



19th International Zebrafish Conference

July 9-13, 2025 | Madison, WI, USA

Wednesday, July 9, 2025

Keynote Session I:

Shannon Hall | 3:45-5:00pm

(Bio)physics of body building: gastrulation, elongation, segmentation, ...

L. Mahadevan, FRS - *Harvard University*

Plenary Session I:

Quantitative Biology, Early Development, Morphogenesis and Patterning

Shannon Hall | 5:00-6:30pm

Session Chairs: Katherine Rogers - *National Institutes of Health (NICHD)* & Jing Chen

Huluwa signaling initiates the regulatory hierarchy of organizer formation in zebrafish

Anming Meng - *Tsinghua University*

Integrator Complex Subunit 6 Represses Thousands of Genes During Zygotic Genome Activation and Ventrolaterally Restricts the Dorsal Organizer

William Jones - *University of Pennsylvania*

Decoding BMP signaling during patterning of the dorsal neural tube

Hannah Greenfeld - *UCSF*

Probing the duality of temperature and osmotic strength on developmental tempo using deep learning

Patrick Müller - *University of Konstanz*

Pressure gradients define how the notochord responds to mechanical perturbations

Parsa Zareiesfandabadi - *Duke University*

Critical Role of Spatio-Temporally Regulated Maternal RNAs in Zebrafish Embryogenesis

Gopal Kushawah - *Stowers Institute for Medical Research*

Thursday, July 10, 2025

Plenary Session II:

Disease Models

Shannon Hall | 8:30-10:00am

Session Chairs: Summer Thyme - *UMass Chan Medical School* & Yonghua Sun - *Institute of Hydrobiology, CAS*

Fishing for Cures: Zebrafish as a Pioneering In Vivo Model to Help Solve Mitochondrial Medicine Odysseys

Ankit Sabharwal - *Dell Medical School, The University of Texas at Austin*

It's all about the context: deciphering permissive conditions and constraints in somatic mosaic disorders

Nicola Blum - *Boston Children's Hospital, Harvard Medical School*

NEW INSIGHT ABOUT AUTOSOMAL DOMINANT HYPER-IGE SYNDROMES: THE INTERPLAY BETWEEN P727STAT3 AND VITAMIN D AS PROMISING THERAPEUTIC TARGET.

Annachiara Tesoriere - *Università di Padova*

Zebrafish erf mutation reveals evolutionarily conserved mechanisms underlying craniosynostosis

Shannon Fisher - *Chobanian and Avedisian School of Medicine, Boston University*

Functional Characterization of Autism with Disproportionate Megalencephaly Candidate Genes in Larval Zebrafish

Nicholas Haghani - *University of California Davis, Genome Center*

Establishing zebrafish as a model to study Down syndrome and a platform for drug development for neural disorders

Summer Thyme - *UMass Chan Medical School*

Concurrent Session I

Neurodevelopment

Shannon Hall | 10:30am-12:00pm

Session Chairs: Bushra Raj - *University of Pennsylvania* & Eric Horstick - *West Virginia University*

Eric Horstick - *West Virginia University*

Multiple genes encoded within the 22q11.2 neurodevelopmental risk locus interact within juxtaventricular glial cells to regulate sensorimotor behavior

Philip Campbell - *University of Pennsylvania*

Circuit mechanisms of gravity-guided locomotion and balance deficits

Yunlu Zhu - *NYU Grossman School of Medicine*

Radial astroglia cooperate with microglia to clear neuronal cell bodies during zebrafish optic tectum development

Heather Barber - *University of Virginia*

Dynamics of the neuronal cytoskeleton in zebrafish

Pascale Bomont - *INMG-PGNM*

Serotonin acutely regulates acoustic behavior selection in zebrafish through multiple HTR2 receptor subtypes

Roshan Jain - *Haverford College*

The heart-brain balancing act: The function and development of motor and sensory circuits for cardiac feedback control

Luis Hernandez-Nunez - *Harvard University / Stanford University*

Infection & Immunity

Play Circle Theater | 10:30am-12:00pm

Session Chairs: Sofia de Oliveira – Albert Einstein College of Medicine & Penny Lam – Medical College of Wisconsin

Neutrophil Dynamics in Polytraumatic Injury: Insights from a Zebrafish Model

Sofia de Oliveira - *Albert Einstein College of Medicine*

The molecular basis of neutrophil reverse migration

Yiran Hou - *University of Wisconsin-Madison*

Visualizing Chemoattractant Gradients in Zebrafish Using GEM-Sensors: A Novel Family of Genetically Encoded Biosensors

