

# THE FORUM FOR MEDICAL AFFAIRS



## GENOMIC ENGINEERING

### The Transformative Discovery of Our Time

## *IMAGINE A WORLD...*

...WHERE YOU CAN CUT AND PASTE GENES TO ELIMINATE DISEASE AND CONQUER WORLD HUNGER. THIS ABILITY IS NO LONGER A TWILIGHT ZONE TECHNOLOGY ...IT IS AVAILABLE FOR APPLICATION IF WE CHOOSE TO DO SO.

#### Objectives:

At the conclusion of this program the participants will:

- Have an understanding of the basic elements of CRISPR-Cas9, the editing technology most widely used in laboratories today;
- Understand how this transformative technology can be used to modify human, animal, and plant genetics;
- Realize how CRISPR-Cas9 can be applied to eliminate genetically based diseases and expand food supplies by increasing crop yields and controlling plant diseases.

Sunday, November 13, 2016

1:00 p.m. - 3:30 p.m.

AMA Interim Meeting  
Walt Disney World Swan/Dolphin  
Swan 6 Ballroom  
Orlando, FL

The FORUM for Medical Affairs  
[www.osmapandtheforum.org](http://www.osmapandtheforum.org)



#### OVERVIEW AND AMA PERSPECTIVE

**Steven J. Stack, MD**  
Immediate Past President  
AMA



#### GENE EDITING TO DECIPHER HUMAN GENETICS

**Neville Sanjana, PhD**  
Core Faculty Member  
New York Genome Center  
Assistant Professor  
Dept. of Biology, NYU

- Genome engineering, the process of writing/editing DNA in the genome, can test whether a particular genetic variant can cause a disease;
- Precise gene editing is enabled by targeted nucleases and cellular double-strand break repair response pathways;
- In contrast to other programmable nucleases where a protein determines the target sequence, CRISPR-Cas9 is a RNA-guided nuclease, allowing easy re-programming via short guide RNAs;
- Discussion of diverse gene editing applications with CRISPR nucleases, including therapeutic gene editing and gene drives.



#### SHORT TERM POTENTIAL FOR CRISPR APPLICATIONS IN AGRICULTURE

**David Holley, MD**  
Program Chair  
FORUM for Medical Affairs