Arrival and Registration

MONDAY, FEBRUARY 28

Welcome and Keynote Address (X2)
Cigall Kadoch, Dana-Farber Cancer Institute, Harvard Medical School, USA
Chromatin Remodeling Complexes and their Targeting in Cancer

Welcome and Keynote Address (X1)
Michael D. Purugganan, New York University, USA
Plant Evolutionary Genomics

Targeting Epigenetic Pathways in Cancer (X2)
Ali Shilatifard, Northwestern University, USA
Principles of Epigenetics and Chromatin in Development and Human Disease
Mark A. Dawson, Peter MacCallum Cancer Centre, Australia
Targeting the Epigenome for Therapeutic Gain
Tony Kouzarides, University of Cambridge, UK
Disruption of RNA Modification Pathways in Cancer

Short Talk(s) Chosen from Abstracts
In Sickness and in Health: Transposons in Disease, Immunology, and Therapeutics (X1)
Vera Gorbunova, University of Rochester, USA
Transposable Elements in Aging
E. Alice Lee, Boston Children's Hospital & Harvard Medical School, USA
Transposable Elements in Neurobiology
Barrett Steinberg, Tessera Therapeutics, USA
Engineering Mobile Genetic Elements to Write the Genome
Ozgen Deniz†, Imperial College London, UK
Short Talk: The Roles of Transposable Elements in Acute Myeloid Leukaemia
Beatrice Bodega, Istituto Nazionale di Genetica Molecolare, Italy
Short Talk: LINE1 are Spliced in Non-canonical Transcript Variants to Regulate T Cell Quiescence and Exhaustion
Jean-David Larouche, Université de Montréal, Canada
Short Talk: Transposable Elements have Distinct Expression Profiles in Antigen-presenting Cells of the Thymus

Workshop 1: TEs as Friends, Foes or Both (X1)
Han Altae-Tran†, Broad Institute, USA
Evolutionary Origins of Cas9 and Cas12 Reveal New Classes of RNA-guided Nucleases: OMEGA Systems
Mikel Zaratiegui†, Rutgers University, USA
Transposon Extermination Reveals Their Adaptive Fitness Contribution
Pierre Bourguet†, Gregor Mendel Institute, Austria
The H2A.W Histone Variant Contributes to Transposon Silencing
Kirsten C. Sadler, New York University Abu Dhabi, United Arab Emirates
Diversity of Transposon Regulation by Epigenetic and Immunological Mechanisms in Mice and Zebrafish
Julius Judd, Cornell University, USA
SARS-CoV2 Accessory Protein ORF3a Upregulates Young LINE1 Elements by Interfering with a Zinc-finger Protein Associated with a Novel Chromatin Repressive Complex
Michelle S. Longworth, Cleveland Clinic Lerner Research Institute, USA
LINE-1 Induces Super Condensin Complex Formation and Condensin-mediated Type I IFN Expression
Ilke Demirci†, Karolinska Institute, Sweden
Large-scale Analysis of Human Specific LINE-1 in Single Cells
Nelson C. Lau, Boston University School of Medicine, USA
Small RNAs as a Brain Response to Transposon Transcripts

Targeting Transcription in Cancer (X2)
Kristian Helin, University of Copenhagen and Memorial Sloan Kettering Cancer Center, Denmark
Epigenetic Regulation of Transcription
Karen Adelman, Harvard Medical School, USA
Rewiring of Transcriptional Enhancers in Cancer and in Response to Therapeutics
Musa M. Mhlanga, Radboud Institute for Molecular Life Sciences, Netherlands
Compartmentalisation and Gene Interplay in Transcription

Short Talk(s) Chosen from Abstracts
Genomic Battlegrounds: Evolutionary Conflicts and Arms Races in the Mobilome (X1)
Harmit S. Malik, Fred Hutchinson Cancer Research Center, USA
Mobile Elements and Genetic Conflict
Zhao Zhang, Duke University, USA
Chasing the Jumping Genes
Tetsuji Nakatani, University of Tokyo, Japan
Transposon Epigenetic Control in Arabidopsis
Paul J. Lehner†, Cambridge Institute of Therapeutic Immunology and Infectious Disease, UK
Short Talk: Genome Surveillance through Repressor of Intronless Mobile Elements by the HUSH Complex
Mathilde Gauchier†, NICHD, USA
Short Talk: Retrotransposons and their Silencing Re-enforcement by Schlafens Endoribonucleases during Mammalian Development
**Poster Session 1**

