, Hitoshi Sawa. RIKEN CDB, Kobe, Japan; Dept. of Biol., Grad. Sch. of Sci., Kobe Univ., Kobe, Japan; Dept. of Biol. Sci., Stanford Univ., Stanford, CA, USA.

11:30 ***45*** *Anterior embryonic polarity is maintained by dynamin*. **Ahna R. Skop**. Department of Genetics, UW-Madison.

12 – 3 PM **Poster Session 2 with Exhibits and Lunch** ACC – Ballroom C

12-1:30 pm Odd number board presentation

1:30-3 pm Even number board presentation

Poster Session 2 themes: Organogenesis, Gene Regulation, Cell Fate Specification, Intracellular Signaling, Germ Cells and Gametogenesis, Functional Genomics

Please see poster assignments in the end of the Meeting Program.

1-3 pm Ice cream dessert served at *Developmental Dynamics* (#15) and at Wiley-Blackwell (#14) display tables

3 – 5 PM **Hilde Mangold Postdoctoral Symposium** ACC – Kiva Auditorium

Session sponsored by Genentech

Co-Chairs: Mariko Hirano, RIKEN
Jen-Yi Lee, UC Berkeley

3:00 ***360*** *Quantitative analysis of cis-regulatory genes and networks*. **Jongmin Nam**, Eric H. Davidson. Division of Biology, CALTECH, Pasadena, CA, USA.

3:15 ***178*** *brambleberry mutants reveal new molecular insight into the mechanics of nuclear division during early embryonic development*. **Elliott W. Abrams**, Florence Marlow, Lee Kapp, Tripti Gupta, Mary Mullins. Dept. of Cell and Dev.

3:30 ***130*** *Oocyte polarity and the patterning of zygotic gene expression are regulated by maternal PCP genes*. **Sang-Wook Cha**, Emmanuel Tadjuijde, Christopher Wylie, Janet Heasman. Div. of Dev. Biol., CCHMC, Cincinnati, OH, USA.

3:45 ***115*** *Fritz regulates the membrane stability mediated by septins dynamics during Convergent Extension in Xenopus embryo*. **Asako Shindo**, Tae Joo Park, Su Kyoung Kim, John B. Wallingford. Molecular Cell and Developmental Biology, University of Texas at Austin, USA.

4:00 ***201*** *Planar polarized cellular protrusions break the symmetry of EGFR signaling during the fate determination of bract cells in Drosophila*. **Ying Peng**, Jeff Axelrod. Dept. of Pathology, Stanford Univ., Stanford, CA, USA.

4:15 ***190*** *Going rogue: In vivo analysis of axon transport in zebrafish*. **Catherine M. Drerup**, Stefanie Kaech, Gary Banker, Alex Nechiporuk. Dept. of Dev. Biol., OHSU, Portland, OR, USA.

4:30 ***375*** *Flotillin2 inhibits the activity of an epidermal wound response sensor*. **Michelle T. Juarez**, William McGinnis. UCSD, La Jolla, CA 92093.

4:45 ***175*** *Loss of primary cilia affect neural crest cell behavior and leads to craniofacial defects*. **Samantha Brugmann**, Nancy C. Allen, Aaron W. James, Zesemayat Mekonnen, Elena Madan, Jill A. Helms. Department of Surgery, Stanford University, Stanford, CA.

3 – 5 PM Poster Session 2 Tear Down ACC – Ballroom C

5 pm – 8 pm Poster Session 3 Set Up

Poster Session 3 themes: Stem Cells and Regeneration, Molecular Medicine and Development, Development and Evolution, Late Abstracts

Please see poster assignments in the end of the Meeting Program.

5:30 – 7:30 PM **Plenary Session II** ACC – Kiva Auditorium

Co-Chairs: Mary Mullins, SDB Secretary, U Penn
Yoshiki Sasai, RIKEN

5:30 *Using adult stem cells to study development*. **Allan Spradling**. Carnegie Institution for Science.

6:00 ***46*** *Neuro-vascular interactions: Dorsal aorta signals on morphogenesis of neural crest lineages*. **Yoshiko Takahashi**. Grad. School of Biol. Sci., Nara Inst. of Sci. and Tech., Nara, Japan.

6:30 *Using light-activated proteins to probe mechanisms of collective cell migration*. **Denise Montell**, Johns Hopkins

7:00 *Interactions in a mobile niche govern maintenance and commitment of nephron progenitors*. **Andy McMahon**, Harvard.

7:30 Dinner on your own

8:30 – 10:30 PM **Eco-Devo Workshop** Hyatt Regency Enchantment Ballroom

Ecological Development: Environmental Signaling during Development

Chair: Scott Gilbert, Swarthmore College

8:30 ***47*** *The Plasticity of Sex*. **Minoru Tanaka**. Laboratory of Molecular Genetics for Reproduction, National Institute for Basic Biology, Japan.

9:00 ***48*** *Developmental Symbiosis: Integrating Life Histories through Gene Expression*. **Scott F. Gilbert**. Dept. of Biology, Swarthmore College, Swarthmore, PA, USA.

9:30 ***49*** *Disruption of Normal Development with Exogenous Agents*. **Kathleen K. Sulik**. Dept. of Cell and Dev. Biol., University of North Carolina, Chapel Hill, NC, USA.

10:00 Discussion with refreshments

Sunday, August 8, 2010

7:30 – 8:30 AM Continental breakfast at Posters ACC – Ballroom C

8 AM – 5 PM Meeting Registration ACC – Upper level foyer

8:30 AM – 12 PM **Concurrent Sessions**

Concurrent Session 7: Integration of Signaling Systems ACC – Ballroom A

Co-Chairs: Denise Montell, Johns Hopkins
Hitoshi Niwa, RIKEN

8:30 *Pattern formation by mobile small RNAs.* **Marja Timmermans**, CSHL

9:00 ***50*** *Differences in Intracellular Signaling Patterns in HUVECs Initially Attaching to Various ECM Component Combinations.* **Christine Pauken**, Michael Caplan. SBHSE, Arizona State University, Tempe AZ.

9:15 *A signaling principle for the specification of the germ cell lineage in mice*. **Mitonori Saitou**, Kyoto Univ.

9:45 ***51*** *A Role for Mxtx2 in Mesendoderm Induction*. **Benjamin Feldman**, Sung-Kook Hong, Jamie L. Brown. Medical Genetics Branch, National Human Genome Research Institute, NIH, Bethesda, MD 20892, USA.

10:00 Coffee Break

10:30 *Cilia and Hedgehogs: Partners in crime in development, cancer and healing*. **Jeremy Reiter**, UCSF

11:00 ***52*** *Roles of cilia in Gli protein activation*. **Aimin Liu**, Huiqing Zeng, Amber Hoover, Jinping Jia. Dept. of Biol., The Penn State Univ., University Park, PA, USA.

11:15 ***53*** *The signaling properties in MAPK cycle are modulated by its downstream substrates*. **Tsuyoshi Hirashima**, Yoosik Kim, Stanislav Y. Shvartsman. Systems Life Sciences, Kyushu Univ., Fukuoka, Japan; Dept. of Chemical Engineering, Princeton Univ., NJ, USA.

11:30 *Engrailed genes in patterning multiple levels of cerebellum development*. **Alexandra Joyner**, Sloan-Kettering.

Concurrent Session 8: Branching and Migration ACC – Ballroom B

Co-Chairs: Brigid Hogan, Duke
Hiroshi Sasaki, RIKEN

8:30 ***54*** *The role of the apical PAR-polarity complex in branching morphogenesis*. **Mark M. Metzstein**. Dept. of Human Genetics, Univ. of Utah, Salt Lake City, UT, USA.

8:45 ***55*** *FGF-induced collective cell migration during lung branching morphogenesis*. **Takashi Miura**. Dept. Anat. Dev. Biol., Kyot Univ. Grad. Sch. Med. Kyoto, Japan.

9:00 ***56*** *Dynamic in vivo multispectral imaging and cell tracking of chick neural crest cell migration using multiple histone fluorescent proteins*. **Paul M. Kulesa**, Cameron H. Cooper, Rebecca McLennan, Jessica M. Teddy. Stowers Institute for Medical Research, Kansas City, MO, USA.

9:15 ***57*** *Wnt/β-catenin Signaling Regulates Morphogenesis of the Zebrafish Lateral Line*. Andy Aman, MinhTu Nguyen, **Tatiana Piotrowski**. Dept. of Neurobiol. and Anat., Salt Lake City, USA.

9:45 ***58*** *Structure-function analyses of the Tre1 G protein-coupled receptor involved in primordial germ cell development of Drosophila*. **Clark R. Coffman**, Margaret M. Pruitt. Department of Genetics, Development, and Cell Biology, Iowa State University, Ames, IA, USA.

10:00 Coffee Break

10:30 *Pollen tube guidance and peptide attractants in flowering plants.* **Tetsuya Higashiyama**, Nagoya Univ

11:00 ***59*** *Endoderm morphogenesis and its effect on heart precursor cell migration in the ascidian Ciona intestinalis*. **Katerina Ragkousi**, Brad Davidson. MCB, University of Arizona, Tucson, AZ, USA.

11:15 ***60*** *A novel Slit-Robo-miR-218 signaling axis regulates VEGF-mediated heart tube formation in zebrafish*. **Stephanie Woo**, Jason E. Fish, Joshua D. Wythe, Benoit B. Bruneau, Didier Y. Stainier, Deepak Srivastava. Gladstone Institute of Cardiovascular Disease, San Francisco, CA; Dept. of Biochemistry and Biophysics, University of California, San Francisco, CA.

11:30 ***61*** *Genetic analysis of mammalian Hippo signaling*. **Randy L. Johnson**. Dept. of Biochem. & Mol. Biol, U. Texas, MD Anderson Cancer Center, Houston, TX.

Concurrent Session 9: Evolution of Regulatory Traits ACC – Kiva Auditorium

Co-Chairs: Shin Aizawa, RIKEN
Richard Behringer, SDB SW Representative. M.D. Anderson Cancer Center

8:30 *Gene regulatory networks during development.* **Eileen E. Furlong**, EMBL, Germany

9:00 ***62*** *Co-option of an anteroposterior head axis gene network for proximodistal patterning of appendages in early bilaterian evolution*. **William McGinnis**, Jens H. Fritzenwanker, John Gerhart, Christopher J. Lowe, Derek Lemons. Dept of Cell & Dev Biol, University of California, San Diego, CA, USA; Dept of Organismal Biol and Anatomy, University of Chicago, IL, USA; Dept of Molec and Cell Biol, University of California, Berkeley, CA, USA.

9:15 *Regeneration in the plant root*. **Ken Birnbaum**, NYU

9:45 ***63*** *Evolution of hindlimb specialization in the Northern Three-toed Jerboa*. **Kimberly L. Cooper**, Shaoyuan Wu, Farish Jenkins, Cliff Tabin. Dept of Genetics, Harvard Medical School, Boston, MA, USA; Organismic and Evolutionary Biology, Harvard University, Boston, MA, USA.

10:00 Coffee Break

10:30 *Molecular mechanisms of reprogramming to form pluripotent stem cells in a moss Physcomitrella patens.* **Mitsuyasu Hasebe**, NIBB

11:00 ***64*** *Opposite Sex-Determining Roles of PUF Proteins in Convergently Evolved Hermaphrodites Are Mediated by A Conserved Target mRNA*. **Qinwen Liu**, Craig Stumpf, Marvin Wickens, Eric Haag. Department of Biology, University of Maryland, College Park; Department of Biochemistry, University of Wisconsin, Madison.

11:15 ***65*** *BMP-mediated dorsoventral patterning in cell lineage-dependent embryogenesis of leech*. **Dian-Han Kuo**, David A. Weisblat. MCB, UC Berkeley, Berkeley, CA, USA.

11:30 ***66*** *Regulation of fate and morphogenesis in the ascidian brain, mouth and palp*. **William C. Smith**, Erin Mulholland, Jason Tresser, Michael T. Veeman, Erin Newman-Smith. Dept. Mol., Cell, Dev. Biol., Univ. of Calif., Santa Barbara, USA.

12 – 3 PM **Poster Session 3 with Exhibits and Lunch** ACC – Ballroom C

12-1:30 pm Odd number boards presentation

1:30-3 pm Even number boards presentation

Poster Session 3 themes: Stem Cells and Regeneration, Molecular Medicine and Development, Development and Evolution, Late Abstracts

Please see poster assignments in the end of the Meeting Program.Posters and Exhibits tear down at end of session

3 – 5 PM **Awards Lectures** ACC – Kiva Auditorium

3:00 E.G. Conklin Medal: **Nori Satoh**, OIST, Japan. *Beyond the Edwin Conklin's idea.* Presentation by Richard Harland, SDB President

3:40 *Developmental Biology*-SDB Lifetime Achievement Award: **Margaret Buckingham**, Pasteur Inst, France. *From striated muscle differentiation to heart fields and skeletal muscle stem cells*. Presentation by Alexandra Joyner, SDB President-elect

4:20 V. Hamburger Outstanding Educator Prize: **Maxine Singer**, Carnegie Inst for Science, USA. *Why can't school science be more like science?* Presentation by Karen Bennett, SDB Professional Development and Education Committee Chair

6 – 10 PM **Closing Reception and Best Student Poster Awards Presentation**

Event to be held at the **Bio Park: Botanical Garden and Aquarium**
Entertainment by *Eric Olson and the Transactivators*
Bus shuttle service will be available between Convention Center and BioPark.
Event supported in part by the Department of Biology, University of New Mexico
MEETING BADGE MUST BE WORN TO BOARD BUS AND FOR BIOPARK ENTRY.

Monday, August 9, 2010

Departure

ACKNOWLEDGMENTS

Grants: National Science Foundation, National Institute of Child Health and Human Development, National Institute of Dental and Craniofacial Research, National Institute of Neurological Disorder and Stroke

Collaborator: University of New Mexico Department of Biology

Contributors: Aquatic Habitats, *Developmental Biology*-Elsevier, FASEB-MARC, Gene Tools, Genentech, *genesis*, Olympus of Japan, Protech International, Wiley Blackwell Asia Pacific
Exhibitors: Aquatic Habitats, Bioptonics, Cold Spring Harbor Lab Press, *Developmental Biology*-Elsevier, *Developmental Dynamics*, EMAGE, FASEB-MARC, Gene Tools, Intavis, Morgan & Claypool Life Sciences, National Institutes of Health (NIH), National Science Foundation (NSF), R&D Systems, RIKEN-CDB, Sinauer Associates, The Company of Biologists, University of New Mexico, Wiley-Blackwell Publishing

POSTER and EXHIBIT SESSIONS
Program Abstract Numbers in ***italics*** Poster Board Numbers: **B_**

Poster and Exhibit Session 1
Friday, August 6, 12:00 – 3:00 PM, with lunch ACC – Ballroom C
Author Presentation: 12-1:30 PM Odd number boards
1:30-3 PM Even number boards
Set up: Thursday, August 5, 8-10 PM Tear down: Friday, August 6, 3-5 PM
Themes: Education, Morphogenesis, Patterning and Transcription Factors, Early Embryo Patterning, Cell Motility and Guidance, Cell-Cell Signaling

Education

67 **B1** *Graphing and socratic tutorials improve student thinking about gene networks*. **Caleb Trujillo**, Michael W. Klymkowsky. MCD Biology/BeSocratic@Colorado, UC Boulder, Boulder, CO 80309.

68 **B2** *Mendel/Muller: A socratic activity designed to connect mutation, molecular effects, and evolutionary novelty.* **Henson Kathleen**, Michael W. Klymkowsky. School of Education, UC Boulder, Boulder, CO. USA; MCD Biology/BeSocratic@Colorado, UC Boulder, Boulder CO. USA.

69 **B3** *Humanoids: A Creative Application Project for Developmental Biology Courses*. **Judith M. Thorn**, Larissa E. Roy, Erin A. Jezuit, Jacqueline W. Brittingham. Dept. of Biology, Knox College, Galesburg, IL; Dept. of Education, Illinois State University, Normal, IL; Dept. of Biology, Simpson College, Indianola, IA.

70 **B4** *From Reading to Research: Vertically integrating undergraduate research from the freshman through senior years*. **Dereth R. Phillips**, Bonnie Bartel. Dept. of Biochem. and Cell Biol., Rice Univ., Houston, TX, USA.

71 **B5** *How To Make A Baby With Lab: A Non-Major Course In Human Reproduction and Development*. **Carol E. Roote**. Nazareth College Rochester, NY.

72 **B6** *Engaging Students in a Stem Cell Research Class through (educational) service projects*. **Joyce Fernandes**, Carli Calderone, Kevin Sequeira, Lauren Espe, Lynne Hansen. Dept of Zoology, Miami University. Oxford. OH. USA; St Ursula High School. Cincinnati OH. 45056.

25 **B7** *Bridge to ReBIO: Partnering Universities and High Schools for Science Outreach*. **Jennifer Skirkanich**, Jamie R. Shuda, Jackie Anzaldo, Dan Kessler. Institute for Regenerative Medicine, Univ. of Pennsylvania, Philadelphia, PA, USA.

24 **B8** *Impacting K-12: What makes Project BioEYES work?* **Jamie Shuda**, Susan Artes, Steven A. Farber. Inst. for Reg. Med., Univ of Penn., Phila., PA, USA; Dept. of Embryol., Carnegie Inst., Balt., MD, USA; Dept. of Embryol., Carnegie Inst., Balt., MD, USA.

73 **B9** *Elegant Science in the High School Classroom*. **Gloriana Trujillo**, Jessica McSwain, Maarten Chrispeels. UCSD, La Jolla, CA 92093; Hilltop High, Chula Vista, CA 91910; Faculty Advisor.

74 **B10** *Bringing The Understanding of Evolution to Turkish Public: A Volunteer Organization Model for Developing Countries*. **B. Duygu Ozpolat**, Erol Akçay, Nazlı Somel, Mehmet Somel. Department of Cell and Molecular Biology, Tulane University, New Orleans, LA, USA; National Institute for Mathematical and Biological Synthesis (NIMBioS), University of Tennessee, USA; Department of Education Science, Helmut Schmidt University, Hamburg, Germany; CAS-MPG Partner Institute for Computational Biology, Shanghai, China.

Morphogenesis

75 **B11** *Expression pattern of E-Cad, Ocln and ZO-1 in cleavage-stage Monodelphis domestica embryos*. **Vicki N. Wang**, Yolanda P. Cruz. Dept. of Biol., Oberlin College, Oberlin, OH, USA.

76 **B12** *Nodal signal is required for morphogenetic movements of epiblast cells in pre-streak chick blastoderm*. **Yanagawa Nariaki**, Toshiyuki Yamagishi, Yuji Nakajima. Anat. and Cell Biol., Sch. of Med., Osaka City Univ., Osaka, Japan.

77 **B13** *Involvement of Dystroglycan in Epithelial-Mesenchymal Transition during chicken gastrulation*. **Yukiko Nakaya**, Erike W. Sukowati, Guojun Sheng. Center for Developmental Biology, RIKEN, Kobe, Japan.

78 **B14** *Novel retinotectal projection pathway in deeper laminae of the developing chick optic tectum*. **Minoru Omi**, Hidekiyo Harada, Harukazu Nakamura. Grad. Sch. Life Sci., Tohoku Univ., Sendai, Japan; IDAC, Tohoku Univ., Sendai, Japan.

