

**The 51<sup>st</sup> NIPS International Symposium**

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# **Frontiers in Epithelial Cell Biology**

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**December 6-8, 2021**

**Organizers:**

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# Program at a Glance

Time: JST: UTC+9:00

December 6 <sup>th</sup> , Monday (Day 1)	December 7 <sup>th</sup> , Tuesday (Day 2)
10:45 Opening remarks by Junichi Nabekura	
10:50 Introduction by Mikio Furuse	
11:00 <b>Session 1</b> Chair: Ann Miller Alpha Yap Mikio Furuse Kaoru Sugmiura Makoto Sato	11:00 <b>Session 3</b> Chair Alexander Ludwig Sachiko Tsukita Ann Miller Yukako Oda Akiharu Kubo
13:00 Break (1 hour)	13:00 Break (1 hour)
14:00 <b>Poster session</b> <b>(Odd numbered posters)</b> (Gather)	14:00 <b>Poster session</b> <b>(Even numbered posters)</b> (Gather)
15:30 <b>Session 2</b> Chair: Alpha Yap Parisa Kakanj Shigenobu Yonemura Junichi Ikenouchi Alf Honigmann	15:30 <b>Session 4</b> Chair: Tatsushi Igaki Yusuke Toyama Tsuyoshi Hirashima Paolo Armando Gagliardi Stefano DeRenzis
17:30 <b>Social Hour</b> (Gather)	17:30 <b>Social Hour</b> (Gather)

<b>December 8<sup>th</sup>, Wednesday (Day 3)</b>	
11:00	<b>Session 5</b> Chair: Shigenobu Yonemura Elgin Korkmazhan Mitsunori Fukuda Alexander Ludwig Akihiro Harada
13:00	Break (1 hour)
14:00	<b>Session 6</b> Chair: Kaoru Sugimura Erina Kuranaga Tatsushi Igaki Fanny Jaulin
15:45	Break (30 min)
16:15	<b>Session 7</b> Chair: Erina Kuranaga Markus Bleich Minoru Takasato Motoko Yanagita
18:00	Concluding remarks
18:30	<b>Social Hour</b> (Gather)

# Program

Time: JST: UTC+9:00

**December 6<sup>th</sup>, Monday (Day 1)**

**10:45 Opening remarks**

Junichi Nabekura (Director General, NIPS, Japan)

**10:50 Introduction**

Mikio Furuse (Organizer, NIPS, Japan)

**Session 1**

Chair: Ann Miller

**11:00 S1-1**

**Mechanotransduction at adherens junctions: its role in epithelial homeostasis**

Alpha Yap (University of Queensland, Australia)

**11:35 S1-2**

**Mechanisms of paracellular sealing at tricellular contacts in vertebrate epithelial cells**

Mikio Furuse (NIPS, Japan)

**12:10 S1-3**

**Dissecting molecular and physical mechanisms underlying cell rearrangement**

Kaoru Sugimura (University of Tokyo, Japan)

**12:45 S1-4 (P15)**

**Tiling mechanisms of the compound eye through geometrical tessellation**

Makoto Sato (Kanazawa University, Japan)

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13:00-14:00 Break

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**14:00 Poster session – Odd numbered posters (Gather)**

**Session 2**

Chair: Alpha Yap

**15:30 S2-1 (P22)**

**Autophagy suppression by TORC1 maintains epithelial plasma membrane integrity**

Parisa Kakanj (University of Cologne, Germany)

**15:45 S2-2**

**Adjusting Tension sensitivity of  $\alpha$ -catenin for epithelial morphogenesis**

Shigenobu Yonemura (Tokushima University, Japan)

**16:20 S2-3**

**Roles of membrane lipids in tight junction formation**

Junichi Ikenouchi (Kyushu University, Japan)

**16:55 S2-4**

**The supra-molecular structure of the apical junctional complex in MDCK cysts**

Alf Honigmann (MPI-CBG, Germany)

**17:30 Social Hour (Gather)**

**December 7<sup>th</sup>, Tuesday (Day 2)**

**Session 3**

Chair: Alexander Ludwig

**11:00 S3-1**

**The tight-junction apical complex: A new point of view that increases our understanding of epithelial barriers and biological systems**

Sachiko Tsukita (Teikyo University, Japan)

**11:35 S3-2**

**Maintenance and remodeling of epithelial cell-cell junctions during cell shape changes**

Ann Miller (University of Michigan, USA)

