

Single Cell Biology (EK26-2021)

Organizer(s): Shalev Itzkovitz and Arjun Raj

Virtual at your computer, , CO • March 17 - March 19, 2021

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

Wednesday, March 17

Welcoming Remarks and Keynote

Address (8am Denver/Mountain Time)

Start) (8:00-8:40 AM)

*Shalev Itzkovitz, Weizmann Institute of Science

Michael Elowitz, California Institute of Technology

Multicellular Circuit Design: Natural and Synthetic

Single Cell Biology of Mammalian

Organs (8:30am Denver/Mountain Time)

Start) (8:40-11:00 AM)

*Arjun Raj, University of Pennsylvania

Ana Domingos, University of Oxford

Sympathetic Neuroimmune Heterogeneity

Naomi Habib, Hebrew University of Jerusalem

Dissecting the Alzheimer's Brain: From Single Cells to Cellular Communities

*Shalev Itzkovitz, Weizmann Institute of Science

Spatial Omics of the Intestinal Epithelium

Ramnik Xavier, Massachusetts General Hospital

Single Cell Analysis of the Intestine

Homaira Hamidzada, University of Toronto

Short Talk: Single Cell Transcriptomics Reveals a Modular Macrophage Structure Conserved Across Organs and Species

Michael Balzer, University of Pennsylvania

Short Talk: Single Cell Profiling of Acute Kidney Injury in Mice Highlights Differential Cell Death Programs and Renal Fibrosis Patterns

Novel Technologies in Single Cell

Analysis (3pm Denver/Mountain Time)

Start) (3:00-6:00 PM)

*Arjun Raj, University of Pennsylvania

Prisca Liberali, Friedrich Miescher Institute for Biomedical Research

Single Cell Approaches to Collective Cell Behavior

Britt S. Adamson, Princeton University

Functional Genomics with High-Resolution Phenotypes

Jessica Whited, Harvard University

Single-Cell Approaches to Understanding Complex Tissue Regeneration in Axolotl

Aaron Streets, University of California, Berkeley

Imaging and Sequencing Single Cells

*Long Cai, California Institute of Technology

Image-Based Transcriptomics in the Spatial Context

Andrew B. Stergachis, University of Washington

Short Talk: Single-Molecule Chromatin Fiber Sequencing Exposes Cell and Haplotype-Specific Chromatin Architectures

Clarice Hong, Washington University in St Louis

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) (8:00-11:00

AM)

*Shalev Itzkovitz, Weizmann Institute of Science

Leeat Keren, Stanford University

New Tools for Visualizing Cellular Heterogeneity in Cancer

Martin Guilliams, Ghent University - VIB

Cell-Cell Circuits Driving Modular Tissue Regeneration

Uri Alon, Weizmann Institute of Science

Optimal Division of Labour Within a Cell Type

*Alex K. Shalek, Massachusetts Institute of Technology

Identifying and Rationally Modulating Cellular Drivers of Enhanced and Diminished Immunity

Regan Hamel, University of Cambridge

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

Short Talk: Vascular and Perivascular Cell Profiling Reveals the Molecular and Cellular Bases of Blood-Brain Barrier Heterogeneity

Meet the Editors (12:30m

Denver/Mountain Time Start) (12:30-1:30

PM)

Computational Approaches (3pm

Denver/Mountain Time Start) (3:00-6:00

PM)

*Shalev Itzkovitz, Weizmann Institute of Science

Arjun Raj, University of Pennsylvania

Single Cell Analysis in Cancer

Stephen Quake, Stanford University

Technology and Applications in Single Cell Analysis

Nancy R. Zhang, University of Pennsylvania

Transfer Learning for Single Cell Transcriptomics

Jean Fan, Harvard University

Statistical Approaches and Computational Tools for Analyzing Spatially Resolved Single-Cell Transcriptomics Data

*Cole Trapnell, University of Washington

Computational Tools for Biological Inference

Bo Wang, Stanford University

Short Talk: Mapping Single-Cell Atlases throughout Metazoa Unravels Cell Type Evolution

Noah F. Greenwald, Stanford University

Short Talk: Accurate Whole-Cell Segmentation of Multiplexed Imaging Data by Combining Large-Scale Data Annotation and Deep Learning

Geethika Arekatla, ETH Zurich

Short Talk: Optogenetic Manipulation Reveals ERK and AKT Signaling Dynamics Required for ESC Differentiation

Federico Gatti, Weill Cornell Medicine

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

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

Short Talk: From Sequence to Space and Time: Inferring Emergent Epigenetic Processes from Single-Cell Multi-Omics

Networking Lounge (12pm

Denver/Mountain Time Start) (12:00-1:30

PM)

Fate Tracing of Single Cells (3pm

Denver/Mountain Time Start) (3:00-5:50

PM)

*Arjun Raj, University of Pennsylvania

Philipp Junker, Max Delbrück Center for Molecular Medicine

High-Throughput Lineage Tracing in the Regenerating Zebrafish Heart

Allon M. Klein, Harvard University

Connecting Cellular States to Cellular Fates

Samantha A. Morris, Washington University in St Louis

New Genomic Technologies to Measure and Manipulate Cell Identity

*John Isaac Murray, University of Pennsylvania

A Lineage-Resolved Molecular Atlas of C. Elegans

Katie Galloway †, Massachusetts Institute of Technology

Short Talk: Detangling DNA: Single-Cell Approaches to Understanding Plasticity in Cellular Reprogramming

Michael Ratz, Karolinska Institutet

Short Talk: Clonal Tracking and Expression Profiling in the Mouse Brain via Single Cell and Spatial Transcriptomics

Merrit J. Romeike, Max Perutz Labs Vienna

Short Talk: Impaired Differentiation: Understanding a Single Cell State Transition

Closing Remarks (5:50pm

Denver/Mountain Time Start) (5:50-6:00

PM)