Wednesday, November 2

6:15 p.m.-8:30 p.m.  Opening Keynote Session
Grand Salon Opera

Welcome Remarks and Session Chairpersons: Robert G. Bristow, University Health Network Princess Margaret Hospital, Toronto, ON, Canada; Maria Jasin, Memorial Sloan Kettering Cancer Center, New York, NY; Theodore S. Lawrence, University of Michigan, Ann Arbor, MI

6:30 p.m.-7:10 p.m.  Advancing the field of mutational signatures: Mechanisms and clinical applications
Serena Nik-Zainal, Wellcome Trust Sanger Institute, Cambridge, United Kingdom

7:10 p.m.-7:50 p.m.  Defects in DNA repair genes revealed by clinical sequencing of advanced cancer patients
Arul M. Chinnaiyan, University of Michigan, Ann Arbor, MI

7:50 p.m.-8:30 p.m.  Targeting the DNA damage response to generate new medicines for cancer treatment
Mark J. O’Connor, AstraZeneca, Cambridge, United Kingdom

8:30 p.m.-10:00 p.m.  Welcome Reception
Soprano and Soprano Foyer

Thursday, November 3

7:00 a.m.-8:00 a.m.  Continental Breakfast
Grand Salon Foyer

8:00 a.m.-10:00 a.m.  Plenary Session 1: Homologous Recombination Defects
Grand Salon Opera

Session Chairperson: Jos Jonkers, Netherlands Cancer Institute, Amsterdam, The Netherlands

8:00 a.m.-8:25 a.m.  Protecting the genome by homologous recombination: Role of the BRCA2 tumor suppressor
Maria Jasin, Memorial Sloan Kettering Cancer Center, New York, NY

8:25 a.m.-8:50 a.m.  Prospective identification of vulnerabilities to DNA repair inhibitors
Daniel Durocher, Lunenfeld-Tanenbaum Research Institute, Toronto, ON, Canada

8:50 a.m.-9:15 a.m.  The Fanconi anemia-BRCA pathway and cancer
Toshiyasu Taniguchi, Fred Hutchinson Cancer Research Center, Seattle, WA
CONFERNECE PROGRAM

9:15 a.m.-9:30 a.m.  Mechanisms of regulation of the tumor suppressor PALB2*  
Jean-Yves Masson, Laval University Cancer Research Center, Quebec, QC, Canada

9:30 a.m.-9:45 a.m.  Small molecules that specifically inhibit the D-loop activity of RAD51*  
Philip Connell, University of Chicago, Chicago, IL

9:45 a.m.-10:00 a.m.  Targeted inhibition of Rad51 by the cell-penetrating antibody 3E10*  
Audrey Turchick, Yale University, New Haven, CT

10:00 a.m.-10:30 a.m.  Break  
Grand Salon Foyer

10:30 a.m.-12:30 p.m.  Plenary Session 2: Synthetic Lethality and Viability  
Grand Salon Opera

Session Chairperson: Daniel Durocher, Lunenfeld-Tanenbaum Research Institute, Toronto, ON, Canada

10:30 a.m.-10:55 a.m.  Genetic determinants of tumor development, therapy response and resistance in mouse models of BRCA-deficient breast cancer  
Jos Jonkers, Netherlands Cancer Institute, Amsterdam, The Netherlands

10:55 a.m.-11:20 a.m.  Synthetic viability due to BRCA2 and PARP1 loss  
Shyam K. Sharan, NCI-Frederick, Frederick, MD

11:20 a.m.-11:45 a.m.  Replication fork stability confers chemoresistance in BRCA-deficient cells  
André Nussenzweig, National Cancer Institute, Bethesda, MD

11:45 a.m.-12:00 p.m.  Mechanism for PARPi resistance: Homologous recombination without BRCA1*  
Yizhou Joseph He, Dana-Farber Cancer Institute, Boston, MA

12:00 p.m.-12:15 p.m.  Distinct BRCA1- and BRCA2-specific functions at stalled replication forks: Clinical implications for differences between BRCA1 and BRCA2 mutation-driven cancer*  
Shailja Pathania, Dana-Farber Cancer Institute, Boston, MA

12:15 p.m.-12:30 p.m.  Targeted chemotherapy for homologous repair defects (HRD) in molecularly profiled cancer patients*  
Joseph Paul Eder, Yale Cancer Center, New Haven, CT

12:30 p.m.-2:30 p.m.  Free Time (Lunch on Own)

2:30 p.m.-4:30 p.m.  Plenary Session 3: DNA Repair Gene Mutations in Cancer Genomes  
Grand Salon Opera

Session Chairperson: Serena Nik-Zainal, Wellcome Trust Sanger Sanger Institute, Cambridge, United Kingdom

