

KEYSTONE SYMPOSIA

on Molecular and Cellular Biology

Epigenetics and Human Disease (X5)

Scientific Organizers: Cheryl H. Arrowsmith, Anne Schaefer and Mark A. Dawson

Supported by the Directors' Fund

3D Genome: Gene Regulation and Disease (X6)

Scientific Organizers: Bing Ren, Ana Pombo and Joseph R. Ecker

March 17-21, 2019 • Fairmont Banff Springs • Banff, Alberta, Canada

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Abstract & Scholarship Deadline: November 15, 2018 / Abstract Deadline: December 12, 2018 / Discounted Registration Deadline: January 22, 2019

SUNDAY, MARCH 17

Arrival and Registration

MONDAY, MARCH 18

Welcome and Keynote Session (Joint)

Richard A. Young, Whitehead Institute for Biomedical Research, USA
Transcriptional Regulation by the 3D Genome

Wendy A. Bickmore, University of Edinburgh, UK
Spatial Organisation of Human Genome in Genetic Disease

3D Epigenome/Epigenetics and Disease (Joint)

Matthias Merkenschlager, Imperial College London, UK
Cohesin and CTCF in the Immune System

Mathieu Lupien, University Health Network, Canada
Epigenetics of Cancer Stem Cells

Joanna Wysocka, Stanford University School of Medicine, USA
Epigenetic Regulation of Craniofacial Development

Short Talk(s) Chosen from Abstracts

Workshop 1: Epigenetic Memory and Inheritance in Health and Disease (X5)

Short Talks Chosen from Abstracts

Workshop 1: 4DN Nucleome Consortium Resources (X6)

Short Talks Chosen from Abstracts

Epigenetic Dysregulation in Neurobiology (X5)

Anne Schaefer, Mount Sinai School of Medicine, USA
Epigenetic Regulation of Neurodevelopment and Neurodegeneration

Danny F. Reinberg, HHMI/New York University, USA
One Genome, Multiple Phenotypes

Shelley L. Berger, University of Pennsylvania, USA
Alzheimer and Metabolic Control of Transcription

Short Talk Chosen from Abstracts

Single Cell Analysis of Genome Architecture (X6)

Alistair Boettiger, Stanford University, USA
Optical Reconstruction of Chromatin Architecture in Developing Embryos

Peter Fraser, Florida State University, USA
Cell Cycle Dynamics of Chromosomal Organisation at Single-Cell Resolution

Ibrahim Cissé, Massachusetts Institute of Technology, USA
Super-Resolution Imaging of Transcription in Live Mammalian Cells

Short Talk Chosen from Abstracts

Poster Session 1

TUESDAY, MARCH 19

Understanding and Targeting Epigenetic Dysregulation (X5)

Mark A. Dawson, Peter MacCallum Cancer Centre, Australia
Mechanisms of Epigenetic Therapeutics in Leukemia

Johannes Zuber, Research Institute of Molecular Pathology, Austria
Decoding and Exploiting Chromatin-associated Dependencies in Leukemia

Cheryl Arrowsmith, University of Toronto, Canada
Probing the Epigenome for Therapeutic Opportunities

Marie Classon, , USA
Epigenetic Mechanisms of Drug Resistance

Short Talk(s) Chosen from Abstracts

Analysis of 3D Genome with Advanced Microscopy (X6)

Cornelis Murre, University of California, San Diego, USA
Tracking Long-Range Genomic Interactions in Live Cells

Jan Ellenberg, European Molecular Biology Laboratory, Germany
Dissecting Structure and Assembly of Nuclear Pores and Mitotic Chromosomes by Nano-Scale Imaging

Andrew S. Belmont, University of Illinois at Urbana-Champaign, USA
Revealing Fundamental Features of Large-Scale Chromatin Organization and their Relationship to Gene Regulation through Live-Cell Imaging

Clodagh C. O'Shea, The Salk Institute for Biological Studies, USA
Cracking the Nucleus: Visualizing the Higher Coding Structures of DNA

Short Talk(s) Chosen from Abstracts

Workshop 2: Post-Translational Modifications, Novel Methods of Detection and Quantification, and Functional Significance (X5)

Short Talks Chosen from Abstracts

Workshop 2: ENCODE Consortium Resources (X6)

Short Talks Chosen from Abstracts

Infectious Diseases and Autoimmunity (X5)

Ido Amit, Weizmann Institute, Israel
Quantitative, Single Cell, Transcription and Cell Fate Determination

Eric A. Miska, University of Cambridge, UK
RNA Modifications and Novel Antiviral Response

Alexander Tarakhovsky, Rockefeller University, USA
I-BET, Inflammation, Histone Mimicry in Pathogens, Antiviral Response

