

KEYSTONE SYMPOSIA

on Molecular and Cellular Biology

Single Cell Biology (EK26)

March 17-19, 2021 • Virtual at your computer

Scientific Organizers: Shalev Itzkovitz and Arjun Raj

Sponsored by 10x Genomics, AstraZeneca, BioLegend, Inc., Cell Research and Novo Nordisk A/S

WEDNESDAY, MARCH 17

Welcoming Remarks and Keynote Address (8am Denver/Mountain Time Start)

- ***Shalev Itzkovitz**, Weizmann Institute of Science, Israel
- Michael Elowitz**, HHMI/California Institute of Technology, USA
Multicellular Circuit Design: Natural and Synthetic

Single Cell Biology of Mammalian Organs (8:30am Denver/Mountain Time Start)

- ***Arjun Raj**, University of Pennsylvania, USA
- Ana Domingos**, University of Oxford, UK
Sympathetic Neuroimmune Heterogeneity
- Naomi Habib**, Hebrew University of Jerusalem, Israel
Dissecting the Alzheimer's Brain: From Single Cells to Cellular Communities
- ***Shalev Itzkovitz**, Weizmann Institute of Science, Israel
Spatial Omics of the Intestinal Epithelium
- Ramnik Xavier**, Massachusetts General Hospital, USA
[NOT AVAILABLE ON DEMAND] Single Cell Analysis of the Intestine
- Homaira Hamidzada**, University Health Network, Canada
Short Talk: Single Cell Transcriptomics Reveals a Modular Macrophage Structure Conserved Across Organs and Species
- Michael Balzer**, University of Pennsylvania, USA
Short Talk: Single Cell Profiling of Acute Kidney Injury in Mice Highlights Differential Cell Death Programs and Renal Fibrosis Patterns

Career Roundtable (12:30pm Denver/Mountain Time Start)

- Arjun Raj**, University of Pennsylvania, USA
- Aaron Streets**, University of California, Berkeley, USA
- Thale C. Jarvis**, Keystone Symposia on Molecular and Cellular Biology, USA

Poster Session 1 (1:30pm Denver/Mountain Time Start)

Novel Technologies in Single Cell Analysis (3pm Denver/Mountain Time Start)

- ***Arjun Raj**, University of Pennsylvania, USA
- Itai Yanai**, New York University School of Medicine, USA
Space Exploration: Elucidating Tissue Biology with Spatial Transcriptomics
- Prisca Liberali**, Friedrich Miescher Institute for Biomedical Research, Switzerland
Single Cell Approaches to Collective Cell Behavior
- Jessica Whited**, Harvard University, USA
Local and Systemic Cellular Activation in Response to Injury in Axolotl
- ***Aaron Streets**, University of California, Berkeley, USA
Imaging and Sequencing Single Cells
- Long Cai**, California Institute of Technology, USA
Image-Based Transcriptomics in the Spatial Context

- Andrew B. Stergachis**, University of Washington, USA
Short Talk: Single-Molecule Chromatin Fiber Sequencing Exposes Cell and Haplotype-Specific Chromatin Architectures
- Clarice Hong**, Washington University in St Louis, USA
Short Talk: scTRIP: A Method to Identify Chromatin Features Influencing Gene Expression Noise

THURSDAY, MARCH 18

Single Cell Analysis in Pathology (8am Denver/Mountain Time Start)

- ***Shalev Itzkovitz**, Weizmann Institute of Science, Israel
- Leeat Keren**, Weizmann Institute of Science, Israel
New Tools for Visualizing Cellular Heterogeneity in Cancer
- Martin Guilliams**, Ghent University - VIB, Belgium
Trying to Follow in the Footsteps of Mercator: Constructing a Proteogenomics Liver Atlas
- Uri Alon**, Weizmann Institute of Science, Israel
Optimal Division of Labour Within a Cell Type
- ***Alex K. Shalek**, Massachusetts Institute of Technology, USA
Leveraging Single-Cell Genomics to Understand COVID-19
- Regan Hamel**, University of Cambridge, UK
Short Talk: Time-Resolved Single-Cell RNAseq Profiling Identifies a Novel Fabp5-Expressing Subpopulation of Inflammatory Myeloid Cells in Chronic Spinal Cord Injury
- Sarah Pfau**, Harvard Medical School, USA
Short Talk: Vascular and Perivascular Cell Profiling Reveals the Molecular and Cellular Bases of Blood-Brain Barrier Heterogeneity

