

KEYSTONE SYMPOSIA

on Molecular and Cellular Biology

Genomic Stability and DNA Repair (EK3)

September 21-23, 2020 • Virtual at your computer • , CO, USA

Scientific Organizers: Roger Greenberg, Dipanjan Chowdhury and Gaele Legube

Part of the Keystone Symposia Global Health Series, supported by the Bill & Melinda Gates Foundation

Sponsored by AstraZeneca

Global Health Travel Award Deadline: August 24, 2020 / Scholarship Deadline: August 24, 2020 / Abstract Deadline: September 3, 2020 / Discounted Registration Deadline:

MONDAY, SEPTEMBER 21

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

***Roger Greenberg**, University of Pennsylvania, USA

Karlene A. Cimprich, Stanford University, USA
The Causes and Consequences of Replication Stress

Replication and Cell Cycle Dependent Mechanisms of Genome Stability (8:30am Denver/Mountain Time Start)

***Sharon B. Cantor**, University of Massachusetts Medical School, USA

***Karlene A. Cimprich**, Stanford University, USA

David Cortez, Vanderbilt University School of Medicine, USA
Mechanisms, Regulation, and Consequences of Fork Remodeling

Helle D. Ulrich, Institute of Molecular Biology, Germany
GLOE-Seq – A New Genomic Tool to Map Replication Patterns and DNA Lesions with Nucleotide Resolution

David Pellman, Dana-Farber Cancer Institute, USA
Mechanisms Driving the Rapid Evolution of Cancer Genomes

André Nussenzweig, NCI, National Institutes of Health, USA
Mechanisms that Maintain Genome Stability

Marcel Mechali, Institute of Human Genetics, CNRS-University of Montpellier, France
Short Talk: Human DNA Replication Origins

Ludovic Deriano, Institut Pasteur, Paris, France
Short Talk: Repair of G1 Induced DNA Double-Strand Breaks in S-G2/M Promotes Cell Survival at the Expense of Genome Integrity

Commodore Perry St. Germain, University of California, Davis, USA
Short Talk: Genome-Wide Mapping of Transcription-Replication Interactions in Mouse Primary B Cells

Dan Sarni, Hebrew University of Jerusalem, Israel
Short Talk: 3D Genome Organization Contributes to Genome Instability at Fragile Sites

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

Karlene A. Cimprich, Stanford University, USA

Joel A. Klappenbach, Pfizer, USA

Katharina Schlacher, MD Anderson Cancer Center, USA

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

Mechanisms of Recombination and Repair (3pm Denver/Mountain Time Start)

***Alberto Ciccio**, Columbia University, USA

Lorraine S. Symington, Columbia University, USA
Initiation of DNA End Resection by the Mre11 Complex

Maria Jasin, Memorial Sloan Kettering Cancer Center, USA
BRCA Control of Homologous Recombination and Replication Fork Protection

Barry P. Sleckman, University of Alabama Birmingham School of Medicine, USA
The Regulation of Homologous Recombination in G1-Phase Cells

Patrick M. Sung, University of Texas Health Science Center at San Antonio, USA

Reconstitution of Homologous Recombination Pathways

Dipanjan Chowdhury, Dana-Farber Cancer Institute, Harvard Medical School, USA

Competition between DNA Repair Mechanisms

Mirit Aladjem, NCI, National Institutes of Health, USA
Replication Origin Modulation: Preventing Runaway DNA Synthesis to Insure Genomic Stability

Jennifer Ziegelbaum, Columbia University, USA
Short Talk: Homologous Recombination Repair Domains: Function and Impact on Genome Stability

***Anna Malkova**, University of Iowa, USA
Short Talk: The Role of Break-Induced Replication in Alternative Lengthening of Telomeres and in Formation of Complex Genomic Rearrangements

James E. Haber, Brandeis University, USA
Short Talk: Mutations and Structural Variants Arising During Double-Strand Break Repair

TUESDAY, SEPTEMBER 22

RNA Mechanisms of Genome Stability (8am Denver/Mountain Time Start)

***Jo R. Morris**, University of Birmingham, UK

***Rémi Buisson**, University of California, Irvine, USA

Joachim Lingner, École Polytechnique Fédérale de Lausanne, Switzerland
How the Long Noncoding RNA TERRA Associates with Telomeres via R-Loops

Irene Chiolo, University of Southern California, USA
Nuclear and Chromatin Dynamics for Heterochromatin Repair

Lee Zou, Harvard Medical School, USA
A Surprising Role of RNA Transcripts in Homologous Recombination

Gaëlle Legube, Center for Integrative Biology, France
Chromatin and Chromosome Dynamics at DNA Double Strand Breaks

Dafni Eleftheria Pefani, University of Patras, Greece
Short Talk: RASSF1A Tumor Suppressor Controls Ribosomal DNA Break Repair

Ioanna Mitrentsi, IGBMC Gie CERBM, France
Short Talk: Double Strand Break Relocation Correlates with Heterochromatic Repeat Clustering

Funding Panel Discussion (10am Denver/Mountain Time Start)

***Gaëlle Legube**, Center for Integrative Biology, France

***Dipanjan Chowdhury**, Dana-Farber Cancer Institute, Harvard Medical School, USA

Keren Lisa Witkin, NCI, National Institutes of Health, USA

Philipp Oberdoerffer, NCI, National Institutes of Health, USA

Geneviève Almouzni, Centre National de la Recherche Scientifique, France

Gerlind Wallon, European Molecular Biology Organization, Germany

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

DNA Repair Mechanisms in Cancer (3pm Denver/Mountain Time Start)

