



20th International Congress of Developmental Biology Society for Developmental Biology 84th Annual Meeting 12th Latin American Society for Developmental Biology Meeting

Sheraton Puerto Rico, San Juan, PR, USA
June 18-22, 2025

PROGRAM COMMITTEE:

Marianne Bronner, Co-Chair, ISDB President, California Institute of Technology, USA; **Carole LaBonne**, Co-Chair, SDB President, Northwestern University, USA; **Juan Riesgo-Escovar**, Co-Chair, LASDB President, National Autonomous University of Mexico, Mexico; **Joshua Brickman**, University of Copenhagen, Denmark; **Heather Marlow**, University of Chicago, USA; **Marcos Nahmad**, Center for Research and Advanced Studies of the National Polytechnical Institute (Cinvestav-IPN), Mexico; **Amy Shyer**, The Rockefeller University, USA; **Yoshiko Takahashi**, Kyoto University, Japan; **Pablo Wappner**, Fundación Instituto Leloir, National Scientific and Technical Research Council (CONICET), Argentina.

LOCAL ORGANIZING COMMITTEE:

José García-Arrarás, University of Puerto Rico, Río Piedras Campus, USA; **Edwin Traverso**, University of Puerto Rico at Humacao, USA; **Catalina I. Villamil**, University of Puerto Rico, Medical Sciences Campus, USA.

Day 1 Wednesday, June 18

Registration

12:00 PM – 8:00 PM

San Juan Foyer

Exhibitors and Art Show Setup

1:00 PM – 5:00 PM

Exhibitors and Art Show Participants

Miramar Ballroom & Corridor

Navigating the Transition to an Independent Position

Sponsored by The Company of Biologists and Stowers Institute for Medical Research

2:00 PM – 4:00 PM

San Juan Ballroom 1-3

Co-Chairs: **Marycruz Flores Flores**, University of Colorado School of Medicine, Anschutz Medical Campus, USA and **M Fernanda Palominos**, University of California, Berkeley, USA

Speakers: **Ariel Waisman**, Fundación Para la Lucha Contra las Enfermedades Neurológicas de la Infancia (FLENI), Argentina; **Daniel Ríos Barrera**, Universidad Nacional Autónoma de México, Mexico; **Rosa Uribe**, Rice University, USA; **Natalia Pabón-Mora**, Universidad de Antioquia, Colombia

Are you wondering how to decide to transition to a postdoc, what to ask and what to expect? Do you have doubts on how to look for principal investigator positions? Join us to learn from early career investigators how to navigate to an independent

position. Organized by LatinX in Developmental Biology, this session is in honor of Camila Behrens and Pablo Guzman-Palma.

First-Timers Introduction to the Congress

3:00 PM – 4:00 PM

San Felipe

Facilitators: SDB Trainee Representatives - **Martha Echevarria-Andino**, University of Wisconsin-Madison, USA and **Yesica Mercado-Ayon**, University of California, Los Angeles, USA; LASDB Representative - **Manuel Alejandro Zúniga-García**, Universidad Nacional Autónoma de México, México; ISDB Representative – **Junpeng Gao**, California Institute of Technology, USA

Welcome and Presidential Symposium

Sponsored by Allen Institute

FRONTIERS IN DEVELOPMENTAL BIOLOGY

4:30 PM – 8:00 PM

San Juan Ballroom

Co-Chairs: **Marrianne Bronner**, California Institute of Technology, USA; **Carole LaBonne**, Northwestern University, USA; **Juan Riesgo-Escovar**, National Autonomous University of Mexico, Mexico

4:30 Opening Introduction by ISDB President **Marrianne Bronner**, SDB President **Carole LaBonne**, and LASDB President **Juan Riesgo-Escovar**

4:35 1 **Roberto Mayor**, University College London, UK. *Integration of chemical and mechanical cues governing neural crest cell migration*

5:05 2 **Margaret McFall-Ngai**, California Institute of Technology, USA. *Embryonic gene expression prepares a host animal for colonization by its bacterial symbiont*

5:35 **Cassandra Extavour**, Harvard University, USA. *Evolution of reproductive morphology within and between species*

6:05 Break

San Juan Corridor

6:30 **Magdalena Zernicka-Goetz**, University of Cambridge, UK and California Institute of Technology. *Decoding the basic principles of embryonic development*

7:00 **ISDB Ross G. Harrison Medal** – Introduction by **Marianne Bronner**, California Institute of Technology, USA
Denis Duboule, Collège de France, France. *#InHoxWeTrust*

Opening Reception at Exhibits

8:00 PM – 10:00 PM

Miramar Ballroom

Day 2 Thursday, June 19

Registration

7:30 AM – 7:00 PM

San Juan Foyer

Poster/Exhibit Session A Setup

8:00 AM – 10:00 AM

Poster Session A presenters

Miramar Ballroom

Concurrent Session 1.1

MORPHOGENETIC INFLUENCES ON DEVELOPMENT

8:20 AM – 10:00 AM

San Juan Ballroom 1-3

Chair: **John Wallingford**, University of Texas at Austin, USA

- 8:20 3 **Yasuko Akiyama-Oda**, JT Biohistory Research Hall, Japan. *Genome-wide dissection of an arthropod segmented body plan using single-nucleus RNA sequencing*
- 8:40 4 **Eric R. Brooks**, North Carolina State University, USA. *Shh and Wnt signaling control shared and unique cellular dynamics to drive cranial neural tube closure*
- 8:55 5 **Kristýna Neffeova**, Charles University, Czech Republic. *Morphological and physiological effects of Jagged1 CKO and patient-based single variant mice in Alagille Syndrome*
- 9:10 6 **Jérôme Gros**, Institut Pasteur, France. *Mechanical feedback in embryonic self-organization*
- 9:30 7 **Raj Ladher**, National Centre for Biological Sciences, India. *Force patterning in organising and ordering the developing cochlea*
- 9:45 8 **Crystal Rogers**, University of California, Davis, USA. *Dynamic shifts: Unraveling cell adhesion changes in neural crest EMT*

Concurrent Session 1.2

ROLE OF CELL MEMORY IN FATE DECISIONS

8:20 AM – 10:00 AM

San Juan Ballroom 4-5

Chair: **Shelby Blythe**, Northwestern University, USA

- 8:20 **Joshua Brickman**, University of Copenhagen, Denmark. *Don't you (forget about me) - Transcription factor occupancy, memory and plasticity*
- 8:40 9 **Issam Al Diri**, University of Pittsburgh, USA. *SOX2 as a key architect of retinal neurogenesis: A genomic perspective*
- 8:55 10 **Pablo Bora**, University of Massachusetts Chan Medical School, USA. *RBFOX2 RNA binding landscape in the mammalian preimplantation embryo; a proof-of-concept*
- 9:10 11 **Déborah Bourc'his**, Institut Curie, France. *Under control: Multi-layered suppression of transposable element in mammalian reproduction*
- 9:30 12 **Patrick Murphy**, Cornell University, USA. *Epigenetic silencing of repetitive elements is a prerequisite for timely zebrafish genome activation*
- 9:45 13 **Gilseung Park**, Eunice Kennedy Shriver National Institute of Child Health and Human Development, USA. *Deciphering hybrid gene expression states in zebrafish axial mesoderm: Origins, mechanisms and developmental consequences*

Concurrent Session 1.3

CELL POLARITY

8:20 AM – 10:00 AM

San Juan Ballroom 6-8

Chair: **David Sherwood**, Duke University, USA

- 8:20 14 **Justin Crocker**, European Molecular Biology Laboratory, Germany. *Understanding fruit flies in context: Toxins, AI, and behavior*

- 8:40 15 **Vidal Bejar-Padilla**, University of Texas at Austin, USA. *Mechanosensing of cytoskeletal stress by the planar cell polarity protein Prickle2*
- 8:55 16 **Shuyi Nie**, Georgia Institute of Technology, USA. *Cytoskeletal coordination in neural crest cell migration in vitro and in vivo*
- 9:10 **Jessica Feldman**, Stanford University, USA. *Mechanisms of epithelial polarity and connectivity*
- 9:30 17 **Sarah Paramore**, University of Chicago, USA. *The core planar cell polarity complex regulates zebrafish pronephric collective cell migration*
- 9:45 18 **Jaeho Yoon**, National Cancer Institute – Frederick, USA. *A proximity-dependent labeling approach for identifying novel planar cell polarity (PCP) factors*

10:00 AM Break

San Juan Corridor

Plenary Session I

Sponsored by Elsevier

LIMITLESS DEVELOPMENTAL BIOLOGY

10:30 AM – 12:30 PM

San Juan Ballroom

Chair: **Crystal Rogers**, University of California, Davis, USA

- 10:30 19 **José García-Arrarás**, University of Puerto Rico, Río Piedras Campus, USA. *The amazing regenerative properties of holothurians*
- 11:00 20 **Marycruz Flores Flores**, University of Colorado School of Medicine, Anschutz Medical Campus, USA. *Functional redundancy and divergence of TBX4 and TBX5 in zebrafish cardiopharyngeal and lateral plate mesoderm development*
- 11:15 21 **Ahna Skop**, University of Wisconsin, USA. *Unveiling the significance of midbody remnants: A novel class of translating extracellular vesicles*
- 11:45 22 **Sierra Marable**, California Institute of Technology, USA. *Single cell analysis highlights differential gene expression patterns between the maxilla and mandible*
- 12:00 23 **D’Juan Farmer**, University of California, Los Angeles, USA. *Mechanisms of growth in the vertebrate skull*

Poster Teasers for Poster Session A

12:30 PM – 12:45 PM

San Juan Ballroom

Chair: **Martha Echevarria-Andino**, University of Wisconsin-Madison, USA

- 120 **Christa Merzdorf**, Montana State University, USA. *Collaborating with Tribal Colleges to develop targeted workshops (A6)*
- 126 **Mol Mir**, Stowers Institute for Medical Research, USA. *Visual cell type descriptions from 3D electron microscopy of the apple snail retina (A12)*
- 130 **Julienn Torres-Rodriguez**, University of Puerto Rico, Río Piedras Campus, USA. *Elucidating the role of Notch signaling in radial nerve cord and intestinal regeneration in the sea cucumber *Holothuria glaberrima* (A16)*
- 144 **Lynne Nacke**, UAB Heersink School of Medicine, USA. *Sniffing out neuroregeneration: Olfactory neurogenesis in the context of Alzheimer's Disease (A30)*
- 150 **Luiza Saad**, Whitehead Institute for Biomedical Sciences, USA. *Elucidating principles of regeneration in a novel mollusk model system (A36)*

- 161 **Arushi Gupta**, University of Miami, USA. *Unveiling the role of maternal factors in regulating egg polarity and Wnt/ β -catenin signaling during early embryogenesis in the cnidarian *Nematostella* (A47)*
- 165 **Cielo Lucia Centola**, Andalusian Center for Developmental Biology (CABD), Spain. *Rhythmic contraction waves trigger the Yap-dependent mechanoregulatory loop fueling gastrulation movements in medaka (A51)*
- 166 **Austen Barnett**, DeSales University, USA. *The expression of Pax6 genes in an eyeless arachnid suggests their ancestral role in arachnid head development (A52)*
- 181 **M. Fernanda Palominos**, Museum of Vertebrate Zoology, University of California, Berkeley, USA. *Craniofacial-specific differential expression reveals novel genes underlying jaw divergence in specialist pupfishes (A67)*
- 191 **Fadi Zidan**, University of Toronto, Canada. *Elucidating the role of Notch signaling in apical constriction during *Drosophila* neuroblast ingression (A77)*
- 204 **Samantha Hoge**, National Cancer Institute, National Institutes of Health, USA. *Using scRNA-seq to characterize cellular diversity and lineage trajectories in the highly regenerative flatworm *Macrostomum lignano* (A90)*

Lunch on your own

12:45PM – 2:00 PM

International Society of Developmental Biology Board Meeting

12:45 PM – 2:00 PM

San Cristóbal

Theme Tables I

1:00 PM – 2:00 PM

San Felipe

Topics and facilitators to be selected

Poster/Exhibit Session A

2:00 PM – 5:00 PM

Miramar Ballroom

4:00 PM *Break*

Miramar Foyer

Poster Session A Teardown

5:00 PM

Poster Session A presenters

Miramar Ballroom

Plenary Session II

TRANSCRIPTIONAL AND EPIGENETIC CONTROL OF DEVELOPMENT

5:00 PM – 7:00 PM

San Juan Ballroom

Chair: **Christian Mosimann**, University of Colorado School of Medicine

5:00 **Tatjana Sauka-Spengler**, Stowers Institute for Medical Research, USA. *TBA*

5:30 24 **Rebecca D. Burdine**, Princeton University, USA. *Transcriptome analysis provides important insights into how Nodal signaling directs asymmetric heart development*

5:45 25 **Robb Krumlauf**, Stowers Institute for Medical Research, USA. *Hox genes, retinoids and head development*

6:15 26 **Martin Estermann**, National Institute of Environmental Health Sciences, USA. *Glucose-driven O-GlcNAcylation regulates testis development and germ cell survival*

6:30 **Shelby Blythe**, Northwestern University, USA. *Establishment and maintenance of embryonic chromatin states*

Poster Teasers for Poster Session B

7:00 PM – 7:15 PM

San Juan Ballroom

Chair: **Martin Estermann**, National Institute of Environmental Health Sciences, USA

- 228 **Caroline Hoppe**, Yale University, USA. *Imaging the earliest events of zebrafish development with GEARS and FLASH-PAINT for single-molecule insights* (B2)
- 235 **Adrián Rivera Rodríguez**, Universidad Nacional Autónoma de México, Mexico. *Aggression in A. mexicanus surface fish and cavefish: A developmental and comparative approach* (B9)
- 238 **Satchel Flammang**, University of Arkansas, USA. *Characterizing the ability of vertebrate and invertebrate Toll family receptors to mediate actomyosin planar polarity and cell morphology* (B12)
- 246 **Arlen Ramírez-Corona**, Universidad Nacional Autónoma de México, Mexico. *Epiboly in zebrafish requires reactive oxygen species derived from NADPH oxidase activity for the regulation of endocytosis and vesicular trafficking* (B20)
- 254 **Sophia Jannetty**, University of Washington, USA. *Cell size asymmetry regulates neurogenesis in developing Drosophila larval brains* (B28)
- 257 **Laura Rustarazo-Calvo**, European Molecular Biology Laboratory Heidelberg, Germany. *Adhesion-driven tissue solidification prompts epithelial fate* (B31)
- 266 **Benjamin Gilbert**, The Ohio State University, USA. *Investigating the role of MECOM during mammalian outflow tract development* (B40)
- 284 **Arshia Bhojwani**, University of Southern California, USA. *SeqFISH of the mouse jaw uncovers a connective tissue-specific stem cell population* (B58)
- 286 **Aitana Manuela Castro Colabianchi**, University Of Buenos Aires, Argentina. *Non-canonical notch1 control of the dorsal-ventral axis signaling in early embryonic development* (B60)
- 324 **Andrew Opincar**, University of Maryland, Baltimore County, USA. *Sticky fingers - How heparan sulfate proteoglycan processing enzymes mediate Drosophila melanogaster border cell migration* (B98)
- 339 **Sienna Muller**, The University of British Columbia, Canada. *Genetic Analysis in Flies of a Novel Human Disease Mutant Reveals How Biological Stress Impacts Cell-ECM Adhesion* (B113)

Dinner on your own

7:15 PM

Trainee Reception with ISDB, SDB, LASDB Board of Directors

7:15 PM – 8:30 PM

San Felipe and San Cristóbal

Day 3 Friday, June 20

Registration

7:30 AM – 6:00 PM

San Juan Foyer

Poster/Exhibit Session B Setup

8:00 AM – 10:00 AM	Poster Session B presenters	Miramar Ballroom
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Concurrent Session 2.1

GENERATION OF IN VITRO EMBRYO MODELS

8:20 AM – 9:55 AM	San Juan Ballroom 1-3
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Chair: **Ondine Cleaver**, University of Texas Southwestern Medical Center

- 8:20 227 **Eszter Posfai**, Princeton University, USA. *Mechanisms of epiblast and primitive endoderm segregation*
- 8:40 28 **Valerie Dupe**, Université de Rennes, CNRS, INSERM, IGDR, France. *Transcriptomic analyses reveal new insights into the function of Sonic Hedgehog signaling during early human brain development*
- 8:55 29 **Harold McNamara**, Yale University, USA. *Recording morphogen signals reveals mechanisms underlying gastruloid symmetry breaking*
- 9:10 30 **Yuchuan Miao**, Johns Hopkins School of Medicine, USA. *Deconstructing human somite patterning with stem cells*
- 9:25 31 **Derk ten Berge**, Erasmus MC University Medical Center, Rotterdam, The Netherlands. *Shaping up: Synchronizing pluripotency transitions with morphogenesis ensures self-organization in embryos and stem cells*
- 9:40 32 **Kongju Zhu**, Harvard Medical School and Brigham and Women's Hospital, USA. *Defective human somitogenesis in the absence of HOX genes*

Concurrent Session 2.2

CELL SIGNALING IN DEVELOPMENT

8:20 AM – 10:00 AM	San Juan Ballroom 4-5
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Chair: **Rebecca Burdine**, Princeton University, USA

- 8:20 33 **Tsuyoshi Hirashima**, National University of Singapore, Singapore. *Curvature feedback via ERK-mechano signaling in lung tissue morphogenesis*
- 8:40 34 **Adrian Jacobo**, Chan Zuckerberg Biohub San Francisco, USA. *Control of cell-type ratios by Notch signaling during development and regeneration*
- 8:55 35 **Michael Layden**, Lehigh University, USA. *Insights into early animal neurogenesis from the sea anemone *Nematostella vectensis**
- 9:10 **Alexander Aulehla**, European Molecular Biology Laboratory, Germany. *Collective rhythms during medaka development*
- 9:30 36 **Evelyn Navarro**, Princeton University, USA. *Uncovering the ERK signaling dynamics that drive alveolar epithelial cell fate*
- 9:45 37 **Jessica Stock**, Marine Biological Laboratory, USA. *BMP signaling is required for body, but not brain, patterning in cephalopods*

Concurrent Session 2.3

ROLE OF SCALING IN DEVELOPMENT AND EVOLUTION

8:20 AM – 9:55 AM	San Juan Ballroom 6-8
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Chair: **Carrie Adler**, Cornell University, USA

- 8:20 38 **Christian Petersen**, Northwestern University, USA. *Cell signaling in planarian and acoel regeneration*
- 8:40 39 **Madison Biesinger**, University of Chicago, USA. *Impacts of alternative splicing on gene regulation and diversifying cell types in Metazoa*
- 8:55 40 **Niles Huang**, Princeton University, USA. *Unbiased quantitation of branching morphogenesis over developmental time in the mouse embryo*
- 9:10 41 **Alana López-Cruz**, University of Puerto Rico Medical Sciences Campus, USA. *Development of the mechanosensory lateral line in the blind Mexican cavefish*
- 9:25 42 **Fabiola Pagán-Torres**, University of Puerto Rico, Medical Sciences Campus, USA. *Sensory adaptation of the hair cell ribbon synapse in the blind Mexican cavefish*
- 9:40 43 **Ceri Weber**, University of California San Diego, USA. *Tell-tail signs: Mechanisms driving vertebral elongation and the evolution of axial proportion*

10:00 AM Break

San Juan Corridor

Hilde Mangold Postdoctoral Symposium

Sponsored by Chan Zuckerberg Initiative

10:30 AM – 12:30 PM

San Juan Ballroom

Co-Chairs: **Lara Busby**, University of California, Berkeley, USA (SDB); **Giacomo Gattoni**, Columbia University, USA (ISDB); **Wilbert Gutierrez Sarmiento**, National Autonomous University of Mexico, Mexico (LASDB)

- 10:30 44 **Ahmed Abdelbaki Abdelaal**, University of Cambridge, UK. *Live imaging human embryos reveals mitotic errors and lineage restriction just before implantation*
- 10:45 45 **Kimberly Arena**, University of Colorado Anschutz Medical Campus, USA. *Investigating the role of Wnt signaling in the cell fate specification of oligodendrocytes during spinal cord development*
- 11:00 46 **Leroy Bondhus**, University of Chicago, USA. *Divergent regulatory architectures facilitate pleiotropic gene expression across Metazoa*
- 11:15 47 **Hocine Rekaik**, College de France, France. *Genetic ablation of Hox function in mammalian pseudo-embryos reveals major rewiring in the early developmental program*
- 11:30 48 **Manaswini Sarangi**, The University of Michigan, USA. *Parental high sugar diet and embryonic development: Unraveling the role of nutritional inheritance*
- 11:45 49 **Alice Sherrard**, Yale University, USA. *Chromatin Gold Electron Microscopy (ChromGEM) reveals ultrastructural changes in chromatin during development and differentiation*
- 12:00 50 **Christopher Small**, Baylor College of Medicine, USA. *Dorsal forerunner cells transmit epiboly forces to extend the chordamesoderm in zebrafish gastrulae*
- 12:15 51 **Stephanie Tsai**, Massachusetts General Hospital, USA. *Elucidating injury-site specific regenerative programs to rebuild the tendon*

Lunch on your own

12:30 PM – 2:00 PM

GRC Power Hour™: Career Challenges at the Frontiers of Science

Sponsored by Gordon Research Conference

12:30 PM – 2:00 PM

San Felipe

Presenter: **Nancy Gray**, President and Chief Executive Officer, Gordon Research Conferences

The GRC Power Hour™ fosters meaningful discussions among colleagues at all career stages about the obstacles to career advancement and explores strategies to support the professional growth of everyone in the community.
Lunch will be provided. Pre-registration is required.

