The California Institute for Quantitative Biosciences (QB3) is a three-campus partnership established in 2000 with the University of California campuses at Berkeley, San Francisco, and Santa Cruz and industry and venture partners. At Berkeley, QB3 stimulates discovery at the intersection of the physical and biological sciences by promoting multidisciplinary research in world-class facilities, creating innovative educational programs, and fostering industry partnerships.

The Innovative Genomics Initiative (IGI) is dedicated to the enhancement and proliferation of genome editing research and technology in both the academic and commercial research communities. Established in 2014 at the Li Ka Shing Center for Genomic Engineering at the University of California, Berkeley, IGI is committed to advancing our understanding of the ways in which genomic information is harnessed to produce complex phenotypes, and our overarching long-term goal is to bring about fundamental change in biological and biomedical research by enabling scientists to read and write in genomes with equal ease.

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3rd ANNUAL Re-writing Genomes: A New Era in Genome Engineering

A one-day symposium hosted by the California Institute for Quantitative Biosciences at Berkeley and the Innovative Genomics Initiative

245 Li Ka Shing Center for Biomedical and Health Sciences
University of California, Berkeley

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3rd ANNUAL
Re-writing Genomes:
A New Era in Genome Engineering

Organized by Dirk Hockemeyer, Assistant Professor, Molecular and Cell Biology, UC Berkeley, and Jennifer Doudna, Professor, Molecular and Cell Biology, UC Berkeley, HHMI

8:30-9:00 Welcome/Introductions

SESSION 1: MOLECULAR MECHANISMS

9:00-9:30 Jennifer Doudna, Session Chair, Professor, UC Berkeley, HHMI, Genome Surveillance by CRISPR-Cas9

9:30-9:50 Eric A. Hendrickson, Professor, University of Minnesota, Two Mechanisms for Nick-induced Gene Targeting

9:50-10:10 Shengdar Tsai, Postdoctoral Researcher, Massachusetts General Hospital, Harvard Medical School, Genome-wide Specificities of Wild-type and Engineered CRISPR-Cas9 Nucleases Defined by GUIDE-seq

10:10-10:30 Pedro A. Mateos-Gomez, Postdoctoral Researcher, New York University Medical Center, Mammalian Polymerase Theta Promotes Alternative-NHEJ and Suppresses Recombination

10:30-11:00 Break (refreshments & posters in the lobby)

SESSION 2: THE CAS9 REVOLUTION

11:00-11:30 Emmanuelle Charpentier, Session Chair, Professor, Max Planck Institute for Infection Biology, Helmholtz Centre for Infection Research, Umeå University, CRISPR-Cas9: Biology, Mechanisms and Evolution

11:30-11:50 Luciano A. Marraffini, Assistant Professor, The Rockefeller University, Cas9 Specifies Functional Viral Targets During CRISPR-Cas Immunization

11:50-12:10 Raj Chari, Postdoctoral Researcher, Harvard Medical School, Elucidating CRISPR/Cas9 Genome Engineering Parameters in Human Cells Using a Library-on-Library Approach

12:10-1:45 Lunch Break (posters in the lobby & lunch outside for registered attendees)

1:45-2:00 Afternoon Introduction

SESSION 3: GENOME EDITING IN STEM CELLS

2:00-2:30 Rudolf Jaenisch, Session Chair, Professor, Whitehead Institute for Biomedical Research, MIT, Gene Editing of Human Stem Cells and the Study of Complex Human Diseases

2:30-2:50 Danwei Huangfu, Assistant Professor, Memorial Sloan Kettering Cancer Center, Explore Complex Human Genetics Through Genome Editing in Pluripotent Stem Cells

2:50-3:10 Kunitoshi Chiba, Graduate Student, UC Berkeley, Cancer-associated TERT Promoter Mutations Abrogate Telomerase Silencing

3:10-3:30 Brock Roberts, Graduate Student, UC Berkeley, Editing the Hedgehog Pathway in Stem Cells Reveals New Mechanisms for Patched in Smoothened Regulation

3:30-4:00 Break (refreshments & posters in the lobby)

SESSION 4: CRISPR/CAS9 EXPLORATIONS

4:00-4:30 Eric Lander, Session Chair, Director, Broad Institute, Systematic Screening for Essential Genes

4:30-4:50 Max Horlbeck, Graduate Student, UCSF, HHMI, Genome-scale Control of Gene Repression and Activation

4:50-5:10 Ophir Shalem, Postdoctoral Fellow, Broad Institute, UC Berkeley, Genome-scale Knockout Screening with Cas9 Nuclease: Technology Development and Applications for Mapping Proteostasis Networks

5:10-5:30 Michael C. Holmes, Vice President, Research, Sangamo BioSciences, Inc., Genome Editing in Primary Human Cells and Organs: Towards the Goal of Engineering Genetic Cures

5:30-5:45 Closing Remarks