



Publications of the Week

ABCA7 Variants Impact Phosphatidylcholine and Mitochondria in Neurons

First Author: Djuna von Maydell (*pictured*) | Senior Author: Li-Huei Tsai
Nature | The Picower Institute, Broad Institute, and MIT



Loss-of-function variants in the lipid transporter ABCA7 substantially increase the risk of Alzheimer’s disease, yet how they impact cellular states to drive disease remains unclear. Using single-nucleus RNA-sequencing analysis of human brain samples, the authors identified widespread gene expression changes across multiple neural cell types associated with rare *ABCA7* loss-of-function variants.

[Abstract](#) | [Press Release](#)

Engineered Prime Editors with Minimal Genomic Errors

First Author: Vikash Chauhan (*pictured*) | Senior Authors: Phillip Sharp and Robert Langer
Nature | Koch Institute and MIT



Prime editors make programmed genome modifications by writing new sequences into extensions of nicked DNA 3’ ends. These edited 3’ new strands must displace competing 5’ strands to install edits, yet a bias towards retaining the competing 5’ strands hinders efficiency and can cause indel errors. Nicked end degradation, consistent with competing 5’ strand destabilization, can be promoted by Cas9-nickase mutations that relax nick positioning.

[Abstract](#) | [Press Release](#)

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Awards

Whitehead Institute Graduate Student Jimmy Ly Receives the 2025 International Birnstiel Award

Whitehead Institute



The Max Birnstiel Foundation and the Research Institute of Molecular Pathology have named Whitehead Institute graduate student Jimmy Ly (*pictured*) one of six laureates to receive the 2025 International Birnstiel Award for Doctoral Studies in Molecular Life Sciences. This distinction recognizes Ly’s work investigating “a previously unrecognized layer of gene regulation”.

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SITC Fellowships

Society for Immunotherapy of Cancer



The Society for Immunotherapy of Cancer (SITC) Fellowship program helps cultivate the next generation of cancer immunotherapy experts by supporting the development of early career scientists. Congratulations to the 2025 Fellows: Drs. Mohamad Ali Najia (*pictured*) from Boston Children’s Hospital and Ivan Pires from Brigham and Women’s Hospital.

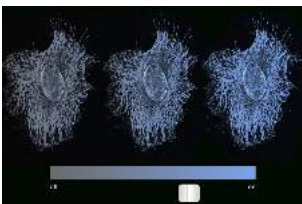
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Local News

Study Finds Cell Memory Can Be More Like a Dimmer Dial Than an On/off Switch

MIT News



Traditionally, scientists have thought that epigenetic memory locks genes either “on” or “off”—either fully activated or fully repressed, like a permanent Lite-Brite pattern. But MIT engineers have found that the picture has many more shades. In a new study appearing in *Cell Genomics*, the team reports that a cell’s memory is set not by on/off switching but through a more graded, dimmer-like dial of gene expression.

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Research Program Helps Bridge the Opportunity Gap for Young Engineers

The Brink



When Brianna Perales (*pictured*) came to Boston University to study electrical and biomedical engineering—the first in her family to go to college—she looked for ways to have an immediate impact. This past year, Perales applied for a BU College of Engineering–affiliated program, Research Engineering and Mentoring-Includes, designed to give first-generation and low-income college students their first taste of lab time.

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Precise Maps of the Brain’s Deepest Corners Are Made Possible Through Tools Developed by These Northeastern Researchers

Northeastern Global News



Scientists who study the brain strive to detect very specific signals from among the billions of neurotransmitter molecules present. Precise and sensitive imaging methods are crucial because some signals are very small. Northeastern University’s NeuroPRISM lab, led by Assistant Psychology Professor Dr. Stephanie Noble, makes tools that pave the way for reliable and reproducible neuroimaging of the brain’s deepest recesses.

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Gene Therapy Vector Produced by UMass Chan Used to Deliver Prophylactic Therapy for HIV

UMass Chan Medical School



An adeno-associated virus produced by Dr. Guangping Gao (*pictured*) and colleagues at UMass Chan Medical School was used to deliver an HIV broadly neutralizing antibody that protected preclinical animal models from HIV. Published in *Nature*, these findings point to potential new approaches to protect young infants from perinatal HIV transmission.

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New RNA Tool to Advance Cancer and Infectious Disease Research and Treatment

MIT News



Researchers at the Antimicrobial Resistance interdisciplinary research group of the Singapore-MIT Alliance for Research and Technology, MIT’s research enterprise in Singapore, have developed a powerful tool capable of scanning thousands of biological samples to detect transfer ribonucleic acid (tRNA) modifications—tiny chemical changes to RNA molecules that help control how cells grow, adapt to stress, and respond to diseases such as cancer and antibiotic-resistant infections.

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This MIT Spinout Is Taking Biomolecule Storage Out of the Freezer

MIT Chemistry



Ever since freezers were invented, the life sciences industry has been reliant on them. That’s because many patient samples, drug candidates, and other biologics must be stored and transported in powerful freezers or surrounded by dry ice to remain stable. Cache DNA wants to set the industry free from freezers. Cache co-founder Dr. James Banal (*pictured*) and his team created a new way to store and preserve DNA molecules at room temperature.

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Machine-Learning Tool Gives Doctors a More Detailed 3D Picture of Fetal Health

MIT News



For pregnant women, ultrasounds are an informative (and sometimes necessary) procedure. A new approach called “Fetal SMPL” presented clinicians with a more detailed picture of fetal health. It was adapted from “SMPL” (Skinned Multi-Person Linear model), a 3D model developed in computer graphics to capture adult body shapes and poses, as a way to represent fetal body shapes and poses accurately.

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Upcoming Events in Boston

Sept 23-24
8:00 a.m.

Innov8 Health
Seaport Hotel Boston

Sept 25
10:30 a.m.

Biotech Horizons: Shaping the Future of Innovation
State Rooms

Oct 4
8:00 a.m.

STEMPeers 2025 Boston
Metcalf Trustee Center

Oct 7
8:00 a.m.

2025 Align Summit
Boston Marriott Copley Place

Oct 9-10
7:00 a.m.

ADA Forsyth Dentech 2025
ADA Forsyth Institute

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Science Jobs in Boston

Research Lab Tech II
Brigham and Women’s Hospital

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Boston University

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Boston Children’s Hospital

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