*Short talks from proffered abstracts

DNA REPAIR: TUMOR DEVELOPMENT AND THERAPEUTIC RESPONSE
2:30 p.m.-2:55 p.m. DNA repair mutations in ovarian carcinoma and relationship to therapeutic response
Elizabeth M. Swisher, University of Washington, Seattle, WA

2:55 p.m.-3:10 p.m. Identifying factors mediating response and resistance to chemotherapy through a
chemical-genetic interaction map*
Sourav Bandyopadhyay, University of California, San Francisco, San Francisco, CA

3:10 p.m.-3:35 p.m. Signatures of mutational processes in human cancer
Ludmil B. Alexandrov, Los Alamos National Laboratory, Los Alamos, NM

3:35 p.m.-3:50 p.m. APOBEC activity in cancer cells confers susceptibility to ATR inhibition*
Lee Zou, Massachusetts General Hospital & Harvard Medical School, Boston, MA

3:50 p.m.-4:05 p.m. APOBEC3A sensitizes leukemia cells to inhibitors of the replication checkpoint*
Abby M. Green, The Children’s Hospital of Philadelphia, Philadelphia, PA

4:05 p.m.-4:20 p.m. Ionizing radiation-induced tumorigenesis is associated with exome-wide mutational
signatures conserved in mice and humans*
Jean Nakamura, University of California, San Francisco, San Francisco, CA

4:30 p.m.-5:00 p.m. Panel Discussion: Homologous recombination deficiency in the clinic
This panel will discuss current approaches, their limitations, and prospects for determining
homologous recombination deficiency and its utility in the clinic.
Grand Salon Opera

5:00 p.m.-7:30 p.m. Poster Session A and Reception
Soprano

Friday, November 4

7:00 a.m.-8:00 a.m. Continental Breakfast
Grand Salon Foyer

8:00 a.m.-10:00 a.m. Plenary Session 4: Replication Stress
Grand Salon Opera

     Session Chairperson: Michael B. Kastan, Duke Cancer Institute, Chapel Hill, NC

8:00 a.m.-8:25 a.m. Poisoning cancer with oxidized nucleotides by targeting MTH1
Thomas U. Hellday, Karolinska Institute, Stockholm, Sweden

8:25 a.m.-8:50 a.m. Replication stress in cancer pathogenesis: Mechanisms and treatment opportunities
Jiri Bartek, Danish Cancer Society-Institute of Cancer Biology, Copenhagen, Denmark

*Short talks from proffered abstracts
CONFERENCE PROGRAM

8:50 a.m.-9:15 a.m.  
Mechanisms of the ATR-dependent replication stress response  
David Cortez, Vanderbilt University Medical Center, Nashville, TN

9:15 a.m.-9:30 a.m.  
Mammalian RAD52 functions in break-induced replication repair of collapsed DNA replication forks*  
Sotirios K. Sotiriou, University of Geneva, Geneva, Switzerland

9:30 a.m.-9:45 a.m.  
Unrepaired DNA damage in mother cells leads to quiescence of daughter cells*  
Mansi Arora, University of Colorado, Boulder, CO

9:45 a.m.-10:00 a.m.  
Identification, validation, and targeting of the mutant p53-PARP-MCM chromatin axis in triple negative breast cancer*  
Jill Bargonetti, City University of New York at Hunter College and The Graduate Center, New York, NY

10:00 a.m.-10:30 a.m.  
Break  
Grand Salon Foyer

10:30 a.m.-12:30 p.m.  
Plenary Session 5: Exploiting Repair Defects in the Tumor Microenvironment  
Grand Salon Opera  
Session Chairperson: Thomas U. Helleday, Karolinska Institute, Stockholm, Sweden

10:30 a.m.-10:55 a.m.  
DNA repair, hypoxia, and prostate cancer: Progression in BRCA carriers and non-carriers  
Robert G. Bristow, University Health Network Princess Margaret Hospital, Toronto, ON, Canada

10:55 a.m.-11:20 a.m.  
Hypoxia-induced replication stress: Causes and consequences  
Ester M. Hammond, University of Oxford, Oxford, United Kingdom

11:20 a.m.-11:35 a.m.  
SIRT2 directs DNA-PKcs in the DNA damage response*  
Pamela Sara E. Head, Emory University, Atlanta, GA

11:35 a.m.-11:50 a.m.  
Cas9/RNA-based forward genetic screenings in mouse embryonic stem cells uncovered the role of genes mediating resistance to ATR inhibitors*  
Sergio Ruiz, Spanish National Cancer Research Center (CNIO), Madrid, Spain

11:50 a.m.-12:05 p.m.  
Normal and neoplastic tissues with partial Hus1 impairment show hypersensitivity to cisplatin in vivo*  
Kelly R. Hume, Cornell University, Ithaca, NY

12:30 p.m.-3:00 p.m.  
Poster Session B and Lunch  
Soprano

*Short talks from proffered abstracts

DNA REPAIR: TUMOR DEVELOPMENT AND THERAPEUTIC RESPONSE
3:00 p.m.-5:00 p.m. **Plenary Session 6: DNA Damage Signaling**  
Grand Salon Opera  