79 **B15** *Elucidating the role of Hoxa-5 in development of the chick axial skeleton*. **Jessica Chen**, Meghan Shilts, Jennifer H. Mansfield. Dept. Biological Sciences, Barnard College, New York, NY, USA.

80 **B16** *Functional analysis of Klf2 during embryonic skeletal development*. **Felicity A. Rodda**, Trevor L. Cameron, Christopher T. Gordon, John F. Bateman, Peter G. Farlie. Murdoch Childrens Research Institute, Parkville, Victoria, Australia; The University of Melbourne, Parkville, Victoria, Australia.

81 **B17** *Where'd my tail go?* **Nowlan Freese**, Susan C. Chapman. Department of Biological Sciences, Clemson University, Clemson, SC, USA.

82 **B18** *Cellular aspects of LR asymmetric morphogenesis in early heart development*. **Hinako Kidokoro**, Koji Tamura, Masataka Okabe, Gary C. Schoenwolf, Yukio Saijoh. Dept. of Neurobiology & Anatomy, University of Utah, SLC, UT, USA; Dept. of Dev. Biol. & Neurosciences, Tohoku University, Sendai, Japan; Dept. of Anatomy, The Jikei University School of Medicine, Tokyo, Japan.

83 **B19** *The KRAB Zinc Finger Protein ZFP568 is Required in the Extraembryonic Mesoderm for Yolk Sac and Placental Development*. **Maho Shibata**, Maria J. Garcia-Garcia. Department of Molecular Biology and Genetics, Cornell University, Ithaca, NY, USA.

84 **B20** *Live-imaging analysis of apoptosis and caspase activation reveals that apoptosis is a facilitator of the neural tube closure*. **Yoshifumi Yamaguchi**, Naomi Shinotsuka, Keiko Nonomura, Masayuki Miura. Dept. of Genet., Grad. Sch. of Pharma. Sci., The Univ. of Tokyo, Japan; CREST, JST, Japan.

85 **B21** *Apoptosis is dispensable for the control of cell number during early brain morphogenesis*. **Keiko Nonomura**, Yoshifumi Yamaguchi, Hiroki Yoshida, Masayuki Miura. Dept. Genetics, Grad. Sch. Pharm. Scis., Unv. Tokyo, Japan; CREST, JST; Saga Univ. Med. Sch., Japan.

86 **B22** *Sprouty genes function as negative regulators of the FGF signalling pathway during cerebellar development*. **Tian Yu**, Yuichiro Yaguchi, Diego Echevarria, Salvador Martinez, Robert Wechsler-Reya, M.Albert Basson. Department of Craniofacial Development, King's College London, UK; Department of Otorhinolaryngology, The Jikei University School of Medicine, Tokyo, Japan; Instituto de Neurociencias de Alicante, Campus de San Juan, Alicante, Spain; Duke University Medical Center, Durham NC , USA.

87 **B23** *LRP2/megalin is required for the FGF-dependent expansion of the basal telencephalon*. **Oleg Lyubinskiy**, Thomas E. Willnow, Annette Hammes. Max-Delbrueck Center for Molecular Medicine, Berlin, Germany.

88 **B24** *Disruption of Apaf1 leads to defective craniofacial development in the mouse embryo*. **Alyssa B. Long**, Tamara Caspary. Dept. of Human Genetics, Emory Univ., Atlanta, GA, USA.

L5 **B25** *Hsp90A ubiquitination and secretion is disrupted in the cranial mesenchyme of the exencephalic Hectd1 mouse model*. **Anjali A. Sarkar**, Irene E. Zohn. Center for Neuroscience Research, Childrens Research Institute, Children's National Medical Center, Washington DC 20010

90 **B26** *Aglossia in Hand2 conditional knockout mutants results from misregulation of Dlx5/6*. **Francie E. Hyndman**, Marthe Howard, David E. Clouthier. Dept. of Craniofacial Biol., School of Dental Medicine, University of Colorado Denver, Aurora, Co 80045; Dept. of Neurosciences, University of Toledo Health Sciences Center, Toledo, OH 43606.

91 **B27** *Gain-of-function in Ras signaling perturbs dental development in mouse and human*. **Alice Goodwin**, Snehlata Oberoi, Cyril Charles, Jessica C. Groth, Cecilia F. Fairley, Xu Chen, James A. Fagin, Katherine A. Rauen, Ophir D. Klein. UCSF, San Francisco, CA; Memorial Sloan-Kettering Cancer Center, New York, NY.

92 **B28** *The control of inner ear morphogenesis by Sprouty and Tbx1 genes in mouse models of 22q11.2 deletion syndrome.* **Yuichiro Yaguchi**, Jennifer Gardiner, Tian Yu, Katherine Shim, Bernice Morrow, M. Albert Basson. Dept.of Otolaryngology, Saku Central Hospital, Japan; Dept.of Craniofacial Dev, KCL, UK; Dept.of Otolaryngology & Com Science at the MCW, USA; Dept.of Molecular Genetics, AECM, New York, USA.

93 **B29** *The Role of FGF Gradients in the Regulation of Early Limb Growth*. **Ying Zhang**, Nikodem J. Popławski, James A. Glazier. Genetics of Vertebrate Development Section, Cancer and Developmental Biology Lab, National Cancer Institute, Frederick Cancer and Developmental Center, Box B, Building 539, Frederick, MD 21702, USA; Biocomplexity Institute and Department of Physics, Indiana University, Simon Hall 047, 212 South Hawthorne Drive, Bloomington, IN 47405, USA.

94 **B30** *The Limb Mesenchyme Recruitment Model for Patterning the Vertebrate Limb*. **Jeffery R. Barrow**, Tiffany M. Dahl, Aaron P. Smith, Kate E. Kmetzsch, Jared J. Barrott, Jed J. Kendall, Keri L. Low. Dept. of Phys. and Developmental Biology, Brigham Young University, Provo, UT, 84602.

95 **B31** *Twist Function in Limb Morphogenesis*. **Peter Farlie**, Christine Wade, Inigo Brinas. Murdoch Childrens Research Institute.

96 **B32** *Does Lunatic fringe play a distinct role in tail development?* **Susan E. Cole**, Dustin R. Williams. Molecular Genetics, The Ohio State University, Columbus, OH.

396 **B33** *Rhabdomyosarcoma - A tumor balanced at a differentiation tipping point*. **Kyle L. MacQuarrie**, J. Yang, Y. Cao, Z. Yao, S. J. Tapscott. Div. of Human Biol., Fred Hutchinson Cancer Res Center, Seattle WA; Public Health Sci. Div., Fred Hutchinson Cancer Res Center, Seattle WA; Dept. of Neuro. and Neurological Sci., Stanford Univ., Stanford CA.

98 **B34** *Cadherin-11 functions during mammary gland branching morphogenesis*. **Julie R. Hens**, Aashish Kumar, John Nuttall, Neha Sanyal, Megan Vos. Dept. of Biol., St. Bonaventure Univ., St. Bonaventure, NY USA.

99 **B35** *NHE1: A Novel Determinant in Branching Morphogenesis.* **Edmund C. Jenkins**, Sajini Gundry, Jimmie E. Fata. Dept. of Biology, College of Staten Island, S.I., NY, USA.; Biology Doctoral Program, Graduate Center, City University of New York, New York, NY, USA.

100 **B36** *Coordinate regulation of cell motility and intercellular adhesion during mammary branching morphogenesis*. **Andrew J. Ewald**, Ryan S. Gray. Dept. of Cell Biology and Center for Cell Dynamics, Johns Hopkins University, Baltimore, MD USA.

101 **B37** *The coupling mechanism to generate synchronized oscillation of segmentation clock in mouse*. **Yusuke Okubo**, Akatsuki Kimura, Shigeru Chiba, Yumiko Saga. Division of Mammalian Development, National Institute of Genetics, Japan; Division of Cell Architecture, National Institute of Genetics, Japan; Dept. of Clinical and Experimental Hematology, Tsukuba univ., Japan.

102 **B38** *Roles of TBX2B During Asymmetric Brain Development*. **Sataree Khuansuwan**, Corey D. Snelson, & Joshua T. Gamse. Department of Biological Sciences, Vanderbilt University; Department of Biological Structure, University of Washington.

103 **B39** *Cell shortening, basal constriction and epithelial relaxation, in the developing vertebrate brain, are regulated by non-muscle myosins.* **Jennifer Gutzman**, Hazel Sive. Whitehead Institute for Biochemical Research, Cambridge, MA, USA; Dept. of Biol., MIT, Cambridge, MA, USA.

104 **B40** *Vgl-2a is Required for Neural Crest Cell Survival During Zebrafish Craniofacial Development*. **Christopher W. Johnson**, Weiguo Feng, Trevor Williams, Kristin Artinger. Department of Craniofacial Biology, University of Colorado Denver School of Medicine, Aurora, CO.

105 **B41** *Requirements for fat4 and atr2a in shaping the zebrafish craniofacial skeleton*. **Pierre Le Pabic**, Seok-Hyung Kim, Lila Solnica-Krezel, Thomas F. Schilling. Dept. of Dev. and Cell Biol., UC Irvine, Irvine, CA, USA; Dept. of Biol. Sci., Vanderbilt University, Nashville, TN, USA.

106 **B42** *Morphogenesis of post-embryonic neural crest-derived pigment cell precursors revealed by time lapse imaging during zebrafish adult pigment pattern formation*. **Erine H. Budi**, Larissa B. Patterson, David M. Parichy. Department of Molecular and Cellular Biology ,; Department of Biology, University of Washington, WA, USA.

107 **B43** *zic1 and zic4 expression in the somite regulates dorsalization of the fish trunk structures*. **Toru Kawanishi**, Yuuta Moriyama, Ryohei Nakamura, Atsuko Shimada, Hiroyuki Takeda. Dept. of Biol. Scis., Grad. Sch. of Sci., Univ. of Tokyo, Japan.

108 **B44** *Myotome patterning and growth in zebrafish - The role of tbx24*. **Stefanie E. Windner**, Stephen H. Devoto. Dept. of Biol., Wesleyan Univ., Middletown, CT, USA; Dept. of Organismic Biol., Univ. of Salzburg, Austria.

109 **B45** *Identifying Mechanisms Which Control Asymmetric Development Of The Zebrafish Heart*. **Jessica R. Rowland**, Kari Baker, Rebecca D. Burdine. Department of Molecular Biology, Princeton University, Princeton, NJ, USA.

110 **B46** *Endocardial-myocardial interactions direct cardiac morphogenesis*. **Olivier F. Noel**, Nathalia Glickman Holtzman. Department of Biology, Queens College; City University of New York, Flushing, NY, USA.

111 **B47** *Notch-restricted Atoh1 expression regulates morphogenesis of the posterior lateral line in zebrafish*. **Miho Matsuda**, Ajay Chitnis. LMG, NICHD, NIH, Bethesda, MD, USA.

112 **B48** *Studying the potential dual role of adhesion G protein-coupled receptors in early zebrafish embryogenesis*. **Xin Li**, Heidi Hamm, Lilianna Solnica-Krezel. Neuroscience Graduate Program; Department of Pharmacology; Department of Biological Sciences, Vanderbilt University, Nashville, TN, USA.

113 **B49** *Proper initiation of zebrafish epiboly requires the T-box transcription factor Eomesodermin A*. **Ashley Bruce**, Susan Du. Dept. of Cell & Systems Biology, Univ. of Toronto, Canada.

114 **B50** *The cytoplasmic tyrosine kinase Arg regulates Xenopus gastrulation via the adaptor protein CrkII*. **Chenbei Chang**, Jason Fletcher, Harshit Dwivedi, Madhav Devani, Gustavo Bonacci. Dept. Cell Biology, Univ. Alabama at Birmingham, Birmingham, AL 35294, USA.

L6 **B51** *Rho and ROCK are required for apical constriction in Xenopus bottle cells*. **Jen-Yi Lee**, Richard Harland. Dept of Mol and Cell Biol, University of California, Berkeley, CA, USA.

116 **B52** *Serotonin and Wnt signaling are required for morphogenesis of the gastrocoel roof plate epithelium, the site of symmetry breakage in the frog embryo*. **Tina Beyer**, Philipp Vick, Thomas Thumberger, Mike Danilchik, Bärbel Ulmer, Peter Walentek, Philipp Andre, Susanne Bogusch, Martin Blum, Axel Schweickert. Institute of Zoology, University of Hohenheim, Garbenstrasse 30, D-70593 Stuttgart, Germany; Department of Integrative Biosciences, Oregon Health & Science University, Portland, OR 97239, U.S.A.; Howard Hughes Medical Institute, University of California, Los Angeles CA 90095, USA.

117 **B53** *Development of swimming regulation systems in sea urchin : from blastulae to larvae*. **Hideki Katow**, Shio Ooka. Res. Centr. Marine Biol., Tohoku Univ., Aomori, Aomori, Japan.

118 **B54** *Serotonin signaling initiates gastrulation in the sea urchin*. **Kamali N. Carroll**, Tara A. Scully, Ken M. Brown. Dept. Biological Sciences, George Washington University, Washington, DC 20052.

119 **B55** *Dissecting Tentacle Formation in Hydra Using Chemical Genetics*. **Kristine M. Glauber**, Catherine E. Dana, Steve S. Park, Tau Li, Richard A. Chamberlin, Robert E. Steele. Dept. of Biol. Chem., UC Irvine, Irvine, CA, USA; Dept. of Chem., UC Irvine, Irvine, CA, USA.

120 **B56** *Nodal signaling is involved in left-right asymmetric ocellus formation in Ciona intestinalis*. **Keita Yoshida**, Hidetoshi Saiga. Dept. Biol. Sci., Tokyo Metropolitan Univ., Japan.

121 **B57** *Post-intercalation elongation and narrowing of the ascidian notochord requires actomyosin contractility and endocytosis*. **Michael T. Veeman**, William C. Smith. Dept. of Molecular, Cell and Developmental Biology, UCSB, Santa Barbara, CA, USA.

122 **B58** *Sexual Dimorphism of the adult Drosophila abdomen: Wingless, segmental fusion and fate transformation.* **John H. Yoder**, Bryan J. Kidd, Wei Wang. Dept. of Biological Sciences, The University of Alabama, Tuscaloosa, AL, USA.

123 **B59** *Activin signaling is required for Drosophila follicle cell development and normal female fertility*. **Changqi C. Zhu**, Michael B. O'Connor. Department of Biological Sciences, Ferris State University, Big Rapids, MI 49307, USA; Department of Genetics, Cell Biology and Development, Howard Hughes Medical Institute, University of Minnesota, 6-160 Jackson Hall, Minneapolis, MN 55455, USA.

124 **B60** *Glia influence patterning of adult muscle innervation in Drosophila*. **Joyce Fernandes**, Sarita Hebbar. Dept of Zoology. Miami University. Oxford OH. USA; National center for Biological Sciences. Bangalore. INDIA.

125 **B61** *The role of post-transcriptional gene regulation in dendritic morphogenesis*. **Eugenia C. Olesnicky**, Elizabeth R. Gavis. Dept of Mol. Biol., Princeton Univ. Princeton, NJ, USA.

126 **B62** *The actin regulator Enabled is essential for proper gonad morphogenesis in Drosophila*. **Hiroko Sano**, Prabhat Kunwar, Andrew Renault, Vitor Barbosa, Ivan Clark, David Finnegan, Ruth Lehmann. New York University, USA; Ochanomizu University, Japan; Edinburgh University, UK; Max Planck Institute for Developmental Biology, Germany; California Institute of Technology, USA; Howard Hughes Medical Institute, USA.

127 **B63** *ROCK I regulates Par protein localization and basement membrane deposition during branching morphogenesis*. **William P. Daley**, Sam Centanni, Melinda Larsen. Department of Biology, University at Albany, Albany, NY, USA.

Patterning and Transcription Factors

128 **B64** *Rescue-potential of chimeric Pou5f1 transcription factors*. **Marcel Mischnik**, Verdon Taylor, Jens Timmer, Wolfgang Driever, Daria Onichtchouk. Developmental Biology, Institute for Biology 1, Univ. of Freiburg, Germany; Center for Data Analysis and Modeling, Univ. of Freiburg, Germany; Max Planck Institute for Immunobiology, Freiburg, Germany.

129 **B65** *Identification of direct targets of the Caenorhabditis elegans global sexual regulator TRA-1 by chromatin immunoprecipitation*. **Matthew R. Berkseth**, Kohta Ikegami, Jason D. Lieb, David Zarkower. Dept. of Genetics, Cell Biology and Development, University of Minnesota, Minneapolis, MN USA; Dept. of Biology and Carolina Center for Genome Science, University of North Carolina at Chapel Hill, Chapel Hill, NC USA.

L7 **B66** *Regional and neural specific transcription factors control EGF signaling along the A-P axis during Drosophila development.* **David Li-Kroeger**, Brian Gebelein. Molecular and Developmental Biology Graduate Program, Cincinnati Children's Hospital, Cincinnati, Ohio; Division of Developmental Biology, Cincinnati Children's Hospital, Cincinnati, Ohio.

131 **B67** *Transcriptional Integration of the Wnt and Nodal Pathways during Organizer Formation*. **Christine D. Reid**, Daniel S. Kessler. Dept. of Cell & Dev. Biol., University of Pennsylvania School of Medicine, Philadelphia, PA 19104.

132 **B68** *Atoh1 regulates cellular patterning through cell fate specification and cell-cycle control in the mammalian cochlea*. **Michael C. Kelly**, Ping H. Chen. Dept of Cell Bio, Emory Univ, Atlanta, GA, USA.

133 **B69** *Genetic Interaction of Lmx1a and Lmo4 in the Mouse Inner Ear*. **Jennifer K. Hill**, Lin Gan, Doris K. Wu. National Institute on Deafness and Other Communication Disorders; Rockville MD USA; University of Rochester, Rochester NY USA.

134 **B70** *Identification of novel candidate Six1-interacting proteins with potential roles in cranial placode development.* **Sally A. Moody**, Pallavi Mhaske, Francesca Pignoni, Bo Yan, Karen M. Neilson. Dept. Anatomy & Regen. Biology, George Washington Univ, Washington, DC; Dept. Ophthalmology, Upstate Medical Center, Syracuse, NY.

135 **B71** *Chicken Scratch2 is expressed during early embryonic neurogenesis*. **Felipe M. Vieceli**, Irene Yan. Department of Cell and Developmental Biology, Instituto de Ciências Biomédicas, Universidade de São Paulo, São Paulo, SP, Brazil.

136 **B72** *Concentration-Dependence Of Tcf3's Function In Wnt/β-Catenin Signaling*. **Chun-I Wu**, Jackson A. Hoffman, Erin M. Ford, Laura Periera, Elaine Fuchs, Hoang Nguyen, Bradley J. Merrill. Dept. of Biochem. and Mol. Genetics, Univ. of Illinois at Chicago, Chicago, IL, USA; Dept. of Mol. and Cell. Biol., Baylor Col. of Medicine, Houston, TX, USA; Lab. of Mammalian Cell Biol. and Dev., The Rockefeller Univ., New York, NY, USA.

