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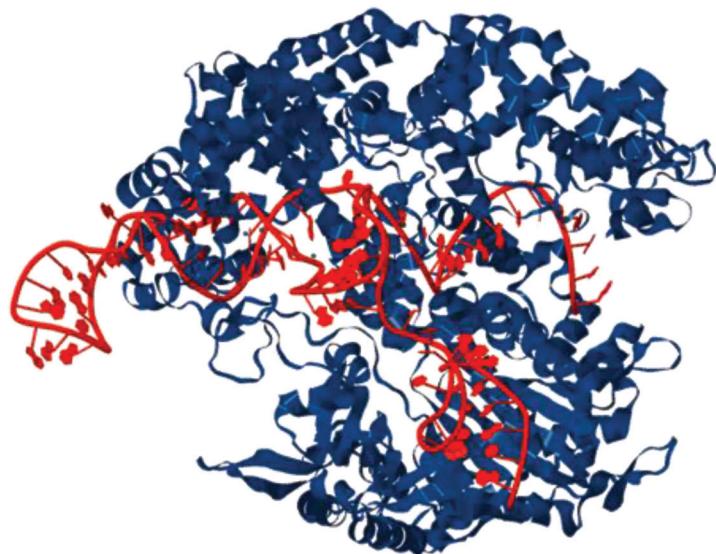
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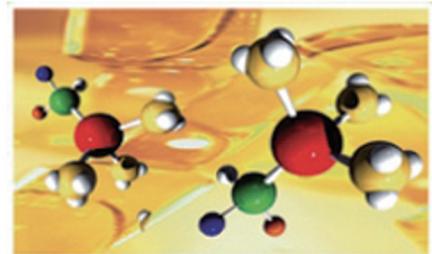
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CRISPR

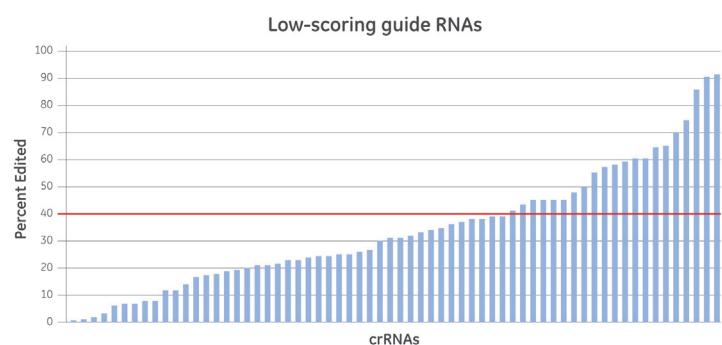
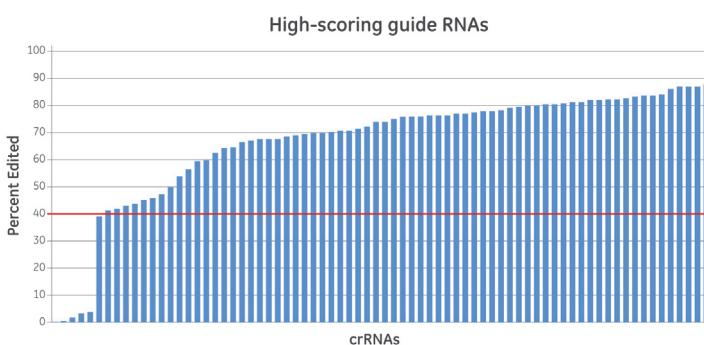


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HEK293T-CAG-Cas9 cells were transfected with either high-scoring or low-scoring crRNAs (50 nM crRNA:tracrRNA) using DharmaFECT 1 transfection reagent (0.25 µL/well) in 96-well format. Gene editing efficiencies were determined using next-generation sequencing. 93% of the top 10 high-scoring crRNAs targeting ten different genes have > 40% indel formation and only 33% of the 10 lowest scoring designs have > 40% indel formation.



