

Publications of the Week
STAG2 Loss Rewires Oncogenic and Developmental Programs to Promote Metastasis in Ewing Sarcoma

First Authors: Biniam Adane and Gabriela Alexa | Senior Author: Kimberly Stegmaier (pictured)
 Cancer Cell | Dana-Farber Cancer Institute, Boston Children's Hospital, Whitehead Institute for Biomedical Research, the Broad Institute, and MIT



The core cohesin subunit STAG2 is recurrently mutated in Ewing sarcoma but its biological role is less clear. The authors demonstrate that cohesin complexes containing STAG2 occupy enhancer and polycomb repressive complex-marked regulatory regions, and that STAG2 mutations can alter chromatin architecture and transcriptional programs to promote an aggressive cancer phenotype. **Abstract**

Induction of Antigen-Specific Tolerance by Nanobody–Antigen Adducts That Target Class-II Major Histocompatibility Complexes

First Author: Novalee Pishesha | Senior Author: Hilde Ploegh (pictured)
 Nature Biomedical Engineering | Harvard University, Boston Children's Hospital, and the Broad Institute



The authors show that, in mouse models of experimental autoimmune encephalomyelitis, type 1 diabetes, and rheumatoid arthritis, the systemic administration of a single dose of nanobodies that recognize class-II major histocompatibility complex molecules and conjugated to the relevant self-antigen under non-inflammatory conditions confers long-lasting protection against these diseases. **Abstract**

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Awards
McLean Researchers Elected to 2022 ACNP Leadership Roles

McLean Hospital



Dr. Kerry Ressler (pictured, right) has been elected as the next President-Elect of the American College of Neuropsychopharmacology (ACNP), and Dr. Bill Carlezon (left) has been elected as an ACNP council member. Drs. Ressler and Carlezon will commence their new ACNP roles in 2022. Founded in 1961, the ACNP is an international organization of leading brain scientists. **Read More**

MCB Faculty Andrew Murray Awarded Prestigious Appointment as Harvard College Professor

Harvard Molecular and Cellular Biology (MCB)



MCB faculty Dr. Andrew Murray (pictured) is one of the five professors from across the Faculty of Arts and Sciences to be named a 2021 Harvard College Professor. The Harvard College Professorships are five-year appointments that are awarded to faculty who excel in teaching undergraduates and promoting a positive teaching culture at the college. **Read More**

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Local News
Patterns of Myosin and F-Actin Proteins across Developing Embryos Promote Tissue Folding and Shape New Life

MIT Biology



Myosin appears in a gradient across the belly and back of the developing fly. Since myosin and F-actin work together, many scientists assumed they would display the same pattern. A new study led by Dr. Adam Martin (pictured) shows how gene expression patterns dictate a unique distribution of F-actin across the mesoderm. In combination with the myosin present, this F-actin pattern causes the cells to stretch, squish, or maintain their shape in just the right places to bend the tissue. **Read More**

Stents Inspired by Paper-Cutting Art Can Deliver Drugs to the GI Tract

MIT News



Inspired by kirigami, the Japanese art of folding and cutting paper to create three-dimensional structures, MIT engineers and their collaborators have designed a new type of stent that could be used to deliver drugs to the gastrointestinal tract, respiratory tract, or other tubular organs in the body. "This technology could be applied in essentially any tubular organ," says Dr. Giovanni Traverso (pictured). **Read More**

Computer Method to Help Predict Outcomes and Tailor Treatments for Patients with Inherited Heart Diseases

Wellcome Sanger Institute



An integrated, genomic computer system for precision cardiology has been created using clinical data that can help inform medical and surgical decisions to support future therapies for patients with inherited heart disease. This global study, which included researchers from MIT such as Dr. Rameen Shakur (pictured), shows how some genetic mutations can cause different cardiovascular diseases with varying outcomes, depending on where they occur in a gene, and the possible mechanisms behind this. **Read More**

Researchers' Tissue Analysis Shows How COVID-19 Affects Infected Cells

Beth Israel Deaconess Medical Center



Since the COVID-19 pandemic, scientists have sequenced the virus' genome, developed vaccines to prevent its spread, and tested a range of drugs to help treat the often deadly infection. Yet much remains unknown about how SARS-CoV-2 drives illness in the body. Now a large collaboration of scientists, including Dr. Ioannis Viachos (pictured) at Beth Israel Deaconess Medical Center, has shown what happens in individual cells of patients who died of COVID-19. **Read More**

FDA Approves First Alzheimer's Treatment in 18 Years. Now What?

Boston University



For the first time since 2003, a new medication to help slow the cognitive decline caused by Alzheimer's disease has been approved by the US Food and Drug Administration (FDA). The drug from the biotech giant Biogen is called aducanumab (the brand name will be Aduhelm) and is aimed at people who have shown signs of early-stage dementia caused by Alzheimer's disease. **Read More**

Could All Your Digital Photos Be Stored as DNA?

