

Publications of the Week

Identification of Environmental Factors that Promote Intestinal Inflammation

First Authors: Liliana Sanmarco, Chun-Cheih Chao, Yu-Chao Wang, and Jessica Kenison | Senior Author: Francisco Quintana (*pictured*)
Nature | Brigham and Women's Hospital, Harvard Medical School, and the Broad Institute



Genome-wide association studies have identified risk loci linked to inflammatory bowel disease — a complex chronic inflammatory disorder of the gastrointestinal tract. The authors describe an integrated systems approach, combining publicly available databases, zebrafish chemical screens, machine learning, and mouse preclinical models to identify environmental factors that control intestinal inflammation. [Abstract](#)

Microfluidic Bioprinting of Tough Hydrogel-Based Vascular Conduits for Functional Blood Vessels

First Authors: Di Wang, Sushila Maharjan, and Xiao Kuang | Senior Author: Yu Shrike Zhang (*pictured*)
Science Advances | Brigham and Women's Hospital, Harvard Medical School, and MIT



Three-dimensional bioprinting of vascular tissues that are mechanically and functionally comparable to their native counterparts is an unmet challenge. The authors developed a tough double-network hydrogel (bio)ink for microfluidic (bio)printing of mono- and dual-layered hollow conduits to recreate vein- and artery-like tissues, respectively. [Abstract](#)

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Awards

Awards & Recognitions: October 2022

Harvard Medical School



Dr. Stuart Orkin (*pictured*), the David G. Nathan Distinguished Professor of Pediatrics at Harvard Medical School and Dana-Farber Cancer Institute, has been named a 2022 Citation Laureate by Clarivate. Dr. Orkin was recognized for foundational research on the genetic basis of blood diseases and for advancing gene therapy for sickle cell anemia and beta-thalassemia. [Read More](#)

BU Neuroscientist Steve Ramirez Given \$1.15 Million Chan Zuckerberg Initiative Science Diversity Leadership Award

The Brink



Dr. Steve Ramirez (*pictured*), a BU neuroscientist studying memory with the goal of improving mental health treatment, has been given an inaugural Science Diversity Leadership Award by the Chan Zuckerberg Initiative. The awards — launched in partnership with the National Academies of Sciences, Engineering, and Medicine — champion early- and mid-career scientists with a proven research record and a commitment to diversifying their field. [Read More](#)

Catherine Drennan Wins American Society for Biochemistry and Molecular Biology's William C. Rose Award

MIT Chemistry



Dr. Catherine Drennan (*pictured*), Professor of Biology and Chemistry, has been named the recipient of the American Society for Biochemistry and Molecular Biology's 2023 William C. Rose Award for her outstanding contributions to biochemical research and commitment to training younger scientists. By combining X-ray crystallography, cryo-electron microscopy, and other biophysical methods, the goal of the Drennan lab is to “visualize” molecular processes by obtaining snapshots of enzymes in action. [Read More](#)

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Local News

Juan Mauricio Pérez on Teaching Tissue Culture

Wyss Institute



After attending a Harvard Stem Cell Institute training during his time in college on the promise of sharing what he learned with others, Juan Mauricio (Maurice) Pérez (*pictured*) realized that not only did he love working with cells, but he was also passionate about teaching. Now, he enables scientific translation by training Wyss researchers in tissue culture, biosafety, and lab best practices — all while keeping a smile on his face and bringing joy and laughter to others. [Read More](#)

Study of Rare Bone Disease Led by UMass Chan Researcher Jae-Hyuck Shim Reaches Important Milestone

UMass Chan Medical School



Progress by a UMass Chan Medical School researcher in developing a gene therapy for a rare, crippling bone disease has reached an important milestone with demonstration of proof-of-concept in a humanized mouse model of fibrodysplasia ossificans progressiva (FOP) and human FOP patient-derived cells. The research was published in *Nature Communications*. [Read More](#)

Study Explores the Effects of Changes in the Non-Coding Genome in Neurodevelopmental Disorders

Broad Institute

Less than two percent of the human genome is made up of genes that code for proteins, with the remaining 98 percent being non-coding and involved in regulating



gene expression. In a new study, researchers at the Broad Institute and Massachusetts General Hospital have discovered that structural variants in the non-coding region near a gene called *MEF2C* — a transcription factor that has been linked to neurodevelopmental disorders — can mimic the effects of changes in the gene itself. [Read More](#)

Innovative Research on Modifying Vaginal Microbiome to Treat Bacterial Vaginosis

Advances in Motion



Innovative research at Massachusetts General Hospital is evaluating the efficacy of vaginal fluid transplantation to prevent recurrent bacterial vaginosis, the most common vaginal condition among women. "The frustrations shared by clinicians and patients concerning this condition are based largely on the complicated nature of vaginal health and the limited research targeting this area," says Dr. Caroline Mitchell (*pictured*). [Read More](#)

