

**Publications of the Week**
**Gut Microbiota Regulation of P-Glycoprotein in the Intestinal Epithelium in Maintenance of Homeostasis**

First Author: Sage Foley | Senior Author: Beth McCormick (pictured) | Microbiome | UMass Medical School, Boston Children's Hospital, and Harvard Medical School



P-glycoprotein (P-gp) plays a critical role in protection of the intestinal epithelia by mediating efflux of drugs/xenobiotics from the intestinal mucosa into the gut lumen. Despite knowledge for over ten years that P-gp plays a central role in gastrointestinal homeostasis, the precise molecular mechanism that controls its functional expression and regulation remains unclear. The authors assessed how the intestinal microbiome drives P-gp expression and function. [Abstract](#)

**Sex-Specific Pubertal and Metabolic Regulation of Kiss1 Neurons via Nhlh2**

First Author: Silvia Leon | Senior Author: Victor Navarro (pictured) | eLife | Harvard Medical School and Brigham and Women's Hospital



Kiss1 neurons serve as a nodal center that conveys essential regulatory cues for the attainment and maintenance of reproductive function. Using Drop-Seq data from the arcuate nucleus of adult mice and *in situ* hybridization, the authors identified Nescient Helix-Loop-Helix 2 (Nhlh2), a transcription factor of the basic helix-loop-helix family, to be enriched in Kiss1 neurons. [Abstract](#)

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**Awards**
**BIDMC's Dr. Alexa Kimball Receives Lifetime Achievement Award from the National Psoriasis Foundation**

Beth Israel Deaconess Medical Center (BIDMC)



Dermatologist Dr. Alexa Kimball (pictured), President and CEO of Harvard Medical Faculty Physicians at BIDMC, has received the Lifetime Achievement Award from the National Psoriasis Foundation for her contributions to caring for those impacted by psoriasis through her research, teaching, and clinical efforts. "Serving my patients is at the center of all that I do, and it is to them that I dedicate this recognition," said Dr. Kimball. [Read More](#)

**Awards & Recognitions: September 2021**

Harvard Medical School (HMS)



Three HMS researchers are among 13 leading endocrinologists chosen by the Endocrine Society as winners of its 2022 Laureate Awards, which will be presented at the organization's annual meeting. Dr. Shingo Kajimura (pictured), HMS Associate Professor in Medicine at Beth Israel Deaconess, was named to receive the Richard E. Weitzman Outstanding Early Career Investigator Award. [Read More](#)

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**Local News**
**Triplet Therapy Shows Promise in Phase 2 Study in Chronic Lymphocytic Leukemia**

Dana-Farber Cancer Institute



A clinical research team led by Dana-Farber Cancer Institute reports that a combination of three molecularly targeted drugs is active against chronic lymphocytic leukemia (CLL), a form of blood cell cancer that primarily affects older adults. "This is the first published study to report on this three drug combination for the treatment of CLL," said first co-author Dr. Matthew Davids (pictured). [Read More](#)

**Novo Nordisk Foundation and Broad Institute of MIT and Harvard Launch New Research Center for Genomic Mechanisms of Disease**

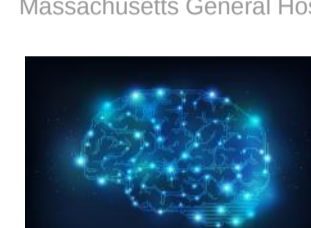
Broad Institute



The Novo Nordisk Foundation and the Broad Institute of MIT and Harvard have announced the launch of the Novo Nordisk Foundation Center for Genomic Mechanisms of Disease, an initiative that will accelerate efforts to mine genetic data for insights into disease mechanisms — and eventually rationally designed treatments. [Read More](#)

**Study Rules Out an Antioxidant Treatment for Slowing the Progression of Parkinson's Disease**

Massachusetts General Hospital



The hypothesis that raising the brain levels of the natural antioxidant urate could slow the progression of Parkinson's disease has been disproven by researchers at Massachusetts General Hospital. Still, the rigor of the clinical study and some of its novel investigative approaches are seen as improving the prospects for future clinical trials to demonstrate the benefits of disease-modifying therapies for people with Parkinson's disease. [Read More](#)