*Session Chairperson: Ester M. Hammond, University of Oxford, Oxford, United Kingdom*  

3:00 p.m.-3:25 p.m. Non-canonical aspects of ATM and p53 signaling pathways  
Michael B. Kastan, Duke Cancer Institute, Chapel Hill, NC  

3:25 p.m.-3:50 p.m. Genetic analysis of chromosome break in metabolism in eukaryotic cells  
John H.J. Petrini, Memorial Sloan Kettering Cancer Center, New York, NY  

3:50 p.m.-4:15 p.m. PARP trapping and Schlafen 11  
Yves G. Pommier, National Cancer Institute’s Center for Cancer Research, Bethesda, MD  

4:15 p.m.-4:40 p.m. Phosphorylation of BRCA1 by CHK2 mediates resection activity and recruitment of BRCA2  
Simon N. Powell, Memorial Sloan Kettering Cancer Center, New York, NY  

4:40 p.m.-4:55 p.m. The transcriptional repressor Slug promotes the DNA damage response*  
Wenhui Zhou, Tufts University School of Medicine, Boston, MA  

5:00 p.m.-5:30 p.m. **Panel Discussion: Targeting checkpoints and DNA repair defects in the clinic**  
This panel will discuss strategies to maintain the therapeutic ratio using inhibitors of ATR, ATM, DNA-PKcs, and other targets. The potential role of somatic mutations and the tumor microenvironment in fine-tuning these strategies will also be discussed.  
Grand Salon Opera  

5:30 p.m.- Evening on Own  

**Saturday, November 5**  

7:00 a.m.-8:00 a.m. **Continental Breakfast**  
Grand Salon Foyer  

8:00 a.m. -10:00 a.m. **Plenary Session 7: Therapies Targeting Cell Cycle Checkpoints**  
Grand Salon Opera  

*Session Chairperson: Alan D. D’Andrea, Dana-Farber Cancer Institute, Boston, MA*  

8:00 a.m.-8:25 a.m. Targeting Wee1 kinase to potentiate chemoradiation in the treatment of pancreatic cancer  
Theodore S. Lawrence, University of Michigan, Ann Arbor, MI  

8:25 a.m.-8:50 a.m. The role of ATM in tumor and endothelial cells mediating the response of cancer to radiation therapy  
David G. Kirsch, Duke University Medical Center, Durham, NC  

*Short talks from proffered abstracts*
8:50 a.m.-9:15 a.m. Using PARP inhibitors to target ATM-deficient cancers
Susan P. Lees-Miller, University of Calgary, Calgary, AB, Canada

9:15 a.m.-9:40 a.m. Targeting Chk1
Alan R. Eastman, Geisel School of Medicine at Dartmouth, Lebanon, NH

9:40 a.m.-9:55 a.m. Somatic ERCC2 mutations, nucleotide excision repair (NER) function, and cisplatin response in muscle-invasive bladder cancer (MIBC)*
Kent Mouw, Dana-Farber Cancer Institute, Boston, MA

10:00 a.m.-10:15 a.m. Break
Grand Salon Foyer

10:15 a.m. -12:15 p.m. Plenary Session 8: Novel Approaches to Targeting DNA Repair
Grand Salon Opera

Session Chairperson: Susan P. Lees-Miller, University of Calgary, Calgary, AB, Canada

10:15 a.m.-10:40 a.m. Novel mechanisms of PARP-inhibitor resistance in tumors with defects in the Fanconi Anemia/BRCA pathway
Alan D. D’Andrea, Dana-Farber Cancer Institute, Boston, MA

10:40 a.m.-11:05 a.m. Dual functions of PARP1 in prostate cancer: mechanisms and implications for therapeutic intervention
Karen E. Knudsen, Thomas Jefferson University, Sidney Kimmel Cancer Center, Philadelphia, PA

11:05 a.m.-11:30 a.m. Exploiting the inhibition of cullin-RING-ligases in DSB repair as a therapeutic strategy
Meredith A. Morgan, University of Michigan, Ann Arbor, MI

11:30 a.m.-11:45 a.m. Targeting DNA double-strand break repair to potentiate radio- and chemo-therapy of glioblastoma*
Sandeep Burma, University of Texas Southwestern Medical Center, Dallas, TX

11:45 a.m.-12:00 p.m. A 53BP1 integrates DNA repair and p53-dependent cell fate decisions via distinct mechanisms*
J. Ross Chapman, University of Oxford, Oxford, United Kingdom

12:00 p.m.-12:15 p.m. DEK is critical for homologous recombination and its loss is synthetic lethal with DNA-PK inhibition*
Eric A. Smith, Cincinnati Children’s Hospital Medical Center, Cincinnati, OH

12:15 p.m. Departure

*Short talks from proffered abstracts