

Program

**Tuesday, March 7 (Day 1)**

9:00-10:00 Registration

10:00-10:05 Opening Remarks by Eisuke Nishida

**Transitions in genomics states: ZGA**

Chair: Ichiro Hiratani

10:05-10:30 Presentation by Zoom

**S1-1**

**Beyond chromatin: Histone H3 as a cell cycle regulator at the Mid-Blastula transition**

Amanda Amodeo (Dartmouth College, USA)

10:30-10:55 **S1-2**

**Chromatin conformation during early embryonic development**

Juanma Vaquerizas (Imperial College London, UK)

10:55-11:20 **S1-3**

**How cell cycle regulation guides zygotic gene transcription at the MBT**

Patrick H. O'Farrell (University of California, San Francisco, USA)

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11:20-11:40 *Coffee Break*

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Chair: Juanma Vaquerizas

11:40-12:05 **S1-4**

**Dynamics of chromatin organization and transcription in early zebrafish embryos**

Hiroshi Kimura (Tokyo Institute of Technology, Japan)

12:05-12:30 **S1-5**

**Somatic DNA replication timing program emerges with a unique transitional S-phase during early mouse embryogenesis**

Ichiro Hiratani (RIKEN Center for Biosystems Dynamics Research, Japan)

12:30-12:45 **S1-6\***

**The source of chromosome abnormalities in early embryos**

Hirohisa Kyogoku (Kobe University, Japan)

\*Selected Talk

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12:45-14:00      *Lunch*

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14:00-15:30      **Poster Session 1**  
14:00-15:00 Presenters of Odd-numbered posters  
15:00-15:30 Free discussion

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**Mechanical phase transitions**

Chair: Tatsuo Shibata

15:30-15:55      **S2-1**  
**Osmotic control of nuclear size**  
Fred Chang (University of California, San Francisco, USA)

15:55-16:10      **S2-2\***  
**Elastic-Plastic Transition in the Mechanical Response of Epithelium**  
Satoru Okuda (Nano Life Science Institute, Kanazawa University, Japan)

16:10-16:35      **S2-3**  
**TBA**  
Kinneret Keren (Technion - Israel Institute of Technology, Israel)

16:35-16:50      **S2-4\***  
**Mind the gap: Space inside eggs steers first few steps of life**  
S. Seirin-Lee (Kyoto University Institute for the Advanced Study of Human Biology (ASHBi), Kyoto University, Japan)

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16:50-17:10      *Coffee Break*

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17:10-17:35      **S2-5**  
**A positive feedback loop between mesendoderm cell migration and interstitial fluid relocalization is required for embryonic axis formation in zebrafish**  
Carl-Philipp Heisenberg (Institute of Science and Technology Austria, Austria)

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17:35-17:50 **S2-6\***  
**Junctional heterogeneity, transitions epithelium to an organized pattern**  
Anubhav Prakash (National Centre for Biological Sciences, Tata Institute for  
Fundamentals Research, India)

17:50-18:15 **S2-7**  
**Evolution Transition of Mechanical Mechanisms For The Release of  
Compressive Stress Resulting From Tissue Tectonic Collision**  
Yu-Chiun Wang (RIKEN Center for Biosystems Dynamics Research, Japan)

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18:15-20:30 Banquet at BDR Lounge

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**Wednesday, March 8 (Day 2)**

**Behavioral transitions: plasticity of homeostasis I**

Chair: Genshiro A. Sunagawa

- 9:30-9:55      **S3-3**  
**Immunoception: immune representation and control by the nervous system**  
Asya Rolls (Technion - Israel Institute of Technology, Israel)
- 9:55-10:20    **S3-4**  
**Programed activation of Autophagy preserves body structure for a long-term diapause period**  
Masayuki Oginuma (Osaka University, Japan)
- 10:20-10:35   **S3-5\***  
**A vasopressin-to-oxytocin receptor crosstalk underlying paternal behavioral transition in mice**  
Kengo Inada (RIKEN Center for Biosystems Dynamics Research, Japan)
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10:35-10:50      *Coffee Break*

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**Technological frontiers in cell state transitions**

Chair: Yoshihiro Shimizu

- 10:50-11:15   **S4-1**  
**Towards a Mathematical Theory of Development**  
Geoffrey Schiebinger (University of British Columbia, Canada)
- 11:15-11:40   **S4-2**  
**TBA**  
Liam Holt (New York University School of Medicine, USA)
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11:40-11:55      *Coffee Break*

