

Keystone Symposia in Keystone Signal Dynamics and Signal Integration in Development and Disease

Keystone Resort | Keystone, Colorado, USA | January 27–31, 2019

Joint with the conference on *Cellular Plasticity: Reprogramming, Regeneration and Metaplasia*

Scientific Organizers:

Nicolas Tapon, Francis Crick Institute, UK

Liliana Attisano, University of Toronto, Canada

Raphael Kopan, University of Cincinnati College of Medicine, USA

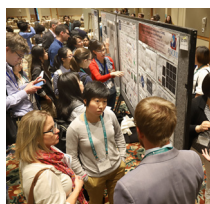
The discovery and study of the major developmental signaling pathways (Notch, Hh, Wnt, TGF-beta, Hippo, RTK) have illuminated how patterning and growth are controlled in metazoans. These pathways are reiteratively used during development and adult life, acting to maintain stem cells and direct tissue repair and regeneration. When they are disrupted, cancer develops. This conference embraces recent progress in quantitative biology, mathematical modeling, single cell analysis and intravital imaging. It also presents a major opportunity to combine knowledge from developmental systems with adult homeostasis, regeneration and cancer, as well as to elucidate how different developmental signals are integrated to influence cellular decision-making processes. Bringing together cell/developmental biologists and stem cell, regeneration and cancer specialists, with a strong emphasis on multidisciplinary approaches that incorporate systems biology, mathematics and physics into the study of living systems, the conference aims to: 1) Explore the commonalities between signaling in development, regeneration and homeostasis; 2) Leverage quantitative, single cell and systems biology to study the dynamics and integration of developmental signaling across scales; and 3) Highlight how perturbations in developmental pathways cause diseases such as cancer. Pairing the conference with the symposium on “Cellular Plasticity: Reprogramming, Regeneration and Metaplasia” will also enhance the conferences’ impact and enable in-depth exploration of the parallels between plasticity/pluripotency in development, regeneration and disease.

Plenary Session Topics:

- Plasticity and Signaling in Development and Homeostasis (Joint)
- Quantitative Approaches and Signaling Networks
- Signaling Dynamics
- Morphogen Gradients in Growth and Patterning
- Plasticity and Signaling in Regeneration and Tumorigenesis (Joint)
- Cell Competition and Mechanical Interactions
- Developmental Signaling and Disease
- Integration of Developmental Signaling Pathways

Scholarship/Discounted Abstract Deadline: Oct 3, 2018; Abstract Deadline: Oct 25, 2018; Discounted Registration Deadline: Nov 28, 2018

Visit www.keystonesymposia.org/19J4 for more details.



KEYSTONE SYMPOSIA™
on Molecular and Cellular Biology
Accelerating Life Science Discovery
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KEYSTONE SYMPOSIA

on Molecular and Cellular Biology

Signal Dynamics and Signal Integration in Development and Disease (J4)

Scientific Organizers: Nicolas Tapon, Liliana Attisano and Raphael Kopan

Supported by the Directors' Fund

Cellular Plasticity: Reprogramming, Regeneration and Metaplasia (J3)

Scientific Organizers: Jason C. Mills, Maïke Sander and Ben Z. Stanger

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SUNDAY, JANUARY 27

Arrival and Registration

MONDAY, JANUARY 28

Welcome and Keynote Address (Joint)

Hans C. Clevers, Hubrecht Institute, Netherlands
Intestinal Stem Cells, Organoids, Regeneration

Plasticity and Signaling in Development and Homeostasis (Joint)

Jayaraj Rajagopal, Massachusetts General Hospital, USA
Feedback Signals Controlling the Airway Stem Cell Niche

Valentina Greco, Yale School of Medicine, USA
Signaling and Cell Competition in Skin

Maïke Sander, University of California, San Diego, USA
Epigenetic Regulation of Developmental Competence

Short Talk(s) Chosen from Abstracts

Workshop (J4)

Short Talks Chosen from Abstracts

Quantitative Approaches and Signaling Networks (J4)

Michael Elowitz, California Institute of Technology, USA
Communication Channels in the Notch and BMP Signaling Systems

Barbara Treutlein, Max Planck Institute for Evolutionary Anthropology, Germany
Single-Cell Genomics of Tissue and Organoid Development

Naama Barkai, Weizmann Institute of Science, Israel
Talk Title to be Announced

Short Talk Chosen from Abstracts

Stem Cell Recruitment and Metaplasia (J3)

Calvin Kuo, Stanford University, USA
Intestinal Stem Cell Niches

Jason C. Mills, Washington University, USA
Reserve Stem Cells Recruited by Paligenosis, an Evolutionarily Conserved Program

Anil K. Rustgi, University of Pennsylvania, USA
Metaplasia in Esophagus and Pancreas

Short Talk Chosen from Abstracts

Poster Session 1

TUESDAY, JANUARY 29

Signaling Dynamics (J4)

Andrew C. Oates, École polytechnique fédérale de Lausanne, Switzerland
Dynamic Notch Signaling and the Vertebrate Segmentation Clock

Deborah L. Gumucio, University of Michigan, USA
Developmental Signals in Organogenesis of the Gastrointestinal Tract

Raphael Kopan, University of Cincinnati College of Medicine, USA
Notch Signaling in Renal Development and Renal Stem Cells

Short Talks Chosen from Abstracts

Cancer and Plasticity (J3)

Arjun Raj, University of Pennsylvania, USA
Controlling Cellular Plasticity in Cancer