**12:10 S3-3**

**The epidermal tight junction barrier maintaining homeostasis of the skin**

Akiharu Kubo (Kobe University, Japan)

**12:45 S3-4 (P14)**

**Anti-inflammatory peptides promote tissue-repair by reinforcing epithelial barrier**

Yukako Oda (Kyoto University, Japan)

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13:00 – 14:00 Break

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**14:00 Poster session – Even numbered posters (Gather)**

## **Session 4**

Chair: Tatsushi Igaki

### **15:30 S4-1**

#### **Decoding the spatial pattern of apoptosis-induced compensatory proliferation**

Yusuke Toyama (Mechanobiology Institute, Singapore)

### **16:05 S4-2**

#### **Mechanochemical feedback control in collective epithelial migration**

Tsuyoshi Hirashima (Kyoto University, Japan)

### **16:40 S4-3 (P25)**

#### **Collective ERK/Akt activity waves orchestrate epithelial homeostasis by driving apoptosis-induced survival**

Paolo Armando Gagliardi (University of Bern, Switzerland)

### **16:55 S4-4**

#### **Engineering Morphogenesis with Optogenetics**

Stefano DeRenzis (EMBL Heidelberg, Germany)

### **17:30 Social Hour (Gather)**

**December 8<sup>th</sup>, Wednesday (Day 3)**

**Session 5**

Chair: Shigenobu Yonemura

**11:00 S5-1 (P19)**

**Dynamic yet strong: sliding anchors as novel organizers of the cell cortex**

Elgin Korkmazhan (Stanford University, USA)

**11:15 S5-2**

**Mechanisms of polarized exosome release from epithelial cells**

Mitsunori Fukuda (Tohoku University, Japan)

**11:50 S5-3**

**Organisation and spatio-temporal control of the Crumbs-associated polarity network in mammalian epithelial cells**

Alexander Ludwig (Nanyang Technological University, Singapore)

**12:25 S5-4**

**Roles of Rabs and SNAREs in epithelial cell polarity in vivo**

Akihiro Harada (Osaka University, Japan)

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13:00 – 14:00 Break

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**Session 6**

Chair: Kaoru Sugimura

**14:00 S6-1**

**Mechanical perspective of collective cell movement in epithelial morphogenesis**

Erina Kuranaga (Tohoku University, Japan)



**14:35 S6-2**

**Genetic dissection of cell competition: how to eliminate unfit neighbors in the epithelium**

Tatsushi Igaki (Kyoto University, Japan)

**15:10 S6-3**

**Epithelial cell clusters undergo a new mode of collective migration**

Fanny Jaulin (Gustave Roussy, France)

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15:45 – 16:15 Break

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## **Session 7**

Chair: Erina Kuranaga

**16:15 S7-1**

**New insights on the role of claudin-10 in renal tubular transport function**

Markus Bleich (Kiel University, Germany)

**16:50 S7-2**

**Induction of 3D bladder epithelial organoids using the support of splanchnic mesoderm**

Minoru Takasato (RIKEN BDR, Japan)

**17:25 S7-3**

**Renal microenvironments regulating renal injury, inflammation and fibrosis**

Motoko Yanagita (Kyoto University, Japan)

**18:00 Concluding remarks**

**18:10 Social Hour (Gather)**

# Poster Program

## **P01**

**Optogenetic relaxation of actomyosin contractility uncovers mechanistic roles of cortical tension during cytokinesis**

Kei Yamamoto (NIBB, Japan)

## **P02**

**Image-based statistical inference of mechanical parameters governing epithelial morphogenesis**

Goshi Ogita (Kyoto University, Japan)

## **P03**

**Occludin and tricellulin regulate the complexity of tight junction strand network and epithelial barrier function**

Tomohito Higashi (Fukushima Medical University, Japan)

## **P04**

**Characterisation of Pals1 dynamics during epithelial polarity development**

Eleanor Martin (Nanyang Technological University, Singapore)

## **P05**

**The effect of claudin-15 deletion on paracellular Na<sup>+</sup> transport in the cecum and large intestine**

Wendy Hempstock (University of Shizuoka, Japan)

## **P06**

**Protective effects of flavonoids against weak UVB-induced barrier dysfunction via suppressing nitric oxide production and mislocalization of claudin-1 in HaCaT cells**

Yuta Yoshino (Gifu Pharmaceutical University, Japan)

