



Publications of the Week

Evolution-Guided Protein Design of IscB for Persistent Epigenome Editing In Vivo

First Authors: Soumya Kannan (*pictured*), Han Altae-Tran, and Shiyou Zhu | Senior Author: Feng Zhang
Nature Biotechnology | Howard Hughes Medical Institute, Broad Institute, McGovern Institute, Yang Tan Collective, and MIT



Naturally existing enzymes have been adapted for a variety of molecular technologies, with enhancements or modifications to the enzymes introduced to improve the desired function. Here, researchers engineered the compact Obligate Mobile Element Guided Activity (OMEGA) RNA-guided endonuclease IscB and its guiding RNA by combining ortholog screening, structure-guided protein domain design and RNA engineering, and deep learning-based structure prediction to generate an improved variant, NovalscB. [Abstract](#) | [Press Release](#)

Large-Scale Combination Screens Reveal Small-Molecule Sensitization of Antibiotic-Resistant Gram-Negative ESKAPE Pathogens

First Authors: Megan Tse (*pictured*) and Mellin Zhu | Senior Authors: Ralph Isberg and Paul Blainey
Proceedings of the National Academy of Sciences | The Stuart B. Levy Center for Integrated Management of Antimicrobial Resistance, Broad Institute, Tufts University, Tango Therapeutics, and MIT



Antibiotic resistance, especially in multidrug-resistant ESKAPE pathogens, remains a worldwide problem. Combination antimicrobial therapies may be an important strategy to overcome resistance. Here, researchers deployed a high-throughput combinatorial screening platform, DropArray, to evaluate the interactions of over 30,000 compounds with up to 22 antibiotics and 6 strains of gram-negative ESKAPE pathogens. [Abstract](#) | [Press Release](#)

Polygenic Modifiers Impact Penetrance and Expressivity in Telomere Biology Disorders

First Author: Michael Poeschla | Senior Author: Vijay Sankaran (*pictured*)
The Journal of Clinical Investigation | Boston Children's Hospital and Dana-Farber Cancer Institute



Telomere biology disorders (TBDs) exhibit incomplete penetrance and variable expressivity. Researchers constructed polygenic scores (PGS) for telomere length in the UK Biobank to quantify common variant burden, and assessed the PGS distribution across patient cohorts and biobanks to determine whether individuals with severe TBD presentations have increased polygenic burden causing short telomeres. [Abstract](#)

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Awards

Eight with MIT Ties Win 2025 Hertz Foundation Fellowships

MIT News



The Hertz Foundation announced that it has awarded fellowships to eight MIT affiliates. The prestigious award provides each recipient with five years of doctoral-level research funding (up to a total of \$250,000), which gives them an unusual measure of independence in their graduate work to pursue groundbreaking research. Among the eight is Ananthan Sadagopan (*pictured*). [Read More](#)

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Local News

Overlooked Cells Might Explain the Human Brain's Huge Storage Capacity

MIT News



MIT researchers led by Dr. Dmitry Krotov (*pictured*) have now put forth a new hypothesis for how astrocytes might contribute to memory storage. The architecture suggested by their model would help to explain the brain's massive storage capacity, which is much greater than would be expected using neurons alone. [Read More](#)

Gene Editing Disrupts Huntington's Mutation in Mice

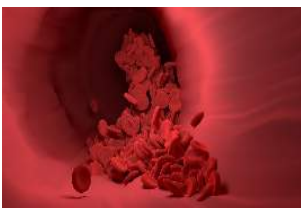
Broad Institute



Broad Institute researchers have developed a way to edit the genetic sequences at the root of Huntington's disease and Friedrich's ataxia. The conditions are two of more than 40 severe neurological disorders caused by three-letter stretches of DNA that repeat consecutively. The research is spearheaded by Dr. David Liu (*pictured*). [Read More](#)

Harbinger Health Showcases Multi-Cancer Early Detection Performance in High-Risk Populations at ASCO 2025

Harbinger Health



Harbinger Health announced clinical data demonstrating the performance of its blood-based MCED test across multiple high-incidence, high-mortality cancers, including those disproportionately affecting individuals with obesity. Results highlight the potential of Harbinger's ctDNA-methylation-based assay and reflex testing paradigm to address gaps in population-level early cancer detection. [Read More](#)

Science That Gives Humans More Say Over Their Destinies

The Harvard Gazette



On May 15, the *New England Journal of Medicine* published what has become a high-profile case of a 5-month-old boy called KJ with a deadly genetic disorder, who became the first to receive a personalized CRISPR gene-editing treatment. The therapy was built on base editing, a technology developed in Dr. David Liu's lab nearly a decade ago. [Read More](#)

AFI Scientist Pursues Deeper Knowledge of Neural Tube Defects and Underlying Cellular and Molecular Mechanisms

ADA Forsyth Institute (AFI)



ADA Forsyth Senior Investigator Dr. Chengji Zhou (*pictured*) has dedicated much of his 20-year career to researching tissue closure birth defects, including neural tube defects and orofacial clefts. A neural tube defect occurs when the precursor structure that eventually grows to make up the spinal column and brain does not close properly during early embryonic development. [Read More](#)

Alter Lab Study Uncovers How Certain Antibodies Help Fight Tuberculosis

Ragon Institute



Researchers at the Ragon Institute have made a significant discovery about how antibodies can directly enhance the body's ability to fight *Mycobacterium tuberculosis* (*Mtb*), the bacteria responsible for tuberculosis. In a study published in *Immunity*, Ragon faculty member Dr. Galit Alter (*pictured*) collected the largest library of monoclonal antibodies to *Mtb*. [Read More](#)

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📅 Upcoming Events in Boston

June 9 - 10
8:00 AM

Precision in Drug Discovery & Preclinical Summit Boston

Revere Hotel Boston Common

June 13
4:00 PM

Symposium Series on Emerging Model Organisms with Tessa Montague

Building 46

June 25 - 27
8:00 AM

2025 RNA Therapeutics: From Concept to Clinic

UMass Medical School

June 27
9:00 AM

Koch Institute Symposium 2025

Huntington Hall

August 18 - 21
8:00 AM

The Bioprocessing Summit 2025

Omni Hotel Boston at the Seaport

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📁 Science Jobs in Boston

Scientist, Center for Patient Derived Models

Dana-Farber Cancer Institute

Postdoctoral Associate, Proteomics

The Broad Institute

Postdoctoral Position, Roehrl Lab

Beth Israel Deaconess Medical Center

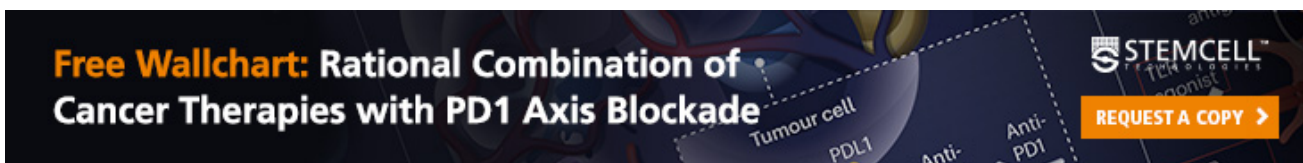
Senior Medical Director, Oncology Clinical Science

Takeda

Principal Scientist, Quantitative Systems

Sanofi

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