

# Genomic Instability and DNA Repair

April 2–6, 2017 | Santa Fe Community Convention Center | Santa Fe, New Mexico | USA

## Scientific Organizers:

**Julia Promisel Cooper**, National Cancer Institute, National Institutes of Health, USA

**Marco F. Foiani**, Istituto FIRC di Oncologia Molecolare, Italy

**Geneviève Almouzni**, Centre National de la Recherche Scientifique, France

## Joint with the meeting on *DNA Replication and Recombination*

Genome stability is the foundation upon which all cellular and organismal processes depend. This conference will grapple with the intricate array of biochemical reactions orchestrated by the cell to replicate, repair and segregate chromosomes accurately despite constant threats from spontaneous and environmentally-induced damage. Defects in these reactions lead to genomic instability, a confirmed driver of cancer and degenerative diseases. Fascinating and therapeutically crucial questions remain about the mechanisms underlying chromosome stability, and cross-disciplinary approaches are required to address them. How do epigenetic chromatin marks influence repair of underlying DNA sequences, and how can we predict the effects of chemotherapeutic agents that alter such marks? To what extent is the nucleus organized into subdomains with distinct functions; how are these subdomains altered when cells move or differentiate? How are the myriad helicases, nucleases and polymerases coordinated to safeguard genome stability, why are these molecules often mutated in human disease, and how can we ameliorate the effects of such mutations? What is the array of strategies available to cancer cells as they achieve unlimited proliferation? This conference has a history of bringing together investigators from diverse subfields who otherwise rarely meet. Cutting-edge concepts in translational, genomic, cellular, molecular, RNA and structural biology will be dissected to take the conversation to unprecedented levels of depth and breadth. The concurrent conference on “DNA Replication and Recombination” will provide additional opportunities for cross-talk. Both conferences are committed to nurturing interactions among longtime experts in the field with students, postdocs and investigators new to the field.


## Session Topics:

- Mechanisms of DNA Repair
- RNA Metabolism and Genome Stability
- Interplay between Chromatin Structure and DNA Replication/Repair (Joint)
- Cell Cycle Regulation of DNA Damage Response
- Nuclear Dynamics and Genome Stability
- DNA Repair and Human Diseases
- Replication Fork Establishment and Replication Coupled Repair (Joint)
- Telomeres and Centromeres

**Scholarship Application & Discounted Abstract Deadline: December 5, 2016**

**Abstract Deadline: January 12, 2017**

**Discounted Registration Deadline: February 2, 2017**



Note: Scholarships are available for graduate students and postdoctoral fellows and are awarded based on the abstract submitted.

Upper image courtesy of: Tom Ellenberger, Washington University School of Medicine in St. Louis, and Dave Gohara, Saint Louis University School of Medicine

Meeting Hashtag: #KSgenomic

[www.keystonesymposia.org/17Z1](http://www.keystonesymposia.org/17Z1)

KEYSTONE SYMPOSIA™  
on Molecular and Cellular Biology  
Accelerating Life Science Discovery

[www.keystonesymposia.org/meetings](http://www.keystonesymposia.org/meetings) | 1.800.253.0685 | 1.970.262.1230

a 501(c)(3) nonprofit educational organization

# KEYSTONE SYMPOSIA

on Molecular and Cellular Biology

## Genomic Instability and DNA Repair (Z1)

Scientific Organizers: Julia Promisel Cooper, Marco F. Foiani and Geneviève Almouzni

Sponsored by AstraZeneca, Bayer HealthCare Pharmaceuticals, Editas Medicine, Inc., EMD Serono Research and Development Institute, Inc., Journal of Molecular Cell Biology (JMCB) and TESARO, Inc.

## DNA Replication and Recombination (Z2)

Scientific Organizers: John F.X. Diffley, Anja Groth and Scott Keeney

April 2-6, 2017 • Santa Fe Community Convention Center • Santa Fe, New Mexico, USA

Sponsored by Editas Medicine, Inc.

