

Keystone Symposia in Keystone

Cellular Plasticity:

Reprogramming, Regeneration and Metaplasia

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

Joint with the conference on *Signal Dynamics and Signal Integration in Development and Disease*

Scientific Organizers:

Jason C. Mills, Washington University, USA

Maike Sander, University of California, San Diego, USA

Ben Z. Stanger, University of Pennsylvania Perelman School of Medicine, USA

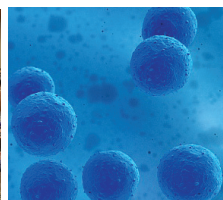
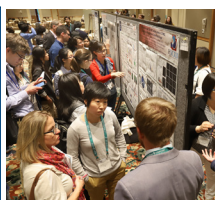
Traditionally, differentiated cells were thought to be post-mitotic. However, we now know mature cells in diverse tissues can reprogram, re-enter the cell cycle, and spawn other lineages (e.g., they revert back to stem cells or adopt other identities). The scientific and health implications are substantial. For one, cellular plasticity might be harnessed to regenerate damaged tissue (e.g., insulin-secreting cells, liver, gut), but repeated reprogramming events – as cells respond to inflammation/injury – can also cause tissue derangement (metaplasia) that predisposes to cancer. Furthermore, cancer cells can harness such plasticity mechanisms to subvert therapy. Thus, defining the mechanisms that allow mature cells to switch identities holds great promise for understanding disease pathogenesis and developing new therapies. This conference gathers the diverse, dynamic field of plasticity/reprogramming together for the first time with the aim of understanding if similar mechanisms underlie plasticity in diverse organs and organisms. The hypothesis is that cellular reprogramming occurs via evolutionarily conserved cellular processes as fundamental to a multicellular organism as apoptosis. Specifically, the conference aims to: 1) Elucidate mechanisms of plasticity in diverse adult tissues; 2) Explore plasticity's evolutionary context; 3) Elucidate its role in metaplasia/cancer; and 4) Investigate how it can be harnessed therapeutically.

Plenary Session Topics:

- Plasticity and Signaling in Development and Homeostasis (Joint)
- Stem Cell Recruitment and Metaplasia
- Cancer and Plasticity
- Reprogramming Cells to Assemble and Repair Organs
- Plasticity and Signaling in Regeneration and Tumorigenesis (Joint)
- Workshop – Nomenclature in Cell Plasticity: “Plasticity,” “Dedifferentiation,” “Transdifferentiation,” “Reprogramming,” “Reversion”
– Can We Agree What These Mean?
- Transcriptional Regulation of Cell Plasticity
- Injury, Inflammation and Regeneration
- Applications of Cell Plasticity

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

Visit www.keystonesymposia.org/19J3 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

Cellular Plasticity: Reprogramming, Regeneration and Metaplasia (J3)

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

Sponsored by Novartis Institutes for BioMedical Research

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

Scientific Organizers: Nicolas Tapon, Liliana Attisano and Raphael Kopan

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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

Maike 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

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

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

Poster Session 1

TUESDAY, JANUARY 29

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

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

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

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

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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

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

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

Poster Session 3

THURSDAY, JANUARY 31

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

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

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

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

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

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

FRIDAY, FEBRUARY 1

Departure