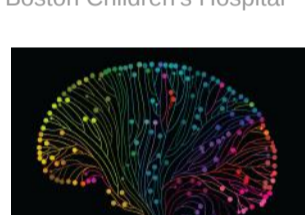
MIT News



Scientists have already demonstrated that they can encode images and pages of text as DNA. However, an easy way to pick out the desired file from a mixture of many pieces of DNA is also needed. Dr. Mark Bathe and his colleagues have now demonstrated one way to do that, by encapsulating each data file into a 6-micrometer particle of silica, which is labeled with short DNA sequences that reveal the contents. **Read More**

An 'Atlas' of the Choroid Plexus across the Lifespan

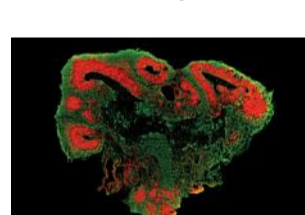
Boston Children's Hospital



A new study led by Dr. Maria Lehtinen and colleagues at Boston Children's and the Broad Institute has revealed a cellular and spatial "atlas" of the choroid plexus during different life stages (early development, adulthood, and old age). The map provides a benchmark to accelerate future studies investigating the lifelong regulation of this diminutive but influential brain structure. **Read More**

Inflammatory Processes Are Altered in the Brains of People with Opioid Use Disorder

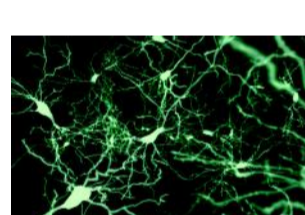
Boston University School of Medicine (BUSM)



While opioid dependence has been extensively studied in preclinical models, an understanding of the biological alterations that occur in the brains of people who chronically use opioids and who are diagnosed with opioid use disorder (OUD) remains limited. To address this issue, BUSM researchers have conducted the largest transcriptomic study to date using postmortem brains from people with OUD. **Read More**

As Novel Sights Become Familiar, Different Brain Rhythms, Neurons Take Over

The Picower Institute



Dismissing the things in a scene that have proven to be of no consequence is an essential function because it allows animals and people to quickly recognize the new things that need to be assessed. A new study by researchers at MIT's Picower Institute for Learning and Memory substantially advances understanding of how a mammalian brain enables this "visual recognition memory". **Read More**

Queen of Hearts

MIT News



Amphibians and humans differ in many ways, but Dr. Laurie Boyer (pictured), a Professor of Biology and Biological Engineering at MIT, is particularly interested in one of those differences. Certain types of amphibians and fish can regenerate and heal their hearts after an injury, but not humans. Instead, the injured human heart ends up with scar tissue that can lead to heart failure. **Read More**

Life Sciences Is Poised to Be Boston's Dominant Industry. Has the Area Become the Silicon Valley of Biotech?

Boston Globe



The Boston area has long been famous for its elite universities, top tier hospitals, passionate sports fans, and deep history. But over the past year, the biggest buzz has been about biotechnology. There has also been a massive amount of investment, acquisitions, public offerings, and laboratory construction during a time when many businesses struggled to keep the lights on. Might it finally be time to say that the Boston area has become the Silicon Valley of biotech? **Read More**

Single-Shot COVID-19 Vaccine Generates Robust Immune Responses against COVID-19 Variants

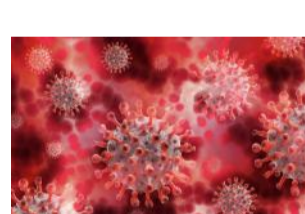
The Ragon Institute



In a new study published in *Nature*, Dr. Dan Barouch and colleagues report on the antibody and cellular immune responses generated by the Ad26.COV2.S vaccine against the original viral strain and against SARS-CoV-2 variants of concern. The team found that this vaccine induced immune responses against all the viral variants. **Read More**

UMMS Research Identifies Potential Antiviral Compound for COVID-19, Flu, Other Viral Infection

UMass Med News



UMass Medical School (UMMS) scientists led by Dr. Katherine Fitzgerald have identified a novel molecule capable of stimulating the innate immune system against SARS-CoV-2 virus. A trigger for the STING (stimulator of interferon genes) pathway, the compound, diamidobenzimidazole, protected animal models and human cells in the lab from SARS-CoV-2 infection. **Read More**

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Upcoming Events in Boston

June 22 3:00 PM	Early Career Funding for Biomedical Research: Meet the Richard and Susan Smith Family Foundation Online
June 23 1:00 PM	Genetics Research in Progress: Dr. Pei Tong Online
June 24 10:00 AM	The Unexpected Drivers of Waste in Clinical Trial Manufacturing Online
June 29 - July 1 8:00 AM	Transitioning into a Career in Clinical Research Online
July 7 8:00 AM	Introduction to Imaging for Researchers: Mechanisms & Methods Online

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