

Publications of the Week
Candelabrum Cells Are Ubiquitous Cerebellar Cortex Interneurons with Specialized Circuit Properties

 First Author: Tomas Osorno and Stephanie Rudolph | Senior Author: Wade Regehr (pictured)
 Nature Neuroscience | Harvard Medical School, Broad Institute, and Boston Children's Hospital


To understand how the cerebellar cortex transforms mossy fiber inputs into Purkinje cell outputs, it is vital to delineate the elements of this circuit. Candelabrum cells are enigmatic interneurons of the cerebellar cortex that have been identified based on their morphology, but their electrophysiological properties, synaptic connections, and function remain unknown. The authors clarify these properties using electrophysiology, single-nucleus RNA sequencing, *in situ* hybridization, and serial electron microscopy in mice. [Abstract](#)

Tacrolimus-Binding Protein FKBP8 Directs Myosin Light Chain Kinase-Dependent Barrier Regulation and Is a Potential Therapeutic Target in Crohn's Disease

 First Author: Li Zuo (pictured, left) | Senior Author: Jerrold Turner (right)
 Gut | Harvard Medical School, Boston Children's Hospital, and Brigham and Women's Hospital


Intestinal barrier loss is a Crohn's disease (CD) risk factor. This may be related to increased expression and enzymatic activation of myosin light chain kinase 1 (MLCK1), which increases intestinal paracellular permeability and correlates with CD severity. The authors sought to define mechanisms of MLCK1 recruitment and to target this process pharmacologically. [Abstract](#)

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Awards
Brown Wins Share of 2022 Gruber Neuroscience Prize

The Picower Institute



The Gruber Foundation announced that Dr. Emery Brown (pictured), Edward Hood Taplin Professor of Medical Engineering and Computational Neuroscience, has won the 2022 Gruber Neuroscience Prize along with Dr. Laurence Abbott of Columbia University, Dr. Terrence Sejnowski of the Salk Institute for Biological Studies, and Dr. Haim Sompolinsky of the Hebrew University of Jerusalem. [Read More](#)

Lindsay Case and Guangyu Robert Yang Named 2022 Searle Scholars

McGovern Institute



Drs. Lindsay Case (pictured) and Guangyu Robert Yang have been named 2022 Searle Scholars. Dr. Case is an Assistant Professor of Biology, while Dr. Yang is an Assistant Professor of Brain and Cognitive Sciences and Electrical Engineering and Computer Science, and an Associate Investigator at the McGovern Institute. They will each receive \$300,000 in flexible funding to support their high-risk, high-reward work over the next three years. [Read More](#)

Three from MIT Elected to the National Academy of Sciences for 2022

MIT News



The National Academy of Sciences has elected 120 new members and 30 international associates, including three MIT professors — Drs. Angela Belcher (pictured), Pablo Jarillo-Herrero, and Ronit Rubinfeld — in recognition of their achievements in original research. Dr. Belcher's primary research focus is evolving new materials for energy, electronics, the environment, and medicine. [Read More](#)

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Local News
Science Still Doesn't Understand How Our Sex Affects Our Health

Scientific American



According to Dr. David Page (pictured), head of the Page Laboratory at the Whitehead Institute, sex differences can be found all over the body. Women are more likely to be diagnosed with rheumatoid arthritis, lupus, and multiple sclerosis, for instance, while men are more likely to be diagnosed with autism. "Biomedical researchers have for a very long time viewed those sex differences as a kind of inconvenience that should be ignored and simply gets in the way of research," he says. [Read More](#)

Circuit Model May Explain How Deep Brain Stimulation Treats Parkinson's Disease Symptoms

The Picower Institute



People with Parkinson's disease and their doctors confront many unknowns, including the answer to exactly how deep brain stimulation relieves some of the motor symptoms patients experience. In a new study, scientists at Boston University and The Picower Institute for Learning and Memory at MIT present a detailed model explaining the underlying circuit dynamics, providing an explanation that, if experimentally confirmed, could improve the therapy further. [Read More](#)

MIT Students and Postdocs Advocate for Increased Federal Support of Scientific Research on Capitol Hill

MIT News



Sixteen MIT students and postdocs recently traveled to Washington to advocate for federal funding of scientific research for the 2023 fiscal year. Congressional Visit Days (CVD) are an effort organized by the MIT Science Policy Initiative, a student group that works at the intersection of policy and research. Participants of CVD underwent multiple training sessions to learn about mechanisms of science policy, the political landscape of scientific funding, and communication strategies for policy asks. [Read More](#)

A Better Antibiotic for Tuberculosis Treatment

Harvard T. H. Chan School of Public Health



Over the past few years of his PhD research, Harim Won has been laying the groundwork to develop a new type of antibiotic to treat tuberculosis, addressing the long-standing problems of lengthy treatments and antibiotic resistance. Won is using a new approach to turn a normal protein system in the bacterial cell against itself. [Read More](#)

Novel Biomaterial Prevents Rejection of Transplants for Type 1 Diabetes

Massachusetts General Hospital



In type 1 diabetes, an autoimmune response attacks the pancreas' insulin-producing beta cells, leading to marked fluctuations in blood sugar levels. Lifelong daily insulin treatments are standard for patients, but replacing lost beta cells through transplants of islets, a group of cells in the pancreas, represents an attractive option. [Read More](#)

Scents of Belonging: An Olfactory-Oxytocin Pathway for the Social Regulation of Appetite and Avoidance

Harvard University Department of Cellular and Molecular Biology



Social interactions are an essential aspect of human experience, and the absence of social stimuli often leads to a sense of loneliness, pain, and anxiety. Similarly, in animals, social isolation or stimulation have profound influences on behavior. The larval zebrafish is no different. However, when larval zebrafish perceive visual or mechanosensory stimuli indicating the presence of other unrelated fish, they tend to swim away, avoiding the social stimuli. [Read More](#)

Conversations on Mental Health: Sharmin Ghaznavi, MD, PhD & The Center for the Neuroscience of Psychedelics

Bench Press



"I think after the pandemic we really