KEYSTONE SYMPOSIA
on Molecular and Cellular Biology

Emerging Cellular Therapies: Cancer and Beyond (Q1)

Scientific Organizers: Crystal L. Mackall, Marina Cavazzana and Stanley R. Riddell

Supported by the Directors' Fund

Engineering the Genome (Q2)

Scientific Organizers: Vic Myer and Erik Sontheimer

February 8-12, 2020 • Fairmont Banff Springs • Banff, Alberta, Canada

Supported by the Directors' Fund

Abstract & Scholarship Deadline: October 8, 2019 / Abstract Deadline: November 6, 2019 / Discounted Registration Deadline: December 10, 2019

SATURDAY, FEBRUARY 8

Arrival and Registration

SUNDAY, FEBRUARY 9

Welcome and Keynote Session (Joint)

Carl H. June, University of Pennsylvania, USA
Updates with Engineered T Cells

Jennifer A. Doudna, HHMI/University of California, Berkeley, USA
Biology and Mechanisms of Genome Editing Enzymes

Genetically Engineered T Cell Therapies for Cancer: Results from the Clinic (Q1)

Stanley R. Riddell, Fred Hutchinson Cancer Research Center, University of Washington, USA
CAR T Cells for Solid Tumors

Christine E. Brown, Beckman Research Institute, City of Hope, USA
CAR T Cells for Brain Tumors

Kristen Hege, Celgene, USA
CAR T Cells for Multiple Myeloma

Short Talk(s) Chosen from Abstracts

Biochemistry, Biophysics and New Enzymes (Q2)

Kira S. Makarova, National Center for Biotechnology Information, USA
In silico Discovery of New Defense Systems

Ilya J. Finkelstein, University of Texas at Austin, USA
Massively-Parallel Profiling of Natural and Engineered High-Fidelity CRISPR Nucleases

Yanli Wang, Chinese Academy of Sciences, China
Structure Function of CRISPR Enzymes

Short Talk(s) Chosen from Abstracts

Workshop 1: Platforms for Immune Cell Engineering (Q1)

Short Talks Chosen from Abstracts

Workshop 1: Ethics of Genome Editing (Q2)

Short Talks Chosen from Abstracts

Engineered Hematopoietic Stem Cells for Treatment of Genetic Diseases (Q1)

Philippe Leboulch, University of Paris-Sud and Harvard University, France
Gene Therapy for Hemoglobinopathies: Challenges to Solve

Marina Cavazzana, Paris Descartes University, France
Gene therapy for Immunodeficiencies

Alessandra Biffi, Dana-Farber Cancer Institute, Boston Children's Hospital, USA
Engineered HSCs for Correction of CNS Disorders

Short Talk(s) Chosen from Abstracts

In Vivo Genome Editing (Q2)

James M. Wilson, University of Pennsylvania, USA
In vivo Editing to Primate Liver

Edward J. Rebar, Sangamo Therapeutics, Inc., USA
Update on Genome Editing in the Liver

David V. Schaffer, University of California, Berkeley, USA
Development of Novel AAV Capsids for in vivo Delivery of Gene Editing Therapies

Short Talk(s) Chosen from Abstracts

Poster Session 1

MONDAY, FEBRUARY 10

Next Generation Immune Cell Engineering (Q1)

Crystal L. Mackall, Stanford University, USA
Engineering Enhanced Potency T Cells

Chiara Bonini, Vita Salute San Raffaele University, Italy
Crispr based Editing of Engineered TCR Therapeutics

Christopher A. Klebanoff, Memorial Sloan Kettering Cancer Center, USA
Targeting Solid Malignancies with "Public" Neoantigen TCRs

Aude G. Chapuis, Fred Hutchinson Cancer Research Center, USA
Enhancing the Efficacy of eTCR Therapies for Solid Tumors

Short Talk(s) Chosen from Abstracts

Genome Editing as a Biology Discovery Tool (Q2)

Alan Huang, Tango Therapeutics, USA
Novel Combination Therapeutic Approaches Identified by Screening

Kathy K. Niakan, Francis Crick Institute, UK
Towards an Understanding of Human Development Using Gene Ablation

Philipp Junker, Max Delbrück Center for Molecular Medicine, Germany
Massively Parallel Lineage Tracing Using CRISPR

Birgit C. Schultes, IntelliaTherapeutics, USA
Equipping T Cells for Solid Tumor Therapy – Learnings from CRISPR Screens

Short Talk(s) Chosen from Abstracts

Workshop 2: HSC and iPSC Engineering and Therapy (Q1)

Short Talks Chosen from Abstracts

Workshop 2: Bacterial Adaptive Immunity Anti CRISPR (Q2)