Poster/Exhibit Session B

2:00 PM – 5:00 PM

Miramar Ballroom

4:00 PM *Break*

Miramar Foyer

Poster Session B Teardown

5:00 PM

Poster Session B presenters

Miramar Ballroom

Plenary Session III

REGENERATIVE SYSTEMS

5:00 PM – 7:00 PM

San Juan Ballroom

Chair: **Christian Petersen**, Northwestern University, USA

5:00 52 **Jorge Casal**, Universidad de Buenos Aires, Fundación Instituto Leloir, Argentina.
Biomolecular condensates in the environmental control of plant body shape

5:30 53 **Shih-Lei (Ben) Lai**, Institute of Biomedical Sciences, Academia Sinica, Taiwan.
Immune modulation by poly I:C administration promotes heart regeneration via macrophage function in medaka

5:45 54 **Jessica Whited**, Harvard University, USA. *Adrenergic signaling coordinates local and distant responses to amputation in axolotl*

6:15 55 **Sarah C. Petersen**, Centre for Discovery Brain Sciences, University of Edinburgh, UK.
Peripheral nerve response to glial-specific damage and recovery

6:30 **Mansi Srivastava**, Harvard University, USA. *A developmental perspective on the evolution of regeneration and stem cells*

Poster Teasers for Poster Session C

7:00 PM – 7:15 PM

San Juan Ballroom

Chair: **Sierra Marable**, California Institute of Technology, USA

343 **Fanning Xia**, Stowers Institute for Medical Research, USA. *"Eggs"treme adaptation of reproductive strategies in *Astyanax mexicanus* (C4)*

350 **Mantha Lamprousi**, European Molecular Biology Laboratory, Germany. *Global temperature stress drives cell type-specific loss of function (C11)*

354 **Lisa Zou**, Michigan State University, USA. *Applied force produces inverse contractile shifts in estrogen versus progesterone rich uterine environment (C15)*

369 **Nathaniel Wells**, University of Wisconsin - Milwaukee, USA. *Non-canonical function of MMP28 in the nucleus of neural crest cells (C30)*

- 372 **Sofia Patino Hernandez**, Rice University, USA. *Defining the molecular mechanism of transcriptional regulation of DNMT3A in neurodevelopment* (C33)
- 378 **Edwin G. Peña-Martínez**, University of Puerto Rico - Rio Piedras, USA. *Global evaluation of congenital heart disease-associated non-coding variants* (C39)
- 385 **Nayeli G. Reyes-Nava**, The University of Texas at Austin, USA. *The road to motile cilia: Dynein transport and its implications in ciliopathies* (C46)
- 388 **Abigail Mumme-Monheit**, University of Colorado Anschutz Medical Campus, USA. *Variable paralog expression underlies variable incomplete penetrance* (C49)
- 405 **Ruoyu Chen**, Whitehead Institute for Biomedical Research, USA. *Vasa/DDX4 promotes RNA localization and translational activation in germ granules* (C66)
- 413 **Jianyu Gan**, University of South Carolina, USA. *Spatial Asynchrony of RNA modifications orchestrates maternal-to-zygotic transition in early embryogenesis* (C74)
- 424 **Jennifer Watts**, Nationwide Children's Hospital, USA. *Cell-Specific Piga function is required for mammalian neurodevelopment* (C85)

Dinner on your own

7:15 PM

Day 4 Saturday, June 21

Registration

7:30 AM – 6:00 PM

San Juan Foyer

Poster/Exhibit Session C Setup

8:00 AM – 10:00 AM

Poster Session C presenters

Miramar Ballroom

Concurrent Session 3.1

EMERGENCE OF EVOLUTIONARY NOVELTY

8:20 AM – 10:00 AM

San Juan Ballroom 1-3

Chair: **Billie Swalla**, University of Washington, USA

- 8:20 56 **Yi-Hsien Su**, Academia Sinica, Taiwan. *Deuterostome evolution and the origin of the notochord*
- 8:40 57 **Abby Bergman**, Stanford University School of Medicine, USA. *Investigation of a transposable element at the maternal-fetal interface*
- 8:55 58 **Lara Busby**, University of California, Berkeley, USA. *Coupling cell-intrinsic and extrinsic mechanisms to drive ectomesenchymal identity in neural crest cells*
- 9:10 **Heather Bruce**, The University of British Columbia, Canada. *Arthropod appendages: Novelty and homology over half a billion years*
- 9:30 171 **Giacomo Gattoni**, Columbia University, USA. *Evolution of inhibitory neuron development in the vertebrate telencephalon*
- 9:45 60 **Jan Stundl**, California Institute of Technology, USA. *Acquisition of neural crest promoted thyroid evolution from chordate endostyle*

Concurrent Session 3.2

CELL BEHAVIOR IN DEVELOPMENT AND DISEASE

8:20 AM – 10:00 AM

San Juan Ballroom 4-5

Chair: **Ankur Saxena**, UAB Heersink School of Medicine, USA

- 8:20 61 **David Sherwood**, Duke University, USA. *On-demand delivery of fibulin-1 protects the basement membrane during cyclic stretching*
- 8:40 62 **Ondine Cleaver**, University of Texas Southwestern Medical Center, USA. *Lats1/2 are essential for developmental vascular remodeling and biomechanical adaptation to shear stress*
- 8:55 63 **Ben Cox**, University of California, Davis, USA. *ECM remodeling shapes head regeneration in *Hydra vulgaris**
- 9:10 64 **Ángela Nieto**, Instituto de Neurociencias de Alicante, Spain. *Epithelial plasticity trajectories in development and disease*
- 9:30 65 **Ayyappa Raja Desingu Rajan**, California Institute of Technology, USA. *Investigating the regulatory logic underlying meningeal development promoters*
- 9:45 66 **Katharine Goodwin**, MRC Laboratory of Molecular Biology, UK. *Physical confinement in the developing mouse embryo puts migrating primordial germ cells at risk of DNA damage*

Concurrent Session 3.3

CELL SHAPE AND VARIATION

8:20 AM – 10:05 AM

San Juan Ballroom 6-8

Chair: **Ceri Weber**, University of California San Diego, USA

- 8:20 67 **Bob Goldstein**, University of North Carolina at Chapel Hill, USA. *How cells change shape: *C. elegans* as a model to understand morphogenesis mechanisms*
- 8:40 68 **Gabriel Amador**, Stanford University, USA. *Differentiation of stomatal precursors is triggered by crossing a cell size threshold*
- 8:55 69 **LeCaine Barker**, University Colorado Anschutz Medical Campus, USA. *Cyclical remodeling of uterine epithelium and junctional proteins across the estrous cycle*
- 9:10 70 **Michael Piacentino**, Johns Hopkins University School of Medicine, USA. *The lipid manager Apolipoprotein D is essential for craniofacial development*
- 9:30 357 **Allyson Quinn Ryan**, Chan Zuckerberg Biohub San Francisco, USA. *Organ-level proliferation control through canonical Wnt signaling and structural maintenance*
- 9:45 72 **Sally Horne-Badovinac**, University of Chicago, USA. *Fat2-based initiation of rotational epithelial migration*

10:00 AM Break

San Juan Corridor

Concurrent Session 4.1

RELATIONSHIP BETWEEN DEVELOPMENT AND AGING

10:30 AM – 12:10 PM

San Juan Ballroom 1-3

Chair: **Peter Lwigale**, Rice University, USA

- 10:30 73 **Rosa E. Navarro González**, National Autonomous University of Mexico, Mexico. *How stress shapes germ cell environments: Lessons from *C. elegans**

- 10:50 74 **Sade Clayton**, Washington University in St Louis, USA. *Saa2/Neat1 and Grem1 positive mesenchymal stem cells respond to intervertebral disc damage by upregulating tissue-specific differentiation markers post injury*
- 11:05 75 **Roman Franek**, University of South Bohemia in Ceske Budejovice, Czech Republic. *Life history shapes germline development in vertebrates*
- 11:20 76 **Pablo Strobl-Mazzula**, Instituto Tecnológico de Chascomús, Argentina. *Small RNAs as mediators of the sins of the father*
- 11:40 77 **Isabelle Top**, Memorial Sloan Kettering Cancer Center, USA. *Linking Lamin B loss in myonuclei to skeletal muscle wasting in cachexia and aging*
- 11:55 78 **Andrew Verdesca**, Yale University, USA. *Drift of positional identity drives aging in the long-lived planarian Schmidtea mediterranea*

Concurrent Session 4.2

PATTERN FORMATION

10:30 AM – 12:10 PM

San Juan Ballroom 4-5

Chair: **Christa Merzdorf**, Montana State University, USA

- 10:30 **Daniel Ríos Barrera**, Universidad Nacional Autónoma de México, Mexico. *Coordination of tracheal and epidermal development by a subset of specialized adhesive cells*
- 10:50 79 **Jeffrey A. Farrell**, Eunice Kennedy Shriver National Institute of Child Health and Human Development, USA. *Gene module reconstruction identifies cellular differentiation processes and the regulatory logic of specialized secretion in zebrafish*
- 11:05 80 **Lauren Lubeck**, Hopkins Marine Station, Stanford University, USA. *Modulations depending on life history: Wnt signaling in posterior patterning of hemichordate embryos*
- 11:20 81 **Alfredo Cruz-Ramirez**, National Laboratory of Genomics for Biodiversity (LANGEBIO)-CINVESTAV, Mexico. *A journey from omics to regulatory circuits in Axolotl regeneration*
- 11:40 82 **Vivian Irish**, Yale University, USA. *A thorny question: Evolution of a novel mode of plant stem cell arrest*
- 11:55 353 **Anthony Treichel**, Stowers Institute for Medical Research, USA. *Streamlined loss-of-function screening for maternal mRNAs supports non-essentiality of individual microproteins during zebrafish MZT*

Concurrent Session 4.3

EMERGENT PROPERTIES

10:30 AM – 12:10 PM

San Juan Ballroom 6-8

Chair: **Tatjana Saulka-Spengler**, Stowers Institute for Medical Research

- 10:30 84 **Seung Yon (Sue) Rhee**, Michigan State University, USA. *Understanding how organisms sense water from molecular to ecological scales: Arabidopsis thaliana FLOE1 as a case study*
- 10:50 85 **Dhalma I. Bayrón-Ho**, University of Puerto Rico, Medical School Campus, USA. *The environmental impact on the ontogeny of aggression in Astyanax mexicanus*

- 11:05 86 **Cristian Coarfa**, Baylor College of Medicine, USA. *Longitudinal transcriptomic analysis of zebrafish embryonic explants reveals an evolutionary conserved and cell type-independent network of timekeeping gene modules*
- 11:20 87 **Stefan de Folter**, Center for Research and Advanced Studies of the National Polytechnic Institute, Mexico. *The cell cycle during gynoecium development in Arabidopsis*
- 11:40 88 **Fabian Lim**, University of California, San Diego, USA. *Highly conserved enhancer grammar across Bilaterians*
- 11:55 89 **Mackenzie Litz**, Massachusetts Institute of Technology, USA. *The stroma keeps time in lung epithelial branching morphogenesis*

Lunch on your own

12:10 PM – 2:00 PM

Theme Tables II

1:00 PM – 2:00 PM

San Felipe

Topics and facilitators to be selected

Poster/Exhibit Session C

2:00 PM – 5:00 PM

Miramar Ballroom

4:00 PM Break

Miramar Foyer

Poster Session C, Exhibits and Art Show Teardown

5:00 PM – 6:00 PM

Miramar Ballroom & Corridor

Poster Session C presenters, Exhibitors, & Art Show participants

Society for Developmental Biology Town Hall

5:00 PM – 5:30 PM

San Juan Ballroom

Plenary Session IV

EVOLUTION AND DEVELOPMENT OF ORGAN SYSTEMS

5:30 PM – 7:30 PM

San Juan Ballroom

Chair: **Guy Tanentzapf**, The University of British Columbia

- 5:30 90 **Cheng-Ming Chuong**, University of Southern California, USA. *Temporo-spatial organization of the amniote integument: A bird's-eye view*
- 6:00 91 **Emma R. Andersson**, Karolinska Institutet, Sweden. *In utero ectoderm barcoding reveals neural and cochlear lineages*
- 6:15 **Benoit Bruneau**, Gladstone Institutes, University of California, San Francisco, USA. *Transcriptional regulation of heart development*
- 6:45 92 **Mingi Hong**, Icahn School of Medicine at Mount Sinai, USA. *Prenatal alcohol exposure and Cdon mutation converge on Nodal signaling in a gene-environment interaction model of holoprosencephaly*
- 7:00 93 **Gert Jan C. Veenstra**, Radboud University, The Netherlands. *Development of three hearts in cephalopods*

Dinner on your own

7:30 PM

Day 5 Sunday, June 22

Registration

7:30 AM – 5:00 PM

San Juan Foyer

Concurrent Session 5.1

REGENERATION OF TISSUES AND ORGANS

8:20 AM – 10:00 AM

San Juan Ballroom 1-3

Chair: **Valeria De La Rosa Reyes**, University of Puerto Rico-Bayamón Campus, USA

- 8:20 94 **Megan Martik**, University of California, Berkeley, USA. *Harnessing the regenerative capacity of the neural crest for cardiac repair*
- 8:40 95 **Evelyn Avilés-Ríos**, University of Puerto Rico Rio Piedras Campus, USA. *Unlocking regeneration: The IGF system's role in intestinal regeneration*
- 8:55 96 **Cambria Chou-Freed**, University of California, San Francisco, USA. *Na⁺/H⁺ Exchanger activity is required for zebrafish larval tail fin regeneration*
- 9:10 97 **Andrea Wills**, University of Washington, USA. *Uncovering the metabolic requirements for complex tissue regeneration*
- 9:30 98 **Lizza Roman**, Cincinnati Children's Hospital Medical Center, USA. *Using human pluripotent stem cell derived tissues to understand mechanisms establishing tissue-specific macrophage signatures across gastrointestinal organoids*
- 9:45 99 **Vidyanand (Anand) Sasidharan**, Stowers Institute for Medical Research, USA. *Planarian EVs: Efficient transporters of RNAi fragments and other biomolecules*

Concurrent Session 5.2

METABOLIC INFLUENCES ON DEVELOPMENT

8:20 AM – 10:00 AM

San Juan Ballroom 4-5

Chair: **Michael Piacentino**, Johns Hopkins University School of Medicine, USA

- 8:20 100 **Pablo Wappner**, Consejo Nacional de Investigaciones Científicas y Tecnológicas (CONICET), Argentina. *Autophagy regulates Drosophila blood cell differentiation*
- 8:40 101 **Anneke Kakebeen**, University of Colorado Boulder, USA. *FAF2 is required for maintaining cell homeostasis during neural tube closure*
- 8:55 102 **Piotr Pawlak**, Poznan University of Life Sciences, Poland. *Energy metabolism disorders during in vitro maturation of bovine cumulus-oocyte complexes interfere with blastocyst quality and metabolism*
- 9:10 103 **Aissam Ikmi**, European Molecular Biology Laboratory, Germany. *Design principles of cnidarian shapes*
- 9:30 104 **Michael Scales**, Duke University, USA. *Transcriptional regulation of neonatal nutrition and immunity*
- 9:45 105 **Daniel Wagner**, University of California, San Francisco, USA. *A stress induced genetic program promotes suspended animation, mRNA stabilization, and canalization of developmental outcomes in zebrafish gastrulae*

Concurrent Session 5.3

OSCILLATIONS THAT SHAPE DEVELOPMENT

8:20 AM – 10:00 AM

San Juan Ballroom 6-8

Chair: **Sharon Amacher**, The Ohio State University

- 8:20 110 **Ertugrul Özbudak**, Northwestern University Feinberg School of Medicine, USA. *Tissue self-organization tunes the period of somite segmentation*
- 8:40 106 **Ariel Bazzini**, Stowers Institute for Medical Research, USA. *Cas13d as a powerful tool for maternal RNA functional genomics in vertebrate embryos*
- 8:55 107 **Sapna Chhabra**, European Molecular Biology Laboratory, Germany. *Plastic players, precise pattern: Thermal robustness of vertebrate segmentation*
- 9:10 108 **Stefano Di Talia**, Duke University, USA. *Encoding geometric memory during zebrafish appendage regeneration*
- 9:30 109 **Prayag Murawala**, Mount Desert Island Biological Laboratory, USA. *Somite-independent regeneration of the axolotl primary body axis*
- 9:45 362 **Jia Song**, University of Delaware, USA. *Post-transcriptional regulation during early development*

10:00 AM Break

Workshop 1

TRUTH MATTERS, STRENGTHENING SCIENCE COMMUNICATION TO COUNTER MISINFORMATION

10:30 AM – 12:30 PM

San Juan Ballroom 1-3

Co-Chairs: **Crystal Rogers**, University of California, Davis, USA and **Nicole Theodosiou**, Union College, USA

Speakers: **Kevin Alicea-Torres**, University of Puerto Rico, Humacao, USA and **Rebecca Calisi Rodríguez**, University of California, Davis, USA

In this interactive workshop, participants will explore strategies for effective science communication, including storytelling techniques and practical tools to address misinformation. Presenters will share resources and proven approaches for engaging diverse audiences, then guide attendees through scenario-based activities to apply these tools in real time. Attendees will leave with a stronger toolkit for navigating and responding to scientific disinformation in public and professional settings.