137 **B73** *Deciphering the Mechanism of Engrailed Function During Mouse Cerebellar Foliation*. **Grant D. Orvis**, Alexandra L. Joyner. Dept. of Dev. Biol., Sloan-Kettering Institute, New York NY.

138 **B74** *Characterization of the function of Sox21 during Xenopus laevis neural development*. **Niteace Whittington**, Doreen Cunningham, Elena Casey. Dept. of Biol., Georgetown Univ, Washington D.C, USA.

139 **B75** *Arx regulates the cell cycle in cortical ventricular zone progenitor cells*. **Jacqueline Simonet**, Ginam Cho, Jeffrey A. Golden. Dept. of Cell and Dev. Biol., Univ. of Penn, Phila., PA, USA; Dept. of Path., Univ. of Penn, Phila., PA, USA.

140 **B76** *Visualization of CiPax6 expression in combination with neural transmitters reveals better understanding of the developing ascidian brain*. **Rachel E. Holbert**, Steven Q. Irvine. Bio. Sci. Dept., Univ. of Rhode Island, Kingston, RI, USA.

141 **B77** *CLASPs in the C. elegans Embryo*. **Eugenel B. Espiritu**, Lori E. Krueger, Anna A. Ye, Lesilee S. Rose. Dept. of MCB, University of California, Davis, CA, USA.

142 **B78** *A pan-ectodermal enhancer module regulates the Dlx-B gene in Ciona*. **Steven Q. Irvine**. Dept. of Biological Sciences, Univ. of Rhode Island, Kingston, RI, USA.

143 **B79** *Crosstalk between Jagged-Notch, Edn1, and Bmp signaling pathways patterns the dorsal-ventral axis of the vertebrate face*. **Gage Crump**, Elizabeth Zuniga, Marie Rippen, Courtney Alexander, Tom Schilling. University of Southern California; University of California, Irvine.

144 **B80** *Cloning and expression of chicken MECOM/EVI-1 during embryonic limb and face development*. **Marcela Buchtova**, Simona Balkova, Joy M. Richman. University of Veterinary and Pharmaceutical Sciences Brno, Czech Republic; Institute of Animal Physiology and Genetics, Czech Republic; University of British Columbia, Vancouver, Canada.

145 **B81** *The Foxa Family & Intervertebral Disk Formation*. **Jennifer Maier**, Brian Harfe. Dept. of Molec. Gen. & Microbiol., Univ. of Florida, Gainesville, FL, USA.

146 **B82** *Foxd3 regulates self-renewal and multipotency of the neural crest*. **Patricia A. Labosky**, Nathan A. Mundell. Department of Cell and Developmental Biology, Vanderbilt University School of Medicine, Nashville, TN, 37232-0494, USA.; Department of Pharmacology, Vanderbilt University School of Medicine, Nashville, TN, 37232-0494, USA.

147 **B83** *Loss of Snail1 leads to loss of mesoderm and neural crest in Xenopus.* **Jianli Shi**, Courtney Severson, Michael W. Klymkowsky. MCD Biology UC Boulder, Boulder, CO 80309.

148 **B84** *Loss of early mesoderm leads to loss of neural crest.* **Jianli Shi**, Courtney Severson, Michael W. Klymkowsky. MCD Biology UC Boulder, Boulder, CO 80309.

149 **B85** *Towards Understanding the prdm1a Gene Regulatory Network in Danio rerio*. **Kristi LaMonica**, Kristin Artinger. Department of Craniofacial Biology, School of Dental Medicine, UC Denver, Anschutz Medical Campus, Aurora, CO 80045.

150 **B86** *prdm genes in zebrafish craniofacial development*. **Letitia Kwok**, David E. Clouthier, Kristin B. Artinger. Cell Biology, Stem Cells and Development Graduate Program; Department of Craniofacial Biology, University of Colorado Anschutz Medical Campus, Aurora, CO 80045.

151 **B87** *Hand2 regulates both ectodermal and neural crest cell identity during lower jaw development*. **David Clouthier**, Marthe Howard, Francie Hyndman. Dept. of Craniofacial Biology, School of Dental Medicine, University of Colorado Anschutz Medical Campus, Aurora, CO 80045; 2Dept. of Neurosciences, University of Toledo Health Sciences Center, Toledo, OH 43606.

152 **B88** *Transcriptional regulation of hand2 in zebrafish neural crest cells and cardiomyocytes*. **Jennifer Ikle**, David E. Clouthier. Department of Craniofacial Biology, University of Colorado Denver, Aurora, CO USA.

153 **B89** *Functional Relevance of Hox-specified Positional Identities in Adult Vasculature*. **Nathanael D. Pruett**, Richard Visconti, Alexander Awgulewitsch. Dept. of Med., MUSC, Charleston, SC USA; Dept. of Cell Biol. and Anat., MUSC, Charleston, SC, USA.

154 **B90** *IDENTIFYING AND CHARACTERIZING DOWNSTREAM TARGETS OF T-BOX TRANSCRIPTION FACTORS*. **Adrienne A. Maxwell**, Taylur Ma, Cecilia Moens, Sharon L. Amacher. Dept. of Mol. and Cell Biology, UC Berkeley, Berkeley, CA; Div. of Basic Science, Fred Hutchinson Cancer Research Center, Seattle, WA.

155 **B91** *tbx24 is required for proper dermomyotome formation in the posterior trunk of zebrafish*. **Nathan C. Bird**, Frank Stellabotte, Stephen H. Devoto. Dept. of Biol., Wesleyan Univ., Middletown, CT, USA; House Ear Institute, Los Angeles, CA, USA.

156 **B92** *The p38-MAPK Interacting Protein (p38IP) regulates somite and vertebral development*. **SUNITA WARRIER**, IRENE E. ZOHN. Center for Neuroscience, Children's Research Institute, Children's National Medical Center, Washington DC USA; Supported by grants from the March of Dimes Foundation and the Spina Bifida Association.

157 **B93** *The Regulation of Somite Epithelialization by Paraxis*. **Megan Rowton**, Pilar Ramos, Douglas Anderson, Heather Cunliffe, Alan Rawls. School of Life Sciences, Arizona State University, Tempe AZ, USA; TGen, Phoenix AZ, USA.

158 **B94** *Structure and Function of AGAMOUS in a Basal Eudicot*. **Theadora R. Tolkin**, Kacie McCarty, Kelsey Galimba, Veronica Di Stilio. Dept. of Bio., U of Washington, Seattle, WA.

159 **B95** *Temporal regulation of development by the MED12-MED13 module of Arabidopsis Mediator*. **Stewart Gillmor**, Matthew Willmann, Scott Poethig. Department of Biology, University of Pennsylvania, Philadelphia, PA USA; National Laboratory for Biodiversity Genomics (LANGEBIO), CINVESTAV-IPN, Irapuato, Guanajuato, MEXICO.

Early Embryo Patterning

160 **B96** *A role for apical membrane polarization in the generation of trophectoderm fate*. **Robert O. Stephenson**, Janet Rossant. Department of Developmental & Stem Cell Biology, Hospital for Sick Children; Department of Molecular Genetics, University of Toronto.

161 **B97** *The preferential incorporation of H2A.X into chromatin in early preimplantation embryos involves its C-terminal domain*. **Buhe Nashun**, Fugaku Aoki. Dept. of Integ. Biosci., Univ. Tokyo, Kashiwa, Chiba, Japan.

162 **B98** *Using the brainbow to trace lineages in early mouse development*. **Inna Tabansky**, Ryan W. Draft, Jacqueline Rosains, Jean Livet, Jeff W. Lichtman, Joshua R. Sanes, Kevin C. Eggan. Depts of MCB and SCRB, Harvard University, Cambridge, MA; Stowers Biomedical Institute, Cambridge, MA; CBS, Harvard University, Cambridge, MA; Dept of MCB, Harvard University, Cambridge, MA; INSERM, Institute de Vision and UPMS University of Paris, Paris, France.

163 **B99** *Gastrulation Defects lead to embryonic lethality in Porcupine Homolog Mutant Mouse Embryos*. **Steffen Biechele**, Brian J. Cox, Janet Rossant. Hospital for Sick Children, Toronto, ON, Canada; Dept. of Mol. Genetics, University of Toronto, Canada.

164 **B100** *Developmental mechanisms underlying cardiac antero-posterior patterning by the Raldh2 caudorostral wave*. **Sylvia Sura Trueba**, José Xavier-Neto. Grupo de Genética e Desenvolvimento Cardíaco, Laboratório de Genética e Cardiologia Molecular, InCor, HC/FMUSP.

165 **B101** *Enhancer N-1-dependent activation of Sox2 during caudal extension of the neural plate and its downstream molecular events*. **Megumi Yoshida**, Tatsuya Takemoto, Masanori Uchikawa, Hisato Kondoh. Graduate School of Frontier Biosciences, Osaka University.

166 **B102** *Self-organization of anterior-posterior axis and elongation morphogenesis in aggregates of mouse embryonal carcinoma cells*. **Yusuke Marikawa**, Dana A. Tamashiro, Toko C. Fujita, Vernadeth B. Alarcon. Dept. of Anat. Biochem. Physiol., Univ. of Hawaii, HI, USA.

167 **B103** *BMP signaling through ACVR1 is crucial for establishment of the left-right asymmetry via proper formation of node cilia in the mouse*. **Yuji Mishina**, Vesa Kaartinen, Yuji Mishina. Dept of Biologic and Materials Sciences, School of Dentistry, Univ. of Michigan, Ann Arbor, MI, USA.

168 **B104** *Functional analysis of the mouse Nodal antagonist, Cerl2, during left-right axis formation*. **Jose M. Inacio**, Sara Marques, Jose A. Belo. Centre for Molecular and Structural Biomedicine, Univ. of Algarve, Faro, Portugal.

169 **B105** *Comparative proteomic analysis of the left and right sides of chick embryos*. **Yonghua Zhang**, Annie Simard, Aimee K. Ryan. Department of Human Genetics and Pediatrics, McGill University, Montreal, Canada; The Research Institute of the McGill University Health Center, Montreal, Quebec.

170 **B106** *Left-right determination requires endoderm function in mice*. **Ranajeet S. Saund**, Masami Kanai-Azuma, Yoshiakira Kanai, Yukio Saijoh. Dept. of Neurobiology and Anatomy, University of Utah, Salt Lake City, USA; Tokyo Medical and Dental University, Japan; University of Tokyo, Japan.

171 **B107** *LRP2/MEGALIN REGULATES FOREBRAIN PATTERNING BY MODULATING MORPHOGEN PATHWAYS.* **Annabel Christ**, Oleg Lioubinski, Thomas Willnow, Annette Hammes. Max-Delbrueck-Center for Molecular Medicine, Berlin, Germany.

L8 **B108** *Neurula rotation determines left-right asymmetry in ascidian tadpole larvae*. **Kazuhiko Nishide**, Michio Mugitani, Gaku Kumano, Hiroki Nishida. Dept. of Biol. Sci., Osaka Univ., Osaka, Japan.

173 **B109** *Notch activity is essential for sequential segmentation*. **Miguel Maroto**, Zoltan Ferjentsik, Jacqueline K. Dale. Div. of Cell & Dev. Biol., Univ. of Dundee, UK.

174 **B110** *Expression of claudin family members during embryonic EMT and MET events.* **Aimee K. Ryan**, Michelle M. Collins, Nicholas Haddad, Halim Khairallah, Indra R. Gupta. Dept. Human Genetics and Pediatrics, McGill University; Research Institute of the McGill University Health Center.

L9 **B111** *The cilia protein ARL13B is required for efficient nodal signaling during mouse left-right axis specification*. **Christine Larkins**, Tamara Caspary. Graduate Program in Biochemistry Cell and Developmental Biology; Department of Human Genetics, Emory University, Atlanta, GA, USA.

176 **B112** *Anterior-posterior patterning of Spemann's organizer by retinoic acid*. **Abraham Fainsod**, Michal Gur, Hadas Kot-Leibovich, Christof Niehrs. Dept. Dev. Biol. and Cancer Res., IMRIC, Hebrew Univ., Jerusalem, Israel; Div. of Molec. Embryol., German Cancer Res. Ctr., Heidelberg, Germany.

177 **B113** *Aquaporin-3b, Neural Folds and Neural Tube Closure*. **E. Jean Cornish**, Tiffany Hensley, Christa Merzdorf. Dept. of Cell Biology and Neuroscience, Montana State University, Bozeman, MT, USA.

L10 **B114** *Non-canonical and canonical roles of maternal Dishevelleds 2 and 3 in Xenopus laevis*. **Emmanuel Tadjuidje**, Sang-Wook Cha, Christopher Wylie, Janet Heasman. Division of Developmental Biology, Cincinnati Children's Hospital Research Foundation, Cincinnati, OH, USA.

179 **B115** *CaMK-II Mediates Non-canonical Wnt-Dependent Morphogenic Events during Zebrafish Gastrulation*. **McLeod Jamie**, Sarah Rothschild, Ludmila Francescatto, Robert M. Tombes. Dept. of Biol., VCU, Richmond, VA, USA.

180 **B116** *Coordinated DV and AP patterning by multiple signals in zebrafish*. **Megumi Hashiguchi**, Mary Mullins. Dept. of Cell & Dev. Biol., University of Pennsylvania, PA, USA.

181 **B117** *A Chemokine Receptor, CCR7, Limits β-catenin Activity during Zebrafish Axis Formation*. **SHU-YU (Simon) WU**, Lilianna Solnica-Krezel. Department of Biological Sciences, Vanderbilt University, Nashville, TN 37235, USA.

182 **B118** *A novel role for fatty acid metabolism in embryonic patterning*. **Rosa Miyares**, Björn Renisch, Matthias Hammerschmidt, Steven Farber. Department of Embryology, Carnegie Institution for Science, Baltimore, MD, USA; Department of Biology, Johns Hopkins University, Baltimore, MD, USA; Institute for Developmental Biology, University of Cologne, Cologne, Germany.

183 **B119** *Complex control of Wnt signaling determines the size of the initial neurogenic territory at the animal pole of the sea urchin embryo.* **Ryan Range**, Robert Angerer, Lynne Angerer. National Institutes of Health, Bethesda, Md, USA.

184 **B120** *Genomic programs for endoderm specification in sea urchin embryos*. **Isabelle Peter**, Eric H. Davidson. Division of Biology 156-29, California Institute of Technology, Pasadena, CA 91125, USA.

185 **B121** *IrxA Expression and Function in Establishing the Sea Urchin Endoderm-Ectoderm Boundary*. **Daniel C. McIntyre**, Winn Seay, David R. McClay. Biology Dept., Duke University, Durham NC, USA.

186 **B122** *Bazooka/PAR-3 and PKC protein localization correlate with spindle position during asymmetric cleavage in the early Ilyanassa embryo*. **Ayaki Nakamoto**, James R. Cooley, Jessica E. Wandelt, Lisa M. Nagy. Dep. of MCB, Univ. of Arizona, Tucson, AZ, USA; Dep. of CBA., Univ. of Arizona, Tucson, AZ, USA; School of Biol. Sciences, Univ. of Texas at Austin, Austin, TX, USA.

187 **B123** *Modifiers of the mel-28 mutant phenotype include nucleoporins, DNA replication components and chromatin organizers*. **Anita Fernandez**, Emily K. Mis, Neha Kaushik, Matthew Fasullo, Fabio Piano. Center for Genomics and Systems Biology and Department of Biology, New York University, New York, NY, USA; Biology Department, Fairfield University, Fairfield, CT, USA.

188 **B124** *Polarity defects resulting from weakened cell-cell adhesion: lost signal?* **Theresa M. Grana**, Jeff Hardin. Department of Biological Sciences, University of Mary Washington, Fredericksburg, VA, USA; Department of Zoology, University of Wisconsin, Madison, WI, USA.

Cell Motility and Guidance

189 **B125** *SMN Participates in the Positioning of Motor Neurons in the Ventral Neural Tube*. **Catherine E. Krull**, Fengyun Su, Mustafa Sahin. Dept. of Biologic and Materials Sciences, Univ. of Michigan, Ann Arbor, MI, USA; Dept. of Neurology, Children's Hospital and Harvard Univ., Boston MA, USA.

L11 **B126** *Multicolor brainbow labeling strategies for neural circuit analyses in the larval zebrafish*. **Estuardo Robles**, Stephen J. Smith, Herwig Baier. Dept. of Physiology, UCSF, San Francisco, CA, USA; Dept. of Physiology, Stanford Univ., CA, USA.

191 **B127** *Distinct mechanisms of Slit-Robo attraction and repulsion mediate the guidance of glial cell positioning and commissural axons in the zebrafish diencephalon*. **Alexandra M. Sobhani**, Anne Tanenhaus, Elizabeth Deschene, Azucena Ramos, Michelle Wong, Alexander Workman, Michael Barresi. Dept. of Biol. Sci., Smith College, Northampton, MA, 01063.

192 **B128** *The fasciculation of spiral ganglion peripheral axons in the mouse cochlea is dependent on Pou3F4.* **Thomas M. Coate**, E. Bryan Crenshaw, Matthew W. Kelley. Section on Developmental Neuroscience NIDCD/NIH, Bethesda, MD 20892; Children's Hospital, U. Pennsylvania, Philadelphia, PA 19104.

193 **B129** *Regulation of endodermal cell migration by Rac1 during zebrafish gastrulation*. **Stephanie Woo**, Didier Y. Stainier. Dept. of Biochemistry and Biophysics, University of California, San Francisco, CA.

L12 **B130** *Role of the Wnt/PCP pathway component: Trilobite/Vangl2 in the transition of cell behavior during convergence and extension movements in zebrafish*. **Isabelle Roszko**, Jason R. Jessen, Lilianna Solnica-Krezel. Dept. of Dev. Biol., Washington Univ., St Louis, MO, USA; Dept. of Cancer Biol., Vanderbilt Univ., Nashville, TN, USA.

195 **B131** *Functional analysis of methylation during neural crest migration*. **Katie Vermillion**, Laura S. Gammill. Dept. of Genetics, Cell Biology and Development, University of Minnesota, Minneapolis, MN, USA.

196 **B132** **moved to Concurrent Session 4**

197 **B133** *CXCR4 controls ventral migration of sympathetic precursor cells*. **Jennifer C. Kasemeier-Kulesa**, Paul M. Kulesa, Rebecca McLennan, Morgan H. Romine, Frances Lefcort. Stowers Institute for Medical Research, Kansas City, MO, USA; Dept. of Cell Biology and Neuroscience, Montana State Univ., Bozeman, MT, USA.

198 **B134** *Vascular Endothelial Growth Factor Regulates Cranial Neural Crest Migration In Vivo*. **Rebecca McLennan**, Jessica M. Teddy, Jennifer C. Kasemeier-Kulesa, Morgan H. Romine, Paul M. Kulesa. Stowers Institute for Medical Research, Kansas City, MO, USA.

199 **B135** *Cell division and cell shape patterns during migration of the embryonic chick neural crest revealed by in vivo time-lapse microscopy*. **Dennis A. Ridenour**, Katherine W. Prather, Rebecca McLennan, Zachary Warren, Paul M. Kulesa. Stowers Institute for Medical Research, Kansas City, MO, USA.