Ben Z. Stanger, University of Pennsylvania Perelman School of Medicine, USA
Epithelial-mesenchymal Plasticity in Cancer, Cell Invasion and Metastasis

Carla F. Kim, Boston Children's Hospital, USA
Lung Stem Cell Niches and Cancer

Cory T. Abate-Shen, Columbia University Medical Center, USA
Cellular Plasticity for Prostate and Prostate Cancer

Short Talk(s) Chosen from Abstracts

Morphogen Gradients in Growth and Patterning (J4)

Caroline S. Hill, Francis Crick Institute, UK
Nodal and FGF Signaling in Endoderm Specification

Anna Kicheva, Institute of Science and Technology Austria, Austria
Tissue Growth and Developmental Pattern Formation by the Hh Pathway in the Spinal Cord

J. P. Vincent, Francis Crick Institute, UK
Coordination of Growth and Patterning in a Developing Epithelium

Short Talk Chosen from Abstracts

Reprogramming Cells to Assemble and Repair Organs (J3)

Jason R. Spence, University of Michigan Health System, USA
Intestinal Organoids

Takanori Takebe, Yokohama City University / Cincinnati Children's Hospital Medical Center, Japan
Next-Gen Organoids from Pluripotency

Meritxell Huch, University of Cambridge, UK
Liver Organoids for the Study of Liver Biology and Disease

Short Talk Chosen from Abstracts

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on Molecular and Cellular Biology

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Poster Session 2

WEDNESDAY, JANUARY 30

Plasticity and Signaling in Regeneration and Tumorigenesis (Joint)

Elly M. Tanaka, IMP - Research Institute of Molecular Pathology, Austria

Transition in Cellular Phenotype during Limb Regeneration

Fernando D. Camargo, Boston Children's Hospital, USA

Hippo Signaling in Stem Cell Plasticity and Cancer

Stacey S. Huppert, Cincinnati Children's Hospital Medical Center, USA

Building a Functional Biliary System from Hepatocytes

Owen J. Sansom, Beatson Institute of Cancer Research, UK

Reserve Stem Cells and Intestinal Tumorigenesis

Short Talk(s) Chosen from Abstracts

Workshop: Nomenclature in Cell Plasticity: 'Plasticity', 'Dedifferentiation', 'Transdifferentiation', 'Reprogramming', 'Reversion' – Can We Agree What These Mean? (J3)

Short Talks Chosen from Abstracts

Cell Competition and Mechanical Interactions (J4)

Eugenia Piddini, University of Bristol, UK

Mechanical Competition in Mammals and Flies

Miguel Torres, Centro Nacional de Investigaciones

Cardiovasculares, Spain

Cell Competition in Mammalian Development and Tissue Homeostasis

Nicolas Tapon, Francis Crick Institute, UK

Tissue Mechanics in Growth Control by the Hippo Pathway

Short Talk Chosen from Abstracts

Transcriptional Regulation of Cell Plasticity (J3)

Ramesh A. Shivdasani, Dana-Farber Cancer Institute, USA

Epigenetic Regulation of Gut Development and Plasticity

Scott Magness, University of North Carolina at Chapel Hill, USA

Harnessing SOX9 Cell State Plasticity to Engineer New Intestines

Michele A. Battle, Medical College of Wisconsin, USA

Transcriptional Regulation of Barrett's Metaplasia

Short Talk Chosen from Abstracts

Poster Session 3

THURSDAY, JANUARY 31

Developmental Signaling and Disease (J4)

Adolfo Ferrando, Columbia University, USA

Notch in T-Cell Acute Lymphoblastic Leukemia

Feng Cong, Novartis Institutes for BioMedical Research, USA

Drug Discovery for the Wnt, TGF β /BMP, and HIPPO Pathways

Kun-Liang Guan, University of California, San Diego, USA

Hippo Signaling in Cancer

Aris N. Economides, Regeneron Pharmaceuticals, Inc., USA

Activin Ligand Traps in Bone Disease Treatment

Short Talk(s) Chosen from Abstracts

Injury, Inflammation and Regeneration (J3)

Irene Miguel-Aliaga, Imperial College London, UK

Sex, Reproduction and Intestinal Plasticity

Xin Sun, University of California, San Diego, USA

Neural-Immune Modules in the Airway

Juanita L. Merchant, University of Arizona College of Medicine, USA

Helicobacter, Hedgehog and Gastric Metaplasia

James R. Goldenring, Vanderbilt University Medical Center, USA

Inflammatory Regulation of Metaplasia Induction in the Stomach

Short Talk(s) Chosen from Abstracts

Integration of Developmental Signaling Pathways (J4)

Liliana Attisano, University of Toronto, Canada

Hippo in Cancer

Norbert Perrimon, Harvard Medical School, USA

Functional Genomics and in vivo Approaches to Developmental Signaling

Jeffrey L. Wrana, Mount Sinai Hospital, Canada

TGF β and Hippo in Cancer and Regeneration

Applications of Cell Plasticity (J3)

Frederic J. de Sauvage, Genentech, Inc., USA

Manipulating Cell Plasticity to Treat and Prevent Tumors

Qiao Zhou, Harvard Stem Cell Institute, USA

Making Beta Cells from Intestine

Darrell N. Kotton, Boston University, USA

Generating Lung Cells for Therapy

Meeting Wrap-Up: Outcomes and Future Directions (Organizers) (J4)

Meeting Wrap-Up: Outcomes and Future Directions (Organizers) (J3)

FRIDAY, FEBRUARY 1

Departure