Abstract & Scholarship Deadline: December 5, 2016 / Abstract Deadline: January 12, 2017 / Discounted Registration Deadline: February 2, 2017

### SUNDAY, APRIL 2

#### Arrival and Registration

### MONDAY, APRIL 3

#### Welcome and Keynote Session (Joint)

- \***Julia Promisel Cooper**, NCI, National Institutes of Health, USA
- \***Scott Keeney**, HHMI/Memorial Sloan Kettering Cancer Center, USA
- Tatsuya Hirano**, RIKEN, Japan  
*Condensin-Based Chromosome Organization*
- Johannes C. Walter**, Harvard Medical School, USA  
*Mechanisms of Replication-Coupled Repair*

#### Mechanisms of DNA Repair (Z1)

- \***Timothy C. Humphrey**, University of Oxford, UK
- Wei Yang**, NIDDK, National Institutes of Health, USA  
*Structural Insights into Translesion DNA Polymerases*
- James E. Haber**, Brandeis University, USA  
*Short Talk: Rad51-Mediated Double-Strand Break Repair and Mismatch Correction of Highly Diverged Substrates*
- Joseph J. Loparo**, Harvard Medical School, USA  
*Short Talk: Single-Molecule Imaging of Non-Homologous End Joining*
- Michael D. Stone**, University of California, Santa Cruz, USA  
*Mechanical Transitions in Long Duplex Telomere DNA Molecules*
- Fena Ochs**, University of Copenhagen, Denmark  
*Short Talk: Dynamic Chromatin Superstructures Safeguard Integrity of Nuclear Compartments Challenged by DNA Breakage*

#### Replication/Repair Structure and Function (Z2)

- \***John F.X. Diffley**, Francis Crick Institute, UK
- Michael E. O'Donnell**, Rockefeller University, USA  
*Structure and Function of the Eukaryotic Replisome*
- Tyler H. Stanage**, University of Wisconsin-Madison, USA  
*Short Talk: The Escherichia coli RarA Protein is Involved in the Switch between DNA Replication and Translesion Synthesis in vivo*
- Karlene A. Cimprich**, Stanford University, USA  
*When RNA Meets DNA: Dangerous Liaisons in the Genome*
- Alessandro Costa**, Francis Crick Institute, UK  
*Cryo-EM Approaches to Understanding the Eukaryotic Replisome*
- Matthew L. Bochman**, Indiana University, USA  
*Short Talk: Hrq1, The Yeast Homolog of RecQ4, Inhibits Telomerase Activity on Long Telomeres*

#### Workshop 1: Genome Instability and DNA Repair I (Z1)

- \***James E. Haber**, Brandeis University, USA

**Elena Balkanska-Sinclair**, Duke University, USA  
*The BRD4-NUT Fusion Protein from Nut-Midline Carcinoma modulates DNA Damage Signaling and Ionizing Radiation Response*

**Michael M. Cox**, University of Wisconsin-Madison, USA  
*Ionizing Radiation Resistance in Experimentally Evolved Escherichia coli Populations*

**Nitika Taneja**, NCI, National Institutes of Health, USA  
*SNF2 Family Protein Fft3 Suppresses Nucleosome Turnover to Promote Epigenetic Inheritance and Proper Replication*

**Ryan M. Baxley**, University of Minnesota, USA  
*Progressive Genomic Instability and Telomere Erosion in Human Cells following Inactivation of a Single MCM10 Allele*

**Michael H. Hauer**, Friedrich Miescher Institute for Biomedical Research, Switzerland

*Histone Degradation in Response to DNA Damage Enhances Chromatin Dynamics and Recombination Rates*

**Mariano Labrador-San Jose**, University of Tennessee, USA  
*Components of the DNA Damage Response Pathway, ATR and ATM, Modulate Chromatin Insulator Activity through Phosphorylation of Histone H2Av at Insulator Sites*

**Mitch McVey**, Tufts University, USA  
*Coordination of ATPase and Polymerase Activities of Drosophila DNA Polymerase Theta during Interstrand Crosslink and Alternative End-Joining Repair of Double-Strand Breaks*

**Hilda A. Pickett**, Children's Medical Research Institute, Australia  
*BLM and SLX4 Play Opposing Roles in Recombination-Dependent Replication at Human Telomeres*

#### Workshop 1: Recombination and Repair (Z2)

**Tracey E. Beyer**, Biotech Research and Innovation Centre, Denmark  
*Ontogeny of Genome Rearrangements in Budding Yeast*

\***Simon N. Powell**, Memorial Sloan Kettering Cancer Center, USA  
*Replication Fork Cleavage Occurs within 100bp from Local ATM Signaling of Site-Specific DNA Replication Block in Human Cells*