Cell-Cell Signaling

200 **B136** *BMP regulation of epithelial organization: moving to real time*. **Laurel A. Raftery**, Wei Sun, Michal Jager. School of Life Sci., Univ. of Nevada, Las Vegas, NV, USA; Cutaneous Biol. Res. Ctr., Mass. General Hosp./Harvard Med. Sch., Charlestown, MA, USA.

L13 **B137** *Motor innervation of the limb requires intracellular enhancement of BMP signalling by the E3 ubiquitin ligase Arkadia2C*. **Claire E. Kelly**, Efstathia Thymiakou, Shinya Tanaka, James E. Dixon, Vasso Episkopou. MRC Clinical Sciences Centre, Imperial College Faculty of Medicine, London, W12 0NN, UK.

202 **B138** *Planar cell polarity and the cytoskeleton: searching for Rho kinase substrates*. **Andreas Jenny**, Cathie Pfleger, Gretchen Dollar. Dev. and Mol. Biology, Einstein, New York, NY, USA; Onc. Sciences, Mount Sinai, New York, NY, USA.

L14 **B139** *Evaluating the Chromosomal Passenger Complex and Centralspindlin in directing the final events in cell division in Sea Urchin Embryos.* **Haroula Argiros**, Christianna Holguin, Charles B. Shuster. Biol. Dept., NMSU, Las Cruces, NM, USA.

L15 **B140** *Primary Cilia Regulate Neural Tube Closure Independent of Hh Signaling*. **Sara M. Peyrot**, John B. Walllingford. Dept. of Molecular Cell and Developmental Biology, University of Texas at Austin, USA; Howard Hughes Medical Institute.

205 **B141** *The roles of beta-catenin pathway in the chick dermomyotome and myotome*. **Yin Min Htaik**, Lisa M. Galli, Laura W. Burrus. Department of Biology, San Francisco State University, 1600 Holloway Ave, San Francisco, CA, 94132.

206 **B142** *Role of Ror1 in the Developing Chick Neural Tube and Somites*. **Camilla S. Teng**, Jorge Franco, Ouma Onguka, Lisa M. Galli, Laura W. Burrus. Biology Dept., SFSU, 1600 Holloway Ave. San Francisco, CA, 94132, USA.

207 **B143** *Restricting cell movement: The role of Tspan18 in neural crest migration*. **Corinne L. Fairchild**, Laura S. Gammill. Department of Genetics, Cell Biology and Development, University of MN, Minneapolis, MN, USA.

208 **B144** *The Twist-Slug-Snail regulated gene sizzled's role in mesoderm and neural crest formation.* **Courtney Severson**, Jianle Shi, Michael W. Klymkowsky. MCD Biology UC Boulder, Boulder, CO 80309.

209 **B145** *Mesodermal Wnt signaling organizes the neural plate via Meis3*. **Yaniv M. Elkouby**, Dale Frank. Dept. of Biochemistry, Rappaport Faculty of Medicine, The Technion, Haifa, Israel.

210 **B146** *The Role of pkd2 in Zebrafish Embryonic nodal Patterning*. **Jason McSheene**, Rebecca Burdine. Dept. of Mol. Biol., Princeton Universtiy, Princeton, NJ, USA.

211 **B147** *MicroRNA-221 regulates chondrogenic differentiation through promoting proteosomal degradation of slug by targeting mdm2*. **Dongkyun Kim**, Jinsoo Song, Jongbum Ra, Eun-Jung Jin. Department of Biological Sciences, Wonkwang University, Iksan, Chunbuk, 570-749, South Korea; Department of Interior Materials Engineering, Jinju Natioanl University, Jinju, Kyongnam 660-758, South Korea.

212 **B148** *Early Embryonic Expression of Ionotropic and Metabotropic GABA receptors in Xenopus laevis*. **Gwendolyn E. Kaeser**, Margaret S. Saha. Dept. of Biol., College of William and Mary, Williamsburg, VA, USA.

213 **B149** *Regulation of BMP Signaling in the Blastocyst by Noggin Producing, MyoD-Positive Epiblast Cells is Critical for Normal Development*. **Jacquelyn V. Gerhart**, J. Pfautz, C. Neely, K. Knudsen, M. George-Weinstein. Lankenau Institute for Medical Research, Wynnewood, PA, USA.

214 **B150** *Pregnancy-related changes in progesterone receptor expression in the uterine glands of Monodelphis domestica*. **Joanna M. Johnson**, John Lydon, John D. Harder, Yolanda P. Cruz. Dept. of Biol., Oberlin College, Oberlin, OH, USA; Dept. of Mol. & Cell. Biol., Baylor Coll. Med., Houston, TX, USA; Dept. of Evol., Ecol., & Org. Biol., Ohio State Univ., Columbus, OH, USA.

Poster & Exhibit Session 2

Saturday, August 7, 12:00 – 3 PM, with lunch ACC – Ballroom C

Author Presentation: 12-1:30 pm Odd number boards
1:30-3 pm Even number boards

Set up: Friday, August 6, 5-8 PM Tear down: Saturday, August 7, 3-5 PM

Themes: Organogenesis, Gene Regulation, Cell Fate Specification, Intracellular Signaling, Germ Cells and Gametogenesis, Functional Genomics

Organogenesis

215 **B1** *Foxg1 is necessary for thymic epithelial cell differentiation*. **Qiaozhi Wei**, Brian G. Condie. Dept. of Genetics, Univ. of Georgia, Athens, GA, USA.

216 **B2** *Loss of Prox1 activity predisposes mice to pancreatitis*. **Joby J. Westmoreland**, G Kilic, J Blain, N Harvey, G Oliver, B Sosa-Pineda. Dept. of Genetics and Tumor Cell Biology, St. Jude Children's Research Hospital, Memphis, TN.

217 **B3** *The mechanisms of the boundary formation between the stomach and intestine endoderm in chicken embryo.* **Kenta Watanabe**, Kimiko Fukuda. Dept. of Biol. Sci., Tokyo Metropol. Univ., Tokyo, Japan.

218 **B4** *hnRNP I is required for the digestive organ development and intestinal homeostasis*. **Wenyan Mei**, Chin-Yee Chan, Jing Yang. The Research Institute at Nationwide Children's Hospital, The Ohio state University; E-mail: Wenyan.Mei@nationwidechildrens.org.

219 **B5** *Tubular extension and cell epithelialization are coordinately regulated and influenced by adjacent tissues*. **Yuji Atsuta**, Emi Ohata, Ryosuke Tadokoro, Daisuke Saitou, Yoshiko Takahashi. Grad. Sch. of Biosci., Nara Inst. of Sci. and Tech., Nara, Japan.

220 **B6** *Wnt4 induces tubule formation in metanephric mesenchyme by a non-canonical mechanism.* **Shunsuke Tanigawa**, Honghe Wang, Yili Yang, Nirmala Sharma, Terry Yamaguchi, Alan Perantoni. Cancer Dev. Biol. Lab., NCI, Frederick, MD, USA.

221 **B7** *Tissue interactions during formation of the pronephric duct in Xenopus laevis*. **Ian Hakkinen**, Amanda Pinto, Julie Drawbridge. Dept. of Biology. Rider University, Lawrenceville, NJ, USA.

222 **B8** *A role for GDNF in pronephric duct cell migration in Xenopus laevis*. **Erin McCafferty**, Vanessa Gerrard, Nicole Revere, Julie Drawbridge. Dept. of Biology, Rider University, Lawrenceville, NJ, USA.

223 **B9** *Isoform and Domain Dependence of Nonmuscle Myosin II In Vivo and In Vitro*. **Aibing Wang**, Xuefei Ma, Mary Anne Conti, Chengyu Liu, Sachiyo Kawamoto, Robert S. Adelstein. Lab of Molecular Cardiology/NHLBI/NIH, Bethesda, MD 20892; Transgenic Mouse Core Facility/NHLBI/NIH, Bethesda, MD 20892.

224 **B10** *Characterization of an Ankyrin Repeat Socs Box gene in the early heart development of the basal chordate, Ciona intestinalis*. **Arielle Woznica**, Brad Davidson. Dept. of Molecular and Cellular Biology, Molecular Cardiovascular Research Program, University of Arizona, Tucson, AZ, USA.

225 **B11** *Critical Functions of Myocardial Mycn in the Developing Mouse Heart*. **Cristina M. Harmelink**, Kai Jiao. Dept. of Genetics, Univ. of Alabama at Birmingham, Birmingham, AL, USA.

226 **B12** *Mice Null for Crim1 Display Altered BMP/TGFβ Signaling, Defects in Multiple Organ Systems and Die in utero with Severe Cardiovascular Defects.* **David J. Pennisi**, Han S. Chiu, K S. Vinay, Lorine Wilkinson, Pumin Zhang, Melissa H. Little. Institute for Molecular Bioscience, The University of Queensland, Australia; Dept. of Molecular Physiology and Biophysics, Baylor College of Medicine, Houston, TX.

227 **B13** *The activity of Cerberus-like 2 during cardiogenesis, morphological and morphogenetics studies*. **Ana C. Araujo**, Jose A. Belo. Centre for Molecular and Structural Biomedicine, Univ. of Algarve, Faro, Portugal.

228 **B14** *Bves and NDRG4 modulate epicardial cell differentiation*. **Emily E. Cross**, Elaine L. Shelton, Raphael P. Hunt, Samyukta Reddy, David M. Bader. Department of Cell and Developmental Biology, Vanderbilt University, Nashville, TN, USA.

229 **B15** *Fgf3 and Fgf10 are required redundantly for neural crest migration and cardiovascular development*. **Lisa D. Urness**, Tracy J. Wright, Suzanne L. Mansour. Dept. of Human Genetics, University of Utah, Salt Lake City, UT, USA.

230 **B16** *Wnt signaling promotes proliferation to pattern the zebrafish craniofacial skeleton*. **Sarah Piloto**, Theresa Quach, Thomas Schilling. Department of Developmental and Cell Biology, University of California, Irvine.

231 **B17** *Disease Variability Caused by Gene/Environment Synergy*. **Johann K. Eberhart**, Neil McCarthy, Mary E. Swartz. MCDB, University of Texas at Austin.

232 **B18** *Characterization of the craniofacial cartilage phenotype in zebrafish fzd7a and fzd7b mutants*. **Barbara E. Sisson**, Jacek Topczewski. Children's Memorial Research Center, Northwestern University. Feinberg School of Medicine, Chicago, IL, USA.

233 **B19** *Ex vivo live-imaging at high resolution to directly visualize melanin transfer from melanocytes to keratinocytes*. **Ryosuke Tadokoro**, Kenichiro Sakai, Hidetaka Murai, Yoshiko Takahashi. NAIST, Ikoma, Nara, Japan.

234 **B20** *Specification of ion-transporting cells in the Xenopus skin*. **Ian K. Quigley**, Jennifer L. Stubbs, Chris Kintner. Molecular Neurobiology Laboratory, Salk Institute for Biological Studies, La Jolla, California USA.

235 **B21** *A novel pRb protein network controlling C. elegans organogenesis*. **David S. Fay**, Kumaran Mani, Evguenia Karina. Dept. of Mol. Biol. Univ. of Wyoming, Laramie, WY.

236 **B22** *Large Scale Analysis of Gene Expression in the Murine Embryonic Lung*. **Hernan Espinoza**, Mark A. Krasnow. Dept of Biochemistry, Stanford University School of Medicine, Stanford, CA, 94305; Howard Hughes Medical Institute, Chevy Chase, MD 20815-6789.

237 **B23** *Regulation of airway shape by SPROUTY-mediated control of oriented cell division*. **Nan Tang**, Wallace Marshall, Martin McMahon, Ross J. Metzger, Gail R. Martin. Department of Anatomy; Department of Biochemistry and Biophysics; Cancer Research Institute and Department of Cellular and Molecular Pharmcology, University of California, San Francisco 94158.

238 **B24** *Sprouty gene function in otic placode induction*. **Katherine Shim**, Amanda Mahoney-Rogers, Jian Zhang. Dept. of Pediatrics, Medical College of Wisconsin, Milwaukee, WI, USA.

239 **B25** *Canonical Notch signaling is neither necessary nor sufficient for prosensory induction in the mouse cochlea*. **Martin L. Basch**, Takahiro Ohyama, Neil Segil, Andrew K. Groves. Deptartments of Neuroscience and Molecular and Human Genetics, Baylor College of Medicine, Houston, TX; Deptartment of Cell Biology and Genetics, House Ear Institute, Los Angeles, CA.

240 **B26** *The role of Sox2 in the regulation of eye development*. **Masanori Uchikawa**, Miho Morishima, Yuka Saigou, Hisato Kondoh. Grad. Sch. of Frontier Bioscis., Osaka Univ., Osaka, JAPAN.

241 **B27** *Transcriptome profiling highlights multiple roles for Xrx1 during eye development*. **Massimiliano Andreazzoli**, Martina Giannaccini, Guido Giudetti, Daniele Biasci, Sara Mariotti, Alessio Paolini, Marco Della Santina, Giuseppina Barsacchi. Dipartimento di Biologia, Università di Pisa, Pisa, Italy; Scuola Superiore di studi universitari e di perfezionamento Sant'Anna, Pisa, Italy; European Commission Joint Research Center, Institute for Health and Consumer Protection, Nanobiosciences Unit, I.

242 **B28** *pug function is essential for normal limb length*. **Scott D. Weatherbee**, Emily Mis, Steven Reilly. Genetics Dept. Yale Univ. New Haven, CT, USA.

243 **B29** *Sall4 is dispensable for mouse limb development*. **Yasuhiko Kawakami**, Junji Itou, Ryuich Nishinakamura, Hiroko Kawakami. Dept. Genetics, Cell Biology & Development, University of Minnesota, MN; Stem Cell Institute, University of Minnesota, MN; Institute of Molecular Embryology and Genetics, Kumamoto University, Japan.

244 **B30** *Role of hedgehog signaling in intervertebral disc development*. **Kyung-Suk Choi**, Brian D. Harfe. Dept. of Molecular Genetics and Microbiology, Univ. of Florida, Gainesville, FL, USA.

245 **B31** *TGFβ expression during the development of the chicken ovary and its effect in the ovarian cortex*. **Jose R. Escalona Mugica**, Enrique A. Pedernera. Dept. of Embryology, School of Medicine, Universidad Nacional Autonoma de Mexico, Mexico DF.

L16 **B32** *Fusobacterium nucleatum is a risk factor for adverse pregnancy outcomes in mice*. **Ines D. Altamirano**, Patricia V. Bouchan, Susana S. Gonzalez, Ethel L. Garcia, Concepcion G. Sanchez. Lab Immunochemistry, ENCB IPN, MEX; Bioterio, INPER IER, MEX; Lab Dev. Biol., HIM FG, MEX.

247 **B33** *The conserved Z-linked gene, DMRT1, is required for testicular morphogenesis in the chicken embryo*. **Craig A. Smith**, Kelly N. Rosezler, Thomas Ohnesorg, David Cummins, Peter G. Farlie, Timothy Doran, Andrew Sinclair. Comparative Development, Murdoch Childrens Research Institute and University of Melbourne Department of Paediatrics, Royal Childrens Hospital, Melbourne, Victoria, Australia; CSIRO Australian Animal Health Laboratories, Geelong, Victoria, Australia.

248 **B34** *Endothelial migration initiates SF1- Proliferation and testis morphogenesis.*. **Jonah Cool**, Blanche Capel. Dept of Cell Biology, Duke University Medical Center, Durham, NC.

249 **B35** *Atrophin controls organ size by participating in the Hippo-Warts pathway in Drosophila*. **Hongxing Gui**, Chih-Cheng Tsai. Dept. of Phys. & Biophys., UMDNJ, Piscataway, NJ, USA.

250 **B36** *Ubiquitin proteasome pathway and organogenesis of Holothuria glaberrima*. **Consuelo C. Pasten**, Rey Rosa, Monica Noya, Jose Garcia-Arraras. Dept. Biology, Univ. Puerto Rico-Rio Piedras, Puerto Rico.

Gene Regulation

251 **B37** *1+1 = 3: When two hormones are better than one*. **Cristina L. Walcher**, Jennifer L. Nemhauser. Biology Department, University of Washington, Seattle, WA, USA.

252 **B38** *Dll-B knockdown and overexpression in the ascidian Ciona intestinalis*. **Matthew D. Blanchette**, Steven Q. Irvine. Dept. of Biol. Sci., University of Rhode Island, Kingston, RI, USA.

253 **B39** *Targeted mutagenesis in the sea urchin embryo using zinc-finger nucleases*. **Hiroshi Ochiai**, Kazumasa Fujita, Ken-ichi T. Suzuki, Masatoshi Nishikawa, Tatsuo Shibata, Naoaki Sakamoto, Takashi Yamamoto. JSPS Research Fellow; Dept. of Math and Life Sci., Grad. Sch. of Sci., Hiroshima Univ., Japan; Cent. for Mar. Envi. Stu., Ehime Univ., Japan.

254 **B40** *Expression of MMP14 and MMP17 During Sea Urchin Development*. **Eric P. Ingersoll**, Nathan H. Lent, Katie A. Pokiniewski. Department of Biology, Penn State Abington, Abington, PA, USA.

255 **B41** *A sulfotransferase (SpSult) is required for mesoderm and endoderm development in sea urchin*. **Cristina Calestani**, Natasha Vermeulen, Sindhu Aravindakshan. Dept. of Biol., Univ. of Central Florida, Orlando, FL, USA.

256 **B42** *The phylogenetically conserved C. elegans T-box factor TBX-2 is SUMOylated*. **Tanya L. Crum**, Paul Huber, Peter G. Okkema. Dept. of Biological Sciences, University of Illinois at Chicago, USA.

257 **B43** *Elucidating a novel LIN-35/pRb protein network controlling nutrient utilization in C. elegans*. **Stanely R. Polley**, David S. Fay. Dept. of Mol. Bio. Univ. of Wyoming, Laramie, WY.

258 **B44** *A genome-wide study of the maternal-to-zygotic transition*. **Jing Yang**, Zhigang Jin, Wenyan Mei. The Research Institute at the Nationwide Children's Hospital, Department of Pediatrics, the Ohio State University, Columbus, Oh, USA.

259 **B45** *Serine protease activation of the epidermal wound response in Drosophila*. **Rachel Patterson**, William J. McGinnis. UCSD, La Jolla, CA 92093.

260 **B46** *Functional analysis of a UBX-responsive regulatory element*. **Bradley Hersh**, Jamie L. Wood. Dept. of Biology, Allegheny College, Meadville, PA, USA; Dep. of Biol. Sci., Clemson University, Clemson, SC, USA.

261 **B47** *Investigating the Regulatory Sequences of dpp Required for Negative Feedback of dpp Transcription*. **Maryanna Aldrich**, Lorena Soares, Kristi Wharton. MCB Dept, Brown University, Providence, RI.

262 **B48** *Akirin links Twist transcription factor activity with the Brahma chromatin remodeling complex during embryogenesis*. **Scott J. Nowak**, Hitoshi Aihara, Katie Gonzalez, Yutaka Nibu, Mary K. Baylies. Dev. Bio., Sloan Kettering Inst., New York NY; Cell and Dev. Bio, Weill Cornell Medical College, New York NY.

263 **B49** *The Drosophila Estrogen-Related Receptor is Required for the Transition from Embryonic to Larval Metabolism*. **Jason M. Tennessen**, Geanette Lam, Janelle Evans, Keith D. Baker, Carl S. Thummel. Dept. of Human Genetics, U. of Utah, Salt Lake City, UT, USA.