**TUESDAY, MARCH 1**

**Chromatin Structure and Regulation (X2)**
- **Robert E. Kingston**, Massachusetts General Hospital, USA
  - Nucleosome Compaction and Phase Transition in Repression
- **Luciano Di Croce**, CRG - Center for Genomic Regulation, Spain
  - Mechanisms of Polycomb-Mediated Silencing
- **Shelley L. Berger**, University of Pennsylvania, USA
  - Epigenetic Enzymes and their Miss-Function in Disease
- **Ibrahim Cissé**, Max Planck Institute of Immunobiology and Epigenetics, Germany
  - Imaging Chromatin

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

**Epigenomics and Epitranscriptomics of Transposition and Interactions with the Environment (X1)**
- **Irina Arkhipova**, Marine Biological Laboratory, USA
  - Bacterial N4-Methylcytosine as an Epigenetic Mark in Eukaryotic DNA
- **Coleen T. Murphy**, Princeton University, USA
  - The Role of the Cer1 Retrotransposon in the Horizontal Transfer of Transgenerational Memory
- **Oded Rechavi**, Tel Aviv University, Israel
  - Heritable Small RNAs
- **Zsuzsanna Izsak**, Max-Delbrück Center, Germany
  - Transposon Regulation in Early Development
- **Josien van Wolswinkel†**, Yale University, USA
  - Short Talk: Transposable Elements in Regulation of Planarian Stem Cells
- **Emeline Roger**, Institut Curie, France
  - Short Talk: A Novel Chromatin Pathway Involved in Transposable Element Regulation
- **Isaac F. López-Moyado†**, La Jolla Institute for Immunology, USA
  - Short Talk: Profound TET Deficiency Results in Heterochromatin Dysfunction and Derepression of Repeat Elements

**Panel 1: Careers in Industry and Academia (X2)**

**Short Talks Chosen from Abstracts**

**Mechanisms of RNA and DNA Modulation in Cancer (X2)**
- **Ramin Shiekhattar**, University of Miami, USA
  - RNA Processing by the Integrator-Complex and Its Role in Cancer
- **François Fuku**, Université Libre de Bruxelles, Belgium
  - Mapping and Function of RNA Modifications in Cancer
- **Salvador Aznar Benitah**, ICREA and Institute for Research in Biomedicine, Spain
  - Lipid Metabolism in Cancer Metastasis

**Panel 2: Women in Science (X2)**

**Short Talks Chosen from Abstracts**

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- **Irina Arkhipova**, Marine Biological Laboratory, USA
- **Coleen T. Murphy**, Princeton University, USA
- **Oded Rechavi**, Tel Aviv University, Israel
- **Zsuzsanna Izsak**, Max-Delbrück Center, Germany
- **Josien van Wolswinkel†**, Yale University, USA
- **Emeline Roger**, Institut Curie, France
- **Isaac F. López-Moyado†**, La Jolla Institute for Immunology, USA

**February 27-March 3, 2022 • Whistler Conference Centre • Whistler, BC, Canada**

**Sponsored by AstraZeneca, Incyte Corporation and Thermo Fisher Scientific Inc.**

**Scholarship Deadline: November 17, 2021 / Abstract Deadline: November 23, 2021 / Discounted Registration Deadline: January 4, 2022**
KEYSTONE SYMPOSIA
on Molecular and Cellular Biology

Epigenetic Mechanisms and the Treatment of Cancer (X2)
Scientific Organizers: Tony Kouzarides, Rab K. Prinjha and Marisa S. Bartolomei
Sponsored by AstraZeneca, Incyte Corporation and Thermo Fisher Scientific Inc.

