



Publications of the Week

Granzyme K Activates the Entire Complement Cascade

First Authors: Carlos Donado and Erin Theisen | Senior Authors: Helena Jonsson and Michael Brenner *(pictured)*
Nature | Brigham and Women's Hospital, Harvard Medical School, and Broad Institute



Granzymes are a family of serine proteases mainly expressed by CD8⁺ T cells, natural killer cells, and innate-like lymphocytes. Recently, researchers found that the majority of tissue CD8⁺ T cells in rheumatoid arthritis synovium and in inflamed organs across other diseases express granzyme K (GZMK), a tryptase-like protease with poorly defined function. Here, they show that GZMK can activate the complement cascade by cleaving C2 and C4. [Abstract](#) | [Press Release](#)

Programs, Origins, and Immunomodulatory Functions of Myeloid Cells in Glioma

First Author: Tyler Miller, Chadi El Farran, and Charles Couturier | Senior Author: Bradley Bernstein *(pictured)*
Nature | Dana Farber Cancer Institute, Broad Institute, Harvard Medical School, Koch Institute, Brigham and Women's Hospital, Ragon Institute, and MIT



Gliomas are incurable malignancies notable for having an immunosuppressive microenvironment with abundant myeloid cells, the immunomodulatory phenotypes of which remain poorly defined. Here, researchers systematically investigate these phenotypes by integrating single-cell RNA sequencing, chromatin accessibility, spatial transcriptomics, and glioma organoid explant systems. [Abstract](#)

LUC7 Proteins Define Two Major Classes of 5' Splice Sites in Animals and Plants

First Author: Connor Kenny | Senior Author: Christopher Burge *(pictured)*
Nature Communications | MIT



Mutation or deletion of the U1 snRNP-associated factor *LUC7L2* is associated with myeloid neoplasms, and knockout of *LUC7L2* alters cellular metabolism. Here, researchers show that members of the LUC7 protein family differentially regulate two major classes of 5' splice sites (5'SS) and broadly regulate mRNA splicing in both human cell lines and leukemias with *LUC7L2* copy number variation. [Abstract](#) | [Press Release](#)

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Awards

Five Tufts Faculty Named Senior Members of National Academy of Inventors

Tufts Now



Five Tufts faculty have been named as senior members of the National Academy of Inventors, an honor for academic inventors who are rising leaders in their respective fields and who have produced technologies that seek to bring a positive impact on society. The awardees are Drs. Ira Herman, Valencia Koomson *(pictured)*, Nikhil Nair, Igor Sokolov, and Sameer Sonkusale. [Read More](#)

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Local News

Study Suggests New Molecular Strategy for Treating Fragile X Syndrome

The Picower Institute



Building on more than two decades of research, a study by MIT neuroscientists at the Picower Institute for Learning and Memory reports a new way to treat pathology and symptoms of fragile X syndrome, the most common genetically-caused autism spectrum disorder. The team, led by Dr. Mark Bear *(pictured)*, showed that augmenting a novel type of neurotransmitter signaling reduced hallmarks of fragile X in mouse models of the disorder. [Read More](#)

Creating the World's First CRISPR Medicine, for Sickle Cell Disease

Harvard Medical School (HMS)



How did a genetic insight paired with gene editing technology lead to a life-changing new therapy? When Dr. Vijay Sankaran *(pictured)* was an MD-PhD student at HMS in the mid-2000s, one of his first clinical encounters was with a 24-year-old patient whose sickle cell disease left them with almost weekly pain episodes. "The encounter made me wonder, couldn't we do more for these patients?" said Dr. Sankaran. [Read More](#)

Harvard's Program for Scientifically Inspired Leadership Bridges Educational Cultures

Harvard University Department of Molecular and Cellular Biology



Each January, while many students enjoy a well-earned winter break, a select group of Harvard undergraduates embarks on a journey that transcends traditional learning. Founded by Dr. Dominic Mao, the Program for Scientifically-Inspired Leadership offers an immersive educational experience in India, aimed at bridging the gap between theoretical knowledge and practical application for underprivileged high school students. [Read More](#)