264 **B50** *Novel animal model for studying the roles of the upstream open-reading frames*. **Hung-Chieh Lee**, Huai-Jen Tsai. Institute of Molecular and Cellular Biology, National Taiwan University, Taipei, Taiwan.

265 **B51** *The molecular structures and expression patterns of two distinct zebrafish Dickkopf 3 genes*. **Chuan-Yang Fu**, Huai-Jen Tsai. Institute of Molecular and Cellular Biology, National Taiwan University, Taipei, Taiwan.

266 **B52** *B1 SOX Coordinate Cell Specification with Patterning and Morphogenesis in the Early Zebrafish Embryo*. **Yuichi Okuda**, Hisato Kondoh, Yusuke Kamachi. Frontier Biosciences, Osaka Univ., Suita, Osaka, Japan.

267 **B53** *Role of the dlx cis-regulatory elements I56i and I56ii in zebrafish GABAergic interneuron development*. **Man Yu**, Marc Ekker. CAREG, Departments of Biology and of Cellular and Molecular Medicine, University of Ottawa, Canada.

268 **B54** *Swi/Snf chromatin remodeling complexes control zebrafish neural patterning and differentiation*. **Nick Osborne**, Keriayn N. Smith, Terry Magnuson. Department of Genetics, University of North Carolina, Chapel Hill.

269 **B55** *Fox1 and Fox4 regulate muscle-specific splicing in zebrafish and are required for cardiac and skeletal muscle function*. **Thomas L. Gallagher**, Joshua Arribere, Shaunak Adkar, Henry Marr, Kariena Dill, Aaron Garnett, Sharon Amacher, John Conboy. Div. Life Sci, LBNL, Berkeley, CA, USA; Dept. of Mol. & Cell. Biol., UC Berkeley, Berkeley, CA, USA.

270 **B56** *Regulation of endoderm development by zebrafish Nipbl*. **Akihiko Muto**, Thomas F. Schilling, Anne L. Calof, Arthur D. Lander. Dev & Cell Biol., Univ. of California, Irvine, CA, USA; Anatomy & Neurobiol., Univ. of California, Irvine, CA, USA.

271 **B57** *Transcriptional Regulation of GlyT2 and GAD67 in X. laevis*. **Alexander V. Chalphin**, Conor W. Sipe, Margaret S. Saha. Dept. of Biol. The College of William and Mary, Williamsburg, VA, USA; Dept. of Cell Biol., UVA., Charlottesville, VA, USA.

L17 **B58** *FGF signaling regulates microRNA abundance during avian gastrulation*. **Alexander S. Bobbs**, Tatiana A. Yatskievych, Maricela Pier, Parker B. Antin. Dept. of Molecular and Cellular Biology, University of Arizona, Tucson, AZ, USA; Dept. of Cellular Biology and Anatomy, University of Arizona, Tucson, AZ, USA.

273 **B59** *Regulation of Nervous System Development by F-box mediated ubiquitination*. **Banu Saritas-Yildirim**, Elena S. Casey. Department of Biology, Washington, DC, USA.

274 **B60** *hnRNP K: an essential element of a posttranscriptional regulon of multiple cytoskeletal mRNAs involved in axon outgrowth*. **Yuanyuan Liu**, Ben G. Szaro. Dept. Biol., State Univ. NY, Albany, NY, USA.

275 **B61** *Chromosomal Regions Associated with Developmental Mutations in Congenic Inbred Lines of Chicken*. **Elizabeth A. Robb**, Hans H. Cheng, Mary E. Delany. Department of Animal Science, University of California, Davis, CA 95616; US Department of Agriculture, Avian Disease and Oncology Laboratory, East Lansing, MI 48823.

276 **B62** *Transcriptional regulation of cadherin-7 during development of the neural epithelium*. **Maneeshi Prasad**, Alicia F. Paulson. Biology Dept., University of South Dakota, Vermillion, SD 57069.

277 **B63** *Novel transcription factor involved in neurogenesis*. **Emma K. Farley**, Emily Gale, Nicole Gennet, Xinsheng Nan, Meng Li. MRC Clinical Sciences Centre, Imperial College London, London, UK.

278 **B64** *MicroRNA-9 regulates neural progenitor proliferation and differentiation in both pallium and subpallium by targeting Foxg1, Nr2e1, Gsh2 and Meis2*. **Mikihito Shibata**, Hiromi Nakao, Hiroshi Kiyonari, Takaya Abe, Shinichi Aizawa. Lab for VBP., CDB, RIKEN, Kobe, Japan; LARGE, CDB, RIKEN, Kobe, Japan.

279 **B65** *The same enhancer regulates the earliest Emx2 expression in caudal forebrain primordium, subsequent expression in dorsal telencephalon and later expression in cortical ventricular zone.* **Yoko Suda**, Kenji Kokura, Jun Kimrua, Eriko Kajikawa, Fumitaka Inoue, Shinichi Aizawa. Lab. for Vertebrate Body Plan, CDB, RIKEN, Japan.

280 **B66** *Characterization of the novel interaction between muskelin and TBX20, a critical cardiogenic transcription factor.* **Paige DeBenedittis**, Yunjia Chen, Qin Wang, Kai Jiao. Dept. of Genetics, UAB, Birmingham, Alabama, USA; Dept. of Physiology & Biophysics, UAB, Birmingham, Alabama, USA.

281 **B67** *Prrxl1 expression in mouse nociceptive neurons is controlled by alternative promoters*. **Isabel Regadas**, Filipe Monteiro, Sandra Rebelo, Deolinda Lima, Carlos Reguenga. Lab. of Mol. Cel. Biol., Faculty of Medicine, Univ. of Porto, Portugal; IBMC - Inst. Biol. Mol. Cel., Univ. of Porto, Portugal.

282 **B68** *The Transcriptional Co-repressor TRIM28 is Differentially Required by KRAB Zinc Finger Proteins during Early Mammalian Embryogenesis*. **Kristin E. Blauvelt**, Maho Shibata, Maria J. Garcia-Garcia. Cornell University, Ithaca, NY.

283 **B69** *A gene regulatory network that underlies the derivation of the anterior neural plate from the epiblast*. **Makiko Iwafuchi-Doi**, Tatsuya Takemoto, Yuzo Yoshida, Isao Matsuo, Jun Aruga, Yusuke Kamachi, Masanori Uchikawa, Hisato Kondoh. Frontier Biosciences, Osaka Univ., Osaka, JAPAN; MCHRI, Osaka Prefectural Hospital Organization, Osaka, JAPAN; RIKEN Brain Science Institute, Saitama, JAPAN.

284 **B70** *Mohawk-mediated repression of Sox6 is necessary for the expression of slow myosin heavy chain (Myh7) in differentiated satellite cells.* **Douglas M. Anderson**, Alan Rawls. School of Life Sciences, Arizona State University, Tempe, Arizona 85287-4501; Molecular and Cellular Biology Graduate Program, Arizona State University, Tempe, Arizona 85287-4501.

285 **B71** *Identification of a Brain and Neural Tube Specific Enhancer Associated with the Expression of Emx2 During Development*. **Brian C. Willis**, Charmaine U. Pira, Shelley A. Caltharp, Kohei Kanaya, Jennifer M. Feenstra, Kerby C. Oberg. Dept. of Pathology and Human Anatomy, Loma Linda University, Loma Linda, CA USA.

L18 **B72** *The Regulation and Function of FoxN2/3 in the Skeletogenic Cells during Sea Urchin Development*. **Ho Kyung Rho**, David R. McClay. Department of Biology, Duke University Durham NC, USA.

287 **B73** *SRY Function in Sex Determination*. **Yen-Shan Chen**, Michael A. Weiss. Dept. of Biochem., Case Western Reverse University, Cleveland, OH, USA.

Cell Fate Specification

288 **B74** *Regulation of neural stem cell differentiation by Lin28 & let-7*. **H Meng**, E G. Moss, V M. Lee. Dev Biol/Pediatrics, Med Coll Wis; Mol Biol, UMDNJ.

289 **B75** *Characterization and Mapping of Mutants that Affect Sex-specific Neurons in C. elegans*. **Darrell J. Killian**, Gulden Kaplan, Mazhgan Rowneki. The College of New Jersey, Department of Biology, Ewing, NJ, USA.

290 **B76** *Development of an In Vitro electroporation assay in the mouse to manipulate gene expression in the lower rhombic lip*. **Rebecca L. Landsberg**, Susan M. Dymecki, Patrick Holland. Dept. of Biology, University of Illinois Springfield, Springfield, IL, USA; Department of Genetics, Harvard Medical School, Boston, MA, USA.

291 **B77** *Zebrafish Kuririn is a crucial factor for the telencephalic neurogenesis through the regulation of Hes-related gene*. **Yutaka Kikuchi**, Akio Yoshizawa, Yoshinari Nakahara, Toshiaki Izawa, Tohru Ishitani, Makiko Tsutsumi, Atsushi Kuroiwa, Motoyuki Itoh. Dept. of Biol. Sci., Grad. Sch. of Sci., Hiroshima Univ., Japan; Div. of Biol. Sci., Grad. Sch. of Sci., Nagoya Univ., Japan.

292 **B78** *Six1 is indispensable for production of functional apical and basal progenitors during olfactory epithelial development*. **Keiko Ikeda**, Ryoichiro Kageyama, Kiyoshi Kawakami. Div. of Biol., Jichi Med. Univ., Tochigi, Japan; Inst. for Virus Res., Kyoto Univ., Kyoto, Japan.

293 **B79** *Sensory Neuron Differentiation is Regulated by Notch Signaling in the Trigeminal Placode*. **Rhonda N.T. Lassiter**, Matthew K. Ball, Jason S. Adams, Brian T. Wright, Michael R. Stark. Physiology & Developmental Biology, BYU, Provo, UT, USA.

294 **B80** *The polycomb repressive complex PRC2 regulates retinal differentiation in Xenopus*. **Issam Al Diri**, Monica L. Vetter. Department of Neurobiology and Anatomy, University of Utah, Salt Lake City, UT, USA.

295 **B81** *Geminin regulates multi-lineage commitment in the Xenopus early embryo in a Polycomb-dependent manner*. **Jong-Won Lim**, Kristen L. Kroll. Dept. of Dev. Biol., Washington Univ. in St. Louis, St. Louis, MO, USA.

296 **B82** *Characterization of Jab1, a Downstream Effector of the Cytokine Mif, in Zebrafish Inner Ear Development*. **Stephanie A. Linn**, Sarah E. Tomkovich, Kate F. Barald. Cellular & Molecular Biology Graduate Program; Dept. of Cell & Dev. Biology; Dept. of Biomed. Engineering, Univ. of Michigan, Ann Arbor, MI.

297 **B83** *Sox2 and Sox3 regulate neurogenesis in the developing inner ear*. **Lale Evsen**, Masanori Uchikawa, Satoko Sugahara, Hisato Kondoh, Doris K. Wu. National Institute on Deafness and Other Communication Disorders, Rockville, MD 20850, USA; Graduate School of Frontier Bioscience, Osaka University, Osaka 565-0871, Japan; University of Maryland, College Park, MD 20740, USA.

298 **B84** *Calcium Channel Antagonists and Neurotransmitter Phenotype Specification*. **Brittany B. Lewis**, Lauren E. Miller, Margaret S. Saha. Dept. of Biology, College of William and Mary, VA, USA.

299 **B85** *Analysis of a mutation in an essential gene for zebrafish lateral line hair cell survival*. **Valdivia Alvarez Leonardo**, Villegas Rosario, Young Rodrigo, Wilson Stephen, Allende Miguel. Center for Genomics of the Cell, Universidad de Chile, Santiago, Chile; Department of Cell and Developmental Biology, University College London, London, UK.

300 **B86** *prdm1a Regulates Rohon-Beard Neuron and Neural Crest Cell Fate at the Neural Plate Border*. **Jera Law**, Kristin B. Artinger. Department of Craniofacial Biology; Neuroscience Graduate Program, University of Colorado Denver Anschutz Medical Campus, Aurora, CO.

301 **B87** *Zebrafish paf1 is required for neural crest specification.* **Michael J. Jurynec**, David J. Grunwald. Dept. of Human Genetics, U of Utah, SLC, UT.

302 **B88** *The methyltransferase NSD3 regulates neural crest cell specification and migration*. **Bridget T. Jacques-Fricke**, Laura S. Gammill. Dept of Genetics, Cell Biology and Development, Univ of Minnesota, Minneapolis, MN, USA.

303 **B89** *Regulation of neural crest development by the putative phosphatase, paladin*. **Julaine Roffers-Agarwal**, Karla Hutt, Laura S. Gammill. Department of Genetics, Cell Biology and Development, University of Minnesota, Minneapolis, MN, USA.

304 **B90** *Kctd15 inhibits neural crest formation by modulating Wnt signaling*. **Sunita Dutta**, Brian P. Brooks, Igor B. Dawid. Sect of Dev. Biol., NICHD, Bethesda, MD, USA; NEI, Bethesda, MD, USA

305 **B91** *Investigating mesothelial cell potential in gut development*. **Rebecca T. Thomason**, Niki I. Winters, Ryan J. Roberts, Elaine L. Shelton, Raphael P. Hunt, David M. Bader. Cell and Dev. Biol., Vanderbilt Univ., Nashville, TN, USA; Div. Cardio. Med., Vanderbilt Med Cnt., Nashville, TN, USA.

306 **B92** *Serosal Mesothelium as a Source of Myofibroblasts and Vascular Smooth Muscle Cells in Development, the Adult, and Disease*. **Nichelle I. Winters**, Rebecca T. Thomason, Elaine L. Shelton, David M. Bader. Dept. of Cell and Dev. Biol, Vanderbilt Univ., Nashville, TN, USA; Dept. of Cardiovascular Med., Vanderbilt Univ., Nashville, TN, USA.

307 **B93** *Transcription factor heterogeneity in proepicardial and epicardium-derived cell populations during heart development*. **Caitlin M. Braitsch**, Michelle D. Combs, Katherine E. Yutzey. Div. of Mol. Cardio. Biol., CCHMC, Cincinnati, OH, USA.

308 **B94** *Agtrl1b acts non-cell-autonomously for proper cell migration during myocardial progenitor development*. **Sivani Paskaradevan**, Ian C. Scott. Department of Molecular Genetics, University of Toronto, Toronto, ON, Canada; The Hospital for Sick Children, Toronto, ON, Canada.

309 **B95** *FGF/Ets Target Genes in Ciona intestinalis Heart Cell Specification*. **Jessica Jemmett**, Arielle Woznica, Ella Starobinska, Arati Babaria, Brad Davidson. University of Arizona.

310 **B96** *FGF signaling regulates spindle dynamics in Ciona heart precursor cells*. **James R. Cooley**, Sarah Sweeney, Stacia Ilchena, Brad Davidson. Department of Molecular and Cellular Biology; Molecular Cardiovascular Research Program.

311 **B97** *How heart cells embrace their fate in the chordate Ciona intestinalis*. **Stacia Ilchena**, James Cooley, Brad Davidson. University of Arizona.

312 **B98** *A feedback loop between xylt1 and sox9 controls chondrocyte differentiation*. **Brian F. Eames**, Mary E. Swartz, Yi-Lin Yan, John H. Postlethwait, Charles B. Kimmel. Institute of Neuroscience, University of Oregon, Eugene, OR.

313 **B99** *Identification of a novel protein, LRRP, involved in primitive erythropoiesis and non-canonical Wnt signaling*. **Mizuho S. Mimoto**, Devorah C. Goldman, Jan L. Christian. Cell & Developmental Biology, Oregon Health & Science University, Portland, OR, USA; Oregon Stem Cell Center, Oregon Health & Science University, Portland, OR, USA.

314 **B100** *Tbx6-dependent regulation of Sox2 enhancer N1 determines the neural vs. mesodermal fate of axial stem cells in the caudal lateral epiblast*. **Tatsuya Takemoto**, Masanori Uchikawa, Robin Lovell-Badge, Virginia Papaioannou, Hisato Kondoh. FBS, Osaka Univ., Osaka, JAPAN; Dept. of Dev. Genet., MRC Nat. Inst. for Med. Res., London, UK; Div. of Genet. and Dev., Columbia Univ., New York, NY, USA.

315 **B101** *Transcriptional control of dorsal-ventral polarity cues in C. elegans*. **Rossio K. Kersey**, Thomas Brodigan, Tetsu Fukushige, Mike Krause. Lab. of Mol. Biol., NIDDK, NIH, Bethesda, MD.

316 **B102** *Molecular Mechanisms of Primitive Endoderm Formation*. **Roy Teo**, Samantha A. Morris, Paul Robson, Magdalena Zernicka-Goetz. The Gurdon Institute, University of Cambridge, Cambridge, UK; Genome Institute of Singapore, Singapore.

317 **B103** *Signaling through BMP receptors promotes respiratory identity in the foregut through repression of SOX2*. **Eric T. Domyan**, Yuji Mishina, Xin Sun. Laboratory of Genetics, University of Wisconsin-Madison, Madison, WI, USA; Dept. of Biologic and Materials Science, Univ. of Michigan, Ann Arbor, MI, USA.

318 **B104** *Ngn3 as a dosage sensitive driver for beta cell differentiation during embryogenesis and regeneration*. **Guoqiang Gu**, JIngbo Yan, Fongchen Pan, Chris V. Wright. Program for Dev. Biol., Cell & DEv. Biol.

Intracellular Signaling

319 **B105** *The Function of ER Remodeling in IP3 Receptors Clustering during Xenopus Oocyte Maturation*. **Lu Sun**. Dept. of Research, Weill Cornell Medical College, Doha, Qatar.

320 **B106** *Regulation of Orai1/CRACM1 Trafficking during Xenopus Oocyte Maturation*. **Fang Yu**, Lu Sun, Khaled Machaca. Dept. of research, Weill Cornell Medical College, Doha, Qatar.

321 **B107** *Membrane Targeted CaMK-II is the Ca2+ Sensor responsible for Left-Right Asymmetry in Zebrafish Embryos*. **Ludmila Francescatto**, Sarah C. Rothschild, Alexandra L. Myers, Robert M. Tombes. Dept. of Biol., VCU, Richmond, VA, USA.

L19 **B108** *Mammalian and fly Hedgehog signal transduction diverge in the importance and mechanism of Ci/Gli release from Sufu suppression*. **Masaki Kato**, Sekyung Oh, Chi Zhang, Yurong Guo, Philip A. Beachy. HHMI, Dept. of Dev. Bio., Stanford Univ. Sch. of Med., Stanford, CA; HHMI, Dept. of Mol. Bio. Genetics, Johns Hopkins Sch. Med., Baltimore, MD; Div. of Pulmonary and Critical Care Med., Johns Hopkins Univ. Sch. Med. Baltimore, MD.

323 **B109** *Characterization of a novel mouse mutant schlei with Sonic Hedgehog signaling and cilia defects*. **Kasey J. Basch**, Scott D. Weatherbee. Department of Genetics, Yale University, New Haven, CT, USA.

324 **B110** *AKAP11 modulates the neural tube patterning through the direct binding and the phosphorylation of Patched1 and Smoothened*. **KAZUSHI AOTO**, PAUL TRAINOR. Stowers Institute for Medical Research, Kansas city, MO, USA.

