

**Publications of the Week**
**Human Sensorimotor Organoids Derived from Healthy and Amyotrophic Lateral Sclerosis Stem Cells Form Neuromuscular Junctions**

First Author: João Pereira | Senior Author: Brian Wainger (pictured)  
 Nature Communications | Harvard Medical School, Massachusetts General Hospital, Harvard Stem Cell Institute, and Broad Institute



Human induced pluripotent stem cells hold promise for modeling diseases in individual human genetic backgrounds and thus for developing precision medicine. The authors generate sensorimotor organoids containing physiologically functional neuromuscular junctions and apply the model to different subgroups of amyotrophic lateral sclerosis. [Abstract](#)

**Integrating CD4<sup>+</sup> T Cell Help for Therapeutic Cancer Vaccination in a Preclinical Head and Neck Cancer Model**

First Author: Hirofumi Shibata | Senior Author: Ravindra Uppaluri (pictured)  
 Oncotarget | Dana-Farber Cancer Institute and Brigham and Women's Hospital



Head and neck squamous cell carcinomas are well suited for cancer vaccination strategies. The authors extend previous studies to evaluate therapeutic vaccination in the mouse oral cancer 22 model. Therapeutic mutant intercellular adhesion molecule 1 (mICAM1) vaccination attenuated tumor growth effectively with mICAM1-specific T cells displaying durable interferon gamma production compared with a p15E synthetic long peptide. [Abstract](#)

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**Local News**
**Toward Better Medicine**

Harvard Medical School



A gift from the Berkowitz family will establish The Ivan and Francesca Berkowitz Family Living Laboratory Collaboration at Harvard Medical School and Chailt Research Institute. "This work, powered by the passion and vision of the Berkowitz family, is an example of cross-pollination across countries, across institutions, and across disciplines," said Dr. George Daley (pictured), Dean of Harvard Medical School. [Read More](#)

**Scientists Harness Human Protein to Deliver Molecular Medicines to Cells**

MIT News



Researchers led by Dr. Feng Zhang (pictured) have developed a new way to deliver molecular therapies to cells. The system, Selective Endogenous eNcapsidation for cellular Delivery (SEND), can be programmed to encapsulate and deliver different RNA cargoes. SEND harnesses natural proteins in the body that form virus-like particles and bind RNA, and it may provoke less of an immune response than other delivery approaches. [Read More](#)

**BIDMC Opens First-of-Its-Kind Spatial Technologies Unit to Massachusetts' Precision Medicine Research Community**

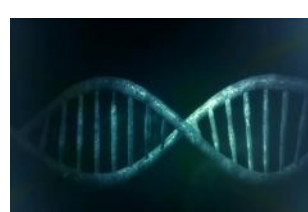
Beth Israel Deaconess Medical Center (BIDMC)



With the goal of dramatically accelerating discoveries in health and disease, BIDMC has opened its Spatial Technologies Unit, the first center in Massachusetts and one of the first of its kind worldwide. "Beth Israel Deaconess Medical Center's new Spatial Technologies Unit provides powerful resources and unique opportunities not only for our own research community, but for the precision medicine community as a whole," said Chief Academic Officer Dr. Gyongyi Szabo (pictured). [Read More](#)

**Company Founded by MIT Alumnus Lets Anyone Run DNA Experiments**

MIT News



If you gave students around the world the power to study and manipulate genes in a test tube, what would they do with it? MiniPCR bio first began selling its portable, inexpensive polymerase chain reaction (PCR) machines in 2013. The machines allow users to multiply specific strands of DNA in minutes, following along with experiments through a phone app. Since then, the founders have been amazed at the amount of learning and research that has come from the devices. [Read More](#)

**Study Finds Some Immune Responses Decrease after Repetitive Head Trauma and during Early CTE**

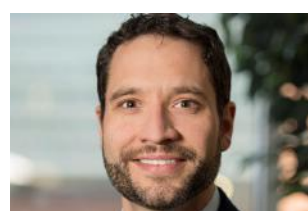
Boston University School of Medicine



While previous research from Boston University's Chronic Traumatic Encephalopathy (CTE) Center has shown that the connection between repetitive head trauma and CTE may occur partly through elevated neuroinflammation, a new study has found that the type of immune response that occurs in early CTE is not uniform and that some aspects of it might be impaired and decrease after injury. [Read More](#)

