



Publications of the Week

KATMAP Infers Splicing Factor Activity and Regulatory Targets From Knockdown Data

First Author: Michael McGurk | Senior Author: Christopher Burge *(pictured)*
Nature Biotechnology | MIT



Understanding how splicing factor (SF) activity influences transcriptomic variation requires elucidating how each SF impacts splicing. Here, researchers present an interpretable regression model, KATMAP, which models splicing changes throughout the transcriptome by analyzing changes in SF binding and the resulting alterations in RNA processing. [Abstract](#) | [Press Release](#)

Degradable Cyclic Amino Alcohol Ionizable Lipids as Vectors for Potent Influenza mRNA Vaccines

First Authors: Annab Rudra *(pictured)*, Akash Gupta, and Kaelan Reed | Senior Author: Daniel Anderson
Nature Nanotechnology | David H. Koch Institute, Boston Children's Hospital, Broad Institute, and MIT



The next generation of mRNA vaccines must address several limitations, including enhancing vaccine potency and reducing toxicity. Here, researchers develop a class of degradable, cyclic amino ionizable lipids via sequential combinatorial chemistry and rational design. The formulations developed here significantly enhance the potency of mRNA vaccines. [Abstract](#) | [Press Release](#)

Alternative Start Codon Selection Shapes Mitochondrial Function and Rare Human Diseases

First Author: Jimmy Ly *(pictured)* | Senior Author: Iain Cheeseman
Molecular Cell | Whitehead Institute, Boston Children's Hospital, and MIT



Eukaryotic cells require related proteins to function both within the mitochondria and in the host cell. By analyzing N-terminal protein isoforms generated through alternative start codon selection, researchers identified hundreds of differentially localized isoform pairs, including dual-localized isoforms that are essential for both mitochondrial and host cell function. [Abstract](#) | [Press Release](#)

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Awards

PhD Candidate Katherine Murphy Receives NIH Grant for Innovative Prostate Cancer Research

UMass Chan Medical School



UMass Chan Medical School PhD candidate Katherine “Kat” Murphy *(pictured)* has received a Ruth L. Kirschstein National Research Service Award Individual Predoctoral Fellowship for her prostate cancer research. The National Institutes of Health (NIH)-funded research focuses on genetic mutations found in a late-stage type of castration-resistant prostate cancer called neuroendocrine prostate cancer. [Read More](#)

Dr. Joshua Sanes Receives Society for Neuroscience’s Highest Honor

Harvard University Department of Molecular and Cellular Biology



Dr. Joshua Sanes *(pictured)* the Jeff C. Tarr Professor of Molecular and Cellular Biology, Emeritus, and Founding Director of Harvard’s Center for Brain Science, has been awarded the 2025 Ralph W. Gerard Prize in Neuroscience from the Society for Neuroscience. The Gerard Prize, the society’s most prestigious honor, recognizes lifetime achievement in neuroscience. [Read More](#)

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Local News

Biomaterial Vaccines to Make Implanted Orthopedic Devices Safer

Wyss Institute



Researchers have long pursued the idea that vaccines could protect patients against the pathogen *Staphylococcus aureus*, the leading cause of orthopedic device infection. Now, clinical researchers and bioengineers at the Wyss Institute and Harvard University have developed a novel vaccine strategy with the potential to solve the challenge of device infection in patients. [Read More](#)

Biology of Adversity Project Launches at Broad Institute

Broad Institute



To uncover how adverse experiences can inflict molecular “scars” in the genome and body and lead to negative health outcomes such as heart disease, researchers at the Broad Institute have launched an interdisciplinary, collaborative effort called the Biology of Adversity Project. Initial funding for the project is provided by a \$50 million gift from Treehouse Family Foundation and the project will be led by Dr. Jason Buenrostro *(pictured)*. [Read More](#)

A New Patch Could Help to Heal the Heart

MIT News



MIT engineers have developed a flexible drug-delivery patch that can be placed on the heart after a heart attack to help promote healing and regeneration of cardiac tissue. “Our goal is to restore that function and help people regain a stronger, more resilient heart after a myocardial infarction.” says Dr. Ana Jaklenec *(pictured)*, a Principal Investigator at MIT’s Koch Institute for Integrative Cancer Research. [Read More](#)

Promising Advances in Fetal Therapy for Vein of Galen Malformation

Boston Children's Hospital



Vein of Galen malformation (VOGM) is a rare vascular condition involving significantly elevated blood flow to the head. VOGM commonly leads to congestive heart failure, pulmonary hypertension, and brain injury. Early results from Boston Children’s groundbreaking fetal embolization trial led by Dr. Darren Orbach *(pictured)* showed success in preventing brain and heart complications from VOGM. [Read More](#)

Sean M. Healey & AMG Center for ALS Announces Design with Inflammasome Therapeutics for Upcoming Healey ALS MyMatch Trial

The Sean M. Healey & AMG Center for ALS



The Sean M. Healey & AMG Center for Amyotrophic Lateral Sclerosis (ALS) at Massachusetts General Hospital has contracted with Inflammasome Therapeutics to design a new Healey ALS MyMatch trial evaluating Kamuvudine-9 in people with ALS. The Healey ALS MyMatch program, led by Dr. Jayakrishna Ambati *(pictured)*, is reshaping the future of ALS clinical trials by harnessing the power of biomarker-driven personalized trial approaches. [Read More](#)

MIT Researchers Invent New Human Brain Model to Enable Disease Research, Drug Discovery

MIT News



A new 3D human brain tissue platform developed by Dr. Li-Huei Tsai *(pictured)* and MIT researchers is the first to integrate all major brain cell types, including neurons, glial cells, and the vasculature, into a single culture. Grown from individual donors’ induced pluripotent stem cells, these models—dubbed Multicellular Integrated Brains (miBrains)—replicate key features and functions of human brain tissue. [Read More](#)

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Upcoming Events in Boston

November 20 8:00 AM	2025 R&D Reimagined MassBioHub
December 3 5:00 PM	MassBioHub 2025 Annual Holiday Party Mixer 100 Technology Square
December 11 8:00 AM	2025 Advancing Drug Development Forum UMASS Club
December 11 - 12 9:00 AM	Boston International Symposium: Accelerating PSC-Derived Cell Therapies Hyatt Regency Cambridge
December 11 4:30 PM	Better Together Ragon Institute

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Science Jobs in Boston

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Advanced Intestinal and Hepatic Organoids
Webinar by Riya Sharma

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