325 **B111** *Fat-Hippo signaling regulates the proliferation and differentiation of Drosophila optic neuroepithelia*. **Venugopala reddy Bommireddy venkata**, Cordelia Rauskolb, Kenneth D. Irvine. Howard Hughes Medical Institute, Waksman

Institute and Department of Molecular Biology and Biochemistry, Rutgers The State University of New Jersey, Piscataway NJ 08854 USA; Waksman Institute and Department of Molecular Biology and Biochemistry, Rutgers T.

326 **B112** *The effects of perturbing components of the Notch signaling pathway on neurotransmitter phenotype and calcium channel subunit expression in X. laevis*. **Molly J. McDonough**, Michael S. Harper, Margaret S. Saha. Dept. of Biol., College of William and Mary, Williamsburg, VA, USA.

327 **B113** *Requirements for SAO-1 Protein During C. elegans Development*. **Clare E. Howard**, Shields Ryan, Hale A. Valerie, Goutte Caroline. Dept. of Biology, Amherst College, Amherst, MA. USA.

328 **B114** *Functional Distinctions Between HOP-1 and SEL-12 Presenilins in C. elegans Embryos*. **Rebecca Resnick**, Valerie A. Hale, Caroline A. Goutte. Dept. of Biology, Amherst College, Amherst, MA. USA.

329 **B115** *Suppression of C. elegans aph-1 Mutants by Increasing mRNA Levels*. **Phoebe Arbogast**, Valerie A. Hale, Caroline Goutte. Dept. of Biology, Amherst College, Amherst, MA. USA.

330 **B116** *FGF signaling is required for parapineal formation*. **Joshua A. Clanton**, Kyle D. Hope, Joshua T. Gamse. Dept.of Biological Sciences, Vanderbilt University, Nashville, TN, USA.

331 **B117** *FGFR3 signaling induces a reversible senescence phenotype in chondrocytes similar to oncogene-induced premature senescence*. **Pavel Krejci**, Jirina Prochazkova, Jiri Smutny, Katarina Chlebova, Patricia Lin, Anie Aklian, Vitezslav Bryja, Alois Kozubik, William Wilcox. Inst. of Exp. Biol., Masaryk Univ., Brno, Czech Republic; Med. Genet. Inst., Cedars-Sinai Medical Center, Los Angeles, CA, USA; Flow-cytometry Fac., Cedars-Sinai Medical Center, Los Angeles, CA, USA; Dept. of Pediatrics, UCLA School of Medicine, Los Angel.

332 **B118** *A Drosophila Model for Fibrodysplasia Ossificans Progressiva (FOP)*. **Viet Q. Le**, Kristi Wharton. Dept. of MCB, Brown Univ., Providence, RI, USA.

333 **B119** *Regulation of vertebrate embryogenesis by the Exon Junction Complex core component Eif4a3*. **Daniel C. Weinstein**, Tomomi Haremaki, Jyotsna Sridharan, Shira Dvora. Biology Department, Queens College of the City University of New York, Flushing, NY, USA; Department of Developmental and Regenerative Biology, Mount Sinai School of Medicine, New York, NY, USA.

334 **B120** *In vivo imaging of retrogradely transported synaptic vesicle proteins in C. elegans neurons*. **Kausalya T. Murthy**, Jaffar Bhat, Sandhya P. Koushika. National Centre for Biological Sciences, TIFR, GKVK, Bellary Road, Bangalore, India.

335 **B121** *Control of cortical actin assembly and cadherin-catenin localization by GPCRs and the small GTPase Rac1*. **Maximiliano J. Jiménez-Dalmaroni**, Sumeda Nandadasa, Christopher Wylie. Division of Developmental Biology, Cincinnati Children's Hospital Research Foundation, Cincinnati, OH, USA; University of Cincinnati College of Medicine, Cincinnati, OH, USA.

336 **B122** *Arf6 recruits EPB41L5 for E-cadherin endocytosis during epithelial-mesenchyme transition*. **Mariko Hirano**, Shinichi Aizawa. Lab. for BVertebrate Body Plan, CDB, RIKEN Kobe, Japan.

337 **B123** *Sestrin is a feedback regulator of TOR that controls cell growth and metabolism and prevents age-associated pathologies*. **Jun Hee Lee**, Andrei V. Budanov, Eek Joong Park, Ethan Bier, Michael Karin. Laboratory of Gene Regulation and Signal Transduction, Departments of Pharmacology and Pathology, School of Medicine, UCSD, 9500 Gilman Drive, La Jolla, CA 92093-0723, USA; Section of Cell and Developmental Biology, UCSD, La Jolla, CA 92093–0349, USA.

Germ Cells and Gametogenesis

338 **B124** *Mechanism of global gene silencing and reactivation during oocyte growth at the one-cell stage after fertilization in mice*. **Kenichiro Abe**, Fugaku Aoki. Dept. of Integ. Biosci., Univ. Tokyo, Kashiwa, Chiba, Japan.

339 **B125** *Regulation of fetal germ cell development and pluripotency by the DM domain protein DMRT1*. **Tony Krentz**, Mark Murphy, Vivian Bardwell, David Zarkower. Dept. of Genetics, Cell Biology and Development, University of Minnesota, Minneapolis, MN 55455 USA.

340 **B126** *Roles of Natriuretic Peptide Receptor 2 and a Novel Gene in Skeletal Development, Ovulation, and Spermatogenesis*. **Krista A. Geister**, Michelle L. Brinkmeier, Sally A. Camper. Graduate Program in Cellular and Molecular Biology; Dept. of Human Genetics, University of Michigan Medical School, Ann Arbor, MI, USA.

341 **B127** *Src family kinase signaling during egg maturation and fertilization in a marine protostome worm*. **Stephen A. Stricker**. Dept. of Biology, Univ. of New Mexico, Albuquerque, NM.

342 **B128** *The mammalian Doublesex homolog DMRT1 controls the mitosis versus meiosis decision in males*. **David Zarkower**, Clinton K. Matson, Mark W. Murphy, Anthony D. Krentz, Shosei Yoshida, Vivian J. Bardwell. Department of Genetics, Cell Biology, and Development, University of Minnesota, Minneapolis, MN 55455; National Institute of Basic Biology, Okazaki, Aichi 444-8787 Japan.

343 **B129** *The RNA-binding protein Nanos2 is required to maintain spermatogonial stem cells.* **Aiko Sada**, Atsushi Suzuki, Hitomi Suzuki, Yumiko Saga. Dept. of Genetics., SOKENDAI., Mishima, Shizuoka, JAPAN; IRC., Yokohama National Univ., Hodogaya-ku, Yokohama, JAPAN; Dept. of Biological Sciences., Tokyo Univ., Bunkyo-ku, Tokyo, JAPAN; Division of Mammalian Development, NIG, Mishima, Shizuoka, JAPAN.

344 **B130** *Stage-Specific Expression of the Homeodomain Protein Cux1 in Sertoli Cells and Spermatids during Spermatogenesis*. **Tony N. Jelsma**, Melissa R. Kroll, Engela S. Viss, Jonathan Lamb, Joy Horstman, Alexander

Powell, Andrea VanWyk, Kaarlo Hinkkala, Aaron Taylor, Gregory VandenHeuvel. Dept. of Biology, Dordt College, Sioux Center, IA, USA; Dept. of Anatomy and Cell Biology, Univ. Kansas Med. Center, Kansas City KS, USA.

345 **B131** *Inhibitory action of Xenopus dicalcin on sperm-egg interaction during fertilization.* **Naofumi Miwa**, Motoyuki Ogawa, Yoshiki Hiraoka, Ken Takamatsu, Satoru Kawamura. Dept. of Physiol.,Toho Univ., Tokyo, Japan; Dept. of Med. Educ., Kitasato Univ., Kanagawa, Japan; Dept. of Anat., Keio Univ., Tokyo, Japan; Grad. Sch. Frontier Biosci., Osaka Univ., Osaka, Japan.

346 **B132** *Roles of hypoxic response genes in Drosophila primordial germ cell development*. **Elizabeth M. Asque**, Jo Anne Powell-Coffman, Clark R. Coffman. Department of Genetics, Development, and Cell Biology, Iowa State University, Ames, IA, USA.

347 **B133** *A crucial role for lipid phosphorylation in WntD-mediated primordial germ cell migration*. **Mark A. McElwain**, Dennis C. Ko, Michael D. Gordon, Roel Nusse. Department of Developmental Biology, Stanford University, Stanford CA, USA.

348 **B134** *Prenylation-deficient heterotrimeric G protein gamma subunits reveal GPCR-mediated signaling events in vivo*. **Tim Mulligan**, Steve Farber. Carnegie Inst., Baltimore, MD, USA.

349 **B135** *Hold On: Females Modulate Sperm Release in Drosophila melanogaster*. **Margaret C. Bloch-Qazi**. Dept. of Biol., Gustavus Adolphus College, St. Peter, MN, USA.

350 **B136** *Testes specific neurotransmitter transporter essential for male fertility in Drosophila melanogaster*. **Nabanita Chatterjee**, Janet Rollina, Christopher Bazinet. Dept Biological Sci, St John's Univ; Col Mt Saint Vincent, Riverdale, NY.

351 **B137** *Closing ring channels in the C. elegans gonad*. **Erin Jezuit**, Uta Wolke, Jim R. Priess. Dept. of Biology, Knox College, Galesburg, IL, USA; Basic Sciences Dept., Fred Hutchinson Cancer Research Center, Seattle, WA, USA.

352 **B138** *Trans-Generational Epigenetic Regulation in C. elegans Primordial Germ Cells*. **Hirofumi Furuhashi**, Teruaki Takasaki, Andreas Rechtsteiner, Tengguo Li, Hiroshi Kimura, Susan Strome, William G. Kelly. Grad. Sch. of Pharm. Sci., Tohoku Univ., Sendai, Miyagi, Japan; Dept. of MCD Biol., UCSC., Santa Cruz, CA, USA; Biol. Dept., Emory Univ., Atlanta, GA, USA; Grad. Sch. of Frontier Biosci., Osaka Univ., Suita, Osaka, Japan.

353 **B139** *Dicer interacts with the P-granule component GLH-1 in C. elegans*. **Karen L. Bennett**, T. J. McEwen, M. C. Jud, J. L. Marshall, J. A. Schisa, E. L. Beshore. MMI Dept, U Missouri, Columbia, MO &; Bio. Dept, Central Michigan University, Mt. Pleasant, MI.

354 **B140** *Regulation of motility in C. elegans sperm*. **Gillian M. Stanfield**. Department of Human Genetics, University of Utah, Salt Lake City, UT, USA.

355 **B141** *Regulation of C. elegans sperm motility by extracellular protease signaling*. **Joseph R. Smith**, Gillian M. Stanfield. Department of Human Genetics, University of Utah, Salt Lake City, UT, USA.

356 **B142** *Feeding and Mating are required for Ovarian Development and Egg Production in the Predaceous Minute Pirate Bug Orius pumilio*. **Paul D. Shirk**, Jeffrey P. Shapiro. Center for Medical, Agricultural, and Veterinary Entomology, Agricultural Research Service, U.S. Department of Agriculture, Gainesville, FL 32608.

357 **B143** *An ancient molecular circuit specifying multipotency*. **S. Zachary Swartz**, Celina E. Juliano, Tal Raz, Doron Lipson, Patrice Milos, Amro Hamdoun, Gary M. Wessel. MCB Dept., Brown University, Providence, RI, USA; Dept. of Cell Biology, Yale University School of Medicine, New Haven, CT, USA; Helicos Biosciences Corporation, Cambridge, Massachusetts, USA; Scripps Institution of Oceanography, UCSD, La Jolla, CA, USA.

358 **B144** *Germ line specification in the leech Helobdella robusta*. **Sung-Jin Cho**, Yvonne Vallès, David A Weisblat. Dept. of Mol. & Cell Biol., 385 LSA, University of California, Berkeley, CA 94720-3200, USA.; Centro Superior de Investigación en Salud Pública. Area de Génomica y Salud. Avda de Cataluña 21, 46020, Valencia, Spain.

Functional Genomics

359 **B145** *GXD: A Gene Expression Resource for Developmental Biologists*. **Constance M. Smith**, J H. Finger, T F. Hayamizu, I J. McCright, J T. Eppig, J A. Kadin, J E. Richardson, M Ringwald. Mouse Genome Informatics, The Jackson Laboratory, Bar Harbor, ME, USA.

L20 **B146** *Identification of the maternal transcriptome in the sea urchin egg*. **Silvia P. Sepulveda**, Charles B. Shuster. Dept. of Biology, New Mexico State University, Las Cruces, NM, USA.

361 **B147** *Gene Regulatory Network Model of Sea Urchin Ectoderm Formation*. **Enhu Li**, Eric H. Davidson. Biology Division, California Institute of Techonology, CA, USA.

362 **B148** *Transcriptomics during maternal-to-zygotic transition in the zebrafish: An mRNA-seq approach*. **Cecilia L. Winata**, Håvard Aanes, Chi Ho Lin, Kandhadayar G. Srinivasan, Serene Lee, Adrian Lim, Guillaume Bourque, Philippe Collas, Vladimir Korzh, Zhiyuan Gong, Peter Alestrøm, Sinnakaruppan Mathavan. Stem Cell Dev. Biol., Genome Inst. Sing., Singapore; Dept. Basic Sci. & Aquat. Med., Norweg. Sch. Vet. Sci., Norway; Comp. Math. Biol., Genome Inst. Sing., Singapore; Dept. Biochem., Univ. Oslo, Norway; Inst. Mol. Cell Biol., Singapore; Nat. Univ. Sing.,.

363 **B149** *Transposon-Mediated Insertional Mutagenesis In The Rat*. **Kenryo Furushima**, Chuan-Wei Jang, Ningna Xiao, Paul A. Overbeek, Richard R. Behringer. Dept. of Genetics, Univ. of Texas M.D. Anderson Cancer Center; Dept. of Mol. Cell. Biol., Baylor College of Medicine, Houston, TX, USA.

L21 **B150** *zTrap and NIGKOF: databases for gene trap, enhancer trap and knockout zebrafish*. **Koichi Kawakami**, Gembu Abe, Kazuhide Asakawa, Ryuichi Fukuda, Pradeep Lal, Akira Muto, Maximilliano Suster, Hitomi Takakubo, Akihiro Urasaki. Div. of Molec, Dev. Biol., Natl. Inst. of Genetics, Mishima, Japan; Dept. of Genetics, Sokendai, Mishima, Japan.

Poster and Exhibit Session 3

Sunday, August 8, 12 – 3 PM, with lunch ACC – Ballroom C

Author Presentation: 12-1:30 pm Odd number boards
1:30-3 pm Even number boards

Set up: Saturday, August 7, 5-8 PM Tear down: Sunday, August 8, 3-5 PM

Themes: Stem Cells and Regeneration, Molecular Medicine and Development, Development and Evolution, Late Abstracts (various themes)

Stem Cells and Tissue Regeneration

364 **B1** *Two different regenerations accomplish limb regeneration cooperatively*. **Satoh Akira**, Susan V. Bryant, David M. Gardiner. RCIS, Okayama Univ., Okayama, Japan; Dept. of Dev. & Cell Bio., UCI, CA, USA; Presto, JST, Japan.

365 **B2** *Diabetes Mellitus impairs limb regeneration as analyzed in adult Zebrafish.* **MIchael P. Sarras**, Ansgar Olsen, Robert Intine. Chicago Med. School, Rosalind Franklin Univ. North Chicago, IL, USA; Scholl College of Podiatric Medicine, Rosalind Franklin Univ. North Chicago, IL, USA.

366 **B3** *Genetic/epigenetic controls of gene expression during limb regeneration in Xenopus.* **Koji Tamura**, Tamae Maruoka, Akio Aruga, Takuya Higashidate, Hitoshi Yokoyama. Graduate School of Life Sciences, Tohoku University, Sendai 980-8578, Japan.

L22 **B4** *Analysis of imprinted X inactivation in in vitro induced extra-embryonic lineages*. **Kazuhiro Murakami**, Hitoshi Niwa. Lab. for Pluripotent Cell Studies, CDB, RIKEN, Japan.

368 **B5** *Analysis of the mechanisms that determine tail regenerative ability in Xenopus laevis tadpoles*. **Yuko Naora**, Kota Kaneko, Yuko Hishida, Taro Fukazawa, Takekazu Kunieda, Takeo Kubo. Dept. of Biol. Sci, Grad. Sch. of Sci., Univ. of Tokyo, Bunkyoku, Tokyo, JPN; RIKEN BRC, Tsukuba, Ibaraki, JPN.

369 **B6** *NaV-Mediated Sodium Transport is Required for Vertebrate Appendage Regeneration*. **Kelly Ai-Sun Tseng**, Wendy S. Beane, Joan M. Lemire, Alessio Masi, Michael Levin. Center for Reg. and Dev. Biology, Tufts Univ., Medford, MA, USA; Forsyth Institute, Boston, MA, USA.

370 **B7** *Satellite cells originate from the lateral plate mesoderm in Xenopus laevis*. **Randy Daughters**, Ying Chen, Jonathan M. Slack. Stem Cell Institute, Univ. of Minnesota, Minneapolis, MN, USA.

371 **B8** *Developmental Gene Activation in Tail Regeneration in the Lizard, Anolis carolinensis*. **Glenn J. Markov**, Rajani George, Nataliya Emmert, Michael Ammar, Walter L. Eckalbar, Juli Wade, Dale DeNardo, Alan Rawls, Jeanne Wilson-Rawls, Kenro Kusumi. School of Life Sciences, Arizona State Univ., Tempe, AZ, USA; Dept. of Psychology, Michigan State Univ., East Lansing, MI, USA; Dept. of Basic Medical Sciences, Univ. Arizona College of Medicine–Phoenix in partnership with Arizona State Univ., Phoenix, AZ, USA.

372 **B9** *Degeneration-regeneration dynamics in the zebrafish lateral line nerve.* **Rosario Villegas**, Alvaro Sagasti, Miguel L. Allende. Center for Genomics of the Cell, Universidad de Chile. Santiago, Chile.; Center for Genomics of the Cell, Universidad de Chile. Santiago, Chile.

373 **B10** *The role of matrix metalloproteinases in the repair of the Xenopus laevis pronephric kidney*. **Shoshoni T. Caine**, Kelly A. McLaughlin. Department of Biology, Tufts University, Medford, MA 02155.

374 **B11** *Finding the Ancestral Wound Healing Response*. **Timothy DuBuc**, Mark Martindale. Dept. of Zoo, Univ Hawaii, HI, USA.

L23 **B12** *Oocyte-type linker histone B4 is required for transdifferentiation of somatic cells in vivo*. **Nobuyasu Maki**, Rinako Suetsugu-Maki, Shozo Sano, Kenta Nakamura, Osamu Nishimura, Hiroshi Tarui, Katia Del Rio-Tsonis, Keita Ohsumi, Kiyokazu Agata, Panagiotis A. Tsonis. Dept. of Biol, Univ. of Dayton, Dayton, OH, USA; RIKEN CDB, Kobe, Hyogo, Japan; Dept. of Biophys., Kyoto Univ., Kyoto, Kyoto, Japan; Dept. of Zoology, Miami University, Oxford, OH, USA; Div. of Biol. Sci., Nagoya Univ., Nagoya, Aichi, Japan.

