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Publications of the Week

DNA Mutagenesis Driven by Transcription Factor Competition with Mismatch Repair

First Author: Wei Zhu | Senior Authors: Sue Jinks-Robertson and Raluca Gordân *(pictured)*
Cell | UMass Chan Medical School

Despite the remarkable fidelity of eukaryotic DNA replication, nucleotide misincorporation errors occur in every replication cycle, generating mutations that drive genetic diseases and genome evolution. Here, researchers show that transcription factor proteins can increase mutagenesis from replication errors by directly competing with the recognition of DNA mismatches by MutSα, the primary initiator of eukaryotic mismatch repair. **Abstract | Press Release**

Directed Evolution-Based Discovery of Ligands for *In Vivo* Restimulation of Chimeric Antigen Receptor T Cells

First Author: Tomasz M. Grzywa | Senior Authors: Leyuan Ma and Darrell Irvine *(pictured)*
Nature Biomedical Engineering | David H. Koch Institute for Integrative Cancer Research, MIT, and the Ragon Institute

Chimeric antigen receptor (CAR) T cell therapy targeting CD19 elicits remarkable clinical efficacy in B cell malignancies, but many patients relapse owing to failed expansion and/or progressive loss of CAR-T cells. Here, researchers demonstrate a general strategy to discover and optimize peptide mimotopes enabling amphiphilic PEG-lipid generation for any CAR. **Abstract**

Plasma Exosomes from Individuals with Type 2 Diabetes Drive Breast Cancer Aggression in Patient-Derived Organoids

First Author: Christina Ennis | Senior Author: Gerald Denis *(pictured)*
Communications Biology | Boston University and Boston Medical Center

Women with obesity-driven type 2 diabetes (T2D) face worse breast cancer outcomes, yet metabolic status does not fully inform current standards of care. Using a novel patient-derived organoid system that preserves native tumor-infiltrating lymphocytes (TILs), researchers show that T2D plasma exosomes induce a 13.6-fold expansion of immunosuppressive TILs relative to nondiabetic controls. **Abstract | Press Release**

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Awards

Brink Bites: Using AI to Spot Alzheimer's; NIH Backs BU COPD Research

The Brink

Chronic obstructive pulmonary disease (COPD) is the fourth highest cause of death in the world. At Boston University (BU), Dr. Kayhan Batmanghelich *(pictured)* and his colleagues are exploring an AI-infused approach to better diagnose and track the disease. Their potentially transformative effort was recently boosted by a $3.1 million grant from the National Institutes of Health's (NIH) National Heart, Lung, and Blood Institute. **Read More**

Dr. Kazuki Nagashima Awarded $100K Gift from Noster to Advance Gut–Immune System Research

Harvard University Department of Molecular and Cellular Biology (MCB)

MCB Assistant Professor Dr. Kazuki Nagashima *(pictured)* has received a $100,000 research gift from Noster Inc. to support his lab's studies on how the immune system interacts with the microbiome. The award builds on a growing relationship between Dr. Nagashima and Noster, reflecting the company's commitment to supporting early-career scientists and foundational research. **Read More**

Rudolf Jaenisch Receives the 2025 Ogawa-Yamanaka Stem Cell Prize

Whitehead Institute

Whitehead Institute Founding Member Dr. Rudolf Jaenisch *(pictured)* has been honored with the 2025 Ogawa-Yamanaka Stem Cell Prize. Awarded by the Gladstone Institutes, the prize recognizes Jaenisch's seminal role in establishing and advancing the field of induced pluripotent stem cells—adult skin or blood cells that can be reprogrammed into an embryonic stem cell-like state. **Read More**

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Local News

Locally Produced Proteins Help Mitochondria Function

Whitehead Institute

The Whitehead Institute's Dr. Jonathan Weissman *(pictured)* and colleagues have studied localized translation in order to understand how it affects cell functions and allows cells to quickly respond to changing conditions. They share a new tool, LOCL-TL, for studying localized translation in close detail, and describe the discoveries it has enabled about two classes of proteins that are locally translated at mitochondria. **Read More**

How Subtle Bacterial Shifts Keep Gut Inflammation at Bay

Harvard Medical School

When it comes to gut immunity, the delicate balance between being ready to react to invaders and remaining calm in the presence of innocent triggers might hinge on a tiny molecule on the surface of gut bacteria. This is according to a new study from Harvard Medical School led by Dr. Dennis Kasper *(pictured)*. This work can inform new ways to prevent or treat inflammatory bowel diseases such as Crohn's. **Read More**

Whatever Happened to … the Race to Cure HIV? There's Promising News

Ragon Institute

In a landmark first for the continent hardest hit by HIV, a new clinical trial in South Africa has delivered a rare but extraordinary outcome: One young woman may be cured of the virus. Her early diagnosis and treatment plan was a result of a program called FRESH (Females Rising through Education, Support and Health). Dr. Krista Dong, Assistant Professor at the Ragon Instute of Mass General Brigham, MIT, and Harvard, is FRESH's Clinical Director. **Read More**

International Neuroscience Collaboration Unveils Comprehensive Cellular-Resolution Map of Brain Activity

McGovern Institute

The first comprehensive map of mouse brain activity has been unveiled by a large international collaboration of neuroscientists. Researchers from the International Brain Laboratory, including McGovern Investigator Dr. Ila Fiete *(pictured)*, published their findings in two papers in *Nature*, revealing insights into how decision-making unfolds across the entire brain in mice at single-cell resolution. **Read More**

Alzheimer's Erodes Brain Cells' Control of Gene Expression, Undermining Function, Cognition

Picower Institute

A study of 3.5 million cells from more than 100 human brains finds that Alzheimer's progression—but also resilience to disease—depends on preserving epigenomic stability. "To understand the circuitry, the logic responsible for gene expression changes in Alzheimer's disease, we needed to understand the regulation and upstream control of all the changes that are happening, and that's where the epigenome comes in," said senior author Dr. Manolis Kellis *(pictured)*. **Read More**

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Upcoming Events in Boston

September 11 8:00 AM	**Thriving in Biotech: Building Bridges, Breaking Barriers** LabCentral
September 15 - 18 8:00 AM	**BioProcess International East** Hynes Convention and Exhibition Center
September 16 - 18 8:00 AM	**Cell & Gene Therapy International** Hynes Convention and Exhibition Center
September 16 4:00 PM	**Uncovering How Tissues Rewire in Disease Using Deep Learning** Whitehead Institute for Biomedical Research
September 18 8:30 AM	**The 2025 Aging Brain Initiative Symposium: The Neuro-Immune Axis and the Aging Brain** Singleton Auditorium

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Science Jobs in Boston

Clinical Research Manager I
Boston Children's Hospital

Research Data Specialist, Lindsley Lab
Dana-Farber Cancer Institute

Data Scientist, Multimodal Data & Analytics in Clinical Development
Novartis

Associate Scientist Analytical Development, Early Development
Takeda

Research Scientist
Mass General Brigham

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