



NCI Symposium on

MUTATION SIGNATURES AND CANCER

December 2–3, 2021

All times are Eastern Standard

December 2

Opening session

- 10:00 – 10:05 Welcome and logistics
Ron Johnson, Ph.D., Division of Cancer Biology, NCI
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- 10:05 – 10:25 Co-chair introduction
Ludmil Alexandrov, Ph.D., Department of Cellular and Molecular Medicine, UCSD
Maria Teresa Landi, M.D., Ph.D., Division of Cancer Epidemiology and Genetics, NCI
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- 10:25 – 11:05 Keynote lecture
Somatic mutations in ageing and disease
Peter Campbell, Ph.D., Wellcome Trust Sanger Institute

Normal and cancer tissues

Rihab Yassin, Ph.D., Division of Cancer Biology, NCI)

- 11:05 – 11:30 *Environment, selection and signatures in squamous epithelia*
Phil Jones, M.D., Ph.D., MRC Cancer Unit, University of Cambridge
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- 11:30 – 11:55 *Genomic profiling of acral melanoma in Mexican patients*
C. Daniela Robles-Espinoza, Ph.D., International Laboratory for Human Genome Research,
National Autonomous University of Mexico
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- 11:55 – 12:20 *Landscape of mutational signatures in lung cancer*
Maria Teresa Landi, M.D., Ph.D., Division of Cancer Epidemiology and Genetics, NCI
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- 12:20 – 12:45 *Mismatch Repair and Polymerase Proofreading Deficiencies in Tumor and Normal Cells*
Gad Getz, Ph.D., Broad Institute
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- 12:45 – 1:05 Panel discussion
Moderated by Nuria Lopez-Bigas, Ph.D., IRB Barcelona

1:05 – 1:30 **Meal break**

1:30 – 2:30 **Poster session**

Day 1 continued

Analytical approaches

Dave Miller, Division of Cancer Biology, Ph.D., NCI

2:30 – 2:55 *Mutational signatures as tools to study interactions between environment, cellular processes, and diseases*

Teresa Przytycka, Ph.D., Computational Biology Branch, NCBI

2:55 – 3:20 *Mutational Processes and Cancer Evolution*

David Wedge, Ph.D., Division of Cancer Sciences, University of Manchester

3:20 – 3:45 *Algorithms in mutational signature analysis: SigMA and MuSiCal*

Peter Park, Ph.D., Department of Biomedical Informatics, Harvard University

3:45 – 3:10 *Opportunities and challenges with Bayesian modeling for mutational signature inference*

Joshua Campbell, Ph.D., Division of Computational Biomedicine, Boston University

4:10 – 4:30 Panel discussion

Moderated by Bin Zhu, Ph.D., Division of Cancer Epidemiology and Genetics, NCI

4:30

Closing remarks- Ludmil Alexandrov, Ph.D., and Maria Teresa Landi, M.D., Ph.D.,

End of day 1

December 3

10:00 – 10:10 **NCI remarks**

Ned Sharpless, M.D., Director, NCI

Exogenous and endogenous processes

Jerry Li, M.D., Ph.D., Division of Cancer Biology, NCI

10:10 – 10:35 *Two signatures: one important for public health, one important for DNA damage and repair,*

Steven Rozen, Ph.D., Programme in Cancer and Stem Cell Biology, Duke-NUS

10:35 – 11:00 *The impact of carcinogens, obesity, and chronic inflammatory processes on mutational signatures and cancer risk in mouse tumor models*

Allan Balmain, Ph.D., Helen Diller Family Comprehensive Cancer Center, UCSF

11:00 – 11:25 *Mutational insights from systematic studies in human stem cell model systems*

Serena Nik-Zainal, M.D., Ph.D., MRC Cancer Unit, University of Cambridge

11:25 – 11:50 *Insights from inflicting "pure" APOBEC3 mutation signatures in human cells*

Reuben Harris, Ph.D., Center for Mutation Research, University of Minnesota

11:50 – 12:10 Panel discussion

Moderated by Dmitry Gordenin, Ph.D., Genome Integrity & Structural Biology Lab, NIEHS

Day 2 continued

12:10 – 12:30 **Break**

Translational aspects

Laura Hunter, Ph.D., Division of Cancer Treatment and Diagnosis, NCI

12:30 – 12:55 *Mutational signatures in translation: Integrating germline and somatic genetics to explore cancer susceptibility, etiology and outcomes*
Ludmila Prokunina-Olsson, Ph.D., Division of Cancer Epidemiology and Genetics, NCI

12:55 – 1:20 *Mutational footprints of cancer therapies*
Nuria Lopez-Bigas, Ph.D., Institute for Research in Biomedicine, Barcelona

1:20 – 1:45 *Interactions between common immune variants and the tumor genome influence immunotherapy outcomes*
Hannah Carter, Ph.D., Division of Medical Genetics, UCSD

1:45 – 2:10 *Clinically relevant mutational signatures in childhood cancer*
Adam Shlien, Ph.D., Department of Laboratory Medicine and Pathobiology, University of Toronto

2:10 – 2:30 Panel discussion
Moderated by Reuben Harris, Ph.D., University of Minnesota

2:30 – 3:00 **Break**

Future directions

Ludmil Alexandrov, Ph.D. and Maria Teresa Landi, M.D., Ph.D., moderators

3:00 – 3:30 Panel discussion

3:30 – 3:35 Closing remarks

3:35 **End of day 2**