**New Research May Help Scientists Grow More Complex and Mature Heart Tissue in the Lab**

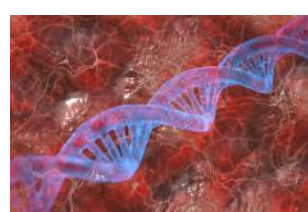
Massachusetts General Hospital



A team led by Dr. Harald Ott (pictured) has generated premature cells that support early heart development but vanish soon after birth. The investigators hope that the advance, which is described in *Nature Communications*, will help bring them closer to achieving their goal of using patients' cells to generate functioning heart tissue that could be transplanted, similar to donor organs, for the treatment of heart failure. [Read More](#)

**New CRISPR-Based Technology Could Revolutionize Antibody-Based Medical Diagnostics**

Phys.org



Scientists have repurposed the genetic modification technology CRISPR to identify antibodies in patient blood samples in a move that could inspire a new class of medical diagnostics in addition to a host of other applications. The technology involves customizable collections of proteins that are attached to a variant of Cas9, the protein at the heart of CRISPR, that will bind to DNA but not cut it as it would when used for genetic modification. [Read More](#)

**Researchers Identify Mechanisms of Resistance to Drug for Triple-Negative Breast Cancer**

Massachusetts General Hospital



Massachusetts General Hospital researchers have identified for the first time how a highly aggressive form of breast cancer can evade one of the most powerful and effective drugs used to treat it. "The findings have potential clinical significance for guiding antibody-drug conjugate sequencing for patients with breast cancer," says Dr. Aditya Bardia (pictured). [Read More](#)

**Summer Students Thrive in Picower labs**

The Picower Institute



Undergraduates from colleges across the country gain scientific training, mentorship, and experience as participants in the MIT Summer Research Program. Sonia Okekenwa said a particularly valuable aspect of her work in Dr. Li-Huei Tsai's (pictured) lab was the frequent dialogue she had with postdoctoral mentor and other lab members, who challenged her to think deeply about what she was finding out in her research mapping where DNA breaks open to enable neuronal processes. [Read More](#)

**Origins of Mutation**

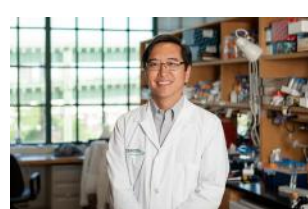
Harvard Medical School



The precise transmission of genetic information from one generation to the next is fundamental to life. Most of the time, this process unfolds with remarkable accuracy, but when it goes awry, mutations can arise — some of them beneficial, some of them inconsequential, and some of them causing malfunction and disease. Yet, precisely where and how heritable genetic mutations tend to arise in humans has remained largely unknown. [Read More](#)

**Researchers Pinpoint How PARP Inhibitors Combat BRCA1 and BRCA2 Tumor Cells**

Massachusetts General Hospital



A team of Massachusetts General Hospital researchers led by Dr. Lee Zou (pictured) has discovered how an important class of anti-cancer drugs called poly adenosine diphosphate-ribose polymerase (PARP) inhibitors works, a finding that could help improve treatment and prolong survival for patients with breast cancer and other malignancies. They found that PARP inhibitors work by creating gaps in tumor cell DNA that remain present through multiple cell cycles. [Read More](#)

**Grad Student Spotlight: Carlos Rivera-López**

Harvard Molecular and Cellular Biology



Molecules, Cells and Organisms graduate student Carlos Rivera-López (pictured) recently joined the Srivastava Lab, where he will study stem cells that enable regeneration in an aquatic worm called *Holstena miamia*. He is also co-leading the Summer Research Opportunities at Harvard program and hosts a website called Latinx in STEM, which features an extensive list of resources for Latinx students interested in pursuing graduate school. [Read More](#)

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**Upcoming Events in Boston**

August 25 12:00 PM	<b>RDM Experts Mini-Workshop: Tools for Reproducible Research</b> Online
September 9 12:00 PM	<b>Topics in Bioengineering: Khuluod Al Jamal</b> Online
September 10 12:30 PM	<b>A Fair Shot: Vaccine Patent Protections and Global Access</b> Online
September 13 4:30 PM	<b>The Next Normal: Global Health</b> Online
September 17 8:30 AM	<b>Engineering the Next Wave of Immunotherapy</b> Online

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