376 **B13** *Grainy head phosphorylation is essential for wound-dependent regeneration of an epidermal barrier but dispensable for embryonic barrier development*. **Myungjin Kim**, William McGinnis. Section of Cell and Developmental Biology, University of California, San Diego, 9500 Gilman Drive, La Jolla, CA 92093-0349, USA.

377 **B14** *Nerve-dependent gene expression in the epidermis of regenerating salamander limbs*. **James R. Monaghan**, Ashley W. Seifert, Randal Voss, David M. Gardiner, Malcolm Maden. Dept. of Biol., Univ. of Florida, Gainesville, FL; Dept. of Biol., Univ. of Kentucky, Lexington, KY; Dept. of Dev. and Cell Biol., Univ. of California Irvine, Irvine, CA.

378 **B15** *Epiplakin1 (Eppk1) marks the cholangiocytes and transit amplifying cells in injured liver*. **Akira Matsuo**, Tetsu Yoshida, Rika Miki, Sakuhei Fujiwara, Kazuhiko Kume, Shoen Kume. Dept. of Stem Cell Biology, IMEG., Kumamoto Univ. Kumamoto, Japan; Global COE, Kumamoto Univ., Japan; Dept. of Anat., Biol. and Med. (Dermatology), Fac. of Med., Oita Univ., Oita, Japan.

L24 **B16** *Identification of genes regulating neoblast self-renewal and differentiation in planarians*. **Daniel E. Wagner**, Peter W. Reddien. Whitehead Institute, MIT, Cambridge, MA, USA; Howard Hughes Medical Institute.

380 **B17** *Numb plays a critical role in satellite cell mediated muscle repair.* **Rajani George**, Brian J. Beres, Erik Rogers, Jeramy Bullis, Alan Rawls, Jeanne Wilson-Rawls. School of Life Sciences, Arizona State University Tempe AZ USA; Basic Medical Sciences, Univ. of Arizona College of Medicine -Phoenix.

381 **B18** *Homology of Tβ-4 and VEGF in Xenopus, Axolotl, and Short-toes*. **Jack G. Windsor**, Behnaz S. Mahmoudi, Neetha Santosh, Fengyu Song. Department of Biology, Indiana University School of Science, Indianapolis, IN, USA; Department of Oral Biology, Indiana University School of Dentistry, Indianapolis, IN, USA.

L25 **B19** *Planarian regeneration involves distinct stem cell responses to wounds and tissue absence*. **Danielle Wenemoser**, Peter W. Reddien. Whitehead Institute, Cambridge, MA, USA; HHMI and Department of Biology, MIT, Cambridge, MA, USA Dept. of Animal; Behaviour, Inst. of Biology, Freie Universitaet Berlin, Berlin, Germany.

383 **B20** *H,K-ATPase-mediated ion transport regulates anterior patterning in regenerating planaria*. **Wendy S. Beane**, Junji Morokuma, Mike Levin. Center for Regenerative and Dev. Biol., Tufts Univ., Medford, MA, USA.

384 **B21** *Long-range neural and gap junction protein-mediated cues control polarity during planarian regeneration*. **Junji Morokuma**, Nestor J. Oviedo, Peter Walentek, Ido P. Kema, Man Bock Gu, Joo-Myung Ahn, Jung Shan Hwang, Takashi Gojobori, Michael Levin. Cntr. for Regen. & Dev. Biol. (TCRDB) & Dept. of Biol., Tufts Univ., Medford, MA, U.S.A.; Dept. of Pathol. & Lab. Med., Univ. Med. Cntr., Univ. of Groningen, Groningen, The Netherlands; Colg. of Life Sci. & Biotech., Korea Univ., Seoul, Republic of Korea; Cntr. for Info. Biol. & DNA Data Bank of Japan, Nat'l Inst. of Genet., Mishima, Shizuoka, Japan; Sch. of Nat. Sci., Univ. of California, Merced., Merced, CA, U.S.A.; Inst. of Zool., Univ. of Hohenheim, Stuttgart, Germany.

385 **B22** *Combinational differentiation by environmental manipulation and transgene with NIA ES cell bank*. **Yuki Nakatake**, Minoru Ko. Lab. of Genet., NIA, NIH, Baltimore, MD, USA.

386 **B23** *Investigating piwi function in Hydra stem cells*. **Celina Juliano**, Robert Steele, Haifan Lin. Dept. of Cell Biology, Yale University, New Haven, CT, USA; Dept. of Biological Chemistry, UC-Irvine, Irvine, CA, USA.

387 **B24** *Serpent, Suppressor of Hairless and U-shaped are critical regulators of hedgehog niche expression and prohemocyte maintenance during Drosophila hematopoiesis*. **Tsuyoshi Tokusumi**, Yumiko Tokusumi, Jessica Stoller, Robert A. Schulz. Department of Biological Sciences, University of Notre Dame, Notre Dame, IN, USA.

388 **B25** *Establishment of novel chicken embryonic stem cells capable of differentiating into germ cells*. **Nikiharu Nakano**, Yuji Fukushima, Kenjiro Arisawa, Masaki Nishimoto, Ryo Ezaki, Shuichi Furusawa, Haruo Matsuda, Hiroyuki Horiuchi. Grad. Sch. Biosphere Sci., Hiroshima Univ., Hiroshima, Japan; Hiroshima Pref. Inst. Ind. Sci. Tech., Hiroshima, Japan.

389 **B26** *Patterning of blood vessels is controlled by neural progenitor cells in the central nervous system*. **Teruaki Takahashi**, Ryosuke Tadokoro, Yuta Takase, Yoshiko Takahashi. Bioscience, NAIST, Nara, Japan.

390 **B27** *Regulation of the CamkII node determines proliferative potential of growth plate chondrocytes*. **Andrew T. Dudley**, Yuwei Li, Molly J. Ahrens, Amy Wu, Jennifer Liu. Dept. of Biochemistry, Molecular Biology and Cell Biology, Northwestern University, Evanston, IL, USA.

L26 **B28** *Cell-autonomous acquisition of motor pool identities from embryonic stem cells*. **Mirza Peljto**, Jeremy S. Dasen, Esteban O. Mazzoni, Thomas M. Jessell, Hynek Wichterle. Dept. of Path. and Cell Biol., Neurol., and Neurosci., Columbia Univ., New York, NY, USA; Dept. of Neurosci., and Biochem. and Mol. Biophys., Columbia Univ., New York, NY, USA; Dept. of Phys. and Neurosci., New York Univ., New York, NY, USA; Howard Hughes.

392 **B29** *Epicardial spindle orientation controls cell entry into the myocardium*. **Mingfu Wu**, Andy Hall, Ivy Lee, Kate Luby-Phelps, Michelle Tallquist. Molecular Biology, UT Southwestern Medical Center; Cell Biology, UT Southwestern Medical Center; Correspondence to Michelle D. Tallquist (michelle.tallquist@utsouthwestern.edu), University of Texas Southwestern Medical Center, Molecular Biology, Dallas, TX.

Molecular Medicine and Development

L27 **B30** *RFX6: novel neonatal diabetes candidate gene*. **Esther J. Pearl**, Zeina Jarikji, Marko E. Horb. Institut de rechereches cliniques de Montreal, Montreal, QC, Canada; Department de Medicine, Universite de Montreal, Montreal, QC, Canada; Montreal Diabetes Research Center, Montreal, QC, Canada.

394 **B31** *Mechanical forces from the fetal breathing-like movements are transduced via Satb1 and Myb during mouse and human lung organogenesis*. **Boris Kablar**, Dijana Gugic, Asja Miletic, Mirna Saraga-Babic, Boris Kablar. Dept. of Anat. & Neurobiol., Dalhousie Univ., Halifax, NS, Canada; Pres. address: Dept. of Biol., Frostburg State Univ., MD, USA; Dept. of Hist. & Embryol., Univ. of Split, Croatia; Dept. of Pathol., Forensic Med. & Cytology, Univ. of Split, Croatia.

395 **B32** *A developmental switch yiuelds a treatment for Beta Thalassemias and sickle cell disease*. **Robert Broyles**, Visar Belegu, Austin Roth, Robert Floyd, Emily Curry, Marie Trudel. The Sickle Cell Cure Foundation, Inc.; Univ. Oklahoma Health Sciences Ctr.; Johns Hopkins Univ. Med. Inst.; Oklahoma Med. Research Fndtn.; IRC Montreal.

L28 **B33** *Wilms Tumor 1 contributes to the mesothelium of the anterior and posterior diaphragm and is associated with a variety of diaphragmatic hernia phenotypes*. **Kate G. Ackerman**, Laurel Baglia, Xiaoyun Zhang, William Pu. Department of Biomedical Genetics, University of Rochester, NY; Department of Pediatrics, University of Rochester, NY; Department of Cardiology, Children's Hospital, Boston, MA.

397 **B34** *Heterotaxin: a novel TGF-beta signaling inhibitor identified in a multi-phenotype profiling screen in Xenopus embryos*. **Nanette M. Nascone-Yoder**, Michael Dush, Andrew McIver, Meredith Parr, Douglas Young, Julie Fisher, Marlene Hauck, Alexander Deiters. Dept. of Molecular Biomedical Sciences, College of Veterinary Medicine; Dept. of Clinical Science, College of Veterinary Medicine; Dept. of Chemistry, North Carolina State University, Raleigh, NC.

398 **B35** *Transmembrane voltage gradient in GlyR-expressing niche cells controls behavior of neural crest derivatives in vivo*. **Douglas Blackiston**, Dany Adams, Joan Lemire, Michael Levin. Dept. of Biol., Tufts University., Medford, MA, USA.

399 **B36** *Effects of Methyl Mercury (MeHg) on Neural Development in X. laevis and in Regenerating Planaria*. **Maitreyi D. Nagarkar**, Margaret S. Saha. Dept. of Biology, College of William and Mary, VA, USA.

400 **B37** *Using zebrafish to understand the neurodevelopment role of susceptibility genes for autism spectrum disorder*. **Brian Key**. School of Biomedical Sciences, University of Queensland, Australia.

L29 **B38** *Dynamic Expression of Signaling Molecules in Mouse Cleft Palate Induced by Retinoic Acid*. **Jing Xiao**, Wei Cong, Lu Shen, Ru Wang, Fu Wang, Enxin Zhu. Dept. of Oral Biol., Dalian Medical University., Dalian, 116044, China.

402 **B39** *Regulatory elements controlling the expression of short-stature (Shox) genes during development*. **John A. Cobb**, Jessica Rosin. Department of Biological Sciences, University of Calgary, Alberta, Canada.

Development and Evolution

403 **B40** *Functional Analysis of Developmental Genes in Aedes aegypti, an Emerging Model for Vector Mosquito Development*. **Anthony Clemons**, David Severson, Molly Duman Scheel. Biol. Sci. and EIGH, Univ. of Notre Dame, Notre Dame, IN; Med. Molec. Gen., IUSM, South Bend, IN.

404 **B41** *Identification of a Divergent Notch Pathway Delta Ligand in the Segmentation Clock of the Reptile, Anolis carolinensis*. **Walter L. Eckalbar**, Carlos Infante, Nataliya Emmert, Jonathan Losos, Alan Rawls, Jeanne Wilson-Rawls, Kenro Kusumi. School of Life Sciences, Arizona State Univ., Tempe, AZ, USA; Dept. of Organismic & Evolutionary Biol., Museum of Comparative Zoology, Harvard Univ., Cambridge, MA, USA; Dept. of Genetics, Univ. of Georgia, Athens, GA, USA; Dept. of Basic Medical Sciences, Univ. of Arizona College of Medicine–Phoenix in partnership with Arizona State Univ., Phoenix, AZ, USA.

405 **B42** *Conserved functions of PAX3/7 during evolution.* **Shinichiro Hayashi**, Bernadette Drayton, Frédéric Aurade, Didier Rocancourt, Margaret Buckingham, Frédéric Relaix. UMR S 787 - Groupe Myologie, INSERM - UPMC-Paris VI, Paris, France; CNRS URA 2578, Department of Developmental Biology, Pasteur Institute, Paris, France.

406 **B43** *In search of functional conservation for the animal epidermal integrity gene grainyhead in the fungus Neurospora crassa*. **Adam C. Pare**, Stuart Brody, William McGinnis. Dept. of Biology, UC San Diego, La Jolla, CA, USA.

407 **B44** ***Withdrawn***

408 **B45** *ASNET: Actin-based network structure in the tunic of ascidian larva*. **Kohji Hotta**, Hiroshi Terakubo, Mitsuru Nakamura, Yoko Nakajima, Yasunori Sasakura, Takeo Horie, Alu Konno, Hiroki Takahashi, Kazuo Inaba, Kotaro Oka. Keio Univ.Yokohama, Kanagawa 223-8521, Japan; University of Tsukuba, Shimoda, Shizuoka 415-0025, Japan; NIBB, Okazaki, Aichi 444-8585, Japan.

409 **B46** *Notch and Wnt signaling in axial elongation in the mollusc embryo Ilyanassa obsoleta*. **Ayaki Nakamoto**, Christy A. Harrison, Maey M. Gharbiah, Lisa M. Nagy. Department of Molecular and Cellular Biology, University of Arizona, Tucson, AZ, 85721.

410 **B47** *Lineage analysis of ectoderm and nervous system in the polychaete annelid Capitella teleta*. **Neva P. Meyer**, Michael J. Boyle, Mark Q. Martindale, Elaine C. Seaver. Kewalo Marine Lab, Univ. of Hawaii, Honolulu, HI, USA.

411 **B48** *Evolution of Neural Induction in Deuterostomes*. **Doreen D. Cunningham**, Christopher J. Lowe, Elena S. Casey. Biology Dept., Georgetown Univ, Washington DC, USA; Hopkins Marine Station, Biology Dept, Standford Univ, Pacific Grove, CA, USA.

412 **B49** *achaete-scute class proneural gene homologs promote neural development in the cnidarian sea anemone Nematostella vectensis.* **Michael Layden**, Michiel Boekhout, Martindale Q. Mark. Univ. of Hawaii, Manoa, HI, USA; Utrecht Univ., Utrect, Netherlands.

413 **B50** *Subfunctionalization of neural plate border genes by enhancer modification*. **Aaron Garnett**, Tyler Square, Daniel M. Medeiros. Department of Ecology and Evolutionary Biology, University of Colorado, Boulder, CO, USA.

414 **B51** *Developmental switch of primary sensory system from Rohon-Beard cells to Dorsal root ganglia*. **Kiyoshi Kawakami**, Hiroshi Yajima, Makoto Suzuki, Haruki Ochi, Keiko Ikeda, Shigeru Sato, Hajime Ogino, Naoto Ueno.

Div. of Biol. Centr. Mol. Med. JMU, Tochigi, Japan; Div. of Morpho. NIBB. Aichi, Japan; Grad. Sch. Biol. Sci. NAIST, Nara, Japan.

415 **B52** *Characterization of Late Emerging Trunk Neural Crest Cells in the Turtle Trachemys scripta*. **Judith A. Cebra-Thomas**, James Robinson, Melinda Yin, James McCarthy, Sonal Shah, Scott F. Gilbert. Dept. of Biology, Millersville University, Millersville, PA, USA; Dept. of Biology, Swarthmore College, Swarthmore, PA, USA.

416 **B53** *Brd2 knock-down in zebrafish results in morphological defects, abnormal patterns of mitosis and apoptosis, and misregulation of midbrain/hindbrain gene markers.* **Giana J. Bistany**, Eliza Fradkin, Heather Melville, Catharine Comstock, Angela J. DiBenedetto. Dept of Biol., Villanova Univ., Villanova, PA, USA.

417 **B54** *Integrative imaging of the developing opossum cochlea.* **Lisa Noelle Cooper**, Karen E. Sears. Dept. of Animal Bio., Univ. of Illinois, Urbana, IL

418 **B55** *A New Model for the Evolution of the Vertebrate Jaw*. **Daniel M. Medeiros**, Jacob Doherty, Maria V. Cattell, Tatjana Sauka-Spengler, Marianne Bronner-Fraser, Feiqiao Yu, Robert Cerny. EBIO Dept., Univ. of Colorado, Boulder, CO, USA; Div. of Biol., CALTECH, Pasadena, CA, USA; Dept. of Zool., Charles University in Prague, Czech Republic.

419 **B56** *The role of neural crest progenitor population specification and proliferation dynamics in establishing species-specific differences in jaw size.* **Jennifer L. Fish**, Rich A. Schneider. Dept. of Orthopaedic Surgery, University of California at San Francisco, San Francisco, CA.

420 **B57** *Evolution of vertebrate skeletal myogenesis: insights from the cyclostome lamprey*. **Rie Kusakabe**, Shigehiro Kuraku, Shigeru Kuratani. Dept. Biol., Grad. Sch. Sci., Kobe Univ., Japan; Lab. for Evol Morph., CDB, RIKEN, Japan; Dept. Biol., Univ. of Konstanz, Germany.

421 **B58** *Evolutionary conservation of the role of Sox6 in terminal differentiation of skeletal muscle*. **Minhan L. Dinh**, Yao Dong, Nobuko Hagiwara. Dep. of Internal Med., Univ. Calfornia, Davis, CA.

422 **B59** *Lrp4 and the Mammalian Neuromuscular Junction*. **Andrea M. Gomez**, Steven J. Burden. Molecular Neurobiology Program, New York University Langone Medical Center, New York, NY, USA.

423 **B60** *Evidence for a rudimentary colon in the elasmobranch, Leucoraja erinacea*. **Nicole A. Theodosiou**, Alyssa Simeone. Department of Biological Sciences, Union College, Schenectady, NY, USA.

424 **B61** *Evolution of Pancreatic Endo- and Exocrine Cells in Deuterostomes*. **Andrew L. Verardo**, Elena Casey. Dept. of Biol., Georgetown Univ., Washington DC.

425 **B62** *Embryonic origin of osteoblasts in scales and fins of medaka fish*. **Atsuko Shimada**, Toru Kawanishi, Keiji Inohaya, Hiroyuki Takeda. Dept. of Biol. Sci., Sch. Sci., Univ. of Tokyo., Tokyo, Japan; Dept. of Biol. Info., Tokyo Inst. of Tech., Yokohama, Japan.

426 **B63** *Gcm2 enhancers specific for the skin surface have contributed to the evolution of the ionocytes rich in proton pomp in zebrafish*. **Takanori Shono**, Tsutomu Miyake, Masataka Okabe. Dept. of Anat., Sch of Med., Jikei Univ., Tokyo, Japan.

427 **B64** *Gata and bHLH factors form a conserved regulatory circuit for deuterostome immunocyte development.* **Cynthia Messier-Solek**, Paola Oliveri, Jonathan P. Rast. Dept. of Mol. & Cell. Biol., Sunnybrook Res. Institute, Toronto ON Canada; Dept. of Med. Biophysics, Univ. of Toronto, Toronto ON Canada; Dept. of Genetics, Evolution and Environment, Univ. College London, London UK.

428 **B65** *y and e contribute to abdominal pigmentation variation in Drosophila ananassae*. **Taruna Aggarwal**. Dept. of Evolution and Ecology, UC Davis, CA, USA.

