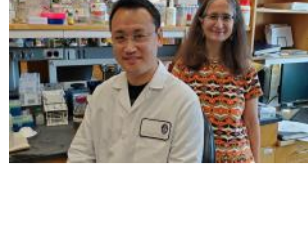


Publications of the Week

Microbiota-Derived Acetate Activates Intestinal Innate Immunity via the Tip60 Histone Acetyltransferase Complex

First Author: Bak-Erdene Jugder (pictured, left) | Senior Author: Paula Watnick (right)
Immunity | Boston Children's Hospital and Harvard Medical School



Microbe-derived acetate activates the Drosophila immunodeficiency (IMD) pathway in a subset of enteroendocrine cells of the anterior midgut. In these cells, the IMD pathway co-regulates expression of antimicrobial and enteroendocrine peptides including tachykinin, a repressor of intestinal lipid synthesis. Mutagenesis and RNA interference revealed that the putative monocarboxylic acid transporter Tareg was essential for enhancement of IMD signaling by dietary acetate. [Profile](#) | [Abstract](#)

Plasma from Patients with Bacterial Sepsis or Severe COVID-19 Induces Suppressive Myeloid Cell Production from Hematopoietic Progenitors *In Vitro*

First Author: Miguel Reyes | Senior Authors: Paul Blainey (pictured) and Nir Hacohen
Science Translational Medicine | Broad Institute, MIT, Massachusetts General Hospital, Harvard Medical School, and the Koch Institute



Patients with bacterial sepsis or severe COVID-19 have increased numbers of suppressive myeloid cells in their blood. The authors show that similar cells can be induced by treatment of healthy human bone marrow progenitor cells in culture with plasma from patients with bacterial sepsis or severe COVID-19. The differentiation of suppressive myeloid cells in this cell model depended on the cytokines interleukin (IL)-6 and IL-10, indicating a role for systemic factors in inducing myeloid dysregulation in patients with severe infections. [Abstract](#)

Fatty Acids Activate the Transcriptional Coactivator YAP1 to Promote Liver Fibrosis via p38 Mitogen-Activated Protein Kinase

First Author: Shadi Salloom | Senior Author: Raymond Chung (pictured)
Cellular and Molecular Gastroenterology and Hepatology | Massachusetts General Hospital, Harvard T.H. Chan School of Public Health, and Harvard Medical School, Boston.



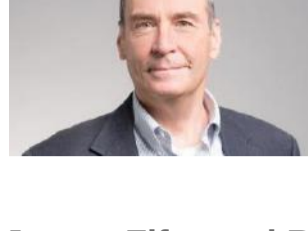
Because the Hippo signaling transcriptional coactivator YAP1 (YAP) has previously been linked with nonalcoholic fatty liver disease (NAFLD)-related fibrosis, the authors sought to explore how hepatocyte free fatty acids activate a YAP-mediated profibrogenic program. Hepatocyte-specific YAP deletion in the murine NAFLD model attenuated diet-induced fibrosis, suggesting a causative role of YAP in NAFLD-related fibrosis. [Abstract](#)

[View All Publications](#)

Awards

Bear Earns Amblyopia Research Award

The Picower Institute



Research to Prevent Blindness (RPB) has granted Picower Professor Dr. Mark Bear (pictured) a \$100,000 RPB Witt and Lily Disney Award for Amblyopia Research to support his work on a potential treatment for the disorder, the most common cause of lost vision starting in childhood, affecting millions around the world. The support is provided over a two-year period. [Read More](#)

James Fifer and Brenna Stallings Receive Dana Wright Fellowship

Boston University



James Fifer (pictured), a PhD candidate in the Davies Lab, and Brenna Stallings, an MS student of the Rojhan Lab, are recipients of the 2021 Dana Wright Fellowship. James is interested in investigating genomic signatures of latitudinal adaptation in several different coral species. He is employing physiological and population genetic tools to answer these questions. [Read More](#)

Congratulations to the 2021 Class of Bridging Academia with Industry

Massachusetts General Research Institute



The Bridging Academia with Industry translational research training program seeks to create a new culture of innovation through collaboration across academia and industry. This year's competition winners were Drs. Meredith Gregory-Ksander, Sarah Low, and Maryanne Senna (pictured) for their project, "Optically FAS Tracking Hair Regeneration" — delivering soluble Fas ligand to hair follicles via optogenetics to reset immune privilege and prevent immune attack. [Read More](#)