**Erin Hannah Sybouts**, University of Texas Health Science Center at San Antonio, USA  
*Recombination and BLM Helicase Compensate for Replication Fork Defects in the Absence of 53BP1 Protein*

**Shane McDevitt**, Temple University Lewis Katz School of Medicine, USA  
*Mechanisms of RNA-Transcript Templated DNA Recombinational Repair Promoted by RAD52*

**Susanne S. C. Bantele**, Max Planck Institute of Biochemistry, Germany  
*Regulation of the Conserved Chromatin Remodeler Fun30SMARCAD1 at DNA Double-Strand Breaks*

**Walter J. Chazin**, Vanderbilt University, USA  
*Mechanisms for Counting and Handoff by Human DNA Primase- A Role for the 4Fe-4S Cluster?*

# KEYSTONE SYMPOSIA

on Molecular and Cellular Biology

## Genomic Instability and DNA Repair (Z1)

Scientific Organizers: Julia Promisel Cooper, Marco F. Foiani and Geneviève Almouzni

Sponsored by AstraZeneca, Bayer HealthCare Pharmaceuticals, Editas Medicine, Inc., EMD Serono Research and Development Institute, Inc., Journal of Molecular Cell Biology (JMCB) and TESARO, Inc.

## DNA Replication and Recombination (Z2)

Scientific Organizers: John F.X. Diffley, Anja Groth and Scott Keeney

April 2-6, 2017 • Santa Fe Community Convention Center • Santa Fe, New Mexico, USA

Sponsored by Editas Medicine, Inc.

Abstract & Scholarship Deadline: December 5, 2016 / Abstract Deadline: January 12, 2017 / Discounted Registration Deadline: February 2, 2017

**Holger Puchta**, Karlsruhe Institute of Technology, Germany  
*The RTR Complex Partner RMI2 and the DNA Helicase RTEL1 Are Both Independently Involved in Preserving the Stability of 45S rDNA Repeats in Arabidopsis thaliana*

**Christian Biertuempfel**, Max Planck Institute of Biochemistry, Germany  
*DNA Recognition Features of Human Holliday Junction Resolvase GEN1*

### RNA Metabolism and Genome Stability (Z1)

\***Hengyao Niu**, Indiana University Bloomington, USA

**Vihandha Wickramasinghe**, Peter MacCallum Cancer Centre, Australia  
*Effects of Altered RNA Processing on Genome Stability and the Proteome*

**Frédéric L. Chedin**, University of California, Davis, USA  
*Short Talk: R-Loop Formation is a Hallmark of Active Early Replication Origins in Mammalian Genomes*

**Julius Brennecke**, IMBA - Institut für Molekulare Biotechnologie GmbH, Austria  
*An RNA-Based Genome Immune System Safeguards Genome Stability*

**Eric A. Hunt**, New England Biolabs, USA  
*Short Talk: Prokaryotic Argonautes and their Potential as New Molecular Tools*

**Alice Meroni**, University of Milan, Italy  
*Short Talk: DNA Polymerase  $\epsilon$  Sensitizes Cells to Nucleotide Pool Deprivation in Absence of RNase H*

**Francesca Storici**, Georgia Institute of Technology, USA  
*Short Talk: Double-Strand Break Repair by Transcript RNA Is Stimulated by Rad52 and Requires Limited End Resection*

### Starting Recombination (Z2)

\***Bernard de Massy**, Institut de Génétique Humaine, France

**Scott Keeney**, HHMI/Memorial Sloan Kettering Cancer Center, USA  
*Breaking and Chewing DNA during Meiosis*

**Florencia M. Pratto**, NIDDK, National Institutes of Health, USA  
*Linking Replication and Meiotic Recombination Initiation in Mammals*

**Kara A. Bernstein**, University of Pittsburgh School of Medicine, USA  
*Short Talk: The Function of the Shu Complex and the Rad51 Paralogs in Repair of Replication Intermediate by Promotion of Rad51 Presynaptic Filament Assembly*

**Maria Jasin**, Memorial Sloan Kettering Cancer Center, USA  
*Protecting the Genome by Homologous Recombination*

**Sofija Mijic**, Institute of Molecular Cancer Research, Switzerland  
*Short Talk: Replication Fork Reversal Triggers Fork Degradation in BRCA2-Defective Cells*