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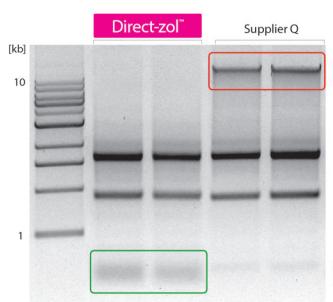


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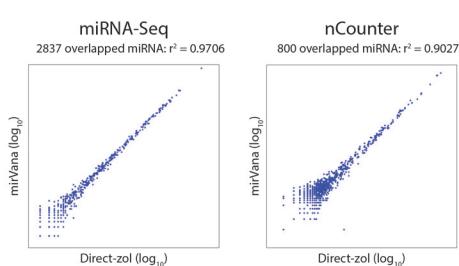
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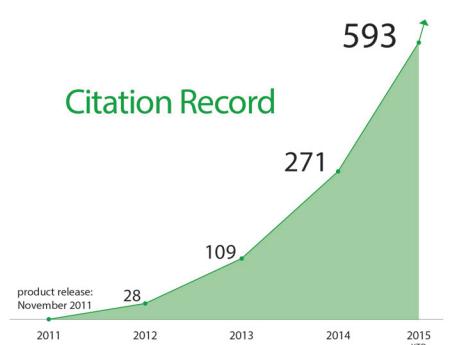
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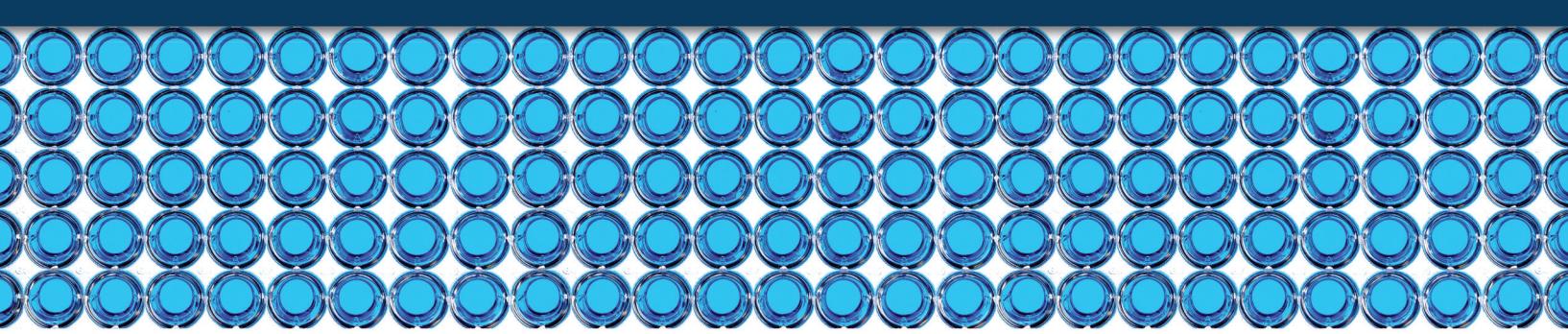


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MOVING LIQUIDS with SOUND



Extraordinary variation of floral organs in *Phalaenopsis* orchid is due to differential expression of multiple genes in sepal, petal, and labellum.¹

¹ Hsiao, Y. et al. *Gene*. 518, 91-100 (2013).

Differential gene expression creates beauty

Differential gene expression plays a significant role in development of many species including orchids.

Phalaenopsis orchids are important species for development and evolutionary studies. Moreover, they are well recognized for their exceptional beauty. The flowers have several organs (i.e. sepal, petal, and labellum), which are significantly different, however together compose conspicuous and harmonious look (view photo). The unique shape of these flower organs is a result of differential expression of multiple genes involved in their development.