**Single Gene Linked to Repetitive Behaviors, Drug Addiction**

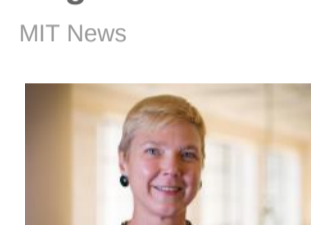
McGovern Institute



Making and breaking habits is a prime function of the striatum, a large forebrain region that underlies the cerebral cortex. McGovern researchers have identified a particular gene that controls striatal function as well as repetitive behaviors that are linked to drug addiction vulnerability. To identify genes involved specifically in striatal functions, MIT Professor Dr. Ann Graybiel (pictured) previously identified genes that are preferentially expressed in striatal neurons. [Read More](#)

**Engineers Grow Pancreatic "Organoids" That Mimic the Real Thing**

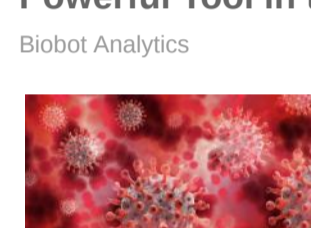
MIT News



MIT engineers, in collaboration with scientists at Cancer Research UK Manchester Institute, have developed a new way to grow tiny replicas of the pancreas, using either healthy or cancerous pancreatic cells. "The research community has been looking for ways to do more medical cultures of these kinds of organoids, and especially to control the microenvironment," says Dr. Linda Griffin (pictured). [Read More](#)

**Biobot Analytics Demonstrates the Utility of Wastewater Sequencing as a Powerful Tool in the Fight Against COVID-19 Variants**

Biobot Analytics



Biobot Analytics, in collaboration with Ginkgo Bioworks, has announced a successful campaign to sequence over 2,000 wastewater samples across all 50 states for SARS-CoV-2. This groundbreaking research and development effort, initiated as a part of the Department of Health and Human Services' national wastewater-based disease monitoring program, represents the largest wastewater sequencing effort ever undertaken in the United States. [Read More](#)

**The Importance of Modeling Neonatal Opioid Withdrawal and Brain Adaptations in Both Sexes**

BU School of Medicine



The ongoing opioid epidemic in the United States has led to an increase in the incidence of neonatal opioid withdrawal syndrome (NOWS). Researchers have identified sex-dependent changes in gene expression in the brainstem during neonatal opioid withdrawal, suggesting that distinct neurobiological mechanisms, and by extension, distinct potential therapeutic targets, could underlie NOWS symptoms and their effective treatment in females versus males. [Read More](#)

**eRapid: Developing a Multiplexed Electrochemical Diagnostic Platform from the Ground Up**

Wyss Institute



Wyss Institute Founding Director Dr. Donald Ingber (pictured) and his sensor team led by Senior Staff Scientist Dr. Pawan Jolly developed an eRapid affinity-based electrochemical sensor platform that enables versatile and multiplexed low-cost point-of-care diagnostics for different hard-to-detect diseases and disorders. [Read More](#)

**Insulin Resistance Pinned to Cell Signaling Defects That Could Act as Therapy Targets**

Joslin Diabetes



Insulin resistance in the general population seems likely to be caused by a series of cell-specific signaling defects, some of which appear to be sex-specific. In addition, only a portion of the defects are shared with those seen in diabetes. "Most people know that insulin is an important hormone for controlling blood glucose, but most people don't realize how important insulin is for all aspects of metabolism," said senior author Dr. Ronald Kahn (pictured). [Read More](#)