### Poster Session 1

#### TUESDAY, APRIL 4

#### Interplay between Chromatin Structure and DNA Replication/Repair (Joint)

\***Jennifer A. Cobb**, University of Calgary, Canada

\***Anja Groth**, University of Copenhagen, Denmark

**Geneviève Almouzni**, Centre National de la Recherche Scientifique, France

*Shaping Chromatin in the Nucleus, the Bricks and the Architects*

**Gary Karpen**, Lawrence Berkeley National Laboratory, University of California, Berkeley, USA

*Regulation of DNA Repair in Heterochromatin and Euchromatin*

**Francesca Mattioli**, HHMI/Colorado University Boulder, USA  
*Short Talk: DNA-Mediated Association of Two Histone-Bound CAF-1 Complexes Drives Tetrasome Assembly in the Wake of DNA Replication*

**Robert A. Martienssen**, Cold Spring Harbor Laboratory, USA  
*RNAi Promotes Heterochromatic Silencing through Replication-Coupled Release of RNA Polymerase II*

**Bernard de Massy**, Institut de Génétique Humaine, France  
*The Control of Initiation of Meiotic Recombination by PRDM9*

**Philipp Oberdoerffer**, NCI, National Institutes of Health, USA  
*Short Talk: Replication Stress Shapes a Protective Chromatin Environment Across Fragile Genomic Regions*

#### Cell Cycle Regulation of DNA Damage Response (Z1)

\***Frédéric L. Chedin**, University of California, Davis, USA

**Tanya T. Paull**, University of Texas at Austin, USA  
*Double-Strand Break Repair Factors and R-Loop-Mediated Genomic Instability*

**David Cortez**, Vanderbilt University School of Medicine, USA  
*Regulation of Replication Fork Stability by Single-Stranded DNA Binding Proteins*

**Kyle M. Miller**, , USA  
*Chromatin Regulation of the DNA Damage Response*

**Michael P. Sheetz**, Mechanobiology Institute, National University of Singapore, Singapore  
*Short Talk: DNA Damage Causes  $\gamma$  Rapid Accumulation of Phosphoinositides to Recruit ATR but not ATM*

**Linda J. Kenney**, National University of Singapore, Singapore  
*Short Talk: Salmonella Typhimurium forms Biofilms on Solid Tumors*

#### Regulating Recombination (Z2)

\***Xiaolan Zhao**, Memorial Sloan Kettering Cancer Center, USA

**Lorraine S. Symington**, Columbia University, USA  
*DNA End Resection and Repair Pathway Choice*

# KEYSTONE SYMPOSIA

on Molecular and Cellular Biology

## Genomic Instability and DNA Repair (Z1)

Scientific Organizers: Julia Promisel Cooper, Marco F. Foiani and Geneviève Almouzni

Sponsored by AstraZeneca, Bayer HealthCare Pharmaceuticals, Editas Medicine, Inc., EMD Serono Research and Development Institute, Inc., Journal of Molecular Cell Biology (JMCB) and TESARO, Inc.

## DNA Replication and Recombination (Z2)

Scientific Organizers: John F.X. Diffley, Anja Groth and Scott Keeney

April 2-6, 2017 • Santa Fe Community Convention Center • Santa Fe, New Mexico, USA

Sponsored by Editas Medicine, Inc.

Abstract & Scholarship Deadline: December 5, 2016 / Abstract Deadline: January 12, 2017 / Discounted Registration Deadline: February 2, 2017

**Jennifer A. Cobb**, University of Calgary, Canada  
*Nej1 Regulates Repair Pathway Choice by Inhibiting Dna2-Sgs1 Mediated Resection*

**Aurele Piazza**, University of California, Davis, USA  
*Short Talk: Multi-Invasions Are Recombination Byproducts that Induce Chromosomal Rearrangements*

**Eric C. Greene**, Columbia University, USA  
*Single-Molecule Studies of Recombination Pathways*

**Sneha Saxena**, Indian Institute of Science, India  
*Short Talk: RAD51 Paralog XRCC2 Suppresses Pathological Replication Fork Progression*

### Poster Session 2

#### WEDNESDAY, APRIL 5

##### Nuclear Dynamics and Genome Stability (Z1)

\***Arnab Ray Chaudhuri**, National Institutes of Health, USA

**Marco F. Foiani**, Istituto FIRC di Oncologia Molecolare, Italy  
*An Integrated ATR, ATM and mTOR-Mechanical Network Controlling Nuclear Plasticity and Cell Migration*

