



Precision Genome Editing with Programmable Nucleases

January 28–February 1, 2018 | Keystone Resort | Keystone, Colorado | USA

Scientific Organizers:

Jin-Soo Kim, Seoul National University, South Korea

Feng Zhang, Broad Institute of MIT and Harvard University, USA

Daniel F. Voytas, University of Minnesota, USA

Genome editing refers to the use of programmable DNA-targeting platforms to manipulate genetic and epigenetic information in living cells and organisms. Genome editing has been recently democratized by the development of RNA-guided endonucleases repurposed from CRISPR-Cas microbial defense systems against viruses or plasmids. Whereas novel tools such as Cpf1 and RNA-guided deaminases are being developed to expand the scope of genome editing, old tools such as ZFNs and TALENs are likely to undergo innovations as well. These tools enable genome-wide genetic screens in cell lines and genetic studies in both model and non-model organisms. Furthermore, genome editing holds great promise for broad applications in medicine and biotechnology, raising public interest and concerns. Yet genome editing is still limited by many factors such as inefficient delivery in vivo, off-target effects, and unwanted, alternative DNA repair. This conference offers opportunities to learn about new developments, advancements and applications in this fast-moving field.

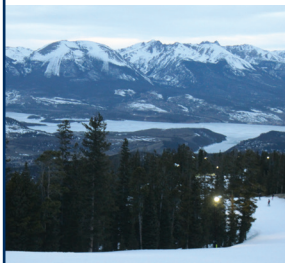
Session Topics:

- DNA Repair and Genome Editing
- Genome Editing Methods and Novel Tools I & II
- Epigenome Editing and Gene Regulation
- Genetic Screening via CRISPR
- Therapeutic Genome Editing
- Plant and Animal Biotechnology
- Human Germline Editing and ELSI

Scholarship Application & Discounted Abstract Deadline: October 3, 2017

Abstract Deadline: November 1, 2017

Discounted Registration Deadline: December 5, 2017



Note: Scholarships are available for graduate students and postdoctoral fellows and are awarded based on the abstract submitted. Submitting an abstract is an excellent opportunity to gain exposure for your work. Abstracts submitted by the abstract deadline will also be considered for short talks on the program.

Meeting Hashtag: #KSgenome
www.keystonesymposia.org/18B1

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on Molecular and Cellular Biology

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Sponsored by AstraZeneca, Editas Medicine, Regeneron Pharmaceuticals, Inc. and Sangamo Therapeutics, Inc.

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SUNDAY, JANUARY 28

Arrival and Registration

MONDAY, JANUARY 29

Welcome and Keynote Address

Jennifer A. Doudna, HHMI/University of California, Berkeley, USA
CRISPR Systems: Nature's Toolkit for Genome Editing

DNA Repair and Genome Editing

Speaker to be Announced

Maria Jasin, Memorial Sloan Kettering Cancer Center, USA
Talk Title to be Announced

Eric A. Hendrickson, University of Minnesota Medical School, USA
The Mechanisms of Precise Genome Editing using Oligonucleotide Donors

Eugene V. Koonin, National Institutes of Health, USA
CRISPRICITY: A Metric for Measuring CRISPR Association and a Comprehensive Census of Cas Proteins

Genome Editing Methods and Novel Tools I

Feng Zhang, Broad Institute of MIT and Harvard University, USA
Expanding the Genome Editing Toolbox by Harnessing Microbial Diversity

David R. Liu, Harvard University, USA
Base Editing: Chemistry on a Target Nucleotide in the Genome of Living Cells

J. Keith Joung, Massachusetts General Hospital, USA
Defining, Optimizing, and Modifying the Activities and Specificities of Genome-Editing Nucleases

Short Talk Chosen from Abstracts

Poster Session 1

TUESDAY, JANUARY 30

Genome Editing Methods and Novel Tools II

Scot A. Wolfe, University of Massachusetts Medical School, USA
Orthogonal Cas9-Cas9 Fusions Provide a Versatile Platform for Precise Genome Editing

Jin-Soo Kim, Institute for Basic Science, South Korea
Genome-Wide Target Specificities of CRISPR Nucleases and Deaminases

Jacob E. Corn, University of California, Berkeley, USA
Molecular mechanisms of genome editing

Keiji Nishida, Kobe University, Japan
Genome Editing with Non-Nuclease Editors from Bacteria to Plants

Short Talk(s) Chosen from Abstracts

Epigenome Editing and Gene Regulation

Charles Gersbach, Duke University, USA
Epigenome Editing for Gene Therapy, Cell Programming, and Functional Epigenomics

Lei (Stanley) Qi, Stanford University, USA
Expanding the CRISPR-dCas9 Platform with Sensors and Actuators

Jennifer Mitchell, University of Toronto, Canada
Uncovering Distal Regulatory Element Function Using CRISPR Genome Engineering

Short Talk Chosen from Abstracts

Poster Session 2

WEDNESDAY, JANUARY 31

Genetic Screening via CRISPR

Speaker to be Announced

Reuven Agami, Netherlands Cancer Institute, Netherlands
Functional Genetic Screens of Regulatory DNA Elements

Neville Sanjana, New York Genome Center & NYU, USA
New Frontiers for Pooled Screens: Finding Regulatory Elements in the Noncoding Genome and Capturing Multi-Cell Interactions

Danwei Huangfu, Memorial Sloan-Kettering Cancer Institute, USA
Human Development and Disease through the Lens of Pluripotent Stem Cells

Short Talk(s) Chosen from Abstracts

Therapeutic Genome Editing

Edward J. Rebar, Sangamo Therapeutics, Inc., USA
Therapeutic Gene Editing and Regulation Using Designed Zinc Finger Proteins

Amy J. Wagers, Harvard University, USA
In vivo Gene Editing in Muscle and Muscle Stem Cells

Charles F. Albright, Editas Medicine, USA
Development of a Subretinally-Delivered, CEP290-Specific CRISPR Medicine for the Treatment of Leber Congenital Amaurosis 10 (LCA10)

Short Talk Chosen from Abstracts

Poster Session 3

THURSDAY, FEBRUARY 1

Plant and Animal Biotechnology

Dan Carlson, Recombinetics, Inc., USA
Large Animal Genome Editing for Agriculture and Biomedicine

Caixia Gao, Chinese Academy of Sciences, China
Genome Editing with Programmable Nucleases in Crop Plants

Daniel F. Voytas, University of Minnesota, USA
Editing the Plant Genome

Weizhi Ji, Kunming University of Science and Technology, China
Primate Gene Editing and Human Complex Disease Study

Short Talk(s) Chosen from Abstracts

Human Germline Editing and ELSI

Kathy K. Niakan, Francis Crick Institute, UK
Genome Editing Reveals a role for OCT4 in Human Embryogenesis

Shoukrat Mitalipov, Oregon Health & Science University, USA
Human Germline Gene Correction

Tetsuya Ishii, Hokkaido University, Japan
The Potential Guidelines for Germline Genome Editing in Clinics

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

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FRIDAY, FEBRUARY 2

Departure