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Local News

Some Brain Disorders Exhibit Similar Circuit Malfunctions

Broad Institute



A new study has uncovered a common neural mechanism for a type of cognitive impairment seen in some people with autism and schizophrenia, even though the genetic variations that produce the impairments are different for each condition. "This study reveals a new circuit mechanism for cognitive impairment and points to a future direction for developing new therapeutics," says Dr. Guoping Feng (pictured). [Read More](#)

New Gene-Editing Technique Shows Promise against Sickle Cell Disease

The Harvard Gazette



A team of researchers led by scientists from Harvard and the Broad Institute used a new gene-editing technique to successfully treat sickle cell disease in mice. "Our hope and expectation is that this approach might result in a durable, one-time treatment and potentially a cure for sickle cell disease that carries fewer risks to the patient," said Dr. David Liu (pictured). [Read More](#)

Muscling up with Nanoparticle-Based Anti-Inflammatory Therapy

Wyss Institute



A research team at the Wyss Institute and the John A. Paulson School of Engineering and Applied Sciences led Dr. David Mooney (pictured) has developed a new approach in which specifically designed anti-inflammatory nanoparticles that could be applied locally and selectively to chronically inflamed muscles severely affected or at more immediate risk of deterioration due to Duchenne Muscular Dystrophy. [Read More](#)

Face Mask Can Help Diagnose COVID-19

The Harvard Gazette



A team of researchers from the Wyss Institute and MIT has found a way to embed synthetic biology reactions into fabrics, creating wearable biosensors that can be customized to detect pathogens and toxins and alert the wearer. "We have essentially shrunk an entire diagnostic laboratory down into a small, synthetic, biology-based sensor that works with any face mask," said Dr. Peter Nguyen (pictured). [Read More](#)

Engineered Yeast Could Expand Biofuels' Reach

MIT News



Boosting production of biofuels such as ethanol could be an important step toward reducing global consumption of fossil fuels. To try to expand biofuels' potential impact, a team of MIT engineers, including Dr. Gregory Stephanopoulos (pictured), has now found a way to expand the use of a wider range of nonfood feedstocks to produce such fuels. [Read More](#)

Researchers Create Structural Model that Explains How Charged Biopolymers Enhance Protein Clustering in Amyloid Diseases

Boston University School of Medicine (BUSM)



Amyloid diseases, including Alzheimer's, Parkinson's, type 2 diabetes, and other life-threatening diseases, involve pathologic deposits of normally soluble proteins or peptides as insoluble amyloid fibrils. When this happens in vital organs, such as the brain, kidney, liver, and heart, it causes organ damage and, if left untreated, death. A new study from BUSM improves our understanding of how heparan sulfate and related biopolymers can promote amyloid deposition in various organs. [Read More](#)

Antibody Evolution

Harvard Medical School



When harmful bacteria or viruses enter the body, immune cells spot telltale proteins known as antigens on the invaders' surfaces and send out armies of antibodies to fend them off. If some of those antibodies have just the right shape, they can latch onto and block the antigens like the key to a padlock. But our immune systems don't always have the right antibodies to fight a particular invader. [Read More](#)

Methodology from Genome-Wide Association Studies Accurately Flags More Deadly SARS-CoV-2 Variant

Harvard T. H. Chan School of Public Health



Using genome-wide association studies methodology to analyze whole-genome sequencing data of SARS-CoV-2 mutations and COVID-19 mortality data can identify highly pathogenic variants of the virus that should be flagged for containment, according to Harvard T.H. Chan School of Public Health and MIT researchers. [Read More](#)

A Detailed Atlas of the Developing Brain

Broad Institute



Researchers at Harvard University and the Broad Institute of MIT and Harvard have created a first detailed atlas of a critical region of the developing mouse brain, applying multiple advanced genomic technologies to the part of the cerebral cortex that is responsible for processing sensation from the body. By measuring how gene activity and regulation change over time, researchers now have a better understanding of how the cerebral cortex is built. [Read More](#)