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Short Talk Chosen from Abstracts

Chromatin and Epigenetics (X6)

Bas van Steensel, Netherlands Cancer Institute, Netherlands
Lamina Associated Domains

Mitchell Guttman, California Institute of Technology, USA
3D Genome Organization and X Chromosome Inactivation

Joseph R. Ecker, The Salk Institute for Biological Studies, USA
Single Cell Analysis of DNA Methylation

Short Talk Chosen from Abstracts

Poster Session 2

WEDNESDAY, MARCH 20

Chromatin Signaling and Epigenetic Mechanisms (X5)

Christopher Vakoc, Cold Spring Harbor Laboratory, USA
Transcriptional Vulnerabilities in Cancer

Cigall Kadoch, Dana-Farber Cancer Institute, Harvard Medical School, USA
BAF Complex and Chromatin Remodeling

Emily Bernstein, Mount Sinai School of Medicine, USA
Epigenetic Sensitivities in Cancer

Xiaobing Shi, Van Andel Institute, USA
Novel Histone Marks and Reader Domains

Short Talk(s) Chosen from Abstracts

3D Genome and Gene Regulation (X6)

Bing Ren, Ludwig Institute for Cancer Research, USA
Regulation of Enhancer/Promoter Interactions

Gerd A. Blobel, Children's Hospital of Philadelphia, USA
"Editing" the Genome and Epigenome to Treat Hemoglobinopathies

Jennifer E. Phillips-Cremins, University of Pennsylvania, USA
Dynamic Chromatin Organization during Stem Cell Differentiation

Stavros Lomvardas, University of California, San Francisco, USA
3D Chromatin Organization of the Olfactory Receptor Locus

Short Talk(s) Chosen from Abstracts

Roundtable Discussion: Women in Science (Joint)

Workshop 3: Epigenetic Therapy (X5)

Short Talks Chosen from Abstracts

Workshop 3: International Human Epigenome Consortium (X6)

Short Talks Chosen from Abstracts

Metabolic Diseases and Aging (X5)

Ross L. Levine, Memorial Sloan Kettering Cancer Center, USA
Metabolic Control of DNA and Protein Methylation

Steve Horvath, University of California, Los Angeles, USA
Epigenetic Aging Clock versus Gene Regulation

Anne Brunet, Stanford University, USA
Epigenetic Regulation of Aging and Rejuvenation

Short Talk Chosen from Abstracts

Genome Architecture and Development (X6)

Wei Xie, Tsinghua University, China
Chromatin Reprogramming in Early Mammalian Development

Ana Pombo, Max-Delbrück-Centrum für Molekulare Medizin, Germany
Genome Architecture Mapping of Embryonic Stem Cells

Denis Duboule, EPFL-SV-ISREC-UPDUB, Switzerland
Hox Gene Regulation and Limb Development

Short Talk Chosen from Abstracts

Poster Session 3

THURSDAY, MARCH 21

Epigenetic Regulation in Immunoncology and Cancer Therapeutics (X5)

Daniel De Carvalho, University Health Network, Canada
DNA Methylation, Viral Mimicry, Epigenetic Therapy

Rab K. Prinjha, GlaxoSmithKline, UK
Drug Discovery and Clinical Progression or Epigenetic Therapies

Ronan C. O'Hagan, Merck Research Laboratories, USA
Epigenetics and Immune Modulation in Cancer

Ricky W. Johnstone, Peter MacCallum Cancer Centre, Australia
Epigenetic Modulation of the Immune System for Cancer Treatment

Short Talk(s) Chosen from Abstracts

Computational Analysis of 3D Genome (X6)

Erez Lieberman-Aiden, Baylor College of Medicine, USA
A 3D Code in the Human Genome

X. Shirley Liu, Dana-Farber Cancer Institute, Harvard School of Public Health, USA

Epigenomic Analysis of Cancer Cells

Frank Alber, University of Southern California, USA
Computational Modeling of 3D Genome

Mario Nicodemi, University of Naples, Italy
Strings and Binders Switch Model of Chromatin Fibres

Short Talk(s) Chosen from Abstracts

Roundtable Discussion: Careers in Industry (Joint)

3D Genome and Disease (Joint)

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Xiaowei Zhuang, Harvard University, USA

Single-Cell Transcriptome and Chromosome Imaging

Bradley E. Bernstein, Massachusetts General Hospital, USA

Instability of Chromosome Conformations in Cancer

Speaker to be Announced

Meeting Wrap-Up: Outcomes and Future Directions (Organizers)
(X5)

Meeting Wrap-Up: Outcomes and Future Directions (Organizers)
(X6)

FRIDAY, MARCH 22

Departure