Short Talks Chosen from Abstracts

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Cell Therapy for Infection and Autoimmune Diseases (Q1)

Jeffrey A. Bluestone, University of California, San Francisco, USA
Treg Therapy of Autoimmune Disease

Bruce R. Blazar, University of Minnesota, USA
Treg Therapies in the Setting of Allogeneic HSCT

Hans-Peter Kiem, Fred Hutchinson Cancer Research Center, USA
Engineering Resistance to HIV Infection

Megan K. Levings, University of British Columbia, Canada
Treg Based Therapeutics

Short Talk(s) Chosen from Abstracts

Translational Science of Genome Editing: Assessing Specificity, Immunogenicity and Safety (Q2)

J. Keith Joung, Massachusetts General Hospital, USA
Advances in Identifying and Modulating the Specificities of Gene Editing Technologies

Zuben E. Sauna, Food and Drug Administration, USA
Prevalence of Pre-Existing Antibodies and T Cell Responses to CRISPR-associated Nuclease Cas9 in the US Population

Speaker to be Announced

Short Talk(s) Chosen from Abstracts

Poster Session 2

TUESDAY, FEBRUARY 11

Crispr Based Editing of Non Immune Cells (Joint)

Matthew Porteus, Stanford University School of Medicine, USA
Crispr Editing of Human HSCs

Alex Marson, University of California, San Francisco, USA
Viral Free Crispr Based Gene Transfer

Jacob E. Corn, ETH in Zurich, Switzerland
High Efficiency HDR in Difficult Cells

Scot A. Wolfe, University of Massachusetts Medical School, USA
Precise Therapeutic Gene Correction by a Simple Nuclease-Induced Double-Strand Break

Short Talk(s) Chosen from Abstracts

Workshop 3: Regulatory Science (Joint)

Short Talks Chosen from Abstracts

"Off the Shelf" Allogeneic Cell Therapies (Joint)

Daniel Shoemaker, Fate Therapeutics, USA
Next Generation iPSC Derived Cell Therapies for Cancer

Jon Terrett, CRISPR Therapeutics, Switzerland
Development of an Allogeneic T Cell Therapy for Oncology

Sonja Schrepfer, University of California San Francisco, USA
Prevention of Immune Rejection of Allogeneic iPSC-Derived Cell Transplants by Genetic Engineering

Short Talk(s) Chosen from Abstracts

Poster Session 3

WEDNESDAY, FEBRUARY 12

Using Synthetic Biology to Enhance Safety and Efficacy of Cellular Therapeutics (Q1)

Yvonne Y. Chen, University of California, Los Angeles, USA
Synthetic Biology to Engineer More Potent CAR T Cells

Kole T. Roybal, University of California, San Francisco, USA
Engineering Next-Generation Immune Cell Therapies for Solid Tumors

Marius Wernig, Stanford University, USA
IPSC Derived Cells Engineered with CRISPR for Treatment of Epidermolysis Bullosae

Short Talk(s) Chosen from Abstracts

DNA Repair and Genome Editing (Q2)

James E. Haber, Brandeis University, USA
Repair of Broken Chromosomes and Triggering of the DNA Damage Response

Vic E. Myer, Editas Medicine, USA
DNA Repair and Genomic Stability in Primary Human Cells

Albert B. Seymour, , USA
AAVHSC-Mediated Genome Editing through Homologous Recombination: Applications in Liver-Mediated Diseases

Gaelle Legube, Center for Integrative Biology, France
Chromatin and Chromosome Dynamics at DNA Double Strand Break

Short Talk(s) Chosen from Abstracts

Non-T Immune Cell Therapies (Q1)

Katy Rezvani, University of Texas MD Anderson Cancer Center, USA
NK-CAR T Cells

Jeffrey S. Miller, University of Minnesota, USA
Novel Strategies to Activate and Target NK Cells as Off-The-Shelf Therapy to Treat Cancer

Leonid Metelitsa†, Baylor College of Medicine, USA
Talk Title to be Announced

Short Talk Chosen from Abstracts

New Genome Editing Tools (Q2)

David R. Liu, Broad Institute, HHMI, and Harvard University, USA
Evolution of Base Editing

Erik Sontheimer, University of Massachusetts Medical School, USA
Cas9 Editing Platforms

Yan Zhang, University of Michigan, USA
Long-Range Genome Engineering in Human Embryonic Stem Cells with CRISPR-Cas3

Short Talk Chosen from Abstracts

Meeting Wrap-Up: Outcomes and Future Directions (Organizers) (Q1)

Meeting Wrap-Up: Outcomes and Future Directions (Organizers) (Q2)

THURSDAY, FEBRUARY 13

Departure