AI System Predicts Protein Fragments That Can Bind to or Inhibit a Target

MIT News



Recently published in *Proceedings of the National Academy of Sciences*, a new method developed in the Department of Biology builds on existing artificial intelligence models to computationally predict protein fragments that can bind to and inhibit full-length proteins in *E. coli*. This tool, created by Dr. Gene-Wei Li's *(pictured)* team, could lead to genetically encodable inhibitors against any protein. [Read More](#)

Two Papers by Walhout Lab in Nature Highlight Novel Metabolic Principles

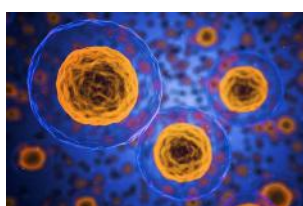
UMass Chan Medical School



Two papers published in the journal *Nature* describe a significant advance in understanding the complex functions of the metabolic network. The research is from the lab of Dr. Marian Walhout *(pictured)*, the Maroun Semaan Chair in Biomedical Research and Chair and Professor of Systems Biology, which has been engaged with fundamental questions of metabolism for more than a decade. [Read More](#)

Gensaic Announces Collaboration With Novo Nordisk to Unlock Next-Generation Precision Therapies

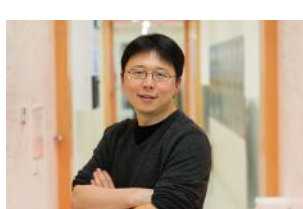
Businesswire



Gensaic, a Cambridge-based biotechnology company that combines AI-powered protein design with biological insights to discover ligands for tissue-selective intracellular delivery, announced a license and discovery collaboration with Novo Nordisk. This collaboration aims to discover tissue targeting ligands and develop new therapeutic candidates to treat cardiometabolic disease via undisclosed targets. [Read More](#)

An Ancient RNA-Guided System Could Simplify Delivery of Gene Editing Therapies

Broad Institute



A vast search of natural diversity has led scientists at McGovern Institute and the Broad Institute to uncover ancient systems with the potential to expand the genome editing toolbox. These systems, which the researchers call TIGR (Tandem Interspaced Guide RNA) systems, use RNA to guide them to specific sites on DNA. The research was led by Dr. Feng Zhang *(pictured)*. [Read More](#)

Ambush Science

ADA Forsyth



ADA Forsyth has published episode 1 of Ambush Science — an all-new series where they conduct a "surprise" Q&A with ADA Forsyth scientists to learn directly from them about their cutting-edge research in oral health. The first episode features Dr. Batbileg Bor, who started at ADA Forsyth as a postdoctoral researcher and is now an Associate Member of Staff. [Read More](#)

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Upcoming Events in Boston

- March 11 - 12 8:00 AM **OPT Congress: Oligonucleotides & mRNA Therapeutics**
Seaport Hotel Boston
- March 12 8:00 AM **MassBio Expert Panel: Advancing Development with Innovative Trial Design and Regulatory Strategies**
MassBioHub
- March 24 - 26 8:00 AM **11th Annual: Latest Advancements and Data in Immuno-Oncology**
Sheraton Boston Hotel
- March 30 8:00 AM **The New England Science Symposium**
Harvard Medical School
- April 2 - 4 8:00 AM **Bio-IT World Conference & Expo**
Omni Hotel Boston at the Seaport

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Science Jobs in Boston

- Research Scientist I, Macosko Lab**
Broad Institute
- MEDscienceLAB Teacher & Program Coordinator**
Harvard Medical School
- Scientist I, Oligonucleotide Synthesis**
Novo Nordisk
- Post-Baccalaureate Research Technician, Cancer Immunology**
Dana-Farber Cancer Institute
- Scientist/Senior Scientist, Gene Editing**
Ensoma

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