A Class Project Helped Two Entrepreneurs Develop a New Contraceptive Device

News@Northeastern



It started with a class project in 2018. Emily Man and Valeria Martinuzzi hardly knew each other. Their idea for an affordable contraceptive device that was not associated with side-effects gained traction. They became co-founders of a startup, Venova Technologies. Now they have earned an inaugural \$10,000 Innovator Award from Northeastern's Women Who Empower inclusion and entrepreneurship initiative. [Read More](#)

Immunotherapy May Be Effective for Subset of Prostate Cancer

Both Israel Deaconess Medical Center



In recent years, cancer immunotherapy has been effective in treating patients with immunogenic, or so-called "hot" tumors with increased levels of inflammation and the presence of immune cells in and around the tumors. Prostate cancer, however, is considered a "cold" tumor, with few immune cells recognizing and infiltrating prostate malignancies. [Read More](#)

Further Hope for BCG Vaccine in Stemming Type 1 Diabetes

Massachusetts General Hospital



At the recent 2021 Annual Scientific Sessions of the American Diabetes Association, researchers from Massachusetts General Hospital presented positive updates on their trials of the bacillus Calmette-Guérin (BCG) vaccine to safely and significantly lower blood sugars. In type 1 diabetes, an autoimmune disease which currently has no cure, T cells attack the pancreas and destroy its ability to create insulin. [Read More](#)

Common Moles Could Serve as Players in Battling Melanoma and Preventing Its Recurrence

Massachusetts General Hospital



Researchers at Massachusetts General Hospital have found that a subset of white blood cells known as CD4+ T cells reside naturally in moles on the body and could be activated as part of a novel strategy to treat melanoma and generate a potent immunity against its recurrence. The team, led by Dr. Shadmehr Demeiri (pictured), learned that common moles are immunogenic targets for killer CD4+ T cells. [Read More](#)

Another Biogen Alzheimer's Drug Expedited by the FDA

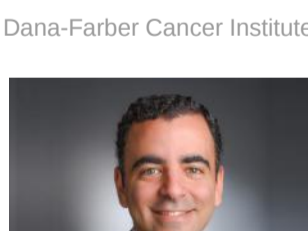
Boston Business Journal



Just weeks after winning approval from the US Food and Drug Administration (FDA) for its Alzheimer's drug Aducanumab — a decision that continues to be mired in controversy — Biogen has scored breakthrough therapy designation for another, similar drug called lecanemab. The designation means that the FDA will now expedite its review of lecanemab for the treatment of Alzheimer's disease. [Read More](#)

New Research Uncovers How Cancers with Common Gene Mutation Develop Resistance to Targeted Drugs

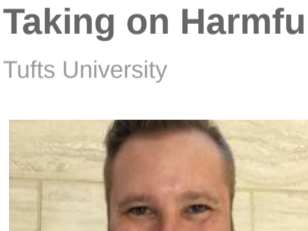
Dana-Farber Cancer Institute



A new study by Dana-Farber Cancer Institute researchers including Dr. Mark Anders (pictured) has given scientists their first look at the genomic landscape of tumors that have grown resistant to drugs targeting the abnormal KRASG12C protein. Their work shows that, far from adopting a common route to becoming resistant, the cells take a strikingly diverse set of avenues, often several at a time. [Read More](#)

Taking on Harmful Cells That Contribute to Age-Related Diseases

Tufts University



Dr. Christopher Wiley (pictured) is testing senolytics to counter senescent cells that promote afflictions like arthritis and Parkinson's disease. Senolytics are drugs that carry out search-and-destroy missions against senescent cells, which are linked to aging. "Studies in mice suggest that by destroying senescent cells, senolytics extended life by as much as 27 percent," says Dr. Wiley. [Read More](#)

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Interesting Articles

US House Backs Higher Spending Levels for NSF and DOE Science

Science Magazine



Members of the US House of Representatives have overwhelmingly approved two bills that would authorize massive spending increases at the National Science Foundation (NSF) and the Department of Energy's (DOE) Office of Science. One calls for more than doubling NSF's current annual budget of \$8.5 billion to \$17.9 billion by 2026, and the other would give the Office of Science a 63% boost, to \$11.1 billion, over the same 5-year period. [Read More](#)

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July 12 12:30 PM	Developing New Cancer Therapies: Patients as Partners Online
July 22 1:00 PM	Grant Writing Workshop Series Online
July 26-27 8:00 AM	Communicating the Future: Engaging the Public in Basic Science Online
July 28 11:00 AM	Literature Review Workshop Online

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