Magnetic Sensors Track Muscle Length

McGovern Institute



Using a simple set of magnets, MIT researchers have come up with a sophisticated way to monitor muscle movements, which they hope will make it easier for people with amputations to control their prosthetic limbs. In a new pair of papers, the researchers demonstrated the accuracy and safety of their magnet-based system, which can track the length of muscles during movement. [Read More](#)

Research Spotlight: SARS-CoV-2 Placentitis, and How Maternal COVID-19 Vaccination Could Prevent Stillbirth

Massachusetts General Hospital



Stillbirth is a recognized complication of COVID-19 in pregnant women that has recently been demonstrated to be caused by SARS-CoV-2 infection of the placenta. This infection caused by the virus has been termed SARS-CoV-2 placentitis, and can negatively impact more than 75% of the placenta, effectively rendering it incapable of performing its function of providing oxygen to the fetus.

[Read More](#)

Engineering Better Ways to Deliver Drug Therapies

Brigham Clinical & Research News



Getting cancer drugs to the correct locations is one of the biggest challenges in treating solid tumors, especially brain cancer. The brain is protected by the blood-brain barrier, which blocks more than 98 percent of drugs from reaching the tissue. To address this obstacle, Dr. Natalie Artzi (*pictured*) and her team are focused on engineering biomaterials that can enhance the effectiveness of drug delivery.

[Read More](#)

A 'Door' into the Mitochondrial Membrane



Over the course of evolution, cells evolved a specific mechanism by which to insert proteins on the outer mitochondrial membrane into the membrane itself. But what that mechanism was, and what cellular players were involved, has long been a mystery. A new paper from the labs of Whitehead Institute member Dr. Jonathan Weissman (*pictured*) and California Institute of Technology Professor Rebecca Voorhees provides a solution to that mystery. [Read More](#)

How AI Can Help Diagnose Rare Diseases

Harvard Medical School



Rare diseases are often difficult to diagnose, and predicting the best course of treatment can be challenging for clinicians. To help address these challenges, investigators from Dr. Faisal Mahmood's lab at Harvard Medical School and Brigham and Women's Hospital have developed a deep-learning algorithm that can teach itself to learn features that can then be used to find similar cases in large pathology image repositories. [Read More](#)

Hansjörg Wyss Gives Fourth Transformational Gift to Support Harvard's Wyss Institute and its Mission to Positively Impact the World through Disruptive Innovation

Wyss Institute



Harvard University has announced the latest gift of \$350 million from Hansjörg Wyss (*pictured*), an entrepreneur and philanthropist, to support the continued mission of the Wyss Institute and ensure that it will continue to make a positive impact in the world for many years to come. This gift builds upon Hansjörg Wyss' initial \$125 million gift that enabled the founding of the Institute, and his subsequent gifts of \$125 million in 2013 and \$131 million in 2019 for the Institute to advance its pioneering work. [Read More](#)

Study Identifies Markers of Response to CAR T Cell Therapies

Dana-Farber Cancer Institute



In a new paper in *Nature Medicine*, researchers at Dana-Farber, the Broad Institute, and Massachusetts General Hospital analyzed blood samples of patients who received CAR T cell therapy and found molecular markers of how the patients responded to treatment. "Gaining understanding of the T cell phenotypes of CAR T cells before and after infusion provides us with insight into the basis for why patients do or do not respond to this potentially life-saving therapy," says study co-senior author Dr. Catherine Wu (*pictured*). [Read More](#)

BIDMC Team Joins NIH Initiative Creating Human Cellular Map

Beth Israel Deaconess Medical Centre

In a monumental undertaking to learn more about the relationship between cell function and health, the National Institutes of Health (NIH) launched the Human BioMolecular Atlas Program (HuBMAP) to develop a framework for mapping the human body cell by cell. Now, a team led by researchers at Beth Israel Deaconess



Medical Center are joining the national program and will be the first HuBMAP group responsible for mapping human lymphatic system at the molecular level.

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Upcoming Events in Boston

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| November 3
8:00 AM | The Forsyth Institute 5th Scientific Symposium: Craniofacial Biology, Disease, and Regeneration
Forsyth Institute & Online |
| November 3
3:00 PM | 2022 Digital Health Impact
MassBioHub & Online |
| November 5
6:30 PM | High Hopes Gala
SoWa Power Station |
| November 15
8:00 AM | Understanding How the Inflation Reduction Act Impacts the Ecosystem
MassBioHub & Online |
| November 15
5:30 PM | Women's Health, Women Leaders: A Conversation with Paula Johnson, President, Wellesley College
Whitehead Institute |

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Science Jobs in Boston

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STEMCELL Technologies

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Sana Biotechnology

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Moderna

Research Associate/Associate Scientist
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Broad Institute

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