Workshop 2

PUBLISHING YOUR WORK – POINTERS FOR PULLING A STORY TOGETHER

10:30 AM – 12:30 PM

San Juan Ballroom 4-5

Chair: **Ondine Cleaver**, University of Texas Southwestern Medical Center, USA, *Developmental Biology* Editor-in Chief

This workshop will guide young scientists (including graduate students, postdocs and new faculty) through the process of transforming their research into a polished scientific paper. We will cover practical strategies for organizing content, deciding the most effective order to write sections, and crafting a compelling title, abstract, and graphical abstract. We will also cover how to choose impactful keywords and write with clarity and purpose to effectively teach and engage DevBio readers.

Workshop 3

TOMORROW'S CAREER DEVELOPMENT FORUM: HOW TO SET UP A NEW LAB

10:30 AM – 12:30PM

San Juan Ballroom 6-8

Panelists: **D'Juan Farmer**, University of California, Los Angeles, USA; **Bob Goldstein**, University of North Carolina at Chapel Hill, USA; **Megan Martik**, University of California, Berkeley, USA; and **Rosa Navarro**, National Autonomous University of Mexico, Mexico

This interactive Q&A panel aims to contribute to leveling the playing field for diverse scientists-in-training by helping postdocs and new faculty think clearly about how to start a research lab and by demystifying some key steps to success.

Lunch on your own

12:30 PM – 2:00 PM

Latin American Society for Developmental Biology Board and Membership Business Meeting

12:30 PM – 2:00 PM

San Cristóbal

Theme Tables III

1:00 PM – 2:00 PM

San Felipe

Topics and facilitators to be selected

Award Lectures I

2:00 PM – 3:50 PM

San Juan Ballroom

- 2:00 **Society for Developmental Biology Trainee Science Communication Award** – Introduction by **Ondine Cleaver**, University of Texas Southwestern Medical Center, USA
- 111 **Joaquin Navajas Acedo**, Biozentrum at University of Basel, Switzerland. *The Mad Science of Developmental Biology: My journey, our journey*
- 2:20 **Society for Developmental Biology Edwin G. Conklin Medal** – Introduction by **Carole LaBonne**, Northwestern University, USA
- Blanche Capel**, Duke University, USA. *Adventures in the gonad*
- 2:50 **Latin American Society for Developmental Biology Senior Investigator Award** – Introduction by **Juan Riesgo-Escovar**, National Autonomous University of Mexico, Mexico
- Miguel Concha**, Universidad de Chile, Chile. *Symmetry under tension: Mechanics and transitions in annual killifish development*
- 3:20 **Society for Developmental Biology Viktor Hamburger Outstanding Educator Prize** – Introduction by **Nicole Theodosiou**, Union College, USA
- 112 **Erica Crespi**, Washington State University, USA. *The importance of ecological developmental biology in the classroom and becoming a citizen*

3:50 PM Break

Award Lectures II

4:20 PM – 6:20 PM

San Juan Ballroom

- 4:20 **Society for Developmental Biology Elizabeth D. Hay New Investigator Award** – Introduction by **Richard Behringer**, University of Texas MD Anderson Cancer Center, USA
- 113 **Mubarak Hussain Syed**, The University of New Mexico, USA. *A developmental tale of lineages, circuits and behaviors*
- 4:50 **Latin American Society for Developmental Biology Young Investigator Award** – Introduction by **Juan Riesgo-Escovar**, National Autonomous University of Mexico, Mexico
- Natalia Pabón-Mora**, Universidad de Antioquia, Colombia. *A plant living inside a plant: Morphological oddities and developmental genetics of the miniature holoparasitic members of the Apodanthaceae*
- 5:20 **Developmental Biology-Society for Developmental Biology Lifetime Achievement Award** – Introduction by **Ken Cho**, University of California, Irvine, USA
- 114 **Billie Swalla**, University of Washington, USA. *Deuterostome ancestors and chordate origins*
- 5:50 **Best Student Poster and Best Postdoctoral Presentation Awards**
Presenter: **B. Duygu Özpolat**, Washington University in St. Louis

Closing Reception

6:30 PM – 8:00 PM

Miramar Ballroom

Day 6 Monday, June 23

Departure

Society for Developmental Biology Board of Directors Meeting

8:30 AM – 4:00 PM

San Felipe

ACKNOWLEDGEMENTS

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Poster Artist: José Miguel Riesgo Álvarez

POSTER/EXHIBIT SESSION ASSIGNMENTS

Dedicated Poster and Exhibit Sessions are held in the Miramar Ballroom, June 19, 20 & 21, 2:00 PM – 5:00 PM when exhibitors, vendor representatives and poster authors will be present.

Program numbers are in **bold italics**.

Poster board numbers are in **bold** with their corresponding poster session letter.

Thursday, June 19

Poster/Exhibits Session A

2:00 PM-5:00 PM		Miramar Ballroom
Author Presentation:	Odd Number Board	2:00 PM - 3:30 PM
	Even Number Board	3:30 PM - 5:00 PM
Set up: Thursday, June 19, 8 AM - 10 AM		Teardown: Thursday, June 19, 5 PM
Poster Themes: Education and Outreach • Stem Cells and Tissue Regeneration • Development and Evolution • Cell Signaling • Single Cell Analysis • Organogenesis		

Education and Outreach

- 115 A1** *Shaping the Future of Developmental Biology: Postdoctoral Perspective* **Ben Dillon Cox**¹, Joshua Moore², Hailong Yang³, Cagney Coomer⁴, James Satterlee⁵, Amy Herbert⁶, Neha Ahuja⁷, Jesús Martínez-Gómez⁸, Yan Gong⁹, Nicole Aponte Santiago¹⁰, Kirk Amundson¹, Siobhan Brady¹, Crystal Rogers¹ (¹University of California-Davis, United States; ²McGill University, Canada; ³University of Massachusetts, Amherst, United States; ⁴University of Michigan, United States; ⁵University of Wisconsin-Madison, United States; ⁶University of Chicago, United States; ⁷University of Texas Southwestern Medical Center, United States; ⁸University of California--Berkeley, United States; ⁹Harvard University, United States; ¹⁰University of California - San Francisco, United States)
- 116 A2** *Developmental neurobiology teaching lessons for inclusion of neurodivergent learners* **Isha Verma**¹, R. Keith Duncan², Haylie L. Miller³, Michael Uhler^{4,5} (¹Department of Neurology, University of Michigan, Ann Arbor MI, 48109, United States; ²Department of Otolaryngology-Head and Neck Surgery, University of Michigan, Ann Arbor MI, 48109, United States; ³School of Kinesiology, University of Michigan, Ann Arbor MI, 48109, United States; ⁴Department of Biological Chemistry, University of Michigan, Ann Arbor MI, 48109, United States; ⁵Michigan Neuroscience Institute, University of Michigan, Ann Arbor MI, 48109, United States)
- 117 A3** *Enhancing Active Learning and Metacognitive Strategies in Large-Enrollment Biology Courses* **Julian Sosnik** (Northeastern University, USA)
- 118 A4** *Teaching concepts of development through the study of endocrine disruption by bisphenols: A comparison of impact on graduate and undergraduate education* **Gary Lange**, Rose Lange (Saginaw Valley State University, United States of America)
- 119 A5** *Share Your Expertise and Enthusiasm with Teachers: Organize a Workshop for Teachers to Build Inexpensive Microscopes for Classrooms* **Bob Goldstein** (Univ of North Carolina at Chapel Hill, USA)
- 120 A6** *Collaborating with Tribal Colleges to develop targeted workshops* Jennifer Forecki¹, Zachary Lenning², **Christa Merzdorf**¹ (¹Montana State University, USA; ²Aaniih Nakoda College, USA)
- 121 A7** *Developing Scientists: An Interinstitutional Developmental Biology CURE and Regional DB Symposium increases student scientific identity* **Adriana Visbal**¹, Mardelle Atkins², Elda Rueda¹, Sharmin Hassan² (¹University of Houston-Downtown, United States; ²Sam Houston State University, United States)

- 122 A8** *The Neural Tube CURE: A developmental biology research course that helps undergraduate students grow as scientists* **Joshua Fandel**, Anneke Kakebeen (CU Boulder, USA)
- 123 A9** *Fly-CURE and connecting curriculum: multi-institutional course-based undergraduate research experiences in genetics, developmental biology, and beyond* **Julie Merkle**¹, Kayla Bieser², Jacob Kagey³, Jamie Siders⁴, Alysia Vrailas-Mortimer⁵ (¹University of Evansville, USA; ²Nevada State University, USA; ³University of Detroit Mercy, USA; ⁴Ohio Northern University, USA; ⁵Oregon State University, USA)
- 124 A10** *The Developmental Studies Hybridoma Bank: Sharing Monoclonal Antibodies Through Open Science* **Douglas W. Houston**, Karen L. Elliott Thompson, Gemma Kerr (The University of Iowa, United States)
- 125 A11** *Microscop'EM all: A model of science outreach in Guatemala* **Pablo Silva-Rodriguez** (Universidad del Valle de Guatemala, Guatemala)
- 126 A12** *Visual cell type descriptions from 3D electron microscopy of the apple snail retina* **Mol Mir**¹, Melainia McClain¹, Alice Accorsi², Stephanie Nowotarski¹, Alejandro Sánchez Alvarado¹ (¹Stowers Institute for Medical Research, United States; ²University of California, Davis, United States)

Stem Cells and Tissue Regeneration

- 127 A13** *Gli3 is required for endometrial homeostasis during the estrous cycle* **Elizabeth Ung**, LeCaine Barker, Elle Roberson (University of Colorado Anschutz Medical Campus, United States)
- 128 A14** *Derivation of embryonic stem cells across avian species* **Xi Chen**^{1,2}, Guo Zheng², Xinyi Tong², Xizi Wang², Xugeng Liu², Hiroki Nagai³, Ping Wu², David Huss⁴, Martin Tran⁴, Christina Wu², Lin Cao², Yixing Huang², Han Zeng², Fan Feng², Nima Adhami², Sirjan Mor², Rusty Lansford⁴, Cheng-Ming Chuong², Guojun Sheng³, Carlos Lois¹, Qi-Long Ying² (¹California Institute of Technology, USA; ²University of Southern California, USA; ³Kumamoto University, Japan; ⁴Children's Hospital Los Angeles, USA)
- 129 A15** *Modeling Joint Cartilage Regeneration in Zebrafish* **Oluchi Ofoegbu**, Kelsey Elliott, Gage Crump (University of Southern California, USA)
- 130 A16** *Elucidating the role of Notch signaling in radial nerve cord and intestinal regeneration in the sea cucumber *Holothuria glaberrima** **Julienn Torres-Rodriguez**, Pamela A. Esteva-Camacho, Malen A. Suarez-Soto, Raquel M. Cordero-Frontera, Jose E. Garcia-Arraras, PhD. (University of Puerto Rico, Rio Piedras Campus, Puerto Rico)
- 131 A17** *Differential expression of the developmental transcription factor Myc during post-traumatic regeneration in the brittle star *Ophioderma brevispinosa** **Soji Ademiluyi**¹, Vladimir Mashanov², Reyhaneh Nouri¹, Denis Machado¹, Daniel Janies¹ (¹University of North Carolina at Charlotte, United States; ²Wake Forest School of Medicine Institute for Regenerative Medicine, United States)
- 132 A18** *Investigating the role of neural crest-derived cells in zebrafish cardiac regeneration* **Alexandra Haugan**, Luke Lyons, Megan Martik (University of California, Berkeley, United States of America)
- 134 A20** *Embryonic epicardium as a key player in myocardial regeneration following cryoinjury* **Kristýna Neffeová**^{1,2}, Eva Rohlová³, Naraine Ravindra³, Eva Nekvindová^{1,2}, David Sedmera¹, Radek Šindelka³, Hana Kolesová¹ (¹Charles University, First Faculty of Medicine, Institute of Anatomy, Czech Republic; ²Czech Centre for Phenogenomics, Institute of Molecular Genetics of the CAS, Czech Republic; ³Laboratory of Gene Expression Institute of Biotechnology CAS, Czech Republic)
- 135 A21** *The essential role of connective-tissue cells during axolotl limb regeneration* **Damián García-García**^{1,2}, Dunja Knapp³, Minjoo Kim¹, Katelyn White¹, Heath Fuqua¹, Ryan Seaman¹, Riley Grindle¹, Sergej Nowoshilow⁴, Maria Novatchkova^{4,5}, Fred W. Kolling⁶, Joel H. Graber¹, Prayag Murawala¹ (¹Mount Desert Island Biological Laboratory, USA; ²Department of Nephrology and Hypertension, Hannover Medical School, Germany;

³Center for Regenerative Therapies (CRTD), Technische Universität Dresden, Germany;
⁴Institute of Molecular Pathology, Austria; ⁵Institute of Molecular Biotechnology, Austria;
⁶Dartmouth Cancer Center, Dartmouth Geisel School of Medicine, USA)

- 136 **A22** *Unlocking Regeneration: Visualizing the Role of Ephrin Signaling in Newt Lens Regeneration* **Sofia Rebull**, George Tsissios, Jared Tangeman, Erika Grajales Esquivel, Katia Del Rio-Tsonis (Miami University, United States)
- 137 **A23** *Mantle cells of zebrafish lateral line undergo epithelial-to-mesenchymal transition (EMT) during neuromast regeneration* **Hadley Johnson**, Josie Ward, Jason Meyers (Colgate University, USA)
- 138 **A24** *Severance of neural communication disrupts regeneration of camera-type eyes in the apple snail *Pomacea canaliculata** **Carlos Barradas Chacón**¹, Alice Accorsi², Alejandro Sánchez Alvarado¹ (¹Stowers Institute for Medical Research, United States; ²University of California Davis, United States)
- 140 **A26** *Investigating neural patterning in the *X. tropicalis* spinal cord during regeneration* **Avery Angell Swearer**, Sam Perkowski, Andrea Wills (University of Washington, United States of America)
- 141 **A27** *Elucidating the role of HNF4 in radial nerve cord and intestinal regeneration in the sea cucumber *Holothuria glaberrima** **Malen A. Suarez-Soto**, Julienn Torres-Rodriguez, Raquel M. Cordero-Frontera, Pamela A. Esteva-Camacho, Jose E. Garcia-Arraras, PhD. (University of Puerto Rico, Rio Piedras Campus, Puerto Rico)
- 142 **A28** *Characterization of the effects of retinoic acid on optic nerve regeneration and reconnection in *Rana pipiens** **Alejandra Muñiz-Rosado**¹, Andrea P. Avilés-García¹, Juliet Ocasio-Morales¹, Rosa E. Blanco^{2,3}, Valeria De La Rosa-Reyes^{1,3} (¹Department of Biology, University of Puerto Rico at Bayamon, Puerto Rico; ²Department of Anatomy and Neurobiology, University of Puerto Rico School of Medicine, San Juan, Puerto Rico; ³Institute of Neurobiology, University of Puerto Rico Medical Sciences Campus, San Juan, Puerto Rico)
- 144 **A30** *Sniffing Out Neuroregeneration: Olfactory Neurogenesis in the Context of Alzheimer's Disease* **Lynne Nacke**¹, Debangana Chakravorty¹, Sriivatsan Govinda Rajan², Ankur Saxena¹ (¹UAB Heersink School of Medicine, United States; ²Memorial Sloan Kettering Cancer Center, United States)
- 145 **A31** *Rab18 regulates neurogenesis through the Wnt pathway in the postnatal subventricular zone-olfactory bulb pathway* **Tsu-Wei Wang**, Ya-Lin Guo, Chen-Man Chou, Tsui-Yi Chan, Min-Fang Tsai, Sang-Yi Wu, Xiu-Li Yang, Chia-Chi Chung (Department of Life Science, National Taiwan Normal University, Taiwan)
- 146 **A32** *Lineage Tracing of Photoreceptor Precursor Cell Subpopulations During Murine Retinal Development* **Joseph Yano**¹, Zhangyong Wei², Brent Bell², Katherine Uyhazi^{1,2} (¹Cell and Molecular Biology, University of Pennsylvania Perelman School of Medicine, USA; ²Department of Ophthalmology, Scheie Eye Institute, University of Pennsylvania Perelman School of Medicine, USA)
- 147 **A33** *Exploring the Molecular Landscape of RPE Neurocompetence: Single-Nucleus Multiomic Insights into Chicken Retina Regeneration* **Erika Grajales-Esquivel**, Carlos M Charris Dominguez, Stacy Bendezu-Sayas, Jared A Tangeman, Raul Perez-Estrada, Katia Del Rio-Tsonis (Miami University, USA)
- 148 **A34** *The Role of Notch Signaling During Regenerative Asymmetric Divisions in Zebrafish Retinas* **Vernon McDermott**, Nicholas Mecca, Jason Meyers (Colgate University, USA)
- 149 **A35** *Using oxygen consumption to assess metabolic dynamics in *Xenopus tropicalis** **Yelena Hallman**, Andrea Wills (University of Washington, United States of America)
- 150 **A36** *Elucidating principles of regeneration in a novel mollusk model system* **Luiza Saad**¹, Patrick Aoude¹, Peter Reddien^{1,2,3} (¹Whitehead Institute for Biomedical Sciences, United States; ²Howard Hughes Medical Institute, United States; ³Department of Biology, Massachusetts Institute of Technology, United States)

- 151 **A37** *Identification of Novel Proteins that Signal to Promote Regeneration* **Sarai Rivera Rivera**, Christopher Perez, Britessia Smith, Rachel Roberts-Galbraith (University of Georgia, United States)
- 152 **A38** *Defining the metabolic regulation of immune cell populations during tadpole tail regeneration* **Beatrice Milnes**¹, Madhavi Karthik², Andrea Wills² (¹University of Washington, Molecular and Cell Biology Program, USA; ²University of Washington, Department of Biochemistry, USA)
- 153 **A39** *The role of somite-derived endothelial cells in hematopoietic stem cell developmen* **Jose Chacon**^{1,2}, Lin Grimm^{1,2}, Pankaj Sahai-Hernandez ¹, Claire Pouget¹, David Traver^{1,2} (¹University of California, San Diego, USA; ²Cedars-Sinai Medical Center, USA)

