

# KEYSTONE SYMPOSIA

on Molecular and Cellular Biology

## Single Cell Biology: Pushing New Frontiers in the Life Sciences (F1)

May 4-8, 2020 • Firenze Fiera-Palazzo dei Congressi • Florence, Italy

Scientific Organizers: Charles Ansong, Nikolaus Rajewsky and Massimiliano Pagani

Organized in collaboration with the Menarini International Foundation

Sponsored by Cell Research

Discounted Abstract & Scholarship Deadline: January 8, 2020 / Abstract Deadline: February 5, 2020 / Discounted Registration Deadline: March 4, 2020

### MONDAY, MAY 4

#### Arrival and Registration

### TUESDAY, MAY 5

#### Welcome and Keynote Address

**Eileen E.M. Furlong**, European Molecular Biology Laboratory, Germany  
*Dissecting Regulatory Principles of Embryonic Development One Cell at a Time*

#### Interrogating Disease Models at Single Cell

**Barbara Treutlein**, ETH Zürich, Switzerland  
*Understanding Organoids by Disassembling and Analysing Component Lineages Using Single-Cell RNA Sequencing*

**Ido Amit**, Weizmann Institute, Israel  
*Immunology and Single Cell Genomics*

**Hans C. Clevers**, Hubrecht Institute, Netherlands  
*Molecular Mechanisms of Tissue Development and Cancer of Various Organs Using 3D Organoids and Single Cell Genomics*

#### Short Talks Chosen from Abstracts

#### Workshop 1: Emerging Technologies for Unbiased Single Cell Analysis

**Charles Ansong**, Pacific Northwest National Laboratory, USA  
**Short Talks Chosen from Abstracts**

#### Single Cell Computational Biology to Molecular Mechanisms

**Sarah Teichmann**, Wellcome Sanger Institute, UK  
*Understanding Global Regulation of Gene Expression in the Immune System Using Single Cell Genomic Data and Computational Analysis*

**Fabian Theis**, Helmholtz Zentrum München, Germany  
*Computational Approaches in Single Cell Trajectory Analysis and Modeling*

**Matthias Mann**, Max Planck Institute of Biochemistry, Germany  
*Proteomics and Systems Biology in the age of Single Cell Analysis*  
**Short Talks Chosen from Abstracts**

#### Poster Session 1

### WEDNESDAY, MAY 6

#### Development and Cell Fate at Single Cell Resolution I

**Jeffrey A. Whitsett**, Cincinnati Children's Hospital Medical Center, USA  
*Single-Cell Atlas of the Developing Lung*

**Nikolaus Rajewsky**, Max Delbrück Center for Molecular Medicine, Germany  
*Design Principles of Gene Expression by Single Cell-Sequencing*

**Alexander F. Schier**, Harvard University, USA  
*Vertebrate Embryogenesis at Single Cell Level*

**Aron B. Jaffe**, , USA  
*Mechanisms Regulating Epithelial Progenitor Cell Fate Decisions*  
**Short Talks Chosen from Abstracts**

#### Poster Session 2

#### Workshop 2

#### Short Talks Chosen from Abstracts

#### Spatially-Resolved Omics at Single Cell Resolution

**Julia Laskin**, Purdue University, USA  
*Spatial Lipidomics and Metabolomics by Imaging Mass Spectrometry*

**Bernd Bodenmiller**, University of Zürich, Switzerland  
*Highly Multiplexed Imaging of Tissues with Subcellular Resolution by Imaging Mass Cytometry*

**Evan Macosko**, Broad Institute of MIT and Harvard, USA  
*Spatial and Single-Cell Genomics for Next-Generation Neuropathology*

#### Short Talks Chosen from Abstracts

### THURSDAY, MAY 7

#### Single Cell Analysis in Tumor Microenvironment

**Massimiliano Pagani**, Fondazione INGM, Italy  
*Understanding the Molecular Mechanisms Underlying T Lymphocyte Differentiation and Plasticity Using Single Cell RNA-Seq*

**Evan W. Newell**, Fred Hutchinson Cancer Research Center, USA  
*Using Antigen Specificity to Parse the High Dimensional Profiles of Tumor Infiltrating T Cells*

**Peter Lichter**, Deutsches Krebsforschungszentrum, Germany  
*Experiences in Assessing Intra-Tumor Heterogeneity by Single Cell Sequencing*

#### Short Talks Chosen from Abstracts

#### Development and Cell Fate at Single Cell Resolution II

**Alexander van Oudenaarden**, Hubrecht Institute, Netherlands  
*Whole-Organism Clone-Tracing Using Single-Cell Sequencing*

**Stefano Piccolo**, University of Padua, Italy  
*Single Cell Analysis and Regenerative Medicine*

**Iannis Aifantis**, New York University School of Medicine, USA  
*The Bone Marrow Microenvironment in Hematopoietic Development and Leukemia*

#### Short Talks Chosen from Abstracts

#### Poster Session 3

### FRIDAY, MAY 8

#### Single Cell Analysis in Neuroscience

**Sten Linnarsson**, Karolinska Institutet, Sweden  
*Molecular Architecture and Development of the Human Brain*

**Ana Pombo**, Max-Delbrück-Centrum für Molekulare Medizin, Germany  
*3D Genome Topology in Specific Neuronal Subtypes*

**Bosiljka Tasic**, Allen Institute for Brain Science, USA  
*Cell Types of Adult Mouse Brain*

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**Liqun Luo**, Stanford University, USA

*Single Cell Genetic Tools to Probe Neural Circuit Assembly and Organization*

**Short Talks Chosen from Abstracts**

### Workshop 3

**Short Talks Chosen from Abstracts**

### Single Cell Analysis in Infection Biology

**David Van Valen**, Caltech, USA

*Deep Learning for Single Cell Biology*

**Jörg Vogel**, University of Würzburg, Germany

*Regulatory and Virulence Mechanisms in Host-Pathogen Interactions*

**Angela Ciuffi**, Institute of Microbiology - CHUV/UNIL, Switzerland

*Single Cell Analysis of Viral Pathogenesis*

**Short Talk Chosen from Abstracts**

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

### SATURDAY, MAY 9

Departure