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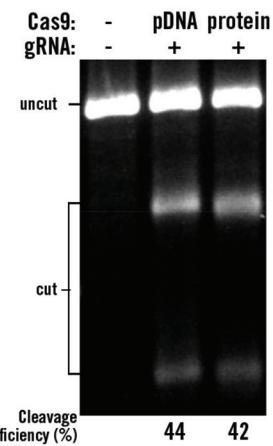


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and RNP Delivery
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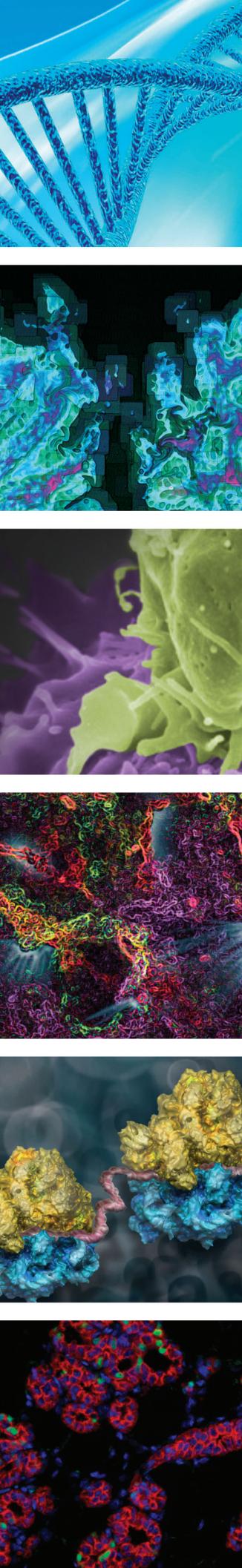
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October 20-23, 2016 • Boston, MA*

Translational Control of Cancer: A New Frontier in Cancer Biology and Therapy

*Conference Co-Chairpersons: Jennifer A. Doudna, Frank McCormick, Davide Ruggero, and Nahum Sonenberg
October 27-30, 2016 • San Francisco, CA*

DNA Repair: Tumor Development and Therapeutic Response

*Conference Co-Chairpersons: Robert G. Bristow, Maria Jasin, and Theodore S. Lawrence
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New Horizons in Cancer Research: Delivering Cures Through Cancer Science

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EORTC-NCI-AACR Molecular Targets and Cancer Therapeutics Symposium

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November 29-December 2, 2016 • Munich, Germany*

San Antonio Breast Cancer Symposium

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Scientific Organizers: Alan Saghatelian, Chuan He and Ileana M. Cristea

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Epigenetics and Human Disease: Progress from Mechanisms to Therapeutics

Scientific Organizers: Johnathan R. Whetstine, Jessica K. Tyler and Rabinder K. Prinjha

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joint with Protein-RNA Interactions: Scale, Mechanisms, Structure and Function of Coding and Noncoding RNPs

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Scientific Organizers: Thomas Thum and Roger J. Hajjar

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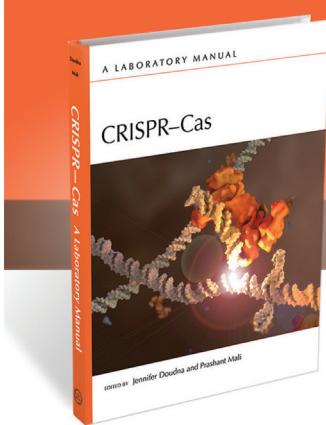
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Submit an abstract to participate fully in the conference via a poster presentation and possible selection for a short talk. Scholarships are available for graduate students and postdoctoral fellows. For full program, speaker, abstract and scholarship details, visit www.keystonesymposia.org/genetics

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CRISPR-Cas

A Laboratory Manual



The essential guide to CRISPR-Cas

Edited by Jennifer Doudna, *University of California, Berkeley*;
Prashant Mali, *University of California, San Diego*

The development of CRISPR-Cas technology is revolutionizing biology. Based on machinery bacteria use to target foreign nucleic acids, these powerful techniques allow investigators to edit nucleic acids and modulate gene expression more rapidly and accurately than ever before.

Featuring contributions from leading figures in the CRISPR-Cas field, this laboratory manual presents a state-of-the-art guide to the technology. It includes step-by-step protocols for applying CRISPR-Cas-based techniques in various systems, including yeast, zebrafish, *Drosophila*, mice, and cultured cells (e.g., human pluripotent stem cells). The contributors cover web-based tools and approaches for designing guide RNAs that precisely target genes of interest, methods for preparing and delivering CRISPR-Cas reagents into cells, and ways to screen for cells that harbor the desired genetic changes. Strategies for optimizing CRISPR-Cas in each system—especially for minimizing off-target effects—are also provided.

