



Publications of the Week

Adaptation to Photoperiod via Dynamic Neurotransmitter Segregation

First Author: Giacomo Maddaloni | Senior Author: Susan Dymecki (*pictured*)
Nature | Harvard Medical School



Changes in the amount of daylight (photoperiod) alter physiology and behavior. Little is known about the precise cellular substrates that underlie phase synchronization to photoperiod change. Here, researchers identify a brain circuit and system of axon branch-specific and reversible neurotransmitter deployment that are critical for behavioral and sleep adaptation to photoperiod. [Abstract](#)

Propofol Anesthesia Destabilizes Neural Dynamics Across Cortex

First Authors: Adam Eisen and Leo Kozachkov | Senior Authors: Ila Fiete (*pictured*) and Earl Miller
Neuron | McGovern Institute for Brain Research, MIT, and Massachusetts General Hospital



Every day, hundreds of thousands of people undergo general anesthesia. One hypothesis is that anesthesia disrupts dynamic stability—the ability of the brain to balance excitability with the need to be stable and controllable. To test this hypothesis, researchers developed a method for quantifying changes in population-level dynamic stability in complex systems: delayed linear analysis for stability estimation. [Abstract](#) | [Press Release](#)

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Awards

UMass Chan Neuroscientist Receives \$4.1 Million Transformative Research Award to Study Down Syndrome

UMass Chan Medical School



Dr. Summer Thyme (*pictured*), Assistant Professor of Biochemistry & Molecular Biotechnology, is the recipient of a five-year, \$4.1 million National Institutes of Health grant under the Transformative Research Award for the INCLUDE (Investigation of Co-occurring Conditions across the Lifespan to Understand Down syndrome) Project. [Read More](#)

Graduate Student Mackenzie Smith Awarded NSF Fellowship

Harvard University Department of Molecular and Cellular Biology



Graduate student Mackenzie Smith (*pictured*) of Dr. Ya-Chieh Hsu's lab has received a grant from the National Science Foundation's (NSF) Graduate Research Fellowship Program (GRFP). The NSF's GRFP provides fellowships with up to five years of funding to promising graduate students. The award will support Smith's investigation into whether parity, or the number of times an individual has given birth, accelerates aging in the skin. [Read More](#)

2024 WIELD Trailblazers: Women Shaping Diabetes and Metabolism Research and Care

Women Inspiring and Elevating Leadership in Diabetes (WIELD)



The WIELD Advisory Board and "Elevate working group" of WIELD has announced the list of Diabetes Trailblazers for 2024. These are women that have been nominated by their peers and that have had a critical impact on research and/or care in the fields of diabetes, obesity, and metabolism. Seven Boston researchers have been named as a 2024 Trailblazers, including Dr. Susan Bonner-Weir (*pictured*). [Read More](#)

Whitehead Institute Member Siniša Hrvatin Named a 2024 McKnight Scholar

Whitehead Institute



The McKnight Endowment Fund for Neuroscience has selected Whitehead Institute Member Dr. Siniša Hrvatin (*pictured*) as one of ten early career scientists to receive a 2024 McKnight Scholar Award. This award will support his research on mechanisms underlying certain animals' capacity to enter states of torpor and hibernation. [Read More](#)

PhD Candidate Jacob Stillman Receives Kirschstein Award for Multiple Sclerosis Research

UMass Chan Medical School



PhD candidate Jacob Stillman (*pictured*) has been awarded a prestigious Ruth L. Kirschstein National Research Service Award Individual Predoctoral Fellowship to further his research on remyelination, the process by which new myelin sheaths are generated around axons in the central nervous system. The funding is from the National Institute of Neurological Disorders and Stroke. [Read More](#)

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Local News

New AI Software Could Make Diagnosing Dementia Easier and Faster for Doctors

The Brink



Although Alzheimer's is the most common cause of dementia—a catchall term for cognitive deficits that impact daily living, like the loss of memory or language—it's not the only one. Boston University's Dr. Vijaya Kolachalama, an expert on using computers to aid medical diagnoses, has created an artificial intelligence tool that can determine what's causing a person's cognitive decline, and assist doctors in more efficiently zeroing in on an accurate diagnosis. [Read More](#)

Gene Silencing Tool Has a Need for Speed

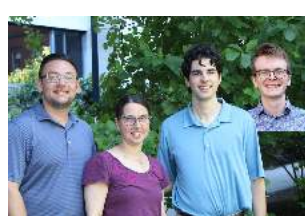
Whitehead Institute



Researchers still do not understand some of the biochemistry underlying RNA interference (RNAi). Slight differences in the design of the RNAi machinery can lead to big differences in how effective it is at decreasing gene expression. Whitehead Institute Member Dr. David Bartel (*pictured*) and graduate student Peter Wang have now dug deeper to figure out the mechanics of the main cellular machine involved in RNAi. [Read More](#)

Systematic Analyses Find That Related Transport Proteins Choreograph Their Conformational Dance from a Small Set of Common Moves

Harvard University Department of Molecular and Cellular Biology (MCB)



A new analysis demonstrates the utility of systematic structural comparisons in understanding the functional mechanisms of membrane transporters. It also suggests that similar studies could provide deeper insights into the conformational dynamics of other protein families. This research was conducted by Michael Gutierrez, Rachelle Gaudet, Jacob Licht, and Sam Berry (*pictured, left to right*) from Harvard MCB's Gaudet Lab. [Read More](#)

Unusual Labmates: Meet Tardigrades, the Crafters of Nature's Ultimate Survival Kit

Whitehead Institute



Tardigrades, also affectionately known as "water bears" or "moss piglets", are remarkable microscopic organisms that have captured the imagination of scientists and nature enthusiasts alike. Researchers at the Whitehead Institute are studying them to learn about what they can offer into long-term organ preservation, space exploration, and more. [Read More](#)

Study Across Multiple Brain Regions Discerns Alzheimer's Vulnerability and Resilience Factors

The Picower Institute



An MIT study published in *Nature* provides new evidence for how specific cells and circuits become vulnerable in Alzheimer's disease, and hones in on other factors that may help some people show resilience to cognitive decline, even amid clear signs of disease pathology. This study was led by Drs. Li-Huei Tsai (*pictured*) and Manolis Kellis at MIT. [Read More](#)

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Upcoming Events in Boston

- July 29 - 31
8:00 AM

Psychedelics Bootcamp 2024: Key Topics in Law, Medicine, Research, Regulations, and Advocacy
Harvard Medical School
- July 31
12:00 PM

Plotting like a Pro: Data Visualization with ggplot2
Online
- August 1
2:00 PM

Biotech in Boston: Leading the Way in Life Sciences
The Ritz-Carlton
- August 19 - 22
8:00 AM

The Bioprocessing Summit 2024
Sheraton Hotel
- September 18
8:30 AM

The 2025 Aging Brain Initiative Symposium: The Neuro-Immune Axis and the Aging Brain
Singleton Auditorium

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Science Jobs in Boston

- Lab Support Assistant**
Beth Israel Deaconess Medical Center
- Technical Lab Assistant**
Massachusetts General Brigham
- Scientist, Radiopharmaceutical Development**
AKTIS Oncology
- Laboratory Manager**
Boston University
- Research Associate, Biochemistry & Biophysics**
MOMA Therapeutics

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