



Publications of the Week

Rational Engineering of Minimally Immunogenic Nucleases for Gene Therapy

First Authors: Rumya Raghavan (*pictured*) and Mirco Friedrich | Senior Author: Feng Zhang
Nature Communications | Broad Institute, McGovern Institute, Howard Hughes Medical Institute, and MIT



Genome editing using CRISPR-Cas systems is a promising avenue for the treatment of genetic diseases. However, cellular and humoral immunogenicity of genome editing tools, which originate from bacteria, complicates their clinical use. Here, researchers report reduced immunogenicity (Red)(i)-variants of two clinically relevant nucleases, SaCas9 and AsCas12a. [Abstract](#) | [Press Release](#)

In Vivo Base Editing Extends Lifespan of a Humanized Mouse Model of Prion Disease

First Authors: Meirui An and Jessie Davis | Senior Authors: Eric Vallabh Minikel (*pictured, left*), Sonia Vallabh (*right*), and David Liu
Nature Medicine | Broad Institute, Harvard University, Prion Alliance, Massachusetts General Hospital, and the Howard Hughes Medical Institute



Prion disease is a fatal neurodegenerative disease caused by the misfolding of prion protein (PrP) encoded by the *PRNP* gene. While there is no cure, depleting PrP in the brain is an established strategy to prevent or stall templated misfolding of PrP. Researchers developed *in vivo* cytosine and adenine base strategies delivered by adeno-associated viruses to permanently modify the *PRNP* locus to achieve PrP knockdown in the mouse brain. [Abstract](#) | [Press Release](#)

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Awards

Dr. Feng Zhang Awarded the National Medal of Technology and Innovation

Broad Institute



In a ceremony at the White House on January 3, Dr. Feng Zhang (*pictured*) from the Broad Institute was awarded the National Medal of Technology and Innovation, the nation's most prestigious honor for American innovators. Dr. Zhang is widely recognized for his pioneering work in developing the CRISPR-Cas9 genome-editing system and its use in eukaryotic cells. [Read More](#)

Two from HMS Receive National Medals of Science, Technology, and Innovation

Harvard Medical School



Two Harvard Medical School faculty members, Drs. Emery Brown (*pictured, right*) and David Walt (*left*), were among the latest 23 individuals recognized by President Biden for their achievements and leadership in science and technology. Dr. Brown was awarded the National Medal of Science for his research into the effects of anesthesia on the brain. Dr. Walt was awarded the National Medal of Technology and Innovation for co-inventing the DNA microarray. [Read More](#)

Dr. Amy Barczak Awarded CFD Excellence in Mentoring Award

Ragon Institute



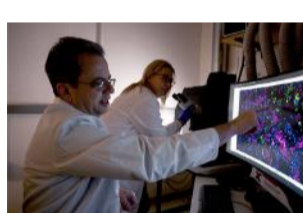
Dr. Amy Barczak (*pictured*) from the Ragon Institute has received the Massachusetts General Hospital Center for Faculty Development Excellence in Mentoring Ally for Women Faculty Award. Amy's dedication to mentorship is evident in her tireless efforts to create an inclusive, equitable environment, provide career guidance, and advocate for organizational changes that remove barriers to success for women. [Read More](#)

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Local News

Mapping Cells to Create Targeted Treatments for Interstitial Lung Disease

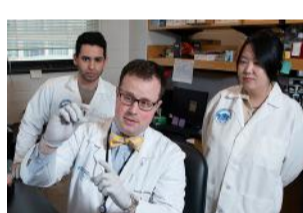
Boston Children's Hospital



Dr. John Kennedy (*pictured, left*) and other researchers are scaling up a successful Boston Children's initiative to a national level: the Inflammatory childhood interstitial lung disease (chILD) Cell Atlas. This is an open-source project funded by the Chan Zuckerberg Initiative that will profile and characterize the molecular composition of single-cell populations in the inflammatory chILD samples of 100 patients. [Read More](#)

Research Spotlight: Factors Contributing to Treatment Resistance in CAR T Therapies for Solid Tumors

Massachusetts General Hospital



Dr. Russell Jenkins (*pictured, center*) is senior author of a new study in *Cancer Immunology Research*. He and his team investigated what factors contribute to treatment resistance in CAR T therapy treatments for solid tumors. They used a unique 3D microfluidic model of tumors to investigate the mechanisms of treatment resistance to CAR T cells. [Read More](#)

Study Suggests How the Brain, with Sleep, Learns Meaningful Maps of Spaces

MIT News



Scientists have known for decades that the brain devotes neurons in a region called the hippocampus to remembering specific locations. So-called "place cells" reliably activate when an animal is at the location the neuron is tuned to remember. Place cells are known to encode individual locations, but new research finds stitching together a "cognitive map" of a whole environment requires a broader ensemble of cells, aided by sleep, over several days. [Read More](#)

The Connection Between Concussions, Viruses, and Alzheimer's

Tufts Now



Concussions and repetitive head trauma in sports like football and boxing, once accepted as an unpleasant consequence of intense athletic competition, are now recognized as serious health threats. Researchers at Tufts University have now uncovered mechanisms that may connect the dots between head trauma events and the emergence of diseases like Alzheimer's disease. [Read More](#)

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Upcoming Events in Boston

- January 27 2:30 PM **Beyond the Lab: Journey from Scientist to Founder**
MIT Media Lab
- January 27 5:00 PM **2025 Economic Outlook Forum**
MassBioHub
- February 19 - 21 8:00 AM **Optimizing Upstream & Downstream Process Development for Cell & Gene Therapies**
Hilton Boston Back Bay
- January 21 4:00 PM **NESACS Meeting with Olaris, Inc.**
Boston College
- February 25 1:30 PM **10th Annual Rare Disease Day Event: An Era of Innovation for Rare Diseases**
Broad Institute

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Science Jobs in Boston

- Science Writer**
Harvard University
- Senior Research Support Associate, Choi Lab**
Picower Institute for Learning & Memory
- Research Coordinator**
Boston University
- Postdoctoral Research Fellow**
Beth Israel Deaconess Medical Center
- Research Associate II**
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