Volume 7.42: October 27, 2025

Publications of the Week

Active Zone Maturation Controls Presynaptic Output and Release Mode and Is Regulated by Neuronal Activity

First Author: Yulia Akbergenova *(pictured)* | Senior Author: J. Troy Littleton
The Journal of Neuroscience | The Picower Institute for Learning and Memory and MIT

Synapse formation requires the accumulation of cytomatrix proteins and voltage-gated Ca^{2+} channels (VGCCs) at presynaptic active zones (AZs). To examine how AZ maturation regulates presynaptic output, serial imaging of AZ formation and function was performed at time-stamped synapses of male larvae expressing glutamate receptors linked to the photoconvertible protein mMaple.

Abstract | Press Release

Engineered 3D Immuno-Glial-Neurovascular Human miBrain Model

First Authors: Alice Stanton *(pictured)* and Adele Bubnys | Senior Author: Li-Huei Tsai
Proceedings of the National Academy of Sciences | Boston Children's Hospital and MIT

To address the lack of human cell-based models incorporating all six of the major brain cell types together, which are critically needed to mimic features of brain pathobiology and accelerate mechanistic understanding and therapeutic testing, researchers have developed, characterized, and harnessed a patient-specific preclinical brain model composed of 3D immuno-glial-neurovascular units.

Abstract | Press Release

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Awards

Garcia-Beltran Lab Awarded NIH High-Risk, High-Reward Award to Engineer NK-Cell Therapies for Solid Tumors

Ragon Institute

Dr. Wilfredo Garcia-Beltran *(pictured)* has received a National Institutes of Health (NIH) High-Risk, High-Reward Research Program (HRHR) award to propel a new project that retools natural killer (NK) cells to better locate, enter, and destroy solid tumors. The HRHR program, part of the NIH Common Fund, backs unusually bold, creative ideas with the potential for broad impact across biomedicine. **Read More**

Hannah McCalmon Awarded NIH F31 Fellowship to Study How the Brain Remembers Smells

Harvard University Department of Molecular and Cellular Biology (MCB)

Fourth-year PhD student Hannah McCalmon *(pictured)* of the Venkatesh Murthy Lab in MCB has been awarded an National Institutes of Health (NIH) F31 Predoctoral Fellowship to support her research on how the brain recognizes familiar smells over time. Her project explores how the brain balances consistency and adaptability in sensory perception. **Read More**

NIH Honors Two BU Researchers for Exceptionally Creative, High-Impact Science

The Brink

Two Boston University (BU) researchers have received prestigious awards from the National Institutes of Health (NIH) for their efforts to improve sexual well-being and to stop mosquitoes from biting us. Drs. Meg Younger *(pictured, left)* and Julia Bond *(right)* have been awarded the NIH Director's New Innovator Award and Early Independence Award respectively. **Read More**

BU Biomedical Engineer Christopher Chen Elected to National Academy of Medicine

The Brink

Boston University (BU) Biomedical Engineer Dr. Christopher Chen *(pictured)* has been elected to the National Academy of Medicine. The nonprofit institution, founded to provide objective advice to the US government, says membership "signifies the pinnacle of professional achievement and commitment to volunteer service." **Read More**

Jessica Spinelli, Emma Watson Named to Distinguished HHMI Scholars Program

UMass Chan Medical School

Two UMass Chan Medical School researchers have been named to the renowned Howard Hughes Medical Institute (HHMI) Freeman Hrabowski Scholars program. Drs. Jessica Spinelli *(pictured, right)*, Assistant Professor of Molecular Medicine, and Emma Watson *(left)*, Assistant Professor of Systems Biology, are the first UMass Chan faculty members to receive the distinction of being named Freeman Hrabowski Scholars. **Read More**

Charles Park Named 2025 STAT Wunderkind

Wyss Institute

The Wyss Institutehas announced that Dr. Charles Park *(pictured)*, a postdoctoral researcher in the Wyss' Immuno-Materials Platform has been named a 2025 STAT Wunderkind by *STAT News*. The STAT Wunderkinds are annual awards that honor early-career scientists whose creativity and perseverance are helping to reshape biomedical research and health care. **Read More**

View All Awards

Local News

New MIT Initiative Seeks to Transform Rare Brain Disorders Research

MIT News

Ana Méndez *(pictured, left)* and Rajeev Jayavant *(right)* have established the Rare Brain Disorders Nexus — or RareNet — at MIT's McGovern Institute. "Ana and Rajeev's commitment to MIT will form crucial partnerships to propel the translation of scientific discoveries into promising therapeutics and expand the Institute's impact on the rare brain disorders community," says MIT President Sally Kornbluth. **Read More**

Chemists Create Red Fluorescent Dyes That May Enable Clearer Biomedical Imaging

MIT Chemistry

MIT chemists have designed a new type of fluorescent molecule that they hope could be used for applications such as generating clearer images of tumors. The new dye is based on a borenium ion, a positively charged form of boron that can emit light in the red to near-infrared range. In a *Nature Chemistry* study, the researchers showed that they could stabilize borenium ions by attaching them to a ligand. **Read More**

In a Surprising Discovery, Scientists Find Tiny Loops in the Genomes of Dividing Cells

MIT News

Using a high-resolution genome mapping technique, an MIT research team led by Dr. Anders Sejr Hansen *(pictured)* discovered that small 3D loops connecting regulatory elements and genes persist in the genome during cell division, or mitosis. The researchers also discovered that these regulatory loops appear to strengthen when chromosomes become more compact in preparation for cell division. **Read More**

Human Organ Chip Technology Sets Stage for Pan-Influenza A CRISPR RNA Therapies

Wyss Institute

Testing for effective antiviral treatments against Influenza A virus (IAV) have been hampered by the absence of a suitable human *in vitro* model. A new collaborative study addressed these challenges by simultaneously leveraging a microfluidic "breathing" human lung alveolus chip model of IAV infection developed by Dr. Donald Ingber *(pictured)*, drug delivery platforms advanced by Dr. Natalie Artzi, and state-of-the-art CRISPR technology. **Read More**

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Upcoming Events in Boston

October 28 - 30 8:00 AM	**The 7th Gene Therapy for CNS Summit** Hilton Boston Logan Airport
November 7 8:30 AM	**Broad Institute Machine Learning in Drug Discovery Symposium 2025** Broad Institute
November 20 8:00 AM	**2025 R&D Reimagined** MassBioHub
December 11 - 12 9:00 AM	**Boston International Symposium: Accelerating PSC-Derived Cell Therapies** Hyatt Regency Cambridge
December 11 4:30 PM	**Better Together** Ragon Institute

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Science Jobs in Boston

Scientist, Cell Biology
The ALS Therapy Development Institute

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Sanofi

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Vertex

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Beth Israel Deaconess Medical Center

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Harvard University

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