***Ralph Scully**, Beth Israel Deaconess Medical Center, USA

J. Ross Chapman, University of Oxford, UK

Molecular Interplay between BRCA1-BARD1 Complexes and the 53BP1 Pathway

Daniel Durocher, Lunenfeld-Tanenbaum Research Institute, Canada
Navigating the Genetic Networks Underpinning Genome Integrity

Nima Mosammamaparast, Washington University in St. Louis, USA
New Players in the Alkylation Damage Response

Roger Greenberg, University of Pennsylvania, USA
Chromatin Accessibility - A New Vulnerability in BRCA Mutant Cancers

Madhesh Coimbatore Ravichandran, Boehringer Ingelheim RCV GmbH & Co KG, Austria

Short Talk: Structure and Function of the WRN Helicase ATPase Domain as a Dependency in MSI-H Cancer Cells

Alberto Ciccia, Columbia University, USA

Short Talk: Defining the Role of Translesion Synthesis in BRCA1/2-Mutant Cancer Cells

***Gaorav Gupta**, University of North Carolina, Chapel Hill, USA

Short Talk: An in vivo Genetic Screen for Tumor Suppressive DNA Damage Responses in Myc-Induced Breast Cancer

Jo R. Morris, University of Birmingham, UK

Short Talk: Repression of HR 'Back-Up' Pathway Use by BRCA1

Josée Guirouilh-Barbat, Institut Cochin, France
Short Talk: The Use of Microhomologies by RAD51 Promotes Genomic Rearrangements between Non Homologous Sequences

Rémi Buisson, University of California, Irvine, USA
Short Talk: Mechanisms of Mutagenesis Induced by APOBEC3A in Tumors: The Genomic "Twin Paradox"

Timothy C. Humphrey, University of Oxford, UK
Short Talk: Persistent Broken Chromosome Inheritance Drives Genome Instability

WEDNESDAY, SEPTEMBER 23

Keynote Address (8am Denver/Mountain Time Start)

***Dipanjan Chowdhury**, Dana-Farber Cancer Institute, Harvard Medical School, USA

Alan D. D'Andrea, Dana-Farber Cancer Institute, USA
The Deshieldin Complex Regulates DNA Repair Pathway Choice

Genome Stability, Human Physiology and Therapeutic Potential (8:30am Denver/Mountain Time Start)

***Petr Cejka**, Institute for Research in Biomedicine, Switzerland

***Anna Malkova**, University of Iowa, USA

Simon J. Boulton, Francis Crick Institute, UK
TRF2-Independent Chromosome End Protection in Pluripotent Cells and Early Development

Jacqueline J. Jacobs, Netherlands Cancer Institute, Netherlands
Mechanisms of Telomere End Protection

Madalena Tarsounas, University of Oxford, UK
Targeting BRCA beyond PARP Inhibitors

Titia de Lange, Rockefeller University, USA
The Role of CST/Polalpha/Primase in DSB Repair

Michael Kosicki, Lawrence Berkeley National Laboratory, USA
Short Talk: Cas9-Induced Large Deletions and Small Indels are Controlled in a Convergent Fashion

Sheera Adar, Hebrew Institute of Jerusalem, Israel
Short Talk: New Insight into the Relationship between UV Damage Formation, Transcription and Mutagenesis

Winnie Tan, St Vincent's Institute, Australia
Short Talk: Mono-ubiquitination by the FA Core Complex Clamps FANCI:FANCD2 on DNA as a Filamentous Array

Yana van der Weegen, Leiden University Medical Center, Netherlands
Short Talk: ELOF1 is a Transcription-Coupled DNA Repair Factor that Directs RNA Polymerase II Ubiquitylation

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

Emerging Concepts in Genome Stability (3pm Denver/Mountain Time Start)

***Gaëlle Legube**, Center for Integrative Biology, France

***Sheera Adar**, Hebrew Institute of Jerusalem, Israel

Katharina Schlacher, MD Anderson Cancer Center, USA
Polygenic Mutations Model the Pleiotropic Disease of Fanconi Anemia

Anindya Dutta, University of Virginia, USA
Strange Tales of Genomic Instability: eccDNAs and Life without ORC

Angelos Constantinou, Institute of Human Genetics, France
Short Talk: TopBP1 Assembles Nuclear Condensates to Switch on ATR Signalling

Xiuli Dan, National Institutes of Health, USA
Short Talk: Mitochondria Responds to DNA Damage with Adjusted Mitophagy

Yi Yin, University of California, Los Angeles, USA
Short Talk: High-Throughput Single Cell Sequencing for Studying HR Partner Choice

Industry Panel Discussion (4:35pm Denver/Mountain Time Start)

***Roger Greenberg**, University of Pennsylvania, USA

***Alan D. D'Andrea**, Dana-Farber Cancer Institute, USA

Katya Marjon, Agios Pharmaceuticals, USA

Josep V. Forment, AstraZeneca, UK

Scott Pesiridis, GlaxoSmithKline, USA

Robert T. Abraham, Vividion Therapeutics, USA

Cory Johannessen, Novartis, USA

Closing Remarks (Organizers) (5:45pm Denver/Mountain Time Start)