**Angela Taddei**, Institut Curie, France  
*Nuclear Organization and Chromatin Status Modulate Homologous Recombination Efficiency and Outcome*

**Irene Chiolo**, University of Southern California, USA  
*Short Talk: Highways for Repair: Nuclear Myosins and Actin Filaments Relocalize Heterochromatic DNA Breaks to the Nuclear Periphery*

**Martin W. Hetzer**, The Salk Institute, USA  
*How the Nuclear Membrane Controls Genome Function*

**Emmanuelle Fabre**, Hopital St Louis, France  
*Short Talk: DNA Damage Increases Chromatin Stiffening in Budding Yeast*

**Neil T. Umbreit**, Dana-Farber Cancer Institute, USA  
*Short Talk: Chromosome Bridge Resolution Requires Mechanical Forces from Actin-Based Contractility*

**Peter Ly**, University of California, San Diego, USA  
*Short Talk: Mitotic Errors Promote Chromosome Shattering and DNA Break Repair by Non-Homologous End Joining*

##### Replication Fork Progression and Restart (Z2)

\***Anne D. Donaldson**, University of Aberdeen, UK

**Kenneth J. Marians**, Memorial Sloan Kettering Cancer Center, USA  
*Imaging Individual Replisomes Reveals Independence and Decoupling of Polymerases During Replication*

**Anja Groth**, University of Copenhagen, Denmark  
*Chromatin Replication and Epigenome Maintenance*

**Alberto Ciccia**, Columbia University, USA  
*Short Talk: Restoration of Fork Stability in BRCA1- and BRCA2-Deficient Cells*

**Xiaolan Zhao**, Memorial Sloan Kettering Cancer Center, USA  
*Smc5/6-Mediated Control of Recombinational Repair is Critical for Genome Duplication*

**Advaita Madireddy**, Albert Einstein College of Medicine, USA  
*Short Talk: FANCD2 Facilitates DNA Replication through Common Fragile Sites*

**Joseph L. Stodola**, Washington University School of Medicine, USA  
*Short Talk: Kinetic Analysis of Lagging Strand Replication and Okazaki Fragment Maturation*

**Joseph Yeeles**, MRC Laboratory of Molecular Biology, UK  
*Short Talk: How the Eukaryotic Replisome Responds to DNA Damage in the Leading- and Lagging-Strand Templates*

### Poster Session 3

##### DNA Repair and Human Diseases (Z1)

\***Hilda A. Pickett**, Children's Medical Research Institute, Australia

**Agnel Sfeir**, New York University School of Medicine, USA  
*Single-Molecule Analysis of mtDNA Replication Uncovers the Basis of the Common Deletion*

**Cecilia Cotta-Ramusino**, Editas Medicine, USA  
*Short Talk: Characterization of the Interplay between DNA Repair and CRISPR/Cas9-Induced DNA Lesions at an Endogenous Locus*

**Simon J. Boulton**, London Research Institute, Clare Hall Laboratories, UK  
*Mechanistic Insights into Telomere Dysfunction Disorders*

**Madalena Tarsounas**, University of Oxford, UK  
*Short Talk: MUS81 Nuclease Activity Is Essential for Replication Stress Tolerance and Chromosome Segregation in BRCA2-Deficient Cells*

**Janet Partridge**, St Jude Children's Research Hospital, USA  
*Short Talk: Histone H3G34R Mutation Causes Replicative Stress, Defective Homologous Recombination and Genomic Instability in Fission Yeast*

##### Replication Initiation Mechanisms (Z2)

\***Kenneth J. Marians**, Memorial Sloan Kettering Cancer Center, USA

**Stephen P. Bell**, Massachusetts Institute of Technology, USA  
*Mechanism and Timing of Mcm2-7 Ring Closure During Origin Licensing*

**Stephen D. Bell**, Indiana University, USA  
*DNA Replication in the Archaea*

**Heath Murray**, Newcastle University, UK  
*Short Talk: A New Bacterial Replication Origin Element Specifies Single-Strand Initiator Binding*

**Anne D. Donaldson**, University of Aberdeen, UK  
*The Conserved Role of Rif1 as a Substrate-Targeting Subunit of Protein Phosphatase 1*

# KEYSTONE SYMPOSIA

on Molecular and Cellular Biology

## Genomic Instability and DNA Repair (Z1)

Scientific Organizers: Julia Promisel Cooper, Marco F. Foiani and Geneviève Almouzni

Sponsored by AstraZeneca, Bayer HealthCare Pharmaceuticals, Editas Medicine, Inc., EMD Serono Research and Development Institute, Inc., Journal of Molecular Cell Biology (JMCB) and TESARO, Inc.