429 **B66** *Ambystoma maculatum and Oophila ambystomatis: a proposed model system for investigating oxygen sensing during vertebrate development.* **Nina Joffe**, Matthew Springer, Julie Drawbridge. Dept. of Biology, Rider University, Lawrenceville, NJ, USA.

430 **B67** *Anthropogenic pollution of spawning ponds as an evolutionary factor affecting the development of frog embryos*. **David R. Aguillon-Gutierrez**, Elena A. Severtsova. Dept. of Evolutionary Biology, Lomonosov Moscow State University. Moscow, Russia.

431 **B68** *Molecular basis of development and diversification of beetle horn.* **Teiya Kijimoto**, Justen Andrews, Armin P. Moczek. Department of Biology, Indiana University, Bloomington, IN, USA.

L30 **B69** *Early Chordate Origins of the Vertebrate Second Heart Field*. **Lionel Christiaen**, Alberto Stolfi, T. Blair Gainous, John J. Young, Alessandro Mori, Michael Levine. CIG, MCB dept, UC Berkeley, Berkeley, CA, 94709; Biology Dept, NYU, New York, NY, 10003.

L31 **B70** *Detection of post-transcriptional components in muscle-like cells of the electric fish S. macrurus.*. **Yihua Leng**, Graciela Unguez. Dept. of Biol., New Mexico State University, Las Cruces, NM, USA.

L32 **B71** *Liposome-mediated Uptake of Isolated Chloroplasts by Insect Cells: Can Animal Cells Have Chloroplasts?* **Yang Zhang**, Hongjun Su, Meimei Yu, Hang Fu, Rose Zhang. HKU-Pasteur research centre,The university of Hong Kong, Hong Kong,China; Department of biochemistry, Sun Yat-sen University, Guangzhou,China; The Key Laboratory of Gene Engineering of Ministry of Education, Guangzhou,China.

L33 **B72** *Evolutionary Origin of the Otx2 Enhancer for its Expression in Visceral Endoderm*. **Daisuke Kurokawa**, Tomomi Ohmura, Hajime Ogino, Masaki Takeuchi, Fumitaka Inoue, Yoko Suda, , Kazuki Nakao, Shinichi Aizawa. Lab. for Vertebrate Body Plan., Center for Developmental Biology, RIKEN Kobe, Kobe, JAPAN; Misaki Marine Biological

Station., Tokyo Univ., Miura, Kanagawa, JAPAN; Lab. for Animal Resources and Genetic Engineering., Center for Developmental Biology, RIKEN.

L34 **B73** *Expression Pattern of SOX9 and AMH in Gonads of the Sea Turtle Lepidochelys olivacea: A Species with Temperature-Dependent Sex Determination*. **Veronica Diaz-Hernandez**, Alejandro Marmolejo-Valencia, Horacio Merchant-Larios. Facultad de Medicina. Dept. de Embriologia. UNAM., Mexico City, Mexico; Dept Biol Cel y Fisiol, Inst Invest Biomed. UNAM., Mexico City, Mexico.

L35 **B74** *Hedgehog signaling following wounding in planarian regeneration*. **Sylvain W. Lapan**, Peter W. Reddien. Whitehead Institute for Biomedical Research, MIT, Cambridge, MA; Howard Hughes Medical Institute.

L36 **B75** *A Bmp/Admp regulatory circuit controls maintenance and regeneration of dorsal-ventral polarity in planarians*. **Michael Gavino**, Peter W. Reddien. Whitehead Institute for Biomedical Research, Cambridge, MA, USA; Department of Biology, MIT, Cambridge, MA, USA.

Education

L37 **B76** *Student Active-Science: Using a Case Study Approach to Teach Developmental Biology*. **Frances Rowe**. Biological Sciences Department, Edgewood College, Madison, Wisconsin, USA.

L38 **B77** *ACDB: Database for Ascidian Chemical Genomics*. **Yuichiro Hira**, Jun Terai, Mitsuru Nakamura, Etsu Tashiro, Masaya Imoto, Kotaro Oka, Kohji Hotta. Department of Biosic. and Infomatics Faculty of Sci. and Tech. Keio Universtiy.

Cell Motility and Guidance

L39 **B78** *Spatial and temporal targeting of GFP expression in zebrafish using combined in vivo electroporation and Gal4-based enhancer trap transgenic lines*. **John H. Horne**, Kenric J. Hoegler, Michael D. Colarusso. Department of Biology, Pace University, Pleasantville, NY.

L40 **B79** *Identification of a herring (Clupea harengus) sperm activating protein (SAP) homolog in zebrafish (Danio rerio).* **Zachary J. Harrison**, Deborah D. Ricker, Jeffrey P. Thompson. Dept. of Biological Sciences, York College of Pennsylvania, York, PA, USA.

L41 **B80** *Computational modelling of pLLp migration*. **Ajay B. Chitnis**, Damian Dalle-Nogare, Swetha Rao. Program in Genomics of Development, NICHD, NIH, Bethesda, MD USA.

Cell Fate Specification

L42 **B81** *Investigating the role of the Hippo signaling component merlin in trophectoderm/inner cell mass specification*. **Katie Cockburn**, Janet Rossant. Program in Developmental & Stem Cell Biology, The Hospital for Sick Children, Toronto, ON, Canada; Dept. of Molecular Genetics, University of Toronto, ON, Canada.

Cell Proliferation

L43 **B82** *Dmbx1 coordinates cell cycle exit and differentiation in the zebrafish retina*. **Loksum Wong**, Vincent Tropepe. Dept. of Cell & Systems Biology, University of Toronto, Toronto, ON, Canada.

L44 **B83** *Role of Arabidopsis bHLH Transcription Factor SPATULA in cell proliferation in the Root Apical Meristem*. **Srilakshmi Makkena**, Rebecca S. Lamb. Department of Plant Cellular and Molecular Biology, The Ohio State University, Columbus, OH, USA.

Intracellular Signaling Pathways

L45 **B84** *Developmental regulation and tissue patterning of muscles by Shh in vertebrate limbs*. **Jimmy Hu**, Edwina McGlinn, Brian Harfe, Gabrielle Kardon, Cliff Tabin. Department of Genetics, Harvard Medical School, Boston MA, 02115, USA; Department of Molecular Genetics and Microbiology, The Genetics Institute, University of Florida, Gainesville, FL 32610, USA.; Department of Human Genetics, University of Utah, Salt La.

L46 **B85** *Multiple BMP pathways regulate sympathetic nervous system development*. **Yuka Morikawa**, Ahmet Zehir, Chuxia Deng, Michael D. Schneider, Yuji Mishina, Peter Cserjesi. Dept. Cell and Molecular Biology, Tulane Univ., New Orleans, LA; Mammalian Genetics Section, NIDDK, NIH, Bethesda, MD; Imperial College London, Faculty of Medicine, London, UK; Dept. Biologic and Materials Sciences, Univ. Michigan, Ann Arbor, MI; Dept. Pa.

L47 **B86** *Transient nuclear localization of intersectin (itsn1) observed during Xenopus laevis development*. **Caroline G. Coatney**, Judith M. Thorn. Dept. of Biology, Knox College, Galesburg, IL, USA.

L48 **B87** *Fgf4 and Fgf8 Comprise the Wavefront Signal During Somitogenesis*. **L. A. Naiche**, N. Holder, M. Lewandoski. National Cancer Inst., Frederick, MD.

Patterning and Transcription Factors

L49 **B88** *Otx1 and Otx2 functions in forebrain and midbrain development*. Yusuke Sakurai, Daisuke Kurokawa, Hiroshi Kiyonari, Eriko Kajikawa, Yoko Suda, **Shinichi Aizawa**. Lab. for Vertebrate Body Plan, CDB, RIKEN, Kobe, Hyogo, Japan; LARGE, CDB, RIKEN, Kobe, Hyogo, Japan; Misaki Marine Biological Station, Univ. of Tokyo, Tokyo, Japan.

L50 **B89** *Chemical pretreatment of growth plate cartilage increases immunofluorescence sensitivity*. **Sarah Romereim**, Molly J. Ahrens, Andrew T. Dudley. Department of Biochemistry, Molecular Biology and Cell Biology, Northwestern University.

L51 **B90** *A systems approach reveals that the locomotive systems development and homeostasis network*. **Asahara Hiroshi**. Dept. of Systems BioMedicine, Nat. Res. Inst. for Child Health and Dev., Tokyo, Japan; Dep. of Mol. Exp. Med., The Scripps Research Inst., La Jolla, CA.

Germ Cells and Gametogenesis

L52 **B91** *Roles of the endocytic pathway in the polarized transport and cortical anchoring of germ cell determinants in the Drosophila oocyte*. **Nakamura Akira**, Kazuki Matsuda, Yasuko Kato, Kazuko Hanyu-Nakamura, Tsubasa Matsuda. Lab. for Germline Dev., RIKEN CDB, Kobe, Japan.

L53 **B92** *Analysis of reproductive mode of the triploid planarian*. **Ayako Chinone**, Hirotsugu Ishizu, Kazuya Kobayashi, Midori Matsumoto. Dept. of Bioscis. and Informatics., Keio Univ., Yokohama, JPN; Graduate school of Medicine, Keio Univ., Tokyo, JPN; Center for Integrative Medical Research, School of Medicine, Keio Univ., Tokyo, JPN.

L54 **B93** *Edc3 is Required for oskar RNP Transport and Translational Control in the Drosophila oocyte*. **Yasuko Kato**, Hannah Long, Akie Tanigawa, Kaori Shinmyozu, Akira Nakamura. Lab. for Germline Dev.; Mass Spec. Analysis Unit, RIKEN CDB, Kobe, Japan.

L55 **B94** *Expression of a testis-speciﬁc form of cerebroside sulfotransferase (CST), a gene essential for spermatogenesis, is regulated by BORIS*. **Teruhiko Suzuki**, Natsuki Kosaka-Suzuki, Dong-Mi Shin, Jeongheon Yoon, Elena Pugacheva, Herbert C. Morse III, Dmitri Loukinov, Victor Lobanenknov. Laboratory of Immunopathology, National Institute of Allergy and Infectious Diseases, NIH, Rockville, MD, USA.

L56 **B95** *The effects of insulin and glutathione on spermatogenic cyst maturation in vitro*. **Peta-Gay Ricketts**, Manfred Minimair, Angela V. Klaus. Seton Hall University.

Early Embryo Patterning

L57 **B96** *A novel technique for measuring extracellular half lives of secreted proteins in living zebrafish embryos*. **Katherine W. Rogers**, Patrick Mueller, Alexander F. Schier. Department of Molecular and Cellular Biology, Harvard University, Cambridge, MA USA.

L58 **B97** ***Withdrawn***

L59 **B98** *The role of preMBT transcription in Xenopus development*. **Jennifer Skirkanich**, Guillaume Luxardi, Jing Yang, Laurent Kodjabachian, Peter Klein. Department of Medicine, University of Pennsylvania, Philadelphia, PA, USA; Institut de Biologie du Developpement de Marseille Luminy, CNRS-Universite de la Mediterranee, Marseille, France; Nationwide Children's Hospital, Columbus, OH, USA; Equal contribut.

L60 **B99** *A formal model of early mouse yolk sac vasculogenesis.*. **Jerry Rhee**, Philip Iannaccone. Dev. Biol. Dept., Children's Memorial Research Center; Dept of Pediatrics, Feinberg School of Medicine, Northwestern University.

L61 **B100** *Spatiotemporal analysis of GABA (A) receptors in the developing Zebrafish with a fliptrap insertion*. **Rasheeda Hawk**, Eduardo Rosa Molinar, Isabella Kim, Debbie Thomas. California Institute of Technology, Pasadena CA, USA; University of Puerto Rico, Rio Piedras, San Juan PR, USA.

L62 **B101** *Yy1 is Required for Gastrulation in the Mouse*. **Mary C. Trask**, Jacob Hiller, Kimberly D. Tremblay, Jesse Mager. Department of Veterinary and Animal Sciences, University of Massachusetts Amherst, MA USA.

Morphogenesis

L63 **B102** *FGFR inhibitor affect proliferation of tail epidermal cells and causeneural tube closure defect in ascidian Ciona intestinalis*. **Terai Jun**, Suzuki Mayu, Imoto Masaya, Tashiro Esu, Oka Kotaro, Hotta Kohji. Keio Univ.Yokohama, Kanagawa 223-8521, Japan.

L64 **B103** *Rac1 is required for cardiomyocytes differentiation*. **Radwan Abu Issa**, Vesa Kaartinen. Department of Natural Sciences University of Michigan-Dearborn; Biologic & Materials Sciences, University of Michigan Ann Arbor.

L65 **B104** *Bone morphogenetic proteins (BMPs) control neural tube closure by regulating apicobasal polarity*. **Dae Seok Eom**, Smita Amarnath, Seema Agarwala. Inst. for Cell and Molecular Biology; Inst. for Neuroscience; Section of Neurobiology, The University of Texas at Austin, TX, USA.

L66 **B105** *C. elegans mutants with the short and the disorganized pharynx phenotypes*. **Pliny A. Smith**, Alexandra Charron, Yama Sadozai, Lynn Switaj, Anneliese Szutenbach, Pliny A. Smith. Dept. of Biology, Lake Forest College, Lake Forest, IL, USA.

L67 **B106** *Mammary Gland Morphogenesis is Altered Following Disruptions in Reelin Signaling*. **Elvira Khialeeva**, Ellen M. Carpenter. Dept. of Psychiatry, UCLA Sch of Med, LA, CA, USA.

L68 **B107** *Quantitative analysis of ascidian tailbud stage embryo at single cell level by constructing 3D Virtual Embryo*. **Mitsuru Nakamura**, Jun Terai, Kohji Hotta, Kotaro Oka. Keio University Faculty of Science and Technology.

L69 **B108** *Ugly duckling, SANT domain containing protein, regulates convergence and extension movements and heart formation during zebrafish gastrulation*. **Atsushi Sawada**, Chunyue Yin, Lilianna Solnica-Krezel. Dept. of Dev. Biol., Washington Univ., St. Louis, MO, USA; Dept. of Biochemistry and Biophysics, Univ. of California, San Francisco, CA, USA.

L70 **B109** *Multiple TGFβ signaling pathways cooperate to instruct asymmetric cardiac morphogenesis*. **Kari Baker**, Nathalia Holtzman, Rebecca D. Burdine. Princeton University, Queens College CUNY.

Gene Regulation

L71 **B110** ***Withdrawn***

L72 **B111** *Analysis of an evolutionarily conserved stress network*. **Aleksandra P. Kuzmanov**, Natalia V. Kirienko, David S. Fay. Dept. of Mol. Biol., Univ. of Wyoming, Laramie, WY, USA.

L73 **B112** *Electrical activity-dependent regulation of muscle gene expression in the electric organ after chronic stimulation of live Sternopygus macrurus*. **Robert Gueth**, Ahmad S. Manshad, Evan E. Salazar, Graciela A. Unguez. Dept of Biology; Dept of Computer Science, New Mexico State University, Las Cruces, NM, USA.

L74 **B113** *Bmp-signaling regulates myocardial differentiation from cardiac progenitors through a miRNA-mediated mechanism.* **Jun Wang**, Margarita Bonilla-Claudio, Jue Zhang, Yan Bai, Zheng Huang, Brian Black, Fen Wang, James Martin. Institute of Biosciences and Technology, Texas A&M System Health Science Center, 2121 W. Holcombe Blvd, Houston, Texas,USA; Cardiovascular Research Institute and Department of Biochemistry and Biophysics, University of California, San Francisco CA.

Functional Genomics

L75 **B114** *Novel nuclear protein Def forms a complex with its partners to control digestive organ development in zebrafish*. **Ting Tao**, Hua Ruan, Hui Shi, Honghui Huang, Jinrong Peng. College of Animal Sciences, Zhejiang University, Hangzhou 310029, P.R. China; College of Life Sciences, Southwest University, Chongqing 400715, P.R. China.

L76 **B115** *COPll Complex Core Component Sec13 Safeguards The Establishment Of Gut Epithelia In Zebrafish*. **Niu Xubo**, Gao Chuan, Peng Jinrong. College of Animal Sciences, Zhejiang University, Hangzhou 310029, P.R.China; School of Life Sciences, Singapore.

Molecular Medicine and Development

L77 **B116** *Inhibition of Complement Component 5 regulates Epithelial to Mesenchymal Transition, Proliferation and Fiber Differentiation after Lens Cataract Surgery in Mice*. **Rinako Suetsugu-Maki**, Timothy P. Fox, Nobuyasu Maki, Richard C. Solari, Craig R. Tomlinson, John D. Lambris, Panagiotis A. Tsonis, . Dept. of Biology and Center for Tissue Regeneration and Engineering at Dayton, Univ. of Dayton. Dayton, OH, USA; Dept. of Medicine and Pharmacology & Toxicology, Dartmouth Hitchcock Medical Center, Norris Cotton Cancer Center, Dartmouth College, Lebanon,.

Organogenesis

L78 **B117** *Hepatocyte Growth Factor signaling in intrapancreatic duct cells drives pancreatic morphogenesis*. **Ryan M. Anderson**, Marion Delous, Justin A. Bosch, Daniel Hesselson, Didier Y. Stainier. Diabetes Center, UCSF, San Francisco, CA, USA.

L79 **B118** *Loss of Semaphorin-Neuropilin-1 signaling causes dysmorphic pulmonary microvascular development and respiratory failure in the neonatal mouse*. **Stephen Joza**, Jinxia Wang, Cameron Ackerly, Martin Post. Physiology and Experimental Medicine Program, Hospital for Sick Children, Toronto, Canada; Dpt. of Lab. Med. and Pathobiology, University of Toronto, Toronto, Canada.

L80 **B119** *PLZF integrates progenitor maintenance with gliogenesis in the developing spinal cord*. **Zachary B. Gaber**, Bennett G. Novitch. Dept of Neurobio., UCLA, CA, USA; Mol. Bio. Interdept. PhD Prog., UCLA; Broad Center of Reg. Med. and Stem Cell Res, UCLA.

L81 **B120** *Valproic acid, an HDAC inhibitor, disrupts primitive hematopoiesis in Xenopus laevis.*. **Rishita Shah**, Peter Klein. School of Medicine, Univ. of Penn., Philadelphia, PA USA.

L82 **B121** *Reciprocal interactions between neural crest cells and dorsal aorta during neuro-vascular network formation*. **Yuta Takase**, Yosuke Mukoyama, Yoshiko Takahashi. Nara Institute of Science and Technology, Nara, Japan; National Institute of Health, Bethesda, MD, USA.

L83 **B122** *Targets of the ectodysplasin pathway in tooth morphogenesis*. **Päivi H. Lindfors**, Otso Häärä, Sung-Ho Huh, Enni Harjunmaa, Thomas Åberg, Ingrid Fliniaux, Jukka Jernvall, David M. Ornitz, Marja Mikkola, Irma Thesleff. Institute of Biotechnology, University of Helsinki, Finland; Department of Developmental Biology, Washington University School of Medicine, St Louis, MO, USA.

L84 **B123** *Microtubule mediated targeting of E-cadherin in de novo adherence junction formation during epithelial organogenesis*. **Kagayaki Kato**, Hosei Wada, Shigeo Hayashi. RIKEN, CDB, Japan