Volume 7.04: February 3, 2025

Publications of the Week

Long Somatic DNA-Repeat Expansion Drives Neurodegeneration in Huntington's Disease

First Authors: Robert Handsaker, Seva Kashin, and Nora Reed | Senior Authors: Sabina Berretta and Steven McCarroll *(pictured, right)*
Cell | Broad Institute, Harvard Medical School, and Howard Hughes Medical Institute

In Huntington's disease, striatal projection neurons degenerate during midlife. The core biological question involves how the disease-causing DNA repeat $(CAG)_n$ in the *huntingtin* (*HTT*) gene leads to neurodegeneration after decades of biological latency. Researchers developed a single-cell method for measuring this repeat's length alongside genome-wide RNA expression. **Abstract | Press Release**

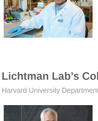
Variants and Vaccines Impact Nasal Immunity Over Three Waves of SARS-CoV-2

First Authors: Jaclyn Walsh, Vincent Miao, Anna Owings, Ying Tang, and Joshua Bromley | Senior Authors: Alex Shalek *(pictured)*, Bruce Horwitz, Sarah Glover, and José Ordovás-Montañes
Nature Immunology | Boston Children's Hospital, Harvard Medical School, Broad Institute, Ragon Institute, and MIT

Viral variant and host vaccination status impact infection with SARS-CoV-2. Researchers performed single-cell RNA sequencing on nasopharyngeal swabs from vaccinated and unvaccinated adults with acute Delta and Omicron SARS-CoV-2 infections and integrated with data from acute infections with ancestral SARS-CoV-2. **Abstract | Press Release**

Rickettsia parkeri Forms Extensive, Stable Contacts with the Rough Endoplasmic Reticulum

First Author: Yamilex Acevedo-Sánchez | Senior Author: Rebecca Lamason *(pictured)*
Journal of Cell Biology | Harvard University and MIT



Upon invasion into the host cell, a subset of bacterial pathogens resides exclusively in the cytosol. While previous research revealed how they reshape the plasma membrane during invasion, it was unclear if these pathogens also interacted with the organelles in this crowded intracellular space. Here, researchers examined if the obligate intracellular pathogen *Rickettsia parkeri* interacts with the endoplasmic reticulum. **Abstract | Press Release**

View All Publications

Awards

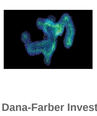
Announcing the 2025 Giuliani Scholars: Advancing Global Health Through Groundbreaking Research

Ragon Institute

The Ragon Institute has announced the 2025 recipients of the Giammaria and Sabrina Giuliani Faculty Support Fund, an endowed fund dedicated to advancing transformative research at the Institute. This year's awardees are Drs. Gaurav Gaiha, Azza Idris *(pictured)*, Aaron Schmidt, and Hernandez Moura Silva, four exceptional scientists whose work is shaping the future of immunology and global health. **Read More**

PhD Candidate Alejandro Félix Mejía's mRNA Research Funded by Kirschstein Award

UMass Chan Medical School



Alejandro Félix Mejía *(pictured)*, a PhD candidate in the Morningside Graduate School of Biomedical Sciences' Interdisciplinary Program, has received a Ruth L. Kirschstein National Research Service Award Individual Predoctoral Fellowship from the National Institute of General Medical Sciences. The funding will support the UMass Chan Medical School student's work on mRNA therapeutics research. **Read More**

Lichtman Lab's Collaborative Work Honored with 2024 Good Tech Award

Harvard University Department of Molecular and Cellular Biology (MCB)

A groundbreaking paper co-authored by the lab of MCB's Dr. Jeff Lichtman *(pictured)* has been named a recipient of the 2024 Good Tech Awards by *The New York Times*. This prestigious award celebrates innovations that use technology to make a significant positive impact on the world. The award-winning paper, titled "Mapping the Human Brain: 150 Million Synapses and Counting," was published in *Science*. **Read More**