Authors also describe other applications of the CRISPR-Cas system, including its use for regulating genome activation and repression, and discuss the development of next-generation CRISPR-Cas tools. The book is thus an essential laboratory resource for all cell, molecular, and developmental biologists, as well as biochemists, geneticists, and all who seek to expand their biotechnology toolkits.

2016, 192 pages, illustrated (20 color, 4 B&W), index

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Decoding the Language of Genetics

By David Botstein, Lewis-Sigler Institute for Integrative Genomics

In this book, the distinguished geneticist David Botstein offers help and advice to scientists and physicians daunted by the arcane technical terms that flourish in his discipline. The science of gene function has a vocabulary of specialized, sometimes confusing terms to explain how traits and diseases are inherited, how genes are organized and regulated in the genome, and how the genetic code is read and translated by cells. These terms are often a barrier to full understanding of the underlying concepts. Yet, as more and more individuals learn about their genomes, the information these sequences contain cannot be understood or explained without reference to the basic ideas of genetics. Botstein draws on his long experience as a teacher and pioneering scientist to explain and illuminate what many genetic terms mean and how they entered common usage.

2015, 240 pages, illustrated (30 4C, 10 B&W), index

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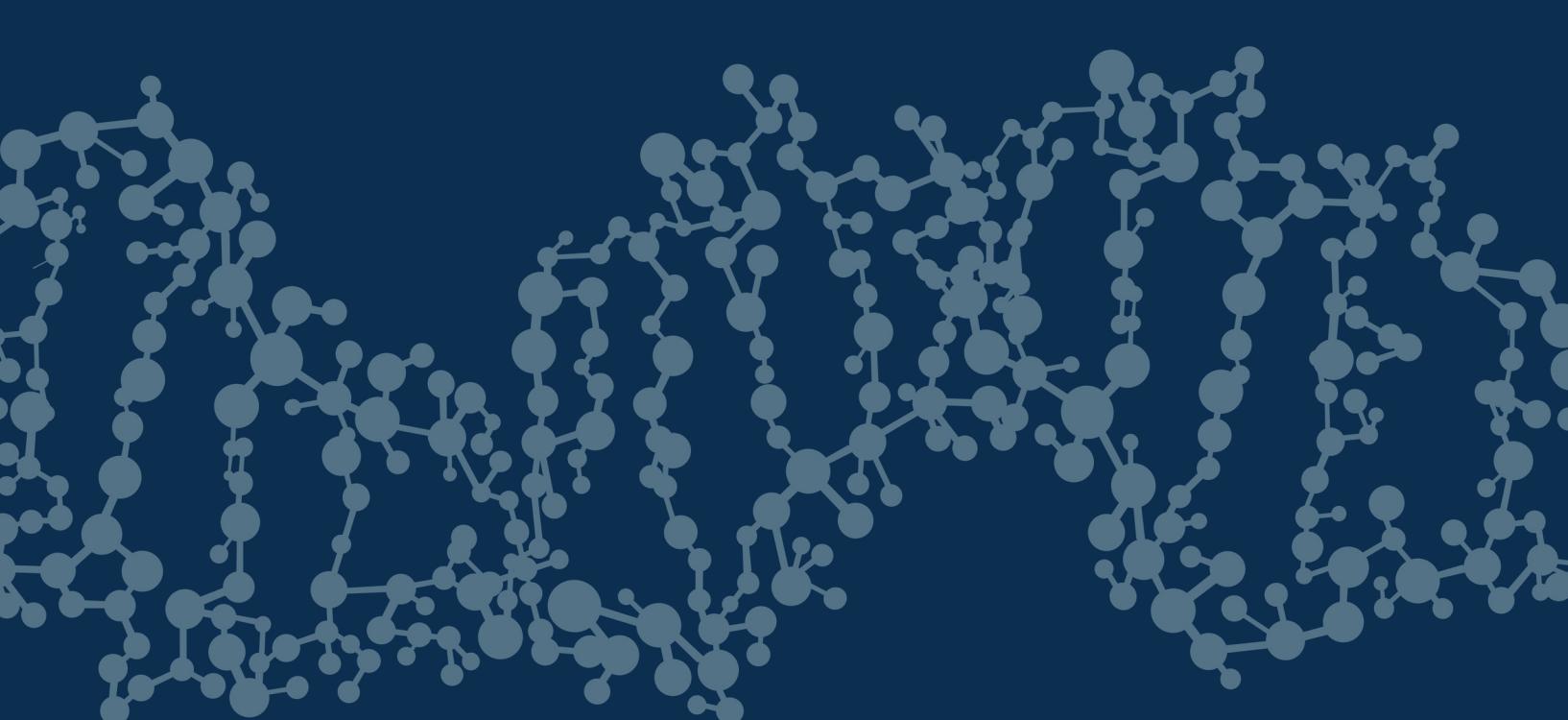
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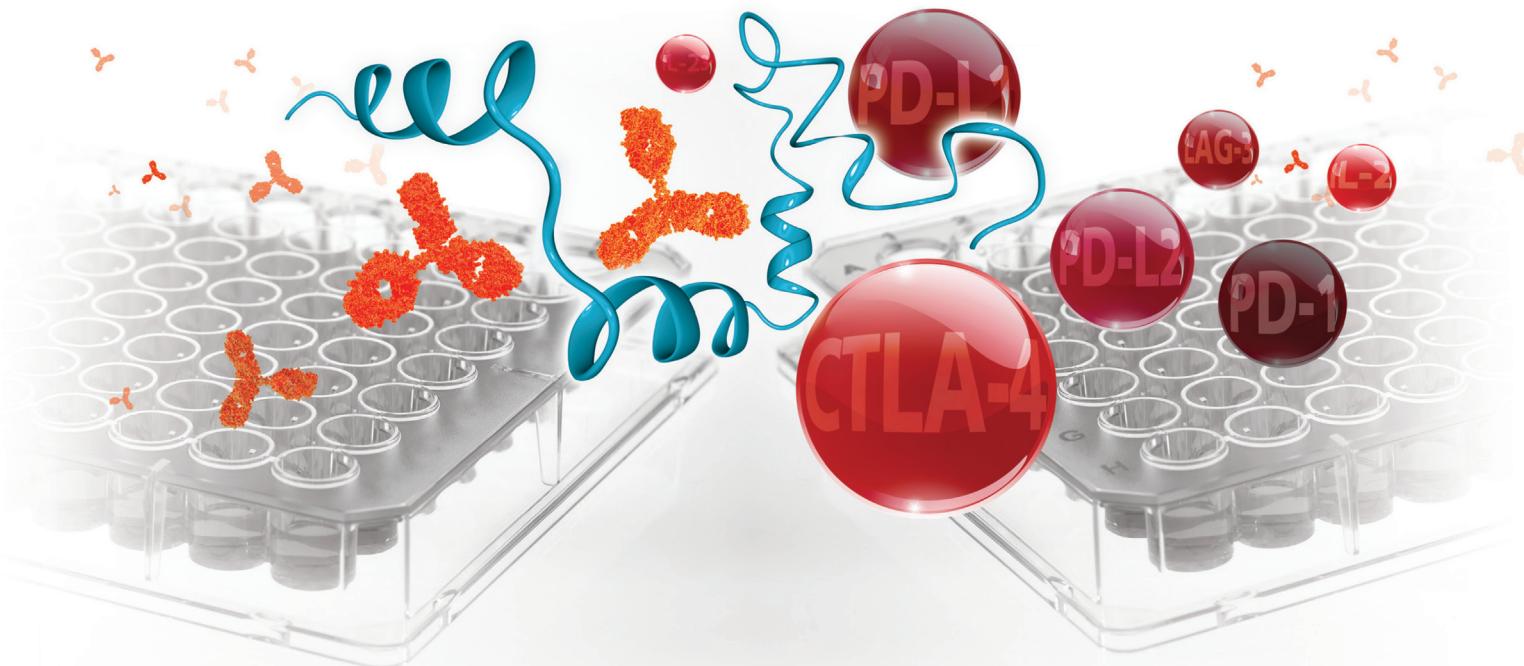
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