Meet the Editors (12:30pm Denver/Mountain Time Start)

- Lucia Morgado Palacin**, Journal of Cell Biology, Rockefeller University Press, USA
- Maria Polychronidou**, EMBO Press, Germany
- Katherine Brown**, Company of Biologists, UK
- Ines Alvarez-Garcia**, Public Library of Science, UK
- Sheba Agarwal**, Cell Press, iScience, USA
- Allison Doerr**, Nature, USA

Poster Session 2 (1:30pm Denver/Mountain Time Start)

Computational Approaches (3pm Denver/Mountain Time Start)

- ***Shalev Itzkovitz**, Weizmann Institute of Science, Israel
- Arjun Raj**, University of Pennsylvania, USA
Single Cell Analysis in Cancer
- Stephen Quake**, Stanford University, USA
Technology and Applications in Single Cell Analysis
- ***Nancy R. Zhang**, University of Pennsylvania, USA
Integrative Analysis of Allele-Specific Copy Number and Chromatin Accessibility in Cancer
- Jean Fan**, Johns Hopkins University, USA
Modeling and Visualizing RNA Velocity of Single Cells

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Cole Trapnell, University of Washington, USA
Studying Developmental Robustness at Whole-Embryo Scale and Single-Cell Resolution

Bo Wang, Stanford University, USA
Short Talk: Mapping Single-Cell Atlases throughout Metazoa Unravels Cell Type Evolution

Noah F. Greenwald, Stanford University, USA
Short Talk: Accurate Whole-Cell Segmentation of Multiplexed Imaging Data by Combining Large-Scale Data Annotation and Deep Learning

FRIDAY, MARCH 19

Tracking Dynamics of Single Cells (8am Denver/Mountain Time Start)

***Shalev Itzkovitz**, Weizmann Institute of Science, Israel

Roser Vento-Tormo, Wellcome Sanger Institute, UK
Mapping the Temporal and Spatial Dynamics of the Human Endometrium in vivo and in vitro

Silvia Santos, Francis Crick Institute, UK
Signaling Dynamics for Cellular Fate Control

***Sabrina L. Spencer**, University of Colorado-Boulder, USA
Real-Time Visualization of Rapid Escape from Drug Treatment in Single Melanoma Cells

Hernan G. Garcia, University of California Berkeley, USA
Dissecting Transcriptional Dynamics in Development One Burst at a Time

Geethika Arekatla, ETH Zurich, Switzerland
Short Talk: Optogenetic Manipulation Reveals ERK and AKT Signaling Dynamics Required for ESC Differentiation

Federico Gaiti, Weill Cornell Medicine, USA
Short Talk: Deciphering the Epigenetic Encoding, Heritability, and Plasticity of Transcriptional Cancer Cell States via Single Cell Multi-Omics

Rinat Arbel Goren, Weizmann Institute of Science, Israel
Short Talk: Robust, Coherent and Synchronized Circadian Clock-Controlled Oscillations along Multicellular Filaments of Anabaena cyanobacteria

Steffen Rulands, Max Planck Institute for the Physics of Complex Systems, Germany
Short Talk: From Sequence to Space and Time: Inferring Emergent Epigenetic Processes from Single-Cell Multi-Omics

Networking Lounge (12pm Denver/Mountain Time Start)

Fate Tracing of Single Cells (3pm Denver/Mountain Time Start)

***Arjun Raj**, University of Pennsylvania, USA

Philipp Junker, Max Delbrück Center for Molecular Medicine, Germany
High-Throughput Lineage Tracing in the Regenerating Zebrafish Heart

Allon M. Klein, Harvard University, USA
Connecting Cellular States to Cellular Fates

Samantha A. Morris, Washington University School of Medicine in St Louis, USA

New Genomic Technologies to Measure and Manipulate Cell Identity

***John Isaac Murray**, University of Pennsylvania, USA
Decoding Animal Development at Single Cell Resolution

Katie Galloway, Massachusetts Institute of Technology, USA
Short Talk: Detangling DNA: Single-Cell Approaches to Understanding Plasticity in Cellular Reprogramming

Michael Ratz, Karolinska Institutet, Sweden
Short Talk: Clonal Tracking and Expression Profiling in the Mouse Brain via Single Cell and Spatial Transcriptomics

Merrit J. Romeike, Max Perutz Labs Vienna, Austria
Short Talk: Impaired Differentiation: Understanding a Single Cell State Transition

Closing Remarks (5:50pm Denver/Mountain Time Start)