

# KEYSTONE SYMPOSIA

on Molecular and Cellular Biology

## Single Cell Biology (L1)

January 13-17, 2019 • Beaver Run Resort • Breckenridge, Colorado, USA

Scientific Organizers: Timm Schroeder and Berthold Göttgens

Supported by the Directors' Fund

Abstract & Scholarship Deadline: September 26, 2018 / Abstract Deadline: October 18, 2018 / Discounted Registration Deadline: November 15, 2018

### SUNDAY, JANUARY 13

#### Arrival and Registration

### MONDAY, JANUARY 14

#### Welcome and Keynote Address

**Scott E. Fraser**, University of Southern California, USA  
*Multimodal Single Cell Imaging*

#### Single Cell Computational Biology

**Fabian Theis**, Helmholtz Zentrum München, Germany  
*Modeling Cell Fate Choice Control from Single Cell Data*

**Rahul Satija**, New York Genome Center, USA  
*Integrated Analysis of Single Cell Data across Modalities, Technologies, and Species*

**Dana Pe'er**, Memorial Sloan Kettering Cancer Center, USA  
*Computational Tools to Advance Single Cell Biology*

**Short Talk(s) Chosen from Abstracts**

#### Workshop 1

**Short Talks Chosen from Abstracts**

#### Development at Single Cell Resolution

**Berthold Göttgens**, Cambridge Institute for Medical Research, UK  
*Mapping Development at Single Cell Resolution*

**Amos Tanay**, Weizmann Institute, Israel  
*Single Cell Epigenetics and Transcriptional Control of Cellular States*

**Allon Klein**, Harvard University, USA  
*Cell Fate Diversification Analyzed at single Cell Resolution*

**Short Talk Chosen from Abstracts**

#### Poster Session 1

### TUESDAY, JANUARY 15

#### Single Cell Measurements to Analyze Molecular Mechanisms

**Lucas Pelkmans**, University of Zürich, Switzerland  
*Principles of Self-Organization of Individual Cells*

**Ellen V. Rothenberg**, California Institute of Technology, USA  
*Molecular Mechanisms Controlling Lymphoid Cell Fates*

**Prisca Liberali**, Friedrich Miescher Institute for Biomedical Research, Switzerland  
*Self-Organisation and Symmetry Breaking in Intestinal Organoids*

**Timm Schroeder**, ETH Zürich, Switzerland  
*Analyzing Cell Fate Control Dynamics by Long-Term Single-Cell Quantification*

**Short Talk(s) Chosen from Abstracts**

#### In vivo Imaging

**Cristina Lo Celso**, Imperial College London, UK  
*Healthy and Malignant Haematopoiesis in the Bone Marrow: Dynamic Cells in a Plastic Environment*

**Speaker to be Announced**

**Shosei Yoshida**, National Institute for Basic Biology, Japan  
*Long-Term in vivo Single Cell Imaging of Spermatogenesis*

**Short Talk Chosen from Abstracts**

#### Poster Session 2

### WEDNESDAY, JANUARY 16

#### New Technology for New Biology

**Stephen Quake**, Stanford University, USA  
*Fluidics Devices for Single Cell Quantification and Manipulation*

**Bart Deplancke**, Swiss Federal Institute of Technology Lausanne, Switzerland  
*Predicting Complex Phenotypes from Single Cell Data*

**Georg Seelig**, University of Washington, USA  
*Talk Title to be Announced*

**Alex K. Shalek**, Massachusetts Institute of Technology, USA  
*New Technologies for Complex Single Cell Profiling*

**Short Talk(s) Chosen from Abstracts**

#### Workshop 2

**Short Talks Chosen from Abstracts**

#### Extracting Information from Highdimensional Measurements

**Garry P. Nolan**, Stanford University, USA  
*High-Dimensional Single Cell Quantification*

**Xiaowei Zhuang**, Harvard University, USA  
*Single Cell High-dimensional Transcriptome and Genome Imaging*

**Remco Loos**, Celgene Institute for Translational Research Europe, Spain  
*Predicting Treatment Response in Leukemia at Single-Cell Level*

**Short Talk Chosen from Abstracts**

#### Poster Session 3

### THURSDAY, JANUARY 17

#### Reconstructing Cell Lineages

**Thomas Hofer**, Deutsches Krebsforschungszentrum, Germany  
*Modeling Population Dynamics of Lineage Pathways through Barcoding Analysis*

**Barbara Wold**, California Institute of Technology, USA  
*Following Cellular Reprogramming at the Single Cell Level*

**Wolf Reik**, Babraham Institute, UK  
*Defining Cell States by Single Cell Multi-Omics*

**Fernando D. Camargo**, Boston Children's Hospital, USA  
*Cellular Barcoding in Mammalian Systems*

**Short Talk(s) Chosen from Abstracts**

#### Neuroscience at Single Cell Resolution

**Hongkui Zeng**, Allen Institute for Brain Science, USA  
*Robotic Single Cell Brain Analysis*

**Rick Horwitz**, Allen Institute for Cell Science, USA  
*Conjoining Single Cell Imaging, Genomics, and Computation to Create a Stem Cell State Space*

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**Barbara Treutlein**, Max Planck Institute for Evolutionary  
Anthropology, Germany  
*Reconstructing Differentiation Pathways in Organs and Organoids*

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

**FRIDAY, JANUARY 18**

**Departure**