



Publications of the Week

The Choroid Plexus Synergizes with Immune Cells During Neuroinflammation

First Author: Huixin Xu | Senior Author: Maria Lehtinen (*pictured*)
Cell | Boston Children's Hospital and Harvard Medical School



The choroid plexus (ChP) is a vital brain barrier and source of cerebrospinal fluid. Here, researchers used longitudinal two-photon imaging in awake mice and single-cell transcriptomics to elucidate the mechanisms of ChP regulation of brain inflammation. They provide a mechanistic understanding and a comprehensive roadmap of neuroinflammation at the ChP brain barrier. [Abstract](#) | [Press Release](#)

Parsing Digital or Analog TCR Performance Through Piconewton Forces

First Author: Aoi Akitsu | Senior Authors: Matthew Lang and Ellis Reinherz (*pictured*)
Science Advances | Dana-Farber Cancer Institute and Harvard Medical School



$\alpha\beta$ T cell receptors (TCRs) principally recognize aberrant peptides bound to major histocompatibility complex molecules (pMHCs) on unhealthy cells, amplifying specificity and sensitivity through physical load placed on the TCR-pMHC bond during immunosurveillance. To understand this mechanobiology, TCRs stimulated by abundantly and sparsely arrayed epitopes following *in vivo* influenza A virus infection were studied with optical tweezers. [Abstract](#)

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Awards

Joslin Diabetes Center Investigator Dr. Rohit Kulkarni Awarded \$10 Million NIH/NIDDK Grant for Pioneering Diabetes and Obesity Research

Beth Israel Lahey Health Joslin Diabetes Center



Dr. Rohit Kulkarni (*pictured*), the Diabetes and Wellness Research Foundation Endowed Chair and Co-Head of the Section on Islet & Regenerative Biology at Joslin Diabetes Center, has been awarded \$9,920,607 from the National Institute of Diabetes and Digestive and Kidney Diseases. The five-year grant will support Dr. Kulkarni and colleagues' groundbreaking research examining gene expression and regulatory activity in multiple metabolic cells. [Read More](#)

Two Whitehead Institute Graduate Researchers Awarded the 2024 Regeneron Prize for Creative Innovation

Whitehead Institute



Whitehead Institute graduate student researchers Christopher Giuliano (*pictured, left*) and Julian Roesler (*right*) have been awarded the 2024 Regeneron Prize for Creative Innovation. The Regeneron Prize, sponsored by global biotechnology company Regeneron Pharmaceuticals, is a competitive award designed to recognize exceptional talent and originality in biomedical research. [Read More](#)

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Local News

Identifying Potential New Protein Targets for Melanoma Therapeutics

Brigham Clinical & Research News



Some proteins can stop the immune system from attacking cancer cells and support the growth of cancer. Therapies targeting these proteins can be highly effective, but tumors can become resistant. Researchers from Brigham and Women's Hospital including Dr. Yu-Hwa Huang (*pictured*) applied a method to detect proteins on a single-cell level to uncover human carcinoembryonic antigen cell adhesion molecule 1 patterns in melanoma. [Read More](#)

New Approach Enables a Closer Look at Brain Cell Organelle

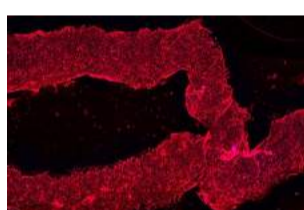
Whitehead Institute



Microglial phagosomes play important roles in brain development, brain function, and a plethora of brain diseases, including neurodegeneration and brain cancer. Therefore, understanding microglial phagosome biology could help to develop new therapies for currently untreatable brain diseases. Whitehead Institute researchers have developed a method to isolate and analyze microglia phagosomes in a rapid, gentle, and unbiased fashion. [Read More](#)

3D-Printed Blood Vessels Bring Artificial Organs Closer to Reality

Wyss Institute



Growing functional human organs outside the body is a long-sought "holy grail" of organ transplantation medicine that remains elusive. New research from Harvard's Wyss Institute for Biologically Inspired Engineering and John A. Paulson School of Engineering and Applied Science brings that quest one big step closer to completion with 3D-printed blood vessels. [Read More](#)

MIT Chemists Synthesize Plant-Derived Molecules That Hold Potential As Pharmaceuticals

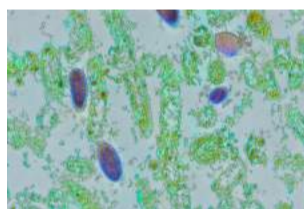
MIT Chemistry



MIT chemists led by Dr. Mohammad Movassaghi (*pictured*) have developed a new way to synthesize complex molecules that were originally isolated from plants and could hold potential as antibiotics, analgesics, or cancer drugs. These compounds, known as oligocyclotryptamines, consist of multiple tricyclic substructures called cyclotryptamine, fused together by carbon-carbon bonds. [Read More](#)

A Common Fatty Acid May Help Restore Healthy Vaginal Bacteria After Infection

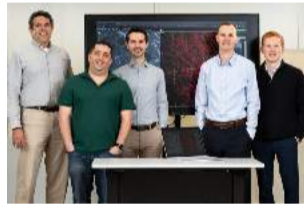
Broad Institute



More than half of women globally experience bacterial vaginosis (BV) — an imbalance of naturally occurring microbes in the female genital tract — at least once in their life. A team of researchers at the Broad Institute have discovered that oleic acid, one of the most abundant fatty acids in the body, restores a healthy balance of vaginal microbes in a laboratory model of BV. [Read More](#)

New Open-Source Tool Helps to Detangle the Brain

MIT News



A new open-source tool is helping to detangle the brain. The software tool NeuroTrALE is designed to quickly and efficiently process large amounts of brain imaging data semi-automatically. The Lincoln Laboratory NeuroTrALE team includes Drs. David Chavez, Adam Michaleas, Michael Snyder, Lars Gjestebj, and Benjamin Roop (*pictured, left to right*). [Read More](#)

An Implantable Sensor Could Reverse Opioid Overdoses

MIT News



In 2023, more than 100,000 Americans died from opioid overdoses. Researchers at MIT and Brigham and Women's Hospital have developed a new device that they hope will help to eliminate those delays and potentially save the lives of people who overdose. The device, about the size of a stick of gum, can be implanted under the skin, where it monitors heart rate, breathing rate, and other vital signs. [Read More](#)

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Upcoming Events in Boston

- Sept. 18 8:30 AM **The 2025 Aging Brain Initiative Symposium: The Neuro-Immune Axis and the Aging Brain**
Singleton Auditorium
- Sept. 23 8:00 AM **2024 Rosamund Stone Zander Translational Neuroscience Center Symposium**
Joseph B. Martin Conference Center
- Sept. 23 - 25 9:00 AM **The Biotech Event Accelerating Fresh Ideas, Partnerships, and Opportunities**
Hynes Convention and Exhibition Center
- Sept. 24 - 25 9:00 AM **Kuggie Vallee Distinguished Lectures and Workshops**
Singleton Auditorium
- Oct. 7 - 9 7:00 AM **Digital Health & AI Innovation Summit**
Boston Marriott Cambridge


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Science Jobs in Boston

- Postdoctoral Associate, Macosko Lab**
Broad Institute
- Research Associate, Protein Purification**
Cugene Inc.
- Associate/Full Professor, Biochemistry or Molecular Biology**
Merrimack College
- Multi-Disciplinary Translational Researcher**
Tufts Medicine
- Senior Scientist, Protein Sciences**
Metaphore Biologics

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