**P07**

**Functional rescue for disease-associated CFTR-mutations frequently found in Japanese CF patients by the CFTR correctors for Caucasian mutants**

Yoshiro Sohma (International University of Health and Welfare, Japan)

**P08**

**The role of the paracellular barrier in stem cell homeostasis in the *Drosophila* gut**

Yasushi Izumi (NIPS, Japan)

**P09**

**Keratin intermediate filaments in mechanotransduction of keratinocytes and the pathophysiology of epidermolysis bullosa simplex**

Sachiko Fujiwara (NIPS, Japan)

**P10**

**The roles of claudins and JAM-A in providing tight junction-dependent mechanical resistance**

Thanh Phuong Nguyen (NIPS, Japan)

**P11**

**Roles of the cytoskeleton in the accumulation of cholesterol at tight junction regions**

Kenta Shigetomi (Kyushu University, Japan)

**P12**

**Tricellulin plays an essential role for the barrier function at tricellular junctions by interacting with actomyosin**

Yuma Cho (Kyushu University, Japan)

**P13**

**Roles of Homer family proteins in the formation of circumferential actin ring in epithelial cells**

Ryoya Fujinaga (Kyushu University, Japan)

**P14 (S3-4)**

**Anti-inflammatory peptides promote tissue-repair by reinforcing epithelial barrier**

Yukako Oda (Kyoto University, Japan)

**P15 (S1-4)**

**Tiling mechanisms of the compound eye through geometrical tessellation**

Makoto Sato (Kanazawa University, Japan)

**P16**

**Study on the expression of Angiotensin converting enzyme 2, ACE2 in the primary culture of human nasal and bronchial epithelial cells**

Kasane Yasuoka (Ritsumeikan University, Japan)

**P17**

**De-wetting of cortical myosin-II facilitates the reconnection of junctions during cell rearrangement**

Keisuke Ikawa (University of Tokyo, Japan)

**P18**

**TBA**

Tara Finegan (Syracuse University, USA)

**P19 (S5-1)**

**Dynamic yet strong: sliding anchors as novel organizers of the cell cortex**

Elgin Korkmazhan (Stanford University, USA)

**P20**

**Epithelial adhesions modulate apical domain contraction to drive cell shape change**

Kenji Matsuzawa (Kyushu University, Japan)

**P21**

**Roles of Ezrin in regulation of ciliary beating in airway ciliary cell**

Kotoku Kawaguchi (Ritsumeikan University, Japan)

**P22 (S2-1)**

**Autophagy suppression by TORC1 maintains epithelial plasma membrane integrity**

Parisa Kakanj (University of Cologne, Germany)

**P23**

**Linking epithelial morphogenesis and oncogenic PI3K/Akt signaling**

Agne Frismantiene (University of Bern, Switzerland)

**P24**

**A unique mode of functional cell death in stratum granulosum cells, corneoptosis**

Takeshi Matsui (Tokyo University of Technology)

**P25 (S4-3)**

**Collective ERK/Akt activity waves orchestrate epithelial homeostasis by driving apoptosis-induced survival**

Paolo Armando Gagliardi (University of Bern, Switzerland)

**P26**

**Competitive elimination of tight junction deficient cells regulate epithelial barrier homeostasis**

Tetsuhisa Otani (NIPS, Japan)

**P27**

**Epithelial tissue compression is mediated by a novel lateral non canonical E-Cadherin associated basal supra cellular acto-myosin cortex in *Drosophila* pupal trachea**

Rojalin Pradhan (National Institute of Science Education and Research, HBNI, India)

**P28**

**Remodeling of the luminal epithelium of the uterus during implantation of mouse embryos**

Jun Sakurai (NIBB, Japan)

**P29**

**mTORC2 suppresses cell death induced by hypoosmotic stress by promoting sphingomyelin transport**

Yumiko Ono (Kyushu University, Japan)

**P30**

**Defects in Tricellular Junction Triggers Tumor-Suppressive Cell Competition**

Haolin Xie (Kyoto University, Japan)

**P31**

**Research on the regulatory factor related to differentiation of multiciliated ependymal cells**

Takuya Hirao (Ritsumeikan University, Japan)

**P32**

**Transcriptional profiles along cell programming into corneal epithelial differentiation**

Maria-Teresa Ortiz-Melo (Universidad Nacional Autonoma de Mexico, Mexico)