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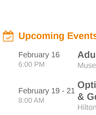
Local News

Scientists Uncover Structure of Critical Component in Deadly Nipah Virus

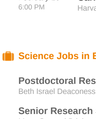
Harvard Medical School



Scientists at Harvard Medical School and Boston University Chobanian & Avedisian School of Medicine have mapped a critical component of the Nipah virus, a highly lethal bat-borne pathogen that has caused outbreaks in humans almost every year since it was identified in 1999. The advance, led by Dr. Rachel Fearns *(pictured)*, brings scientists a step closer to developing much-needed medicines. **Read More**

MIT Method Enables Ultrafast Protein Labeling of Tens of Millions of Densely Packed Cells in Organ-Scale Tissues

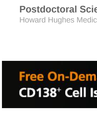
The Picower Institute for Learning and Memory



A new technology developed at MIT by Dr. Kwanghun Chung's *(pictured)* lab enables scientists to label proteins across millions of individual cells in fully intact 3D tissues with unprecedented speed, uniformity, and versatility. Using the technology, the team was able to richly label whole rodent brains and other large tissue samples in a single day. **Read More**

Could We Cure or Prevent Food Allergy by Targeting an Intestinal Protein?

Boston Children's Hospital



When is food simply nourishing and enjoyable, and when does it provoke an allergic reaction? The answer appears to lie in the balance of microbes that live in our intestine — and a specific protein secreted by intestinal goblet cells that influences that balance. Excess amounts of this protein, RELMß, change the profile of intestinal microbes in a way that causes the body not to tolerate certain triggering foods. **Read More**

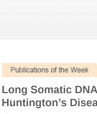
Dana-Farber Investigators Pinpoint Keys to Cell Therapy Response for Leukemia

Dana-Farber Cancer Institute

Dr. Katie Maurer *(pictured)* has identified factors that determine whether donor lymphocyte infusion (DLI), a standard therapy for patients with acute myeloid leukemia who have relapsed after allogenic hematopoietic stem cell transplant, will successfully move the patient into remission. The team identified that a key cell type in the DLI product and features of the tumor microenvironment in patients both play a role. **Read More**

A New Vaccine Approach Could Help Combat Future Coronavirus Pandemics

MIT News



A new experimental vaccine developed by researchers at MIT could offer protection against emerging variants of SARS-CoV-2, as well as related coronaviruses. The nanoparticle-based vaccine shows promise against many variants of SARS-CoV-2 by using up to eight different versions of receptor binding proteins that tend to remain unchanged across all strains of the viruses. **Read More**

Li Li on Bringing Advanced Omics Technology to Dermatology

Wyss Institute

Dr. Li Li *(pictured)* is working on a Validation Project called GeneSkin. Her team has discovered novel gene targets that regulate scar formation and fibrosis, and they aim to validate new disease-modifying approaches based on these targets in both *in vitro* and *in vivo* models. They want to apply these effective therapeutic solutions for skin rejuvenation and hair regeneration, contributing to better dermatological health and well-being. **Read More**

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Upcoming Events in Boston

February 16 6:00 PM	**Adult Night at Science Park** Museum of Science
February 19 - 21 8:00 AM	**Optimizing Upstream & Downstream Process Development for Cell & Gene Therapies** Hilton Boston Back Bay
February 20 7:30 PM	**Generative AI and the New Dawn of Life Sciences and Healthcare** Museum of Science
February 25 1:30 PM	**10th Annual Rare Disease Day Event: An Era of Innovation for Rare Diseases** Broad Institute
February 26 6:00 PM	**Carl Zimmer at the Harvard Science Center** Harvard Science Center

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Science Jobs in Boston

Postdoctoral Research Fellow
Beth Israel Deaconess Medical Center

Senior Research Scientist
Mass General Brigham

Research Assistant II
Harvard Medical School

Postdoctoral Research Fellow, Leukemia & Epigenetics
Dana-Farber Cancer Institute

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