## DNA Replication and Recombination (Z2)

Scientific Organizers: John F.X. Diffley, Anja Groth and Scott Keeney

April 2-6, 2017 • Santa Fe Community Convention Center • Santa Fe, New Mexico, USA

Sponsored by Editas Medicine, Inc.

Abstract & Scholarship Deadline: December 5, 2016 / Abstract Deadline: January 12, 2017 / Discounted Registration Deadline: February 2, 2017

**Dominik Boos**, University of Duisburg-Essen, Germany

*Short Talk: MTBP Is an Essential Replication Initiation Factor with Vertebrate-Specific and Sld7-Like Features*

### THURSDAY, APRIL 6

#### Replication Fork Establishment and Replication-Coupled Repair (Joint)

\***Jeannine Gerhardt**, Weill Cornell Medicine, USA

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

**James M. Berger**, Johns Hopkins University School of Medicine, USA  
*Physical Mechanisms for Initiating DNA Replication in Cells*

**Agata Smogorzewska**, Rockefeller University, USA  
*Stress Response at the Replication Fork*

**Eric J. Brown**, Perelman School of Medicine, University of Pennsylvania, USA  
*Short Talk: Characterizing Replisome Ubiquitination upon Fork Stalling*

**André Nussenzweig**, NCI, National Institutes of Health, USA  
*DNA Breaks and End-Resection Measured Genome-Wide by End Sequencing (END-seq)*

**Helle D. Ulrich**, Institute of Molecular Biology, Germany  
*Coordination of DNA Damage Bypass with Genome Replication and Checkpoint Signaling*

**Stephane Koundrioukoff**, Institute Gustave Roussy, France  
*Short Talk: DNA Replication Compensation: A Two Steps Mechanism*

#### Workshop 2: Genome Instability and DNA Repair II (Z1)

\***Michael P. Sheetz**, Mechanobiology Institute, National University of Singapore, Singapore

**Katharina Schlacher**, MD Anderson Cancer Center, USA  
*Epigenetics-Enabled MRE11 Replication Restart by p53 Promotes Replication Pathway Homeostasis to Suppress Opportunistic Transcription Reprogramming*

**Kristijan Ramadan**, University of Oxford, UK  
*SPRTN Is a Novel Mammalian Protease with the Central Role in DNA Replication-Coupled DNA-Protein Crosslink Repair*

**Jason Sheltzer**, Cold Spring Harbor Laboratory, USA  
*Single-Chromosome Aneuploidy Commonly Functions as a Tumor Suppressor but Can Drive Genome Evolution*

**Manuel Stucki**, University of Zurich, Switzerland  
*TOPBP1 Cooperate with TCOF1/Treacle in the Nucleolar Response to DNA Double-Strand Breaks*

**Maria Teresa Teixeira**, CNRS – UMR 8226, France  
*Telomere Replication in the Absence of Telomerase: Failure, Repair and Adaptation*

**Johannes van den Boom**, University of Duisburg-Essen, Germany  
*The AAA-ATPase VCP/p97 Extracts Sterically Trapped Ku70/80 Rings from DNA in Double-Strand Break Repair*

**Catherine H. Freudenreich**, Tufts University, USA  
*Cytosine Deamination Mediates R-Loop Dependent CAG Repeat Fragility and Instability*

**Muwen Kong**, University of Pittsburgh, USA  
*Auto-PARYlation Switches PARP1 Search Mechanism from Three-Dimensional Diffusion to Anomalous One-Dimensional Sliding*

#### Workshop 2: Replication (Z2)

\***Linda B. Bloom**, University of Florida, USA  
*Active Sliding Clamp Opening in Three Steps*

**Christopher Sansam**, Oklahoma Medical Research Foundation, USA  
*DNA Replication Timing during Development Anticipates Transcriptional Programs and Parallels Enhancer*

**Petr Cejka**, University of Zurich, Switzerland  
*Processing of DNA Double-Strand Breaks for Repair by Homologous Recombination*

**Ralph Scully**, Beth Israel Deaconess Medical Center, USA  
*Short Talk: Microhomology-Mediated Tandem Duplications form at Tus/Ter-Stalled Replication Forks in BRCA1 Mutant Cells*