Development and Evolution

- 154 **A40** *Using Megaselia abdita's Genome to Unlock Evolutionary Novelty in Embryogenesis* **Ayse Tenger-Trolander**¹, Ezra Amiri¹, Valentino Gantz², Chun Wai Kwan^{1,3}, Sheri Sanders⁴, Urs Schmidt-Ott¹ (¹University of Chicago, United States; ²University of California San Diego, United States; ³RIKEN Center for Biosystems Dynamics Research, Japan; ⁴Notre Dame University, United States)
- 155 **A41** *Understanding the evolution of ubiquitination in Metazoa through Khl family evolutionary history* **Lauren DeWildt**¹, Jonathan Bahamon¹, Anna Cavaliere¹, Filomena Ristatore², Ugo Coppola¹ (¹Department of Biological Sciences, Florida Gulf Coast University, Fort Myers, USA; ²Biology and Evolution of Marine Organisms, Stazione Zoologica Anton Dohrn Napoli, Naples, Italy)
- 156 **A42** *A single-cell view of growth dynamics in Schmidtea mediterranea* **Adriaan B. Meiborg**^{1,2}, Amrutha Palavalli ¹, Ana M. Mellado Fuentes¹, Kristina K. Mirkes^{1,2}, Gaurav Vaidya^{1,2}, Steffen Werner³, Micheal M. Dorrity⁴, Hanh T. K. Vu¹ (¹Developmental Biology Unit, European Molecular Biology Laboratory (EMBL), Germany; ²Collaboration for joint PhD degree between EMBL and Heidelberg University, Germany; ³Department of Experimental Zoology, Wageningen University & Research, The Netherlands; ⁴Molecular Systems Biology Unit, European Molecular Biology Laboratory (EMBL), Germany)
- 158 **A44** *Elaborating the regulatory network of cnidocyte specification in Nematostella vectensis* **Benjamin Danladi**¹, Layla Al-shaer¹, Jamie A. Havrilak¹, Kejue Jia², Wyatt Forwood¹, Timothy Dubuc³, Jacob Musser², Michael J Layden¹ (¹Department of Biological Science, Lehigh University, Bethlehem, PA, USA; ²Department of Molecular and Cellular Biology, Yale University, New Haven, CT, USA; ³Department of Biology, CUNY Queens, New York, NY, USA)
- 159 **A45** *RTK signaling is necessary for dpERK induction, D quadrant organizer specification, and dorsal ventral axis patterning in the marine gastropod, Crepidula atrasolea* **Stephanie Neal**¹, Francesca Musso¹, Mars Garcia¹, Maryna Lesoway¹, Vanessa Barone², Deirdre Lyons¹ (¹Scripps Institution of Oceanography, UCSD, United States of America; ²Stanford University, United States of America)
- 160 **A46** *Specification of the primary embryonic axis in metazoan embryos: Insights from sea star development* **Deema Abayawardena**, Athula H. Wikramanayake (University of Miami, USA)
- 161 **A47** *Unveiling the role of maternal factors in regulating egg polarity and Wnt/ β -catenin signaling during early embryogenesis in the cnidarian Nematostella* **Arushi Gupta**, Athula Wikramanayake (University of Miami, United States of America)
- 162 **A48** *Molecular asymmetry in Cephalochordate early embryos: implications for the evolution of early patterning events in chordates* **Jr-Kai Sky Yu**, Che-Yi Lin (Institute of Cellular and Organismic Biology, Academia Sinica, Taipei, Taiwan, Taiwan)
- 163 **A49** *Investigating Structural Coloration in Morpho peleides Wing Scales using RNA-seq* **Jessica Wilkins**, Gabrielle Jerz, Nipam Patel (Marine Biological Laboratory, United States)

- 164 **A50** *Spatial and temporal expression analysis of pigmentation genes using hybridization chain reaction (HCR) in Drosophila pupae* **Erick X Bayala Rodríguez**, Pratyush Sinha, Patricia J Wittkopp (University of Michigan, United States)
- 165 **A51** *Rhythmic contraction waves trigger the Yap-dependent mechanoregulatory loop fueling gastrulation movements in medaka.* **Cielo Lucia Centola**¹, Jorge Corbacho¹, Lázaro Centanin², Juan Ramón Martínez Morales¹ (¹Andalusian Center for Developmental Biology (CABD), Spain; ²Centre for Organismal Studies (COS), Germany)
- 166 **A52** *The Expression of Pax6 Genes in an Eyeless Arachnid Suggests Their Ancestral Role in Arachnid Head Development* **Austen Barnett** (DeSales University, United States)
- 167 **A53** *FGF Pathway Knockdown Triggers Hypoxia, Disrupting Molting and Metabolism in Rhodnius prolixus* **Guillermina Buzetti**^{1,2}, María José Delgado^{1,2}, Andrés Lavore^{1,2} (¹Centro de BioInvestigaciones (Universidad Nacional del Noroeste de la Provincia de Buenos Aires-CICBA), Argentina; ²Centro de Investigaciones y Transferencias del Noroeste de la provincia de Buenos Aires (CITNOBA-CONICET), Argentina)
- 168 **A54** *Innovation and diversification of and through sexual dimorphism: insights from horned beetles* **Erica Nadolski**, Armin Moczek (Indiana University Bloomington, USA)
- 169 **A55** *Neural crest-derived melanocytes in the mammalian cochlear stria vascularis as an evolutionary novelty* **Tianli Qin**, Tatiana Solovieva, Marianne Bronner (California Institute of Technology, USA)
- 170 **A56** *Lens Nucleus Centralization: A Conserved Optical Development Mechanism in Xenopus Laevis* **Karla Akari Garcia**¹, Kelly Tseng¹, Irene Vorontsova² (¹University of Nevada, Las Vegas, United States; ²University of Auckland, New Zealand)
- 171 **A57** *Evolution of inhibitory neuron development in the vertebrate telencephalon* **Giacomo Gattoni**¹, Erica C Hurley¹, Hunter S Whitbeck¹, Jamie Woych¹, Elias Gumnit¹, Astrid Deryckere¹, Panagiotis Oikonomou², Bianca Dumitrascu³, Maria Antonietta Tosches¹ (¹Dept Biological Sciences, Columbia University, USA; ²Dept Biomedical Engineering, Columbia University, USA; ³Irving Institute for Cancer Dynamics, Columbia University, USA)
- 172 **A58** *Retinal progenitor cells show temporal changes in transcriptional maintenance of retinal identity regulated by Vsx2* **Alan Hurtado**¹, Xiaodong Li², Edward Levine^{1,2} (¹Vanderbilt University, United States of America; ²Vanderbilt University Medical Center, United States of America)
- 173 **A59** *Genetic and neural mechanisms underlying behavioral evolution in cavefish* Stefan Choy¹, Renee Mapa¹, Suzanne McGaugh², **Johanna Kowalko**¹ (¹Lehigh University, United States of America; ²University of Minnesota, United States of America)
- 175 **A61** *Thyroid hormone regulates pectoral fin morphogenesis during zebrafish metamorphosis* **Nicolás Cumplido**, Yuchen (Anna) Zhou, Mica Quelle, Sarah McMenamin (Boston College, United States of America)
- 176 **A62** *Analyzing the role of Endothelin-2 in survival and growth of zebrafish post-embryonic development* **Jacob Gray**, Parham Diba, Ingo Braasch, Julia Ganz (Michigan State University, The United States of America)
- 177 **A63** *Dissecting the role of Gli3 transcription factor for vertebrate appendages formation.* **Joaquín Letelier**¹, Fernando Vázquez¹, Constanza Mounier¹, Isidora Naranjo¹, Manuel Fernández^{2,3}, Ignacio Maeso^{2,3} (¹Centre for Integrative Biology, Chile; ²Department of Genetics, Microbiology and Statistics, University of Barcelona, Spain; ³Institute for Biodiversity Research (IRBio), Barcelona., Spain)
- 178 **A64** *Shaping sides: dorsal-ventral patterning mechanisms across the fin to limb transition* M Brent Hawkins¹, Sofía Zdrá², Silvia Naranjo³, Miguel Juliá², Manuel Sánchez-Martín⁴, Juan J Tena³, Matthew P Harris¹, **Marian Ros**² (¹Department of Genetics, Harvard Medical School, Boston, Massachusetts., USA; ²Instituto de Biomedicina y Biotecnología de Cantabria (IBBTEC), Consejo Superior de Investigaciones Científicas-Sociedad para el Desarrollo de Cantabria-Universidad de Cantabria, Santander., Spain; ³Centro Andaluz de Biología del Desarrollo (CABD), Consejo Superior de Investigaciones Científicas/Universidad Pablo de Olavide, Sevilla., Spain; ⁴Department of Medicine, University of Salamanca, Salamanca., Spain)

- 179 **A65** *Exploring Triggers of Meckel's Cartilage Regression Using Satb2-Deficient Mice with Delayed Regression* **David Zimčík**^{1,2}, Viktoria Parobková³, Veronika Jakešková¹, Tomáš Zikmund³, Marcela Buchtová^{1,2} (¹Laboratory of Molecular Morphogenesis, Institute of Animal Physiology and Genetics, Czech Academy of Sciences, Brno, Czech Republic; ²Department of Experimental Biology, Faculty of Science, Masaryk University, Brno, Czech Republic; ³ Laboratory of Computed Tomography, CEITEC BUT, Brno, Czech Republic)
- 180 **A66** *The Cellular and Molecular Origin of the Avian Craniofacial Integument* **Daniel Núñez-León**¹, Marianne E. Bronner², Cheng-Ming Chuong¹ (¹University of Southern California, USA; ²Caltech, USA)
- 181 **A67** *Craniofacial-specific differential expression reveals novel genes underlying jaw divergence in specialist pupfishes* **M. Fernanda Palominos**^{1,2}, Vanessa Muhl^{1,2}, Christopher H. Martin^{1,2} (¹Museum of Vertebrate Zoology, University of California, Berkeley, United States of America; ²Department of Integrative Biology, University of California, Berkeley, United States of America)
- 182 **A68** *alx function in the frontonasal skeleton revives the pharyngeal arch-0 hypothesis* **Nadia Wright**¹, Jennyfer M. Mitchell¹, Raisa Bailon¹, Colette Dolby¹, Daniel Medeiros², James T. Nichols¹ (¹University of Colorado Anschutz Medical Campus, USA; ²University of Colorado Boulder, United States)
- 184 **A70** *Role of Pitx genes in the development of Frontonasal Domain in Zebrafish* **Muniza Junaid**, Gage Crump (Eli and Edythe Broad Center for Regenerative Medicine and Stem Cell Research, Keck School of Medicine, University of Southern California, United States)
- 185 **A71** *Reptile to chicken enhancer swaps to understand the molecular basis underlying morphological diversity in the vertebrate lung* **Joseph S Bush**¹, Logan T Edvalson¹, Colleen G. Farmer², Jeffery R Barrow¹ (¹Brigham Young University, USA; ²University of Utah, USA)
- 186 **A72** *Evolutionary Conservation of Stress Ball Morphogenesis in the Lungs of Squamates* **Kaleb J. Hill**¹, Aaron H. Griffing^{1,2,3}, Michael A. Palmer^{1,4}, Aria Lupo⁵, Natalia A. Shylo⁶, Tony Gamble^{3,7,8}, Paul A. Trainor^{6,9}, Celeste M. Nelson^{1,2} (¹Department of Chemical & Biological Engineering, Princeton University, Princeton, NJ 08544, United States of America; ²Department of Molecular Biology, Princeton University, Princeton, NJ 08544, United States of America; ³Milwaukee Public Museum, Milwaukee, WI 53233, United States of America; ⁴Marine Biological Laboratory, Woods Hole, MA 02543, United States of America; ⁵Department of Ecology & Evolutionary Biology, Princeton University, Princeton, NJ 08544, United States of America; ⁶Stowers Institute for Medical Research, Kansas City, MO 64110, United States of America; ⁷Department of Biological Sciences, Marquette University, Milwaukee, WI 53233, United States of America; ⁸Bell Museum of Natural History, University of Minnesota, St. Paul, MN 55113, United States of America; ⁹Department of Anatomy and Cell Biology, University of Kansas Medical Center, Kansas City, KS 66160, United States of America)
- 187 **A73** *Multi-omics analysis reveals a novel origin of pulmonary smooth muscle in the lungs of birds* **Aaron Griffing**¹, Katharine Goodwin^{1,2}, Michael Palmer^{1,3}, Benjamin Brack¹, Bezia Lemma¹, Jorge Moreno^{1,4}, Chan Jin Park¹, Megan Rothstein¹, Wei Wang¹, Pengfei Zhang¹, Ricardo Mallarino¹, Celeste Nelson¹ (¹Princeton University, United States of America; ²Current: MRC Laboratory of Molecular Biology, United Kingdom; ³Current: Marine Biological Laboratory, United States of America; ⁴Current: Stowers Institute for Medical Research, United States of America)
- 188 **A74** *Breaking symmetry is regulated by Nodal during initiation of the spiral intestine* **Nicole Theodosiou**, Anyerys Diaz (Union College, United States)
- 189 **A75** *3'regM, a new tool to understand the Retinoic acid-Nr2f1 relationship in vertebrate heart* Joshua Waxman¹, Abe Canowitz¹, **Ugo Coppola**^{1,2} (¹Molecular Cardiovascular Biology Division and Heart Institute, Cincinnati Children's Hospital Medical Center, Cincinnati, USA; ²Department of Biological Sciences, Florida Gulf Coast University, Fort Myers, USA)

Cell Signaling

- 191 **A77** *Elucidating the role of Notch signaling in apical constriction during Drosophila neuroblast ingression* **Fadi Zidan**, Gerald Lerchbaumer, Sergio Simoes, Ulrich Tepass (Cell and Systems Biology - University of Toronto, Canada)
- 192 **A78** *Decoding Dorsal Patterning: Input-output dynamics of BMP signaling and the role of Zen in a rapid transcriptional response* **Susanna Brantley**¹, Jacqueline Janssen², Anna Chao¹, Shelby Blythe³, Massimo Vergassola², Stefano Di Talia¹ (¹Duke University, United States; ²École Normale Supérieure, France; ³Northwestern University, United States)
- 193 **A79** *Continuous Monitoring of Signal Disruption in Human iPSCs for Developmental Toxicity Assay* **Yusuke Okubo**^{1,2}, Kashu Mizota^{1,2}, Koki Murayama^{1,2}, Rieko Matsuura¹, Archana Mootha¹, Satoshi Kitajima¹, Yoko Hirabayashi¹, Yoshihiro Nakajima³, Junji Fukuda² (¹National Institute of Health Sciences, Japan; ²Yokohama National University, Japan; ³National Institute of Advanced Industrial Science and Technology, Japan)
- 194 **A80** *Mechanisms of Bone Morphogenetic Protein Mesoderm Patterning* **Courtney Tello**, Benjamin Martin (Stony Brook University, United States)
- 195 **A81** *BMP receptor trafficking and sub-functionalization in signal transduction during embryonic patterning in the zebrafish* **Jeet H. Patel**, Benjamin Tajer, Mary C. Mullins (University of Pennsylvania, United States of America)
- 196 **A82** *Regulation of retinoic acid signaling during craniofacial development* **Blanka Mrazkova**¹, Karin Zueckert-Gaudenz², Radislav Sedlacek¹, Alex Moise³, Paul Trainor^{2,4} (¹Institute of Molecular Genetics of the Academy of Sciences, Czechia; ²Stowers Institute for Medical Research, USA; ³Northern Ontario School of Medicine University, Canada; ⁴University of Kansas Medical Center, USA)
- 197 **A83** *Elucidating the roles of divergent Notch ligands and fringe glycosylation in vertebrate segmentation* **Nathen Zavada**, Dustin Servello (The Ohio State University , The United States of America)
- 198 **A84** *Investigating the role of EGFR signaling in NADPH-oxidase-derived ROS production during zebrafish epiboly* **Francis Valeria Eliosa-García**, Hilda Lomelí-Buyoli, Enrique Salas-Vidal (Department of Developmental Genetics and Molecular Physiology, Institute of Biotechnology, National Autonomous University of Mexico, Mexico)
- 199 **A85** *A versatile optogenetic toolkit to study mechanical modulation of tissue morphogenesis and patterning* **Eric Upton**, Tony Tsai (Washington University School of Medicine, United States)
- 200 **A86** *Investigating the Role of Kizuna in Dishevelled C-terminus Signaling in Ciliogenesis* **Maya Lines**, Kenan Murray, Jaeho Yoon, Ira Daar (National Cancer Institute, United States of America)
- 201 **A87** *Foxi1 regulates multiple steps of mucociliary development and ionocyte specification through transcriptional and epigenetic mechanisms* **Mona Hansen**^{1,2}, Magdalena Maria Brislinger-Engelhardt^{1,2,3}, Sarah Bowden^{1,3,4}, Africa Temporal-Plö^{1,3,4}, Damian Weber^{1,2,3}, Sandra Hägele^{1,2,3}, Peter Walentek^{1,2,3,4} (¹Internal Medicine IV, Medical Center - University of Freiburg, Hugstetter Strasse 55, 79106 Freiburg, Germany; ²SGBM Spemann Graduate School for Biology and Medicine, University of Freiburg, Albertstrasse 19A, 79104 Freiburg, Germany; ³CIBSS Centre for Integrative Biological Signalling Studies, University of Freiburg, Schänzlestrasse 18, 79104 Freiburg, Germany; ⁴IMPRS-IEM International Max Planck Research School of Immunobiology, Epigenetics and Metabolism, Max Planck Institute of Immunobiology and Epigenetics, Stübeweg 51, 79108 Freiburg, Germany)
- 202 **A88** *Uncovering the role of Importin9 in vertebrate Hedgehog signaling* **Hanh Truong**, Alyssa Long, Melissa Bentley-Ford, Tamara Caspary (Emory University, United States)
- 203 **A89** *Investigating the relationship between Notch signaling and mechanics during early mouse embryo development* **Sneha Rao** (University of California, San Francisco, USA)

Single Cell Analysis

- 204 A90** *Using scRNA-seq to characterize cellular diversity and lineage trajectories in the highly regenerative flatworm *Macrostomum lignano** **Samantha Hoge**, Matthew G. Voas, Francisco P. Lobo, Erin L. Davies (Center for Cancer Research, National Cancer Institute, National Institutes of Health, Frederick, MD, 21704, USA, USA)
- 205 A91** *Identifying cell types in *Parhyale hawaiiensis* ovaries using single-cell RNA seq* **Neeharika Verma**^{1,2}, Amelie Raz³, Sheri Grill³, Nipam H. Patel^{1,2} (¹Department of Organismal Biology and Anatomy, The University of Chicago, Chicago, IL, USA; ²Marine Biological Laboratory, Woods Hole, MA, USA; ³Whitehead Institute for Biomedical Research, Cambridge, MA, USA)
- 206 A92** *A quantitative framework for differential analysis of cellular composition in single-cell perturbation experiments* **Madeleine Duran**^{1,2}, Eliza Barkan^{1,2,3}, Amy Tresenrider^{1,2}, Heidi Lee^{1,2}, Ryan Friedman¹, Nicholas Lammers¹, Marazzano Colón¹, Jennifer Franks¹, Brent Ewing^{1,4}, David Kimelman^{1,5}, Cole Trapnell^{1,2,4,6} (¹Department of Genome Sciences, University of Washington, USA; ²Seattle Hub for Synthetic Biology, USA; ³Graduate Program in Molecular & Cellular Biology, University of Washington, USA; ⁴Brotman Baty Institute for Precision Medicine, University of Washington, USA; ⁵Department of Biochemistry, University of Washington, USA; ⁶Allen Discovery Center for Cell Lineage Tracing, USA)
- 207 A93** *Calcium-Dependent Gene Expression: Immediate Early Genes and Late Response Genes in Zebrafish Development* **Nicole Aponte Santiago**, Dan Wagner (University of California San Francisco, Eli and Edythe Broad Center for Regeneration Medicine and Stem Cell Research Center for Reproductive Sciences, United States)
- 208 A94** *Embryo-scale single-cell chemical transcriptomics reveals dependencies between cell types and signaling pathways* **Eliza Barkan**, Madeleine Duran, Nick Lammers, Amy Tresenrider, Dana Jackson, Heidi Lee, Benjamin Haagen, Lauren Saunders, Phil Abitua, David Kimelman, Cole Trapnell (University of Washington, USA)
- 209 A95** *PRDM16 is required for normal nasal septal cartilage and bone development in mice* **Eliya Tazreena Tashbib**¹, Victoria Hansen¹, Alexis Klee¹, Eloise Fadial¹, Maeve O'Brien^{1,2}, Lomeli C. Shull³, Chia-Lung Wu¹ (¹University of Rochester, United States; ²Harvard University, United States; ³University of New Mexico, United States)
- 210 A96** *Axial level differences in transcriptional programs contribute to cranial versus cardiac neural crest developmental potential* **Aria Fasse**, Tatiana Solovieva, Marianne Bronner (California Institute of Technology, United States)
- 211 A97** *The Role of Hand2 in Mandibular Development: Insights from Single-Cell Multiomics* **Yonina Loskove**¹, David Gorkin¹, Samantha A. Brugmann², Kevin Peterson³ (¹Department of Biology, Emory University, Atlanta, GA, United States of America; ²Division of Developmental Biology, Department of Pediatrics, Cincinnati Children's Hospital Medical Center, Cincinnati, OH, United States of America; ³The Jackson Laboratory, Bar Harbor, ME, United States of America)
- 212 A98** *Deciphering cellular and molecular principles of Hindbrain Choroid Plexus development* **Petra Kompanikova**¹, Antonia Mikulova¹, Terezia Kurucova², Michaela Prochazkova³, Ivana Bukova³, Jan Prochazka³, Boris Tichy², Radislav Sedlacek³, Vitezslav Bryja¹ (¹Department of Experimental Biology, Faculty of Science, Masaryk University, 62500, Brno, Czech Republic; ²CEITEC - Central European Institute of Technology, Masaryk University, 62500, Brno, Czech Republic; ³Czech Centre for Phenogenomics and Laboratory of Transgenic Models of Diseases, Institute of Molecular Genetics of the CAS, Prague 142 20, Czech Republic)

Organogenesis

- 214 A100** *Shear stress impacts coronary artery recruitment and maturation* Darla Le, Loren Swaney, William Merritt, MaryKate Kordash, **Laura Dyer** (University of Portland, USA)

- 215 A101** *Examining the Role of Tbx5 in Atrial Septation* **Lisa Iwamoto-Stohl**, Benoit Bruneau (Gladstone Institutes, USA)
- 216 A102** *Notch Receptors Involved In The choice Between Secretory and Enterocyte Cells Within The Embryonic Intestinal Epithelium* **Anisa Iffikhar** (Clarkson University, USA)
- 217 A103** *Mechanisms of Enteric Muscle Regeneration in the Sea Cucumber *Holothuria glaberrima** **Alejandra Beltrán-Rivera**, Joshua G. Medina-Feliciano, Paula Sepúlveda-Arsuaga, Matilde Grosso-García, José E. García-Arraras (University of Puerto Rico, Rio Piedras Campus, Puerto Rico)
- 218 A104** *Investigating the Influence of Left-Right Asymmetry on *Xenopus* Intestinal Rotation* **Abigail Wright**, Nanette Nascone-Yoder (Department of Molecular Biomedical Sciences, College of Veterinary Medicine, North Carolina State University, Raleigh, NC 27607, USA)
- 219 A105** *Intestinal differences between postembryonic zebrafish.* Pijush Sutradhar¹, **Samia Sadaf**¹, Adam Rich², Kenneth Wallace¹ (¹Clarkson University, Potsdam, NY, , United States of America; ²SUNY Brockport, Brockport, NY, United States of America)
- 220 A106** *Building Pancreatic Tubes: The Hippo modulator MERLIN is required for pancreatic morphogenesis and endocrine differentiation.* **Neha Ahuja**, Tyler Bierschenk, Chris Chaney, Jinlong Lin, Kevin Dean, Thomas Carroll, Ondine Cleaver (University of Texas Southwestern Medical Center, United States)
- 221 A107** *Exploring hepatomesenchymal cell plasticity and cell states in liver development and regeneration* **Bradley Hoskin**^{1,2}, Rebecca Cullum², Kwangjin Park^{1,2}, Pamela Hoodless^{1,2} (¹University of British Columbia, Canada; ²BC Cancer Research Centre, Canada)
- 222 A108** *Left-Right Asymmetries in Fibronectin Shape Stomach Curvature.* **Carley Huffstetler**, Dr. Nanette Nascone-Yoder (Department of Molecular Biomedical Sciences, College of Veterinary Medicine, North Carolina State University, Raleigh, NC, United States of America)
- 223 A109** *Using in vitro and in vivo platforms to identify mechanisms regulating ENS development in the proximal GI tract* **Mahliyah Adkins-Threats**¹, Alex Eicher², Sophia Li¹, Lu Han³, Aaron Zorn¹, Jim Wells¹ (¹Cincinnati Children's Hospital Medical Center, USA; ²Brigham and Women's Hospital, USA; ³Medical University of South Carolina, USA)
- 224 A110** *Mosaic analysis with double markers reveals the imprinted *Grb10* locus regulates multipotent pancreatic progenitor expansion* **Paul Riccio**¹, Henrik Semb² (¹Fairfield University, United States; ²Helmholtz Munich, Germany)
- 226 A112** *The role of *krüppel* like factor 17 in zebrafish lateral line development* Sophia Guitar, Emma Dinolfo, **Ezra Lencer** (Lafayette College, United States)

Friday, June 20

Poster/Exhibits Session B

2:00 PM – 5:00 PM

Miramar Ballroom

Author Presentation: Odd Number Board 2:00 PM - 3:30 PM
 Even Number Board 3:30 PM – 5:00 PM

Set up: Friday, June 20, 8 AM - 10 AM

Teardown: Friday, June 20, 5 PM

Poster Themes: Imaging Development • Emerging Research Organisms • Morphogenesis
 • Cell Growth and Polarity • Cell Fate Specification and Differentiation • Cell Adhesion, Migration and Guidance

Imaging Development

- 227 B1** *Mechanisms of epiblast and primitive endoderm segregation* **Eszter Posfai**¹, Rebecca Kim-Yip¹, David Denberg^{1,2,3}, Denis Faerberg^{1,2}, Hayden Nunley³, Madeleine Chalifoux¹, Bradley Joyce¹, Jared Toettcher¹, Bin Gu^{4,5} (¹Princeton University, USA; ²Lewis-Sigler Institute for Integrative Genomics, United States; ³Center for Computational Biology,

Flatiron Institute – Simons Foundation, United States; ⁴Department of Obstetrics, Gynecology and Reproductive Biology, College of Human Medicine, Michigan State University, United States; ⁵Institute for Quantitative Health Science and Engineering, Michigan State University, USA)

- 228 B2** *Imaging the earliest events of zebrafish development with GEARs and FLASH-PAINT for single-molecule insights* **Caroline Hoppe**, Curtis W. Boswell, Florian Schüder, Joerg Bewersdorf, Antonio J. Giraldez (Yale University, USA)

Emerging Research Organisms

- 230 B4** *Nutrient transport genes play a role in the cellular mechanisms of bleaching in cnidarian-algal symbiosis* **Griffin Kowalewski**^{1,2}, Shumpei Maruyama¹, Natalie Swinhoe¹, Phillip Cleves^{1,2} (¹Carnegie Institution for Science, United States; ²Johns Hopkins University, United States)
- 231 B5** *Metamorphosis in the rice coral *Montipora capitata*: molecular mechanisms of larval settlement and transformation.* **Emma Rangel-Huerta**¹, Jason Morrison¹, Joseph Varberg¹, Seth Malloy¹, Sofia Robb¹, Shiyuan Chen¹, Drury Crawford², Matthew C. Gibson¹ (¹Stowers Institute for Medical Research, Kansas City, Missouri, USA; ²Hawaii'i Institute of Marine Biology, Kaneohe, Hawaii, USA)
- 232 B6** *The case for long development times: the parthenogenetic stick insect *Carausius morosus** **Petra Kovacikova**¹, Upendra R. Bhattarai^{1,2}, Macy Ingersoll¹, Cassandra Extavour^{1,3,4} (¹Department of Organismic and Evolutionary Biology, Harvard University, Cambridge, MA, USA; ²current address: Harvard Chan Bioinformatics Core, Harvard T. H. Chan School of Public Health, Boston, MA, USA; ³Department of Molecular and Cellular Biology, Harvard University, Cambridge, MA, USA; ⁴Howard Hughes Medical Institute, Chevy Chase, MD, USA)
- 233 B7** *Molecular Cartography the Octopus *chierchia* Central Brain: Revealing Cellular Identity and Architectural Principles in an Emerging Model Organism* Alyson Hally¹, Jessica Stock², Chaichontat Sriworarat³, Genevieve Stein-O'Brien^{3,4}, Gül Dölen⁵, Caroline Albertin², **Loyal A. Goff**^{1,3,4} (¹McKusick-Nathans Department of Human Genetics, Johns Hopkins University School of Medicine, USA; ²Woods Hole Marine Biological Laboratory, University of Chicago, USA; ³Solomon H. Snyder Department of Neuroscience, Johns Hopkins University School of Medicine, USA; ⁴Kavli Neurodiscovery Institute, Johns Hopkins University, USA; ⁵University of California, Berkeley, USA)
- 234 B8** *Characterizing mechanosensory ion channels in *Schmidtea mediterranea** **Britya Ghosh**, Kara Marshall, Blair Benham-Pyle (Baylor College of Medicine, United States)
- 235 B9** *Aggression in *A. mexicanus* surface fish and cavefish: A developmental and comparative approach* Homar Cardona Sierra¹, Ángel Reyes Acosta¹, **Adrián Rivera Rodríguez**¹, Dhalma Bayron Ho^{2,3}, Valeria De La Rosa Reyes¹, Roberto Rodríguez Morales^{2,3} (¹Department of Biology, UPR-Bayamón Campus, Puerto Rico; ²Molecular Sciences Research Center, Puerto Rico; ³Department of Anatomy and Neurobiology, UPR- Medical Sciences Campus, Puerto Rico)
- 236 B10** *The Identification of a Chicken Genomic Safe Harbor Locus: Oasis* Zachary E. Olsen, Joseph S. Bush, **Jeffery R Barrow** (Brigham Young University, USA)
- 237 B11** *Examining the efficacy of recombinases in chicken primordial germ cells* **Matthew C Bronson**, Zachary E Olsen, Jeffery R Barrow (Brigham Young University, USA)

Morphogenesis

- 238 B12** *Characterizing the ability of vertebrate and invertebrate Toll family receptors to mediate actomyosin planar polarity and cell morphology* **Satchel Flammang**, Chloe Kuebler, Elizabeth Atungulu, Adam Pare (University of Arkansas, United States of America)

- 240 B14** *Zic transcription factors and aqp3b in cell polarization* **James Russette**, Rhoda Adjarkey, Christa Merzdorf (Montana State University, United States)
- 241 B15** *Role of ion-channel mediated bioelectric signaling in zebrafish fin patterning* **GuangJun Zhang** (Purdue University, USA)
- 242 B16** *Pax9 regulates deployment of sclerotome to the median fins* Sarah McLeod¹, Sandhya Paudel¹, Raisa Bailon-Zambrano², Melissa Scott-Preusse¹, Margaret Keating², Colette Hopkins², Raelyn Begay², James Nichols², **Lindsey Barske**^{1,3} (¹Cincinnati Children's Hospital Medical Center, United States; ²University of Colorado Anschutz Medical Campus, United States; ³University of Cincinnati College of Medicine, United States)
- 243 B17** *Cadherin-mediated dewetting strengthens mechanically unstable geometry for robust tissue morphogenesis* Madeline Ryan¹, Fabrizio Olmeda², Samuel Kuo¹, Chia-Teng Chang¹, Edouard Hannezo², **Tony Tsai**¹ (¹Washington University School of Medicine, St. Louis, MO, United States; ²Institute of Science and Technology Austria, Austria)
- 244 B18** *Basal localization of actomyosin drives cell deformation during epithelial tissue transformation in the pectoral fin* **Shun Okayama**¹, Gembu Abe², Masahiro Uesaka¹, Yoshihiro Morishita³, Koji Tamura¹ (¹Tohoku University, Japan; ²Tottori University, Japan; ³RIKEN BDR, Japan)
- 245 B19** *Regional identities imprinted during embryogenesis inform growth and shape of the adult caudal fin skeleton* **Eric Surette**¹, Joan Donahue¹, Crisvely Soto Martinez¹, Deirdre McKenna¹, Nicolás Cumplido¹, Rolf Karlstrom², Sarah McMenamin¹ (¹Boston College, United States of America; ²University of Massachusetts Amherst, United States of America)
- 246 B20** *Epiboly in zebrafish requires reactive oxygen species derived from NADPH oxidase activity for the regulation of endocytosis and vesicular trafficking* **Arlen Ramírez-Corona**, Brenda Reza-Medina, Denhi Schnabel-Peraza, Hilda Hilda, Enrique Salas-Vidal (Institute of Biotechnology, Universidad Nacional Autónoma de México, México)
- 247 B21** *A matter of time: the role of Sulfatases Modifying Factors in the timing of zebrafish Convergence and Extension.* **Ailen Soledad Cervino**, Margot Kossmann Williams (Baylor College of Medicine, USA)
- 248 B22** *Regulation of convergent extension and anterior-posterior patterning by Aquaporin-3b during Xenopus gastrulation* **Rhoda Adjarkey**, Kaitlyn See, Oscar Machado, Christa Merzdorf (Montana State University, USA)
- 249 B23** *Effects of RA Signaling Activation on Cell Behavior During Axolotl Limb Regeneration* **Brianda B. Lopez Aviña**, Yuanxing Liao, Phillip L. Skipwith, Ashley W. Seifert (University of Kentucky, USA)
- 250 B24** *Fold-and-fuse neurulation in Zebrafish requires Vangl2* **Jacalyn Macgowan**, Mara Cardenas, Margot LK Williams (Baylor College of Medicine, USA)
- 251 B25** *Spatial Control of GTP Synthesis Contributes to Somite Boundary Formation* **Gavin Wheeler**¹, Audrey O'Neill¹, Morgan McCartney², Justin Kollman¹, Andrea Wills¹ (¹University of Washington, USA; ²University of California, Berkeley, USA)
- 252 B26** *Development of Hyloscirtus lynchi, a frog endemic to the Colombian Andes* **Sebastian Plata Cadena**, Yurany Nathaly Hernández Díaz, Martha Patricia Ramírez Pinilla (Universidad Industrial de Santander, Colombia)
- 253 B27** *Glands in action: Spatial and morphological remodeling of uterine glands during murine embryo implantation* **Aishwarya Bhurke**^{1,2,3}, Mia Simone^{3,4}, Emmanuel Paul^{2,5}, Ripa Arora^{2,3} (¹Genetics and Genome Sciences Program, Michigan State University, USA; ²Department of Obstetrics, Gynecology and Reproductive Biology, Michigan State University, USA; ³Institute for Quantitative Health Science and Engineering, Michigan State University, USA; ⁴Lyman Briggs College, Michigan State University, USA; ⁵Grand Rapids Research Center, Michigan State University, USA)
- 254 B28** *Cell size asymmetry regulates neurogenesis in developing Drosophila larval brains* **Sophia Jannetty**, Melissa Delgado, Ian Hertzler, Mia Hoover, Danielle Vahdat, Chang Yin, Ilara

Yilmaz, Jay Parrish, Clemens Cabernard, Neda Bagheri (University of Washington, United States of America)

- 255 B29** *Investigating the interplay between signaling and cell biology during Drosophila wing vein refinement* **Carol Dilts**, Julio Miranda-Alban, Zach Baker, Ilaria Rebay (University of Chicago, USA)
- 256 B30** *Self-organizing feather pattern formation: Gap junctions in Turing-type periodic patterning* **Chun-Chih Tseng**^{1,2}, Thomas Woolley³, Ting-Xin Jiang², Ping Wu², Philip Maini⁴, Randall Widelitz², Cheng-Ming Chuong² (¹St. Jude Children's Research Hospital, USA; ²University of Southern California, USA; ³Cardiff University, UK; ⁴University of Oxford, UK)
- 257 B31** *Adhesion-driven tissue solidification prompts epithelial fate* **Laura Rustarazo-Calvo**^{1,2}, Cristina Pallares-Cartes¹, Adrián Aguirre-Tamaral³, Elisa Floris³, Maximilian Hingerl¹, Camilla Autorino^{1,2}, Nicoletta I. Petridou¹, Bernat Corominas-Murtra³ (¹Developmental Biology Unit, European Molecular Biology Laboratory Heidelberg, Germany; ²Collaboration for Joint PhD Degree Between EMBL and Heidelberg University, Faculty of Biosciences, Heidelberg, Germany; ³Institute of Biology, University of Graz, Austria)
- 258 B32** *A localized cell adhesion threshold is required to transduce and withstand actomyosin forces during mammalian lip morphogenesis* **Camilla Teng**, Jeffrey Bush (University of California San Francisco, United States of America)
- 259 B33** *TGFβ signaling determines spacing between branches in the embryonic chicken lung* **Chan Jin Park**, Pengfei Zhang, Celeste M. Nelson (Princeton University, USA)
- 260 B34** *Investigating the relationship between mechanical forces and the retinoic acid signaling pathway during embryonic lung development.* **T. Kim Dao**¹, Pengfei Zhang^{1,2,3}, Anna Liu¹, Celeste M. Nelson^{1,4} (¹Department of Chemical and Biological Engineering, Princeton University, Princeton, NJ 08544, USA; ²Lewis-Sigler Institute, Princeton University, Princeton, NJ 08544, USA; ³Omenn-Darling Bioengineering Institute, Princeton University, Princeton, NJ 08544, USA; ⁴Department of Molecular Biology, Princeton University, Princeton, NJ 08544, USA)
- 261 B35** *Analysis of mouse strain-specific developmental tempos and rates of lung development* **Bridget Waas**, Niles Huang, Bradley Joyce, Eric W. Fowler, T. Kim Dao, Eszter Posfai, Celeste M. Nelson (Princeton University, United States of America)
- 262 B36** *Patterns of Morphogenesis and Differentiation in the Developing Lung* Samhita P. Banavar¹, **Eric W. Fowler**¹, Jake J. Klimek², Anna B. Liu¹, Celeste M. Nelson¹ (¹Princeton University, United States; ²Duke University, United States)
- 263 B37** *Self-organized mechanochemical feedback via the extracellular matrix drives reproducible tissue morphogenesis* **Yusuke Mori**, Anne Belle Cheney, Akankshi Munjal (Department of Cell Biology, Duke University School of Medicine, United States)
- 264 B38** *Local nr4a3/2b expression has global consequences on tissue architecture during epithelial fusion* **Nadia Elora**, Akankshi Munjal (Department of Cell Biology, Duke University School of Medicine, USA)
- 265 B39** *Left/ right asymmetry in the cardiac neural crest* **Tatiana Solovieva**, Marianne E. Bronner (California Institute of Technology, USA)
- 266 B40** *Investigating the role of MECOM during mammalian outflow tract development* **Benjamin Gilbert**^{1,2}, Jun Yasuhara², Sean Angler², Talita Choudhury², Vidu Garg^{1,2} (¹The Ohio State University, United States of America; ²Nationwide Children's Hospital, United States of America)
- 267 B41** *Unraveling the Role of Protein Myristoylation During Embryonic Heart Development* **Shenice Harrison**^{1,2}, Khalid Tejan-Sie^{1,2}, Gregory Miner^{1,2}, Whitney Edwards^{1,2} (¹Department of Cell Biology and Physiology, University of North Carolina at Chapel Hill, Chapel Hill, NC 27599, USA, United States; ²McAllister Heart Institute, University of North Carolina at Chapel Hill, Chapel Hill, NC 27599, USA, United States)
- 268 B42** *Mesenchymal signaling impacts murine uterine architecture to influence implantation success* **Harini Raghu Kumar**^{1,2,3}, Manoj Madhavan^{3,4}, Emmanuel Paul³, Ripa Arora^{1,2,3,4} (¹Genetics and Genome Sciences Program, USA; ²Institute for Quantitative Health

Science and Engineering, USA; ³Department of Obstetrics, Gynecology and Reproductive Biology, USA; ⁴Department of Biomedical Engineering, Michigan State University, USA)

- 269 **B43** *Surface ectodermal dynamics and signaling regulation of mammalian neural tube closure* **Chengji Zhou**^{1,2}, Subbroto Saha^{1,2}, Tianyu Zhao², Arjun Stokes², Moira McMahon² (¹ADA Forsyth Institute, USA; ²UC Davis School of Medicine, USA)

Cell Growth and Polarity

- 270 **B44** *Regulation of meiosis and mitosis by the PAM-1 aminopeptidase in the one-cell *C. elegans* embryo* **Jasmine Borie**, Matilda Dumaine, Aidan Durkan, Sophie Lear, Rebecca Lyczak (Ursinus College, United States of America)
- 271 **B45** *Investigating mechanisms controlling tissue-level coordination of Planar Cell Polarity* **Madalene Halley**, Dr. Maureen Cetera (University of Minnesota-Twin Cities, United States)
- 272 **B46** *Investigating Planar Cell Polarity-Directed Collective Cell Migration* **Anyoko Sewavi**, Rishabh Sharan, Danelle Devenport (Princeton University, United States)
- 273 **B47** *AlphaFold-Guided Investigation of Jbts17 Structure, Function, and Interactions* **Tynan Gardner**¹, Chanjae Lee¹, Michinori Toriyama², Edward Marcotte¹, John Wallingford¹ (¹Department of Molecular Biosciences, University of Texas at Austin, USA; ²Department of Biomedical Sciences, Kwansei Gakuin University, Japan)
- 274 **B48** *Formation of energid, the non-membrane-bound cell-like compartments in syncytial *Drosophila* embryos* **Mo Weng**, Chase Yezzi, Lingkun Gu (University of Nevada Las Vegas, United States)
- 275 **B49** *Mitotic polarity oscillation promotes epithelial tumor progression* **Ming Meggie Cao**, Milena Pellikka, Gayaanan Jeyanathan, Sarah Robinson, Vanessa Ghorayeb, Parama Talukder, Maksym Shcherbina, Ulrich Tepass (University of Toronto, Canada)

Cell Fate Specification and Differentiation

- 276 **B50** *Activin signaling inhibits regeneration after ionizing radiation* **Haleigh Brownlee**, Zachary Castles, Valentina Morakis, Hannah Ashraf, Jasmine Xiong, Asia Drenon, Blair Benham-Pyle (Baylor College of Medicine, USA)
- 277 **B51** *The Cyclin B3-Cdk1 Complex Coordinates Cell Division with Early Cell Fate Specification in *C. elegans** **David Bojorquez**, Gio Jison, Pablo Lara-Gonzalez (University of California, Irvine, USA)
- 278 **B52** *The Role of Centrosomes in Epidermal Mitotic Spindle Positioning* **Lauren Griffith**, Kendall Lough, Scott Williams (University of North Carolina at Chapel Hill, United States)
- 279 **B53** *The Role of Centrosomes in Epidermal Mitotic Spindle Positioning* **Lauren Griffith**, Kendall Lough, Scott Williams (University of North Carolina at Chapel Hill, United States of America)
- 280 **B54** *The germline soma split is patterned on the plasma membrane* **Marcus Kilwein**, Elizabeth Gavis, Stanislav Shvartsman (Princeton University, United States of America)
- 281 **B55** *Exploring the Complexity of the kayak Locus in Eye Development* **Manuel Zúniga-García**^{1,2}, Juan Riesgo-Escovar¹ (¹Instituto de Neurobiología, Universidad Nacional Autónoma de México, México; ²Posgrado de Ciencias Biológicas, UNAM, México)
- 282 **B56** *Spatiotemporal Regulation of Early Neurodevelopmental Gene Expression in *Drosophila* Using Single-Cell Multiome Sequencing* **Priyanshi Borad**¹, Anna Makridou², Eva Martou², Theodora koromila^{1,2} (¹Department of Biology, The University of Texas at Arlington, USA; ²School of Biology, Aristotle University of Thessaloniki, Greece)
- 284 **B58** *SeqFISH of the Mouse Jaw Uncovers a Connective Tissue-Specific Stem Cell Population* **Arshia Bhojwani**^{1,2}, Audrey C. Nickle², Kuo-Chang Tseng¹, Ryan R. Roberts¹, J. Gage Crump¹, Amy E. Merrill² (¹Department of Stem Cell Biology and Regenerative Medicine,

Keck School of Medicine, University of Southern California, United States of America;
²Center for Craniofacial Molecular Biology, Ostrow School of Dentistry, University of Southern California, United States of America)

- 285 B59** *The T-box gene *eomesa* specifies few sclerotome cells to expand and form the median fin skeleton* **Raelyn Begay**^{1,2}, Margaret Keating¹, Colette Hopkins¹, Raisa Bailon-Zambrano¹, Lindsey Barske³, James T. Nichols¹ (¹University of Colorado - Anschutz Medical Campus, United States; ²Metropolitan State University of Denver, United States; ³Cincinnati Children's Hospital Medical Center, United States)
- 286 B60** *Non-canonical notch1 control of the dorsal-ventral axis signaling in early embryonic development* **Aitana Manuela Castro Colabianchi**^{1,2}, Carmen Gloria Lemus^{3,4}, Miguel Luis Concha^{3,4}, Silvia Liliana Lopez^{1,2} (¹University Of Buenos Aires. F.Med. Department of Histology, Embriology, Cell Biology and Genetics. Laboratory of Molecular Embryology, Argentina; ²CONICET-Universidad de Buenos Aires, Instituto de Biología Celular y Neurociencias "Prof. E. De Robertis" (IBCN), Buenos Aires, Argentina., Argentina; ³Institute of Biomedical Sciences, Faculty of Medicine, Universidad de Chile, Santiago, Chile., Chile; ⁴Biomedical Neuroscience Institute, Santiago, Chile. , Chile)
- 287 B61** *Uncovering developmental regulation of intestinal *best4*⁺ cells* **Abhinav Sur**, Ella Segal, Michael Nunneley, Morgan Prochaska, Jeffrey Farrell (National Institutes of Health (NIH), USA)
- 288 B62** *Clonal analysis reveals PGCs differentially contribute to the early germline* **Maya Pahima**, Florence Marlow (Icahn School of Medicine at Mount Sinai, United States of America)
- 289 B63** *Establishing targets of *hdac1* function in zebrafish using RNAseq* Lacie Mishoe Hernandez¹, Leah DeLorenzo², Ahmed Mohammed³, TJ Willoner¹, Alec Jones¹, Kara Powder², Jason Kubinak³, **April DeLaurier**¹ (¹Department of Biological, Environmental, and Earth Sciences, University of South Carolina Aiken, USA; ²Department of Biological Sciences, Clemson University, USA; ³Department of Pathology, Microbiology, and Immunology, University of South Carolina School of Medicine, USA)
- 290 B64** *Cell Cycle Regulation of Cell Fate and Morphogenesis in the Zebrafish Midline* **Samantha Stettinisch**, Robert Morabito, Benjamin Martin (Stony Brook University, United States)
- 291 B65** *Fast-twitch myofibrils grow wider in proportion to *Myhpf* dosage in the zebrafish embryo* Tayo Adekeye¹, Emily Teets², Emily Tomak¹, Sadie Waterman¹, Kailee Sprague¹, Angelina White¹, Maddison Coffin¹, Daniel Tanaka¹, Sabrina Varga¹, Mason Soares¹, Teresa Easterbrooks¹, Sarah Shepherd², Jared Austin¹, Dmitrii Krivorotko¹, Troy Hupper¹, Joshua Kelley¹, Sharon Amacher², **Jared Talbot**¹ (¹The University of Maine, USA; ²The Ohio State University, USA)
- 293 B67** *Characterizing the role of the cell cycle on neural crest migration and differentiation* **Sabrina Hafeez**, Samantha Stettinisch, Benjamin Martin (Stony Brook University, United States)
- 294 B68** *Emergence of a novel innate immune cell lineage prior to gastrulation in the African Turquoise Killifish* **Sydney Sattler** (University of Washington, United States)
- 295 B69** *Reciprocal chondrogenic competence of neural crest- and mesoderm-derived mesenchyme in the little skate* **Michael Wen**¹, Victoria Prince¹, Andrew Gillis² (¹University of Chicago, United States; ²Marine Biological Laboratory, United States)
- 296 B70** *Multifunctional RNA-binding transcription factors coordinate cell states in development* **Bailey Weatherbee**¹, Yann Audic², Agnes Mereau², Luc Paillard², Hannah Truong¹, Aaron Zorn¹ (¹Cincinnati Children's Hospital Medical Center, United States; ²Institut de Génétique & Développement de Rennes, France)
- 297 B71** *Understanding Wnt10a's Role in Regulating Stem Cell Proliferation and Differentiation in the Mucociliary Epithelium with Insights into Ectodermal Dysplasia* **Anthea Luo**, Bilal Niazi, Jaeho Yoon, Ira Daar (National Cancer Institute, United States of America)
- 298 B72** *Circadian genes coordinate instructive cues with a shift in metabolism during dorsal mesoderm specification in *Xenopus laevis* animal cap ectoderm* **Kristen Curran**, Melanie Georgi, Salaar Akbar, Angel Navarrette, Eric Corcoran, Jacob Schumacher (University of Wisconsin-Whitewater, U.S.A.)

- 299 **B73** *Differences of developmental timing in sacral neural crest-specific structures in the avian enteric nervous system* **Jessica Jacobs-Li**, Marianne Bronner (California Institute of Technology, United States)
- 301 **B75** *Role of Lipid Heterogeneity in Early Embryonic Development* **Nika Goršek**¹, Sylvia Ho¹, Gianluca Amadei², Giovanni D'Angelo¹ (¹Institute of Bioengineering and Global Health Institute, EPFL, Switzerland; ²Department of Biology, University of Padua, Italy)
- 302 **B76** *The Role of Vitamin B12 Metabolism in Melanocyte Specification from the Neural Crest* **David Quispe-Parra**¹, William G. Bauer¹, Kamryn N. Gerner-Mauro¹, Tiffany Chern², Xuefei Tong¹, Paul G. Swinton¹, James F. Martin¹, Ross A. Poché¹ (¹Baylor College of Medicine, United States; ²Stanford University, United States)
- 303 **B77** *Striking the Balance: Stem Cell Maintenance versus Differentiation in Head and Brain Development* Shermin Mak¹, Alessia Petrella¹, Nihan Yildirim¹, Isabel Weig¹, Agnieszka Rybak-Wolf¹, Narashima Telugu¹, Silke Frahm¹, Sebastian Diecke¹, Jules Garreau², Veranika Panasenka², Valerie Dupe², **Annette Hammes**¹ (¹Max Delbrueck Center for Molecular Medicine in the Helmholtz Association, Berlin, Germany, Germany; ²University of Rennes, CNRS, INSERM, France, France)
- 304 **B78** *Shaping a geometrical model of cell fate specification in the developing mouse embryo* **Woonyung Hur**^{1,2}, Dillon Cisló¹, Anna-Katerina Hadjantonakis², Eric Siggia¹ (¹The Rockefeller University, United States of America; ²Memorial Sloan Kettering Cancer Center, United States of America)
- 305 **B79** *Loss of TBX4 and TBX5 causes excess and ectopic smooth muscle differentiation in the embryonic lung.* **Kaylie Chiles**^{1,2,3,4}, Madeline Dawson^{3,4}, Lea Steffes⁵, Csaba Galambos⁶, Maya Kumar⁵, Ripa Arora^{2,3,4,7} (¹Michigan State University College of Osteopathic Medicine, East Lansing, MI, United States; ²Cell & Molecular Biology Program, Michigan State University, East Lansing, MI, United States; ³Institute for Quantitative Health Science & Engineering, Michigan State University, East Lansing, MI, United States; ⁴Department of Obstetrics Gynecology & Reproductive Biology, Michigan State University, East Lansing, MI, United States; ⁵Division of Pediatric Pulmonary Medicine, Department of Pediatrics, Stanford University School of Medicine, Palo Alto, CA, United States; ⁶Department of Pathology, University of Colorado School of Medicine, Aurora, CO, United States; ⁷Department of Biomedical Engineering, Michigan State University, East Lansing, MI, United States)
- 306 **B80** *Uncovering the transcription factors that control human motor neuron cell fate* **Sophie Li**, Yingzhen Pei, Esteban Mazzoni (Department of Cell Biology, New York University Grossman School of Medicine, New York, New York, USA)
- 307 **B81** *Two-factor signaling unlocks mesoderm commitment in human pluripotent stem cells* **Vaishna Vamadevan**, Loic Fort, Jeremy Clements (Department of Cell and Developmental Biology, Vanderbilt University School of Medicine, Nashville, TN, United States)
- 309 **B83** *Hoxa11/Hoxd11 transcription factors regulate extracellular matrix genes during osteochondral differentiation* **Martha Echevarria-Andino**¹, Sirui Yan^{1,2}, Paul Van Ginkel¹, Shuyang Chen³, Sunduz Keles^{3,4}, Marjorie Brand^{1,5}, Deneen Wellik¹ (¹Department of Cell and Regenerative Biology, University of Wisconsin-Madison, Madison WI, 53705, USA; ²Genetics Graduate Program, University of Wisconsin-Madison, Madison WI, 53706, USA; ³Department of Statistics, University of Wisconsin-Madison, Madison WI, 53705, USA; ⁴Department of Biostatistics and Medical Informatics, University of Wisconsin-Madison, Madison, WI 53792, USA; ⁵Wisconsin Blood Cancer Research Institute, Madison WI, 53705, USA.)
- 310 **B84** *The disease-associated miR9-2 locus regulates progenitor competence in the developing mouse retina* **LuLu Callies**^{1,2}, Ashi Jain², Stella Xu^{1,2}, Abbi Engel², Timothy Cherry^{1,2} (¹University of Washington, USA; ²Seattle Children's Research Institute, USA)
- 311 **B85** *The mouse Shox2 gene functions in respiratory pattern regulation in the neonatal hindbrain and in cell-differentiation trajectories in developing limbs* **John Cobb**, Carly

Sullivan, Natalia Zubieta-DeUrioste, Richard Wilson, Juan Jovel, Greg Hamilton (University of Calgary, Canada)

- 312 B86** *A second wave of Notch signaling diversifies the intestinal secretory lineage* **Eleanor Zagoren**¹, Nicolas Dias¹, Anderson K. Santos¹, Zachary D. Smith^{1,2,3}, Nadia A. Ameen^{4,5}, Kaelyn Sumigra^{1,2} (¹Department of Genetics, Yale School of Medicine, USA; ²Yale Stem Cell Center, Yale School of Medicine, USA; ³Max Planck Institute for Molecular Genetics, Germany; ⁴Department of Pediatrics/Gastroenterology and Hepatology, Yale School of Medicine, USA; ⁵Department of Cellular and Molecular Physiology, Yale School of Medicine, USA)
- 313 B87** *Loss of murine Rnf20 and Rnf40 reveals a critical role in trophoblast differentiation and embryo patterning during implantation* **Ashmita Chander**, Jesse Mager (University of Massachusetts, Amherst, United States)
- 314 B88** *Investigating the Role of Cardiac Pericytes in Coronary Artery Maturation during Postnatal Development* **Azalia Martinez Jaimes**^{1,2}, Mia Girela³, Karen Gonzalez, PhD⁴, Kristy Red-Horse, PhD^{2,3,4,5} (¹Department of Developmental Biology, Stanford University, United States; ²Howard Hughes Medical Institute, United States; ³Cardiovascular Institute, Stanford University, United States; ⁴Institute for Stem Cell Biology and Regenerative Medicine, Stanford University, United States; ⁵Department of Biology, Stanford University, United States)
- 316 B90** *DNA Methylation Modifiers TET1 and DNMT3A Regulate Neural Plate Border Development* **Nagif Alata Jimenez**^{1,2}, Marcos Simoes-Costa^{1,2} (¹Boston Children's Hospital, USA; ²Harvard Medical School, USA)
- 317 B91** *Standardized 2D WNT Modulation Consistently Generates Left Ventricular Cardiomyocytes from Human Pluripotent Stem Cells Upon Sufficient Maturation* Joaquín Smucler¹, Julia María Halek¹, Sheila Castañeda¹, Denisse Saulnier¹, Agustina Scaraffia¹, Guadalupe Amín¹, Alejandra Guberman², Gustavo Sevelever¹, Santiago Miriuka¹, Lucía Moro¹, **Ariel Waisman**¹ (¹FLENI, Argentina; ²Facultad de Ciencias Exactas y Naturales, UBA, Argentina)
- 318 B92** *Developing a Human iPSC-derived Cellular Model of White Adipocytes for Studying Metabolic Diseases* **Hermelinda Renteria** (University of California, Los Angeles (UCLA), USA)
- 319 B93** *Temporality and mechanisms of retinogenesis in human retinal organoids* **Benvindo Tyrese Chicha**, Robert Johnston (Johns Hopkins University, United States)
- 320 B94** *Stem cell-based embryo model reveals lineage-specific effects of aneuploidy* **Laura Amaya**¹, Lisa Iwamoto-Stohl¹, Pallavi Panda¹, Yuqi Wang¹, Catherine King², Magdalena Zernicka-Goetz¹ (¹California Institute of Technology, United States; ²University of Cambridge, England)
- 321 B95** *Investigation of the Mechanism by Which Bacteria Induce Dedifferentiation in Eukaryotic Cells* **Bhagirath Bandigari** (Wake Forest University, United States of America; Pioneer, United States of America)
- 322 B96** *Intron Retention Orchestrates Spliceosome Reprogramming in Osteogenic Differentiation* **Tal Rosen**¹, Qing Chen², Weiqun Peng², Jian Xu¹ (¹University of Southern California, United States of America; ²George Washington University, United States of America)

Cell Adhesion, Migration and Guidance

- 323 B97** *Characterizing the Role of Perlecan on Drosophila Border Cell Migration* **Christopher Welsh**, Alexander George, Michelle Starz-Gaiano (UMBC, USA)
- 324 B98** *Sticky Fingers - How Heparan Sulfate Proteoglycan Processing Enzymes Mediate Drosophila melanogaster Border Cell Migration* **Andrew Opincar**, Alanna Carter, Alexander George, Michelle Starz-Gaiano (University of Maryland, Baltimore County, USA)

- 325 **B99** *Tissue structure impacts chemoattractant distribution and signaling during Drosophila egg development* Alexander George¹, Naghmeh Akhavan², Christopher Welsh¹, Bradford Peercy², **Michelle Starz-Gaiano**¹ (¹University of Maryland Baltimore County, Department of Biological Sciences, United States; ²University of Maryland Baltimore County, Department of Mathematics and Statistics, United States)
- 326 **B100** *Isolating and Characterizing Migratory Cells in Zebrafish Skin* **Olivia Justynski**, Alvaro Sagasti (University of California, Los Angeles, USA)
- 327 **B101** *Coordinated regulation of actin and septin filaments during neural crest cell migration* **Mary Kho** (Georgia Institute of Technology, USA)
- 328 **B102** *E-cadherin in Collective Migration of Cranial Neural Crest Cells* **Cooper Shenyu Lyu**, Shuyi Nie (Georgia Institute of Technology, United States)
- 330 **B104** *Unraveling the Fasciclin II-Discs large interaction in epithelial cell reintegration* **Hannah Rice**, Tara Finegan, Dan Bergstralh (University of Missouri, United States)
- 331 **B105** *Elucidating the Role of S1PR2 in Regulating Basal Extrusion of Cells from the Epithelium in Zebrafish* **Llaran Turner**^{1,2}, Adriana Paulucci², George Eisenhoffer^{1,2} (¹Genetics and Epigenetics Graduate Program, The University of Texas MD Anderson Cancer Center UTHHealth Houston Graduate School of Biomedical Sciences, United States; ²Department of Genetics, The University of Texas MD Anderson Cancer Center, United States)
- 332 **B106** *Exploring the role of cell-cell interaction in cranial placode assembly* **Junpeng Gao**, Marianne Bronner (California Institute of Technology, USA)
- 333 **B107** *Characterizing the impact of NSD3 and CAMK2 on cranial neural crest migration and morphology* **Bridget Jacques-Fricke**¹, Alan Escalante¹, Ethan Heide¹, Callie Gustafson-Ramsden², Julaine Roffers-Agarwal², Laura Gammill² (¹Hamline University, United States; ²University of Minnesota, United States)
- 334 **B108** *Characterization of Potential Roles for Glial Precursors during the Wiring of the Developing Cochlea* **Jessica Dixon**, Olubusola Olukoya, Lisa Goodrich (Harvard Medical School, United States)
- 336 **B110** *Differential Adhesion Mechanisms in Dorsoventral Patterning of the Pectoral Fin* **Wyndham Ferris**, Tony Tsai (Washington University School of Medicine, USA)
- 337 **B111** *Anchor Cell Invasion Relies on the Proteasome* **Jake Leyhr**, David R Sherwood (Duke University, USA)
- 338 **B112** *N-Myc Downstream Regulated Gene 1b (NdrG1b) is a novel regulator of cell adhesion during early muscle development* **Prableen Chowdhary** (University of Maryland, Baltimore County, United States)
- 339 **B113** *Genetic Analysis in Flies of a Novel Human Disease Mutant Reveals How Biological Stress Impacts Cell-ECM Adhesion* **Sienna Muller**, Darius Camp, Anastasia Tountas, Guy Tanentzapf (The University of British Columbia, Canada)

Saturday, June 21

Poster/Exhibits Session C

2:00 PM – 5:00 PM

Miramar Ballroom

Author Presentation: Odd Number Board 2:00 PM - 3:30 PM
 Even Number Board 3:30 PM – 5:00 PM

Set up: Saturday, June 21, 8 AM - 10 AM Teardown: Saturday, June 21, 5 PM

Poster Themes: Environmental Influences on Development • New Technologies •
 Mathematics and Physics of Development • Gene Regulation and Epigenetics • Genetic
 Models of Disease • Germ Cells and Gametogenesis • Patterning Embryo Development
 • Neural Development and Patterning

Environmental Influences on Development

- 340 C1** *Characterizing the Ethanol Sensitivity of the Planar Cell Polarity Pathway in Endoderm Morphogenesis and Jaw Development* **Raeden Gray**, Anna Llyod, Ben Lovely (University of Louisville, USA)
- 341 C2** *Canalization during hypoxia-induced pausing in zebrafish gastrulation is mediated by tent5ba* **Christopher Chen**, Hannah Greenfeld, Sarah Foust, Daniel Wagner (University of California San Francisco, United States of America)
- 342 C3** *The effect of fadrozole on gonadal development in a parthenogenetic reptile - *Lepidodactylus lugubris** **Izabela Rams-Pociecha**^{1,2}, Paulina C. Mizia^{1,2}, Rafal P. Piprek¹ (¹Department of Comparative Anatomy, Institute of Zoology and Biomedical Research, Jagiellonian University, Gronostajowa 9, 30-387 Cracow, Poland; ²Doctoral School of Exact and Natural Sciences, Jagiellonian University, Cracow, Poland)
- 343 C4** *"Eggs"treme adaptation of reproductive strategies in *Astyanax mexicanus**. **Fanning Xia**, Ana Santacruz, Di Wu, Sylvain Bertho, Elizabeth Fritz, Pedro Morales-Sosa, Sean McKinney, Stephanie Nowotarski, Nicolas Rohner (Stowers Institute for Medical Research, Kansas City, MO, USA)
- 344 C5** *Investigating the impact of chemicals associated with agricultural runoff on the embryogenesis of ramshorn snails from central OH.* **Laura Romano** (Denison University, USA)
- 345 C6** *"Forever" impacts: How "chemicals" like PFAS disrupt neuro-muscular gene regulatory programs during development.* **Zainab Afzal**, Vandana Veershetty, Charles Hatcher, Deepak Kumar (BBRI, North Carolina Central University, USA)
- 346 C7** *Neurotoxic and Behavioral Effects of Lead Oxide Nanoparticles in Zebrafish larvae: Influence of Calcium Levels* Adriena Jedlickova¹, Daniela Kristekova^{1,2}, Tomas Vaculovic³, **Marcela Buchtova**^{1,2} (¹Institute of Animal Physiology and Genetics, Czech Academy of Sciences, Czech Republic; ²Department of Experimental Biology, Faculty of Science, Masaryk University, Czech Republic; ³Department of Chemistry, Faculty of Science, Masaryk University, Czech Republic)
- 347 C8** *Evidence of Aryl Hydrocarbon Receptor Acting Independently of ARNT1 During Embryonic Development* **Shayan Shahriar**, Hailey E. Edwards, Jaclyn P. Souder, Kaley Neugebauer, Daniel A. Gorelick (Center for Precision Environmental Health, Department of Molecular and Cellular Biology, Baylor College of Medicine, Houston, Texas 77030, United States of America)
- 348 C9** *Perinatal through pubertal effects of endocrine disrupting bisphenols: Comparison of bisphenol-A or bisphenol-S exposure on development, morphology, and reproductive behavior of rats* **Gary Lange**, Aayushi Gandhi, Azalee Almond, Luke Burns, Xsandrie Guimba, Nathaniel James, Sophia Moberly, Alexanna Taylor (Saginaw Valley State University, USA)
- 349 C10** *From Moon to Martian Gravity: Detecting Developmental Mechanisms in Larval and Adult Flies Adapting to Extreme Environments in Space* Alexei Evsikov¹, Rafael Evsikov², Esperanza Evsikova², **Caralina Marin de Evsikova**^{1,3} (¹Veterans Administration, USA; ²Acadia Academy, USA; ³University of South Florida, USA)
- 350 C11** *Global temperature stress drives cell type-specific loss of function* **Mantha Lamprousi**, Sophie Kneeshaw, Isabelle Becher, Frank Stein, Alexandre Paix, Matthew Benton, Mikhail Savitski, Michael Dorrity (EMBL , Germany)

New Technologies

- 351 C12** *Validation of Novel RNA-ISH Assays with HCRTTM RNA-ISH: A case study in *Xenopus laevis* using HCRTTM Pro and HCRTTM Gold to maximize sensitivity and multiplex capabilities* **Douglas W. Houston**¹, Cameron Earl², Aneesh Acharya² (¹Department of Biology, University of Iowa, 257 Biology Building, Iowa City, IA, 52242, United States;

²Molecular Instruments, 5015 Eagle Rock Blvd, Ste 301, Los Angeles, CA, 90041, United States)

- 352 C13** *Automating HCR™ Gold RNA-FISH: Providing an affordable, scalable solution for high-performance RNA imaging in whole-mount embryos and tissue sections* **Cameron Earl**, Wudy Yang, Randy Chen, Aneesh Acharya (Molecular Instruments, 5015 Eagle Rock Blvd, Ste 301, Los Angeles, CA, 90041, United States)
- 354 C15** *Applied force produces inverse contractile shifts in estrogen versus progesterone rich uterine environment* **Lisa Zou**¹, Ria Bramhane¹, Rohit Mahesh¹, Olmo Zavala², Ripla Arora¹ (¹Michigan State University, United States of America; ²Florida State University, United States of America)

Mathematics and Physics of Development

- 355 C16** *A quadratic paradigm describes the relationship between phenotype severity and variation* Abigail Mumme-Monheit, Grace Gustafson, Colette Hopkins, Juliana Sucharov, Michael Lippencott, Gregory Way, Kathryn Colborn, **James Nichols** (University of Colorado Anschutz Medical Campus, United States)
- 356 C17** *A chromatin dynamics model of Hox collinearity based on statistical thermodynamics and ATAC-seq data.* **Yoshifumi Asakura**¹, Yoshihiro Morishita¹, Takayuki Suzuki² (¹RIKEN BDR, Japan; ²Osaka Metropolitan University, Japan)

Gene Regulation and Epigenetics

- 358 C19** *Characterizing the DNA Binding Specificity of the SIX Family of Transcription Factors in Nematostella vectensis* **Oswaldo L. Echevarría-Bonilla**, Rosalba Velázquez-Roig, Derek Santiago-Ferrer, Jeremy López-Torres, José A. Rodríguez-Martínez (University of Puerto Rico - Río Piedras, Puerto Rico)
- 359 C20** *Repressive chromatin influences life history decisions via DAF-12 signaling in C. elegans* **Thiago Borges**, Scott Roques, Jaime Croft, Alexander Beaudoin, Teresa Lee (University of Massachusetts Lowell, USA)
- 360 C21** *Histone H2A monoubiquitylation in regulation of neuronal gene expression and enhancers with developmentally dynamic accessibility* **Kailynn MacGillivray**, Daniel Fusca, Hua Tang, Luomeng Tan, Reta Aram, Arneet Saltzman (University of Toronto, Canada)
- 361 C22** *Chromatin context and genome replication underlie how transcriptional activation depends on Bicoid concentration* **Eleanor Degen**, Shelby Blythe (Northwestern University, USA)
- 363 C24** *Gene Regulatory Programs Controlling the Development of the Cardiac Neural Crest in Zebrafish* **Luke Lyons**, Rekha Dhillon-Richardson, Alexandra Haugan, Megan Martik (University of California, Berkeley, United States)
- 364 C25** *mRNA regulation through 3'UTR changes during early zebrafish development* **Ludivine Fierro**, Keisuke Sato, Tomoya Kotani (Hokkaido University, Japan)
- 365 C26** *3' untranslated region (UTR) shortening as a mechanism for activating maternal mRNA translation* **Anna Ishii**, Keisuke Sato (Hokkaido University, JP)
- 366 C27** *Molecular Mechanisms Underlying the Role of NDRG1 in Hypoxia Adaptation in the Inner Ear* **Lilian Gonzalez**¹, Anya Visnawathan¹, Erin Jimenez², Rachel Brewster¹ (¹University of Maryland Baltimore County, USA; ²Johns Hopkins University, USA)
- 367 C28** *Genetically Encoded Affinity Reagents (GEARs) uncover spatiotemporal requirements of higher-order genome organization during embryogenesis* **Curtis Boswell**, Caroline Hoppe, Liyun Miao, Mina Kojima (Yale University, USA)

- 368 C29 *A developmental buffering mechanism of initiation codon mutations.* **Grace Gustafson**, Raisa Bailón-Zambrano, Abigail Mumme-Monheit, Juliana Sucharov, James T. Nichols (University of Colorado Anschutz Medical Campus, United States)
- 369 C30 *Non-canonical function of MMP28 in the nucleus of neural crest cells* **Nathaniel Wells**, Noah Pison, Anna Evans, Nadege Gougnard (University of Wisconsin - Milwaukee, USA)
- 371 C32 *Novel insights into X-Chromosome Inactivation through the white-footed deermouse (*Peromyscus leucopus*)* **Maria Andrade Ludena**, Jonathan Duong, Aqsa Motiwala, Anthony Long, Alan Barbour, Sha Sun (University of California, Irvine, USA)
- 372 C33 *Defining the molecular mechanism of transcriptional regulation of DNMT3A in neurodevelopment* **Sofia Patino Hernandez**, Laura Lavery (Rice University, United States)
- 373 C34 *The polysyntactic cis-regulatory code of transcriptional regulation of the human and mouse genome* **Vivekanandan Ramalingam**, Anusri Pampari, Vivian Hecht, Chang Yun, Boyang Zhang, Zahoor Zafrulla, Alex Tseng, Abhimanyu Banerjee, Surag Nair, Aman Patel, Ziwei Chen, Salil Deshpande, Austin Wang, Georgi Marinov, Jacob Schreiber, Johannes Linder, ENCODE Consortium, Anshul Kundaje (Stanford University, United States)
- 374 C35 *Noncanonical role of DNA damage response in regulating neural development.* Bitna Lim, Yurika Matsui, Seunghyun Jung, Wenjie Qi, Beisi Xu, **Jamy Peng** (St. Jude Children's Research Hospital, USA)
- 375 C36 *Multi-Omic Analysis to Identify Barriers to Human Pluripotent Stem Cell-derived Skeletal Muscle Maturation* **Cassandra Manrique**^{1,2}, Effie Apostolou¹, Mary Baylies^{1,2} (¹Weill Cornell Medicine Graduate School of Medical Sciences, United States; ²Sloan Kettering Institute, Memorial Sloan Kettering Cancer Center, United States)
- 376 C37 *Polyamines alter biophysical properties of chromatin organization to promote lineage commitment during cell differentiation* Maya Emmons-Bell, Allison Gardner, Robby Nelson, **Sedona Murphy** (Yale University Department of Cell Biology, United States)
- 377 C38 *Investigating the DNA-binding specificity of cardiac transcription factors complexes* **Jessica M. Rodríguez-Ríos**, José A. Rodríguez-Martínez (University of Puerto Rico, Río Piedras Campus, Puerto Rico)
- 378 C39 *Global Evaluation of Congenital Heart Disease-Associated Non-Coding Variants* **Edwin G. Peña-Martínez**¹, Shreya Sharma², Diego A. Pomales-Matos¹, Jean L. Messon-Bird¹, Leandro Sanabria-Alberto¹, Adriana C. Barreiro-Rosario¹, Joshua G. Medina-Feliciano¹, Alejandro Rivera-Madera³, Jessica M. Rodríguez-Ríos¹, Elise Root⁴, Lois Parks⁵, Marissa Granitto⁵, Lucinda Lawson⁵, Carmy Forney⁵, Matthew T. Weirauch⁵, Leah C. Kottyan⁵, Steven K. Reilly⁴, Devesh Bhimsaria⁴, José A. Rodríguez-Martínez¹ (¹University of Puerto Rico - Río Piedras, Puerto Rico; ²Indian Institute of Technology Roorkee, India; ³University of Puerto Rico - Cayey, Puerto Rico; ⁴Yale University, United States; ⁵Cincinnati Children's Hospital Medical Center, United States)

Genetic Models of Disease

- 380 C41 *Exposure to low levels of benzene alters red blood cell morphology and increases the presence of blasts in peripheral blood of zebrafish (*Danio rerio*)* **Diana Paola Díaz-Torres**, Luis Alfredo Cruz-Ramírez (Advanced Genomics Unit, CINVESTAV, Mexico)
- 381 C42 *Causative mutation of Cartilage-Hair Hypoplasia, Rmrp 71A>G, causes failure of gastrulation in mice* **Inka Raimoranta**¹, Guillermo Martinez-Nieto^{1,2}, Marika Karikoski¹, Satu Kuure³, Reetta Hinttala⁴, Petra Sipilä^{1,2} (¹Institute of Biomedicine, Research Centre for Integrative Physiology and Pharmacology, University of Turku, Finland; ²Turku Center for Disease Modeling, University of Turku, Finland; ³GM-Unit, Laboratory Animal Center, Helsinki Institute of Life Science, University of Helsinki, Finland; ⁴Research Unit of Clinical Medicine, and Medical Research Center Oulu, Oulu University Hospital, and Biocenter Oulu, University of Oulu, Finland)
- 382 C43 *Developmental mechanisms of VGLL2::NCOA2 and ARF6 cooperation during rhabdomyosarcoma tumorigenesis* **Delia Calderon**^{1,2}, Chinmay Sankhe¹, Cenny Taslim¹,

Olivier Delattre^{3,4,5}, Genevieve Kendall^{1,2,6} (¹Center for Childhood Cancer Research, The Abigail Wexner Research Institute, Nationwide Children's Hospital, USA; ²Molecular, Cellular, and Developmental Biology Ph.D. Program, The Ohio State University, USA; ³Institut Curie Research Center, Paris Sciences et Lettres (PSL) Research University, Inserm U830, France; ⁴Institut Curie, SIREDO Pediatric Center, France; ⁵Institut Curie Hospital Group, Unité de Génétique Somatique, France; ⁶Department of Pediatrics, The Ohio State University College of Medicine, USA)

- 383 C44** *Breaking down the centrosome: TRIM37-mediated mechanism of centrosome elimination in development and disease* **Weronika Stachera** (UT Southwestern Medical Center, United States)
- 385 C46** *The Road to Motile Cilia: Dynein Transport and Its Implications in Ciliopathies* **Nayeli G. Reyes-Nava**¹, Chanjae Lee¹, Ophelia Papoulas¹, Juyeon Hong², Edward M. Marcotte¹ (¹The University of Texas at Austin, United States ; ²Ulsan National Institute of Science & Technology, South Korea)
- 386 C47** *Developments in Cryopreservation and Homology Directed Repair at the National Xenopus Resource* **Nikko-Ideen Shaidani**, James Parente, Carl Anderson, Marko Horb (National Xenopus Resource, Marine Biological Laboratory, United States)
- 387 C48** *Developing CRISPR Knockouts at the Xenopus Mutant Resource (XMR)* **Kelsey Coppentrath**¹, Nikko-Ideen Shaidani¹, Casey Griffin², Andre L. P. Tavares^{3,4}, Jean-Pierre Saint-Jeannet², Tylor R Lewis⁵, Sally Moody³, Marko Horb¹ (¹Bell Center for Regenerative Medicine and National Xenopus Resource, Marine Biological Laboratory, United States of America; ²Applied Bioinformatics Laboratory, NYU Grossman School of Medicine, United States of America; ³Department of Anatomy and Cell Biology, George Washington University School of Medicine and Health Sciences, United States of America; ⁴Department of Biological Sciences, University of Delaware, United States of America; ⁵Department of Ophthalmology, Duke University Medical Center, United States of America)
- 388 C49** *Variable paralog expression underlies variable incomplete penetrance* **Abigail Mumme-Monheit**, Colette Hopkins, Nicole Costantino, Faith Frasier, Juliana Sucharov, James T. Nichols (University of Colorado - Anschutz Medical Campus, USA)
- 389 C50** *Elucidating Tissue Specific Vulnerabilities of Cornelia de Lange Syndrome* **Kevin X. Chen**, Daniel E. Wagner (University of California, San Francisco, USA)
- 390 C51** *The microcephaly gene Abnormal spindle promotes proper brain growth and development through non-cell autonomous mechanisms* **Shalini Chakraborty** (University of Wyoming, United States of America)
- 391 C52** *Zebrafish as a model for development defects cause by Zika Virus* Sol Valentina Cárdenas-Durango¹, Alejandra López-Sanmiguel¹, Valentina Medina-Ardila¹, Myriam Velandia-Romero², **Zayra V. Garavito-Aguilar**¹ (¹Laboratorio de Biología del Desarrollo–BIOLDES, Departamento de Ciencias Biológicas, Universidad de los Andes, Colombia; ²Instituto de Virología, Grupo de Virología, Vicerrectoría de investigación, Universidad El Bosque, Colombia)
- 392 C53** *Assessing ASO efficacy for the treatment of retinitis pigmentosa using patient-derived retinal organoids* **Anna Howell**¹, Boxun Zhao^{2,3}, Dr. Tim W. Yu^{2,3}, Dr. M. Natalia Vergara¹ (¹University of Colorado School of Medicine, USA; ²Boston Children's Hospital, USA; ³Harvard Medical School, USA)
- 393 C54** *Spatiotemporal Dynamics of Cystogenesis in the jck Mouse Model of Polycystic Kidney Disease* **Barbora Fialkova**¹, Daniela Kristekova², Marcela Buchtova^{1,2} (¹Department of Experimental Biology, Masaryk University, Czechia; ²Laboratory of Molecular Morphogenesis, Institute of Animal Physiology and Genetics, Czech Academy of Sciences, Czechia)
- 394 C55** *Loss of elastin in smooth muscle cells in early development leads to changes in passive and active aortic mechanics* **Garrett Easson**, Parker Ernst, Jessica Wagenseil (Washington University in St. Louis, United States)

- 395 **C56** *Uncovering the role of Fzd6 in lymphatic network development* **Evalyn Beall**¹, Connie Corcoran¹, Isabel Constable¹, Sarah Paramore², Luciana D. Garlisi Torales³, Sarah E. Sheppard³, Maureen Cetera¹ (¹University of Minnesota, United States; ²University of Chicago, United States; ³Eunice Kennedy Shriver National Institute of Child Health and Human Development, United States)

Germ Cells and Gametogenesis

- 396 **C57** *The PAM-1 aminopeptidase interacts with the cell cycle machinery to regulate oocyte maturation in C. elegans* **Madison Smith**, Alyssa Lemmon, S. Matthew Janik, Sarah Bell, Alexa Alessandrini, Rebecca Lyczak (Ursinus College, United States of America)
- 397 **C58** *Investigating the importance of tissue-specific alternative splicing in the akt-1 and pkc-2 kinase genes in germline development in Caenorhabditis elegans* **Charlotte Martin**, Victoria Work, John Calarco (Department of Cell and Systems Biology, University of Toronto, Canada)
- 398 **C59** *Role of germ granules in asymmetric RNA localization and translation* **William Simmons**¹, Geraldine Seydoux^{1,2} (¹Department of Molecular Biology and Genetics, Johns Hopkins School of Medicine, USA; ²Howard Hughes Medical Institute, USA)
- 399 **C60** *A potential protein chaperoning function for P granules* **Devavrat Bodas**¹, Geraldine Seydoux^{1,2} (¹Johns Hopkins School of Medicine, Baltimore, MD, USA; ²Howard Hughes Medical Institute, Chevy Chase, MD, USA)
- 400 **C61** *Characterization of conserved cell death proteins during physiological apoptosis in the C. elegans germline* **Zerubabel Kebede**^{1,2}, Laura Thomas^{1,2}, Geraldine Seydoux^{1,2} (¹Johns Hopkins School of Medicine, United States; ²Howard Hughes Medical Institute, United States)
- 401 **C62** *Roles of Cpsf5 and Cpsf6 in the Drosophila ovary* **Jenn-Yah Yu**¹, Yu-Te Lan², Yu-Cheng Tzeng¹, Yen-Ting Ou¹ (¹Department of Life Sciences and Institute of Genome Sciences, National Yang Ming Chiao Tung University, Taiwan; ²Interdisciplinary Master Program in Molecular Medicine, National Yang Ming Chiao Tung University, Taiwan)
- 402 **C63** *A beta-importin promotes the asymmetric inheritance of a unique ER-like organelle in Drosophila female germline stem cells* **Amanda Powell** (East Carolina University, USA)
- 403 **C64** *Over-expression of the nuclear receptor Eip75B in somatic cells induces egg chamber death in the Drosophila ovary* **Allison Simmons**, Alexandria Warren, Elizabeth Ables (East Carolina University, USA)
- 404 **C65** *Role of Drosophila melanogaster Indy2 on testis development and function* **Sarah Ene**, Dr. Surya Jyoti Banerjee (Texas Tech University, United States)
- 405 **C66** *Vasa/DDX4 promotes RNA localization and translational activation in germ granules* **Ruoyu Chen** (Whitehead Institute for Biomedical Research, United States)

Patterning Embryo Development

- 406 **C67** *Establishment of the adult axes during S. polychroa embryogenesis* **Ennis Deihl**, Clare Booth, Francisco Lobo, Erin Davies (National Cancer Institute, USA)
- 407 **C68** *H3K27me3 resolves unique, spatially distributed patterning states in Drosophila embryogenesis* **Corinne Croslyn** (Northwestern University, United States)
- 408 **C69** *Cellular Strategies for Interpreting Positional Information Dynamics to Optimize Patterning Precision During Tissue Morphogenesis* **Chia-Teng Chang**¹, Julian Renaud², Gasper Tkacik², Tony Tsai¹ (¹Washington University School of Medicine, United States; ²Institute of Science and Technology Austria, Austria)
- 409 **C70** *Critical Role of Spatio-Temporally Regulated Maternal RNAs in Zebrafish Embryogenesis* **Gopal Kushawah**, Ariel Bazzini (Stowers Institute for Medical Research, USA)

- 410 C71** *Role of a novel zinc finger protein in morphogenesis of the zebrafish left-right organizer* **Anna Maria Hinman Hinman**^{1,2}, Emma Retzlaff^{1,2}, Osama A Abdel-Razek,¹, Jeffrey Amack^{1,2} (¹Cell and Developmental Biology, SUNY Upstate Medical University, USA; ²The BioInspired Institute at Syracuse University, USA)
- 412 C73** *Self-organization of Early Embryo Shape Controls Developmental Potency* Chuan Qin, Jianyu Gan, **Hui Chen** (Department of Biological Sciences, University of South Carolina, Columbia, SC 29208, USA)
- 413 C74** *Spatial Asynchrony of RNA Modifications Orchestrates Maternal-to-Zygotic Transition in Early Embryogenesis* **Jianyu Gan**, Chuan Qin, Hui Chen (Department of Biological Sciences, University of South Carolina, Columbia, SC 29208, United States)
- 414 C75** *Ultraviolet light specifically disrupts dorsal fin development* **Margaret Keating**¹, Julio Jamie¹, Raisa Bailón-Zambrano¹, Marlin Rice², James Gagnon², James T. Nichols¹ (¹University of Colorado-Anschutz Medical Campus, USA; ²University of Utah, USA)
- 415 C76** *Novel role for cilia in interdigit cell death* Natasha Shylo¹, **Scott Weatherbee**² (¹Stowers Institute for Medical Research, USA; ²Fairfield University, USA)
- 416 C77** *Retinoic acid amplifies WNT signalling and CDX gene expression to drive progressive HOX cluster expression.* **Filip J. Wymeersch**¹, Antigoni Gogolou^{2,3}, Emma Shaw⁴, Valerie Wilson⁴, Anestis Tsakiridis^{2,3}, Minoru Takasato^{1,5} (¹Laboratory for Human Organogenesis, RIKEN Center for Biosystems Dynamics Research, Japan; ²Centre for Stem Cell Biology, School of Biosciences, University of Sheffield, United Kingdom; ³Neuroscience Institute, The University of Sheffield, United Kingdom; ⁴Centre for Regenerative Medicine, Institute for Stem Cell Research, School of Biological Sciences, University of Edinburgh, United Kingdom; ⁵Laboratory of Molecular Cell Biology and Development, Graduate School of Biostudies, Kyoto university, Japan)
- 417 C78** *Uncovering developmental dynamics in the embryonic lung using single-cell and high-resolution spatial transcriptomics* **Pengfei Zhang**^{1,2,3,4}, Benjamin Law^{2,3}, Katharine Goodwin^{2,3}, Michelle Chan^{2,3}, Celeste Nelson^{1,3} (¹Department of Chemical and Biological Engineering, Princeton University, United States; ²Lewis-Sigler Institute for Integrative Genomics, Princeton University, United States; ³Department of Molecular Biology, Princeton University, United States; ⁴Omenn-Darling Bioengineering Institute, Princeton University, United States)
- 418 C79** *Mechanism and Consequence of Murine Blastocyst Implantation Site Specitification* **Elysse Phillips**, Orion Weiner (University of California San Francisco, United States)
- 419 C80** *Metabolic regulation of branching morphogenesis in the developing lung* **Pihu Mehrotra**¹, Celeste Nelson^{1,2} (¹Department of Chemical and Biological Engineering, Princeton University, USA; ²Department of Molecular Biology, Princeton University, USA)
- 420 C81** *Unique ectoderm and neural crest TFAP2-guided gene regulatory networks pattern the vertebrate face.* Jaclyn Olberding¹, Timothy Nguyen¹, Fan Shao¹, Jamie Thompson¹, Carter Coppinger¹, Jennyfer Mitchell², Jamie Nichols², Colin Kenny¹, Huojun Cao¹, **Eric Van Otterloo**¹ (¹University of Iowa, United States; ²University of Colorado - Anschutz Medical Campus, United States)
- 421 C82** *The Role of LATS1/2 Kinases in the First Cell Fate Decision in Preimplantation Rabbit Embryo Development* **Patrycja Konowrocka**, Elzbieta Wenta-Muchalska, Anna Piliszek (Department of Experimental Embryology, Institute of Genetics and Animal Biotechnology of the Polish Academy of Sciences, Jastrzebiec, Poland, Poland)

Neural Development and Patterning

- 423 C83** *Guidance cues for the central arteries during zebrafish hindbrain development* Naoki Hirano, Hayato Endo, **Misato Fujita** (Department of Biological Sciences, Faculty of Science, Kanagawa University, Japan)
- 423 C84** *Characterizing the isthmic organizer (IsO) during neural development* **Sylvia Nunez**, Yong-Il Kim, Rebecca O'Rourke, Charles Sagerstrom (University of Colorado - Anschutz Medical Campus, USA)

- 424 C85 *Cell-Specific Piga function is required for mammalian neurodevelopment* **Jennifer Watts** (Nationwide Children's Hospital, USA; The Ohio State University, USA)
- 425 C86 *The role of G protein-coupled receptor 161 in the neuromesodermal progenitor maintenance during spinal neural tube development.* Yunjae Hur, **Sung-Eun Kim** (Department of Pediatrics, Dell Medical School, The University of Texas at Austin, Austin, TX 78723, USA)
- 426 C87 *Investigating the role of Anterior-Posterior Regionalization in Neurectoderm Convergence and Extension* **Margaret Eisenbrandt**, Alyssa Emig, Margot Williams (Baylor College of Medicine, USA)
- 427 C88 *Assessment of in vivo and in vitro range and production of netrin1 during spinal cord development* **Yesica Mercado-Ayon**, Cristian Rodriguez, Samantha Butler (University of California, Los Angeles, USA)
- 428 C89 *Understanding the roles of Prickle proteins during vertebrate neural development* **Lorena Agostini Maia**, Jakub Harnos (Department of Experimental Biology, Faculty of Science, Masaryk University, Brno, 62500, Czech Republic)
- 429 C90 *Decoding BMP signaling during patterning of the dorsal neural tube* **Hannah Greenfeld**, Daniel Wagner (University of California - San Francisco, United States)
- 430 C91 *Mapping the Neural Landscape of Pancreatic Development* **Joaquin Lilao-Garzon**, Isabel Espinosa-Medina (HHMI Janelia Research Campus, United States)
- 431 C92 *Unravelling mechanisms of pancreatic innervation in developing zebrafish larvae.* **Triveni Menon** (Janelia Research Campus, Howard Hughes Medical Institute, Ashburn, Virginia, United States of America)
- 432 C93 *Proximity-based proteomic discovery of electrical synapses reveals molecular overlap with chemical synapses.* Jen Michel¹, Adam Miller¹, **E. Anne Martin**² (¹University of Oregon, United States; ²University of Iowa, United States)
- 433 C94 *Co-Migration of Peripheral Axons and Neural Crest Cells Requires tcf15/paraxis* **Bennett Andrassy**, Maximos P. McCune, Sarah C. Petersen (Kenyon College, USA)
- 434 C95 *Spatiotemporal emergence of somatosensory neuron diversity* **Joaquin Navajas Acedo**¹, Alex Schier^{1,2} (¹Biozentrum at the University of Basel, Switzerland; ²Allen Discovery Center for Lineage Tracing, USA)
- 435 C96 *Transcriptional repression in spinal cord dorsal interneuron differentiation.* **Vitória S. Botezelli**¹, Tatianne N. Kanno², Ana Azambuja², Carolina P. Goes¹, Marcos Simões-Costa², C.Y. Irene Yan¹ (¹Universidade de Sao Paulo, Brazil; ²Harvard University, USA)
- 436 C97 *Sox11 genes affect neuronal differentiation in the developing zebrafish enteric nervous system* **Yuanyun Huang**, Can Li, Ayyappa Raja Desingu Rajan, Marianne Bronner (California Institute of Technology, USA)
- 437 C98 *Investigating the Dosage Effects of Gata3 in Spiral Ganglion Neuron Development* **Yi-Chia Huang**, Olubusola Olukoya, Jessica Dixon, Lisa Goodrich (Department of Neurobiology, Harvard Medical School, Boston, MA, USA)
- 438 C99 *Autism-associated variants in the orthologs of CACNA1C and MAPK8IP3 cause defects in axon patterning through dysregulation of the SHN-1 (SHANK1/3) protein.* Hailey Berryman, Alyssa Grandsard, Tamjid Chowdhury, **Christopher Quinn** (University of Wisconsin-Milwaukee, United States of America)
- 439 C100 *Large-scale brain architecture is controlled by specific cell populations in the developing Drosophila optic lobe* **Maria E. Bustillo**, Jessica E. Treisman (NYU School of Medicine, United States)
- 440 C101 *Developmental repurposing of larval neurons for adult sexual behaviors in Drosophila* **Kara Miller** (Villanova University, United States)
- 441 C102 *Identification of novel phenotypes and genetic interactions among neuronally-enriched RNA-binding proteins in the C. elegans multidendritic PVD neurons* **Sharanja Premachandran**, Heather Lin, Welna He, Luca Savo, Emily Deng, John Calarco (Department of Cell and Systems Biology, University of Toronto, Canada)

- 442 C103** *Cellular and transcriptional trajectories of neural fate specification in sea anemone uncover two modes of adult neurogenesis for nerve net scaling* **Flora Plessier**, Heather Marlow (University of Chicago, United States)
- 443 C104** *Gene enrichment in the anterior half of *Heliocidaris erythrogramma* larvae: Why is it so neural?* **Alejandro Berrio**, Esther Miranda, David McClay, Gregory Wray (Duke University, United States of America)
- 444 C105** *Leveraging Spatial and Bulk Transcriptomics to investigate how BMP signaling assays diverse roles in cerebral corticogenesis.* **Nitin Agnihotri**, Jonaki Sen (Indian Institute of Technology (IIT), Kanpur, India, India)
- 445 C106** *Uncovering MeCP2-RNA interaction and functions during brain development* **Chelsea Drown**, Lee Niswander (University of Colorado Boulder, United States of America)
- 446 C107** *BRWD3 is required for proper mammalian forebrain development* **Bryan Crase**^{1,2}, Rebekah Rushforth^{1,3}, Katherine Inskeep^{1,4}, Rolf Stottmann^{1,2} (¹Steve & Cindy Rasmussen Institute for Genomic Medicine, Nationwide Children's Hospital, United States; ²Department of Pediatrics, The Ohio State University College of Medicine, United States; ³The Ohio State University College of Medicine, United States; ⁴Cincinnati Children's Hospital Medical Center, United States)
- 448 C109** *Ventral identity is required for a high-acuity area formation in zebrafish* **Cindy Lorena Olmos Carreno**, Takeshi Yoshimatsu (Ophthalmology, Washington University, St Louis, MO, United States)
- 449 C110** *Isl1 Regulates the Contralateral and Ipsilateral Projection of Retinal Ganglion Cell Axons in the Binocular Visual Pathway* **Lin Gan**^{1,2}, Shiona Biswas¹, Shuchun Li¹, Xiaoling Xie¹, Mei Xu¹, Cynthia Wen¹ (¹Department of Neuroscience & Regenerative Medicine, Medical College of Georgia, Augusta University, GA, USA; ²James & Jean Culver Vision Discovery Institute, Medical College of Georgia, Augusta University, GA, USA)
- 450 C111** *Quantitating Gene Expression Levels in Zebrafish Olfactory Epithelia* **Hayleigh Smith**, Lynne M. Nacke, Debangana Chakravorty, Ankur Saxena (University of Alabama at Birmingham, United States of America)