**From Brazil to Fenway Park, Researcher Strives to Save Lives with Science**

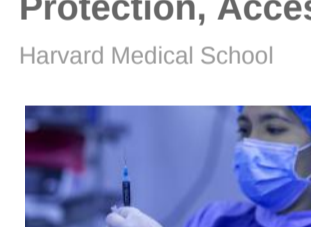
The Picower Institute



As a researcher studying Huntington's disease, and as a science communicator working tirelessly to keep Portuguese- and Spanish-speaking communities informed about COVID-19, Izabella Pena (pictured) is focused on keeping people safe. In the Picower Institute, she performs neurobiology research but what brought her to the pitcher's mound of Fenway Park to help throw the ceremonial first pitch on September 5 was, in a sense, her role as a research subject. [Read More](#)

**Protection, Accessibility, Durability**

Harvard Medical School



Many nations and communities are in acute need of COVID-19 vaccines. Producing more doses of approved vaccines — and developing new vaccines that are easy to make and have long shelf lives — are both critical to tamping down the coronavirus pandemic. An international collaboration including Harvard Medical School scientists at Massachusetts Eye and Ear has just taken a decisive step toward providing a new vaccine. [Read More](#)

**A New Gene-Delivery Vehicle Could Make Gene Therapy for Muscle Diseases Safer and More Effective**

Broad Institute



Genetic muscle diseases lead to progressive muscle wasting and often early death, with few treatment options and no cure. Some gene therapies that use a harmless virus to deliver a functioning copy of a disease-causing gene to cells have shown promise in clinical trials for a subset of muscular dystrophies, but have faced challenges. Researchers have engineered a gene-shuttling virus used in gene therapy to better target muscle tissue at lower doses. [Read More](#)

**New Programmable Gene Editing Proteins Found Outside of CRISPR Systems**

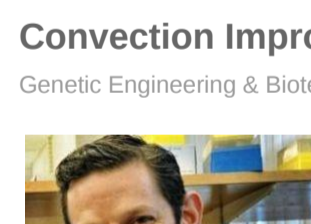
McGovern Institute



Within the last decade, scientists have adapted CRISPR systems from microbes into gene editing technology. Now, Drs. Sourmya Kannan (pictured), Han Altae-Tran, and a team at the McGovern and Broad Institutes have discovered a new class of programmable DNA modifying systems called Obligate Mobile Element Guided Activities, which may naturally be involved in shuffling small bits of DNA throughout bacterial genomes. [Read More](#)

**Convection Improves Survival and Insulin Secretion of Beta Cell Implants**

Genetic Engineering &amp; Biotechnology News



A team of researchers from Brigham and Women's Hospital, Harvard University, and the University of Massachusetts Medical School has designed a convection-enhanced macroencapsulation device that could significantly improve  $\beta$  cell replacement therapies to help many type 1 diabetes patients. "The next challenge is getting those cells into the body in a way that's minimally invasive and will have longevity with maximal function," said Dr. Jeffrey Karp (pictured). [Read More](#)

**Emulate Closes \$82 Million Series E Financing to Scale Amid Rapid Growth in Organ-on-a-Chip Market**

Emulate



Emulate, a leading provider of next-generation *in vitro* models, has announced the close of an \$82 million Series E financing round led by existing investor Northpond Ventures with additional participation from Perceptivest Advisors. Organ-on-a-chip technology by Emulate provides flexible microenvironments containing tiny hollow channels lined with living cells and tissues that can be subjected to mechanical forces that mirror breathing or digestion in the human body. [Read More](#)

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**Upcoming Events in Boston**

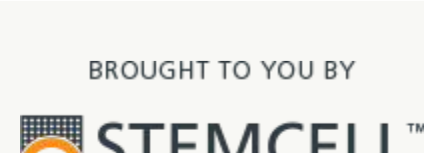
September 23 4:00 PM	Colloquium on the Brain and Cognition with Dr. Michelle Monje, Stanford University Online
September 24 4:00 PM	MIT Microbiome Club General Body Meeting with Dr. Alvaro Sanchez Online
September 28 8:45 AM	Perturbations, Therapeutics, and Machine Learning Online
September 28 4:00 PM	The Genetics of Opioid Addiction: What We Know, What We Are Learning Online
September 30 4:00 PM	Industry Career Chat with Flare Therapeutics Online

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