**Stephen C. West**, Francis Crick Institute, UK  
*Unresolved Recombination Intermediates as a Source of DNA Breaks and Chromosome Aberration*

**Meeting Wrap-Up: Outcomes and Future Directions (Organizers) (Z1)**

**Meeting Wrap-Up: Outcomes and Future Directions (Organizers) (Z2)**

### FRIDAY, APRIL 7

Departure

# KEYSTONE SYMPOSIA

on Molecular and Cellular Biology

## Genomic Instability and DNA Repair (Z1)

Scientific Organizers: Julia Promisel Cooper, Marco F. Foiani and Geneviève Almouzni

Sponsored by AstraZeneca, Bayer HealthCare Pharmaceuticals, Editas Medicine, Inc., EMD Serono Research and Development Institute, Inc., Journal of Molecular Cell Biology (JMCB) and TESARO, Inc.

## DNA Replication and Recombination (Z2)

Scientific Organizers: John F.X. Diffley, Anja Groth and Scott Keeney

April 2-6, 2017 • Santa Fe Community Convention Center • Santa Fe, New Mexico, USA

Sponsored by Editas Medicine, Inc.

Abstract & Scholarship Deadline: December 5, 2016 / Abstract Deadline: January 12, 2017 / Discounted Registration Deadline: February 2, 2017

*Activation*

**Boris Pfander,**

Max Planck  
Institute of  
Biochemistry,  
Germany

*Robust Replication  
Control by  
Temporal Gaps  
between Licensing  
and Firing Phases*

**Hasan Yardimci,**

Francis Crick  
Institute, UK  
*Super-Resolution  
Fluorescence  
Imaging of DNA  
Replication  
Intermediates*

**Jon Baxter,**

University of  
Sussex, UK

*Transcription  
Promotes  
Replication Fork  
Rotation and  
Double-Stranded  
DNA Intertwining  
via a  
Cohesin-Dependent  
Pathway*

**Ivan Psakhye,**

IFOM, FIRC  
Institute of  
Molecular  
Oncology, Italy  
*DDK-Mediated  
Regulation of the  
deSUMOylating  
Enzyme Ulp2  
Facilitates DNA  
Replication  
Initiation*

### Telomeres and Centromeres (Z1)

**\*Maria Teresa**

**Teixeira,** CNRS –  
UMR 8226, France

**Titia de Lange,**

Rockefeller  
University, USA  
*How Shelterin  
Solves the  
Telomere*

# KEYSTONE SYMPOSIA

on Molecular and Cellular Biology

## Genomic Instability and DNA Repair (Z1)

Scientific Organizers: Julia Promisel Cooper, Marco F. Foiani and Geneviève Almouzni

Sponsored by AstraZeneca, Bayer HealthCare Pharmaceuticals, Editas Medicine, Inc., EMD Serono Research and Development Institute, Inc., Journal of Molecular Cell Biology (JMCB) and TESARO, Inc.

## DNA Replication and Recombination (Z2)

Scientific Organizers: John F.X. Diffley, Anja Groth and Scott Keeney

April 2-6, 2017 • Santa Fe Community Convention Center • Santa Fe, New Mexico, USA

Sponsored by Editas Medicine, Inc.

Abstract & Scholarship Deadline: December 5, 2016 / Abstract Deadline: January 12, 2017 / Discounted Registration Deadline: February 2, 2017

*End-Protection  
Problem*

**Kerry S. Bloom,**  
University of North  
Carolina at Chapel  
Hill, USA

*The Molecular  
Basis for the  
Centromere Spring*

**Nausica Arnoult,**  
The Salk Institute  
for Biological  
Studies, USA

*Short Talk:  
Regulation of DNA  
Repair Pathway  
Choice in S/G2 by  
the NHEJ Inhibitor  
CYREN*

**Julia Promisel  
Cooper,** NCI,  
National Institutes  
of Health, USA  
*Telomeric Control  
of Kinetochore  
Assembly and  
Nuclear Envelope  
Breakdown*

### Finishing Recombination (Z2)

**\*Maria Jasin,**  
Memorial Sloan  
Kettering Cancer  
Center, USA

**Stephen C.  
Kowalczykowski,**  
University of  
California, Davis,  
USA

*Molecular  
Functions and  
Single Molecule  
Studies of BRCA1,  
BRCA2, and  
RAD51 Paralogs*