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\*Selected Talk

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Chair: Takuhiro Ito

- 11:55-12:20 **S4-3**  
**Mass spectrometry-based quantitative targeted proteomics with cell-free labeled peptides for cellular transition studies**  
Yoshihiro Shimizu (RIKEN Center for Biosystems Dynamics Research, Japan)
- 12:20-12:45 **S4-4**  
**Manipulating Living Systems by Light**  
Moritoshi Sato (The University of Tokyo, Japan)
- 12:45-13:00 **S4-5\***  
**Brillouin microscopy meets proteomics: an integrated approach to study the determination of mechanical properties during *Drosophila* morphogenesis**  
Juan Manuel Gomez (European Molecular Biology Laboratory (EMBL) Heidelberg, Germany)

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13:00-14:00 *Lunch*

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- 14:00-15:30 **Poster Session 2**  
14:00-15:00 Presenters of Even-numbered posters  
15:00-15:30 Free discussion
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**Cellular transitions in tissue to organisms**

Chair: Emma Gordon

- 15:30-15:45 **S5-1\***  
**Tissue pattern emerges through surface-induced ordering in the mouse epiblast**  
Takafumi Ichikawa (Institute for the Advanced Study of Human Biology (ASHBi), Kyoto University, Japan)
- 15:45-16:10 **S5-2**  
**A role of Aquaporin 1 in mediating endothelial cell state transitions in the dorsal aorta**  
Li-Kun Phng (RIKEN Center for Biosystems Dynamics Research, Japan)

\*Selected Talk

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- 16:10-16:35 **S5-3**  
**Deciphering the transcriptional regulation of lymphatic vascular development downstream the Hippo signalling pathway**  
Benjamin M. Hogan (University of Melbourne, Australia)
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- 16:35-16:55 *Coffee Break*
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- 16:55-17:20 **S5-4**  
**Mechanism of organismal size “sensing” in planarian flatworms**  
Hanh Vu (European Molecular Biology Laboratory, Heidelberg, Germany)
- 17:20-17:45 **S5-5**  
**Non-cell autonomous effects of cardiomyocyte renewal**  
Kazu Kikuchi (National Cerebral and Cardiovascular Center Research Institute, Japan)
- 17:45-18:10 **S5-6**  
**Progenitor cell integration into a barrier epithelium during adult organ turnover**  
Lucy Erin O'Brien (Stanford University School of Medicine, USA)

**Thursday, March 9 (Day 3)**

**Metabolic steering of life-stage transitions**

Chair: Sa Kan Yoo

- 9:30-9:55      **S6-1**  
**Metabolic control of signaling dynamics in mouse embryos**  
Hidenobu Miyazawa (European Molecular Biology Laboratory, Heidelberg, Germany)
- 9:55-10:20    **S6-2**  
**Metabolic regulation of cardiac regeneration**  
Wataru Kimrui (RIKEN Center for Biosystems Dynamics Research, Japan)
- 10:20-10:45   **S6-3**  
**Gut Microbiota and Longevity**  
Koji Atarashi (Keio University School of Medicine, Japan)
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- 10:45-11:05              *Coffee Break*
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- 11:05-11:30    **S6-4**  
**TBA**  
Emi Nishimura (The University of Tokyo, Japan)
- 11:30-11:55    **S6-5**  
**Changing guts**  
Irene Miguel-Aliaga (MRC London Institute of Medical Sciences, Imperial College London, UK)
- 11:55-12:10    **S6-6**  
**Nutrient-driven dedifferentiation of enteroendocrine cells promotes adaptive intestinal growth**  
Yu-ichiro Nakajima (The University of Tokyo, Japan)
- 12:10-12:25    **S6-7**  
**Impacts of nutritional histories in juvenile stages on the adult lifespan of *Drosophila***  
Tadashi Uemura (Kyoto University, Japan)

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12:25-13:30      *Lunch*

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**Behavioral transitions: plasticity of homeostasis**

Chair: Kazunari Miyamichi

13:30-13:55    Presentation by Zoom

**S7-1**

**The ‘Low-Power Mode’ of neocortex: energy use and coding precision during food scarcity**

Nathalie L Rochefort (University of Edinburgh, UK)

13:55-14:20    **S7-2**

**Transition to life-without-water in anhydrobiotic tardigrades**

Sae Tanaka (National Institutes of Natural Sciences, Exploratory Research Center on Life and Living Systems, Japan)

14:20-14:45    **S7-3**

**Warm hibernation enabled: revolutionizing hibernation research with QIH**

Genshiro A. Sunagawa (RIKEN Center for Biosystems Dynamics Research, Japan)

14:45-14:50    Closing remarks by Irene Miguel-Aliaga