Transposable Elements at the Crossroads of Evolution, Health and Disease (X1)
Scientific Organizers: Kathleen H. Burns, Harmit S. Malik and Irina Arkhipova
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Short Talk(s) Chosen from Abstracts

Transposon Domestication and Co-Option at the DNA, RNA and Protein Levels (X1)
Cedric Feschotte, Cornell University, USA
Transposon Domestication
Miguel Branco, Queen Mary University of London, UK
Placental Gene Regulation by Transposable Elements
Edward B. Chuong, University of Colorado Boulder, USA
Transposon Repurposing in Gene Networks
Helen S. Mueller†, Memorial Sloan Kettering Cancer Center, USA
Short Talk: Elucidating DNA Damage Repair Signaling Activated by the DNA Transposase PGBD5
Mohamad Ali Naja, MIT, USA
Short Talk: Transposable Element Regulation of Hematopoietic Lineage Decisions

Poster Session 3

THURSDAY, MARCH 3

Epigenetic Drug Discovery in Cancer (X2)
Rab K. Prinjha, GlaxoSmithKline, UK
Transposing Novel Epigenetic Drugs into the Clinic
Shefali Agarwal, Epizyme, Inc., USA
Role of EZH2 Inhibitor as an Epigenetic Target in Oncology
Tamara Maes, Oryzon Genomics, Spain
Talk Title to be Announced
Speaker to be Announced
Short Talk(s) Chosen from Abstracts

Transpositions across Genomic and Cellular Compartments (X1)
John V. Moran, University of Michigan Medical School, USA
Studies of a Human Transposable Element
José R. Penadés, Imperial College London, UK
Transposons and Virulence and Resistance Factors
Amanda Larracuente, University of Rochester, USA
Selfish DNAs and Satellites
Fangpu Han, Chinese Academy of Sciences, China
Plant Chromosome Biology
Henry L. Levin, NIH, USA
Short Talk: Identification of an Integrase-independent Pathway of Retrotransposition
Juanna Vaquerizas†, MRC London Institute of Medical Sciences, UK
Short Talk: Transposable Element-driven Reorganisation of 3D Chromatin during Early Embryonic Development
Michelle J. Percharde†, MRC London Institute of Medical Sciences, UK
Short Talk: Nucleolar-based Mechanisms of Gene and Transposon Control in Early Development

Workshop 2: Bioinformatic and Multi-omic Tools (X1)

Matthew L. Bendall, Weill Cornell Medicine, USA
Michael Cuoco†, The Salk Institute, USA
Comprehensive Benchmarking of Transposable Element RNA-seq Quantification Methods
Andrew Garven, Queens University, Canada
The Transposable Elements Expression Landscape in Muscle-Invasive Bladder Cancer
Cristian Groza, McGill University, Canada
Genome Graphs Detect Human Polymorphisms in Active Epigenomic States During Influenza Infection
Darren Taylor†, Blizzard Institute, UK
Locus-Specific Chromatin Profiling of Evolutionarily Young Transposable Elements
Yilan Wang, Harvard University, USA
grnTea, a Machine Learning Tool to Detect Transposable Element Insertions in Ancient Human Whole-genome Sequencing Data
Shohei Kojima†, RIKEN, Japan
Variation in Human Genomes and Phenotypes Driven by Mobile Genetic Elements
Hani Girgis†, Texas A&M University- Kingsville, USA
LtrDetector: Toward High Quality Annotation of Long Terminal Repeat Retrotransposons

Epigenetics in Diagnosis and Treatment of Cancer (X2)
Kimberly Stegmaier, Dana-Farber Cancer Institute, USA
Treatments in Pediatric Oncology
Joanna Holbrook, Epigenetix, UK
Diagnosis using DNA Methylation
Dan A. Landau, Weill Cornell Medicine, USA
Clonal Evolution in Cancer Care

Short Talk(s) Chosen from Abstracts

From Ultraconservation to Hypervariability: The Significance of Variation (X1)
Jeff F. Miller, University of California, Los Angeles, USA
Bacterial Adaptation by Diversity-Generating Retroelements
Vincent Colot, École Normale Supérieure, France
Genome Dynamics and Epigenetic Variation
Anna Selmecki, University of Minnesota, USA
Ploidy Variation in Fungi
Blair G. Paul, Marine Biological Laboratory, USA
Short Talk: Hypermutation in Filamentous Cyanobacteria

Meeting Wrap-Up: Outcomes and Future Directions (Organizers) (X2)

Meeting Wrap-Up: Outcomes and Future Directions (Organizers) (X1)

* Session Chair † Invited but not yet accepted Program current as of December 22, 2021. Meal formats are based on meeting venue.
For the most up-to-date details, visit https://www.keystonesymposia.org.
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FRIDAY, MARCH 4
Departure