Balazs Enyedi - *Semmelweis University*

Decoding innate immune PRRs in zebrafish

Emily Rosowski - *Clemson University*

A whole animal drug screen reveals a molecule stimulating sustained immune responses

Hannah Young - *University of Utah*

Integrating archive-wide virus discovery with whole immune system profiling

Keir Balla - *Chan Zuckerberg Biohub SF*

Cell Biology

Wisconsin Historical Society | 10:30am-12:00pm

Session Chairs: Alexa Burger - *University of Colorado Anschutz Medical Campus* & Chuck Kaufmann

Mechanosensing-driven cell competition ensures robust morphogen gradient formation.

Tohru Ishitani - *RIMD(Biken), Osaka University*

PCM1 Coordinates Centrosome Asymmetry and Polarized Endosome Dynamics to Regulate Neural Progenitor Cell Fate

Xiang Zhao - *Chan Zuckerberg Biohub San Francisco*

The core planar cell polarity complex regulates pronephric collective cell migration

Sarah Paramore - *University of Chicago*

Developmental Regulation of Epithelial Polarization by pre-mRNA Splicing

Andressa Pacheco Czaikowski - *Duke University*

BMP receptor trafficking and sub-functionalization in signal transduction during embryonic patterning in the zebrafish

Jeet Patel - *University of Pennsylvania*

Phosphotyrosine-Independent Interactions Between the Cell Adhesion Molecule Jam2a and Adaptor Proteins Crk/CrkI During Zebrafish Myoblast Fusion

Zhou Luo - *UT Southwestern Medical Center*

Plenary Session III:

Organ Formation & Function

Shannon Hall | 1:00-2:30pm

Session Chairs: Daniela Panáková - *Max Delbrück Center for Molecular Medicine & Thomas Juan - Uppsala University*

Live Imaging of Compensatory Lymphangiogenesis in Zebrafish Larvae During Edema Resolution

Hyun Min Jung - *University of Illinois at Chicago*

Reverse genetics at single-cell resolution reveals lineage-specific programs in shared tissues

Lauren Saunders - *Heidelberg University*

Expanded knock-in targeting to visualize cellular niches and stimulate pancreatic beta-cell maturation

Olov Andersson - *Uppsala University*

Enteroendocrine cell signaling wires the gut-brain vagal axis

Lihua Ye - *The Ohio State University*

Nr2f1a-Notch signaling interactions balance chamber-specific endocardial identity necessary for cardiac development

Bitan Saha - *Cincinnati Children's Hospital Medical Center*

Cardiac contractions repress venous fate in the endocardium.

Thomas Juan - *Uppsala University*

**Christiane Nüsslein-Volhard Award
Lecture**

Shannon Hall | 2:30-3:15pm

Seeking Mechanisms of Brain Development: A Career Path Guided by Local Cues

Corinne Houart - *King's College London*

Workshop Session I

**Integration of Computational Modeling
and Quantitative Biology**

Shannon Hall | 4:00-5:30pm

Moderators: Qing Deng - *Purdue University*

Presenters: Michel Bagnat - *Duke University*; Linlin Li - *Purdue University*; Nissa Larson - *Purdue University*; Shelly Tan; Chang Ding - *Purdue University*; Bakary Samasa - *NICHD, NIH*; Mary Mullins - *University of Pennsylvania Perelman School of Medicine*

Skeletal Development

Play Circle Theater | 4:00-5:30pm

Moderators: Shannon Fisher - *Chobanian and Avedisian School of Medicine, Boston University*; Matthew Harris - *Boston Children's Hospital*; Thomas Schilling - *University of California, Irvine*

**Zebrafish Sustainability
Network**

Wisconsin Historical Society | 4:00-5:30pm

Moderators: Ashley Bruce - *University of Toronto*; Manjari Trivedi - *Harvard Medical School*

Friday, July 11, 2025

Plenary Session IV:

Neurobiology

Shannon Hall | 8:30-10:00am

Session Chairs: Cagney Coomer & Konstantinos Ampatzis

Cell Adhesion Molecules Required for Electrical Synapse Assembly

William Crow - *University of Oregon*

Searching for rhythmic cell populations – a time-series single-cell RNA-sequencing analysis of zebrafish adult brains

Han Wang - *Center for Circadian Clocks, Soochow University, Suzhou 215123, Jiangsu, China*

Psilocybin-induced subcortical plasticity promotes stress resilience

Takashi Kawashima - *Weizmann Institute of Science*

Mapping the neural basis for individual differences in the exploratory behavior of adult zebrafish.

Neha Rajput - *Wayne State University*

Defining the cellular and molecular dynamics of astrocytes during axon regeneration

Alexandria Hulegaard - *University of Pennsylvania*

A cell-state switch establishes competence for target-specific regeneration in the zebrafish vagus nerve

Lindsey Qian - *University of Minnesota*

Concurrent Session II

Disease Models

Shannon Hall | 10:30am-12:00pm

Session Chairs: Misha Ahrens & Lihua Ye – *The Ohio State University*

Very efficient recovery of precisely edited alleles harboring multiple base substitutions

Kazuyuki Hoshijima - *University of Utah*

A Novel Zebrafish Model for Diffuse Midline Glioma (DMG)

Elissar Alhaj Kadour - *School of Medicine and Public Health, University of Wisconsin-Madison*

Intrinsic and TDP-43 loss-induced catabolic stress elicits neuroprotective cellular degradation in ALS-vulnerable motor neurons

Kazuhide Asakawa - *National Institute of Genetics*

CK189 is linked to neurodevelopmental disorder in a zebrafish knockout model

Dilan Wellalage Don - *Department of Biology, Chungnam National University, South Korea*

Gene-ethanol interactions and epithelial morphogenesis: The shape of things to come

C. Lovely - *University of Louisville School of Medicine*

A single nucleus RNA-seq atlas of the larval zebrafish response to a high-lipid meal

Catherine Brown - *Johns Hopkins University*

Tissue Regeneration

Play Circle Theater | 10:30am-12:00pm

Session Chairs: Zhaoxia Sun - *Yale University School of Medicine* & Matthew Harris - *Boston Children's Hospital*

Hb-egf-mobilized epicardial cells direct morphogenesis and regeneration of compact cardiac muscle

Fei Sun - *Morgridge Institute for Research*

Neural crest-like cell transdifferentiation underlies a new mode of neuronal regeneration in the zebrafish retina

Romain Madelaine - *MDIBL*

Molecular mechanisms underlying axon target selection during regeneration in zebrafish vagus nerve

Rabab Ibrahim - *University of Minnesota*

Hypothermia induces cardiac regeneration via ERAD-mediated Nfe2l1 stabilization and proteasome activation

Tao P. Zhong – *East China Normal University*

Live visualization of ECM dynamics during development and regeneration in zebrafish

Jingwen Shen - *Morgridge Institute for Research*

Macrophage-derived Extracellular Vesicles Modulate Stem Cell Functions During Muscle Regeneration In Zebrafish

Quoc Duy Tran - *Australian Regenerative Medicine Institute*

Tissue Patterning

Wisconsin Historical Society | 10:30am-12:00pm

Session Chairs: Kelle Siegfried & James Gagnon - *University of Utah*

Nodal drives blastopore formation by re-organizing actomyosin networks

Tao Cheng - *Women's Hospital, Zhejiang University School of Medicine*

Distinct tissue kinematics shape the embryonic body plan

Susan Wopat - *UC Santa Barbara*

Precision in Motion: Cytoneme-Driven Wnt Signalling in Neural Crest Fate Decisions

Gemma Sutton - *Living Systems Institute, University of Exeter*

Agouti and BMP signaling drive a naturally occurring fate conversion of melanophores to leucophores

Delai Huang - *University of Virginia*

Cell-type specific expression of rRNAs in sex determination and differentiation

Miranda Wilson - *Icahn School of Medicine at Mount Sinai*

Prkra dimer senses double-stranded RNAs to dictate global translation efficiency

Ming Shao - *School of Life Sciences, Shandong University*

Plenary Workshop:

Advances and Challenges in Genome Engineering

Shannon Hall | 1:00-2:30pm

Moderators: Marnie Halpern; Filippo Del Bene - *Institut de la Vision*

George Streisinger Award Lecture

Shannon Hall | 2:30-3:15pm

The MBL Zebrafish Course: A Quarter Century Sharing Tricks of the Trade
MBL Course Directors

Workshop Session II:

Challenges Facing Early-Career Zebrafish Researchers

Shannon Hall | 4:00-5:30pm

Moderators: M. Brent Hawkins – *Boston Children's Hospital*; Carl Berggren

A Practical Workshop for Analyzing Whole-Brain Calcium and Voltage Imaging Data

Wisconsin Historical Society | 4:00-5:30pm

Moderator: Takashi Kawashima - *Weizmann Institute of Science*

Designing Sustainable Activities for Outreach and Education

Play Circle Theater | 4:00-5:30pm

Moderator: Jason Meyers - *Colgate University*

Saturday, July 12, 2025

Plenary Session V:

Emerging Technologies

Shannon Hall | 8:30-10:00am

Session Chairs: Diana Pinheiro - *IST Austria* & Saba Parvez - *University of Utah*

CRISPR prime editing made precise by inhibition of microhomology-mediated end-joining

Filippo Del Bene - *Institut de la Vision*

Optimized Cytosine Base Editors Overcome GC/CC Editing Barriers to Enhance Zebrafish Models of Human Genetic Diseases

Yanmei Liu - *Institute for Brain Research and Rehabilitation (IBRR), South China Normal University Guangzhou, Guangdong, China*

High-efficiency TadA Cytosine Base Editors for Precise Genetic Variant Modeling

Wei Qin - *OKLAHOMA MEDICAL RESEARCH FOUNDATION*

Functional Genetic Testing of the Mitochondrial Genome Using Enhanced TALE Base Editors

Stephen Ekker - *University of Texas at Austin*

Auxin inducible protein degradation in zebrafish

Benjamin Martin - *Stony Brook University*

Engineering of epitope tagged proteins: how, which and where?

Darius Balciunas - *Temple University*

Concurrent Session III

Organogenesis

Shannon Hall | 10:30am-12:00pm

Session Chairs: Kristen Kwan - *University of Utah* & Holger Knaut

Wnt signaling directs epithelial tubule interconnection in the regenerating zebrafish kidney

Iain Drummond - *MDI Biological Laboratory*

Hand2 functions upstream of Jam2 signaling to induce Etv2 expression in organ-specific vascular progenitors

Saulius Sumanas - *University of South Florida*

Investigating the roles of notochord membrane proteins in vacuole integrity and chordoma initiation.

James Norman - *Duke University Department of Cell Biology*

Functional identification of neurons and pace-maker like cells involved in various types of motility in the zebrafish gut

Kohei Hatta - *Grad Sch of Science, Univ of Hyogo*

Forward Genetic Screen and new mapping pipeline uncover novel regulator of ApoB lipoprotein biogenesis

McKenna Feltes - *Johns Hopkins University*

Dietary protein absorption in the ileum is regulated by local metabolism of circulating lipoproteins

John Rawls - *Duke University School of Medicine*

Toxicology, Environmental Biology and Sustainability

Play Circle Theater | 10:30am-12:00pm

Session Chairs: C. Ben Lovely - *University of Louisville School of Medicine* & Jessica Plavicki

Valproic Acid Disrupts Redox Homeostasis and Alters Cellular Composition in the Optic Tectum of Larval Zebrafish

Bailey Calder - *Brigham Young University*

Preconception paternal alcohol exposure leads to physical and behavioral changes commonly associated with fetal alcohol spectrum disorders.

Yohaán Fernandes - *Univeristy of South Dakota*

Craniofacial defects associated with nicotine and nicotine and ethanol co-exposure in zebrafish embryos are mediated by nicotine metabolites generated by Cyp2y3

Gissela Borrego-Soto - *University of Texas at Austin*

The small molecule ML233 is a direct inhibitor of tyrosinase function

Romain Menard - *MDI Biological Laboratory*

Estrogen-Mediated Perturbations in Biliary Endothelial Cells: Implications for Liver Homeostasis and Disease

Patrice Delaney - *Massachusetts General Hospital / Harvard Medical School*

Environmental Contaminant Exposure During Juvenile Development Induces Sex-Specific Cardiac Dysfunction

Michelle Kossack - *Brown University*

Stem Cells

Wisconsin Historical Society | 10:30am-12:00pm

Session Chairs: Marlies Rossmann - *University of Rochester Medical Center* & Junsu Kang – *University of Wisconsin - Madison*

Jund orchestrates cis-regulatory element dynamics to facilitate endothelial-to-hematopoietic transition

Lu Wang - *Institute of hematology*

A collagen-modifying enzyme is required for vertebrate hematopoietic stem cell specification

Wilson Clements - *St. Jude Children's Research Hospital*

chd2 Mediates crosstalk between Neural Development and Hematopoietic stem and progenitor cell Expansion via Inflammation in Zebrafish Embryos

Yibo Shao - *State Key Laboratory of Organ Regeneration and Reconstruction, Beijing Institute for Stem Cell and Regenerative Medicine, Institute of Zoology, University of Chinese Academy of Sciences, Chinese Academy of Sciences*

Negative regulation of the NLRP3-inflammasome via the aryl hydrocarbon receptor is critical for HSC expansion

Morgan Walcheck - *Boston Children's Hospital*

Vcam1 expression in the CHT during the development of hematopoietic stem cells.

Octavia Santis Larrain - *UW-Madison*

Hematopoietic Stem and Progenitor Cell Maturation is Dependent on Integrin $\alpha 4$ -mediated Interactions with the Niche During Development

Nicole Woodhead - *University of Wisconsin-Madison*

Keynote Session II:

Shannon Hall | 5:00-6:00pm

Dissecting Human Hematopoietic Stem Cell Development, Self-Renewal and Transformation

Hanna Mikkola, MD, PhD – *University of California Los Angeles*

Sunday, July 13, 2025

Plenary Session VI:

Regeneration Across the Lifespan

Shannon Hall | 8:30-10:00am

Session Chairs: Ellen Lien – *University of Southern California* & Jing-Wei Xiong

Platelet-derived Hb-egfb regulates zebrafish heart regeneration

Yuanyuan Sun – *Peking University*

Sonic hedgehog signaling upregulates basal epidermal fibrillin 3 to support guided osteoblast movements underlying zebrafish fin ray branching

Sam Horst - *University of Oregon*

Regeneration programs buffer defects in development

Kazunori Ando - *Morgridge Institute for Research, University of Wisconsin-Madison*

Molecular characterization and regeneration of the aging zebrafish retina

Leah Campbell - *University of Notre Dame*

Small molecule augmentation of Notch signaling rescues regeneration in models of liver and muscle disease

Duc Dong - *Sanford Burnham Prebys Medical Discovery Institute*

Regeneration in the face of DNA stress

Gilbert Weidinger - *Ulm University*

Concurrent Session IV

Advanced Imaging & Engineering

Shannon Hall | 10:30am-12:00pm

Session Chairs: Kaite Drerup - *University of Wisconsin-Madison* & Daniel Levic - *Duke University*

MCA: MultiCellular Analysis calcium imaging toolbox for ImageJ

John Hager - *West Virginia University*

pIGLET: safe harbor landing sites for reproducible transgenesis applications

Christian Mosimann - *University of Colorado School of Medicine, Anschutz Medical Campus*

Precise control of secreted signaling protein activity using a synthetic protease library

P. C. Dave Dingal - *The University of Texas at Dallas*

See-through science: *Danio rerio* as a model for CNS regeneration

Pui-Ying Lam - *Medical College of Wisconsin*

High throughput in vivo mapping of signaling histories with CRISPR barcodes

Bushra Raj - *University of Pennsylvania*

A High-Throughput Imaging and Analysis Pipeline for Phenotyping MIC-Drop-Generated Zebrafish Mutants in 96-Well Plates

Abhinav Bachu - *Northwestern University*

Evolution & Comparative Biology

Play Circle Theater | 10:30am-12:00pm

Session Chairs: Shunji Jia - *Institute of Genetics and Developmental Biology, Chinese Academy of Sciences* & Ji-Feng Fei - *Guangdong Provincial People's Hospital*

Evolution and regulation of diapause in the African killifish

Param Priya Singh - *University of California, San Francisco*

Zebrafish models of duplicated genes implicated in human brain evolution

Megan Dennis - *University of California, Davis*

Uncovering cryptic genetic variants that contributed to eye-loss in the evolution of the blind cavefish, *Astyanax mexicanus*

Hannah Grunwald - *Boston Children's Hospital*

Exploring the cellular and molecular mechanisms underlying indeterminate skeletal muscle growth in teleosts.

Yansong Lu - *Monash University - Australian Regenerative Medicine Institute*

Odyssey of Strange Fish: Holostean Fishes Inform the Developmental Evolution of Vertebrates and Bridge Zebrafish to Human

Ingo Braasch - *Michigan State University*

Disclosing the role of muscle stem cells during tail regeneration in the axolotl

Ji-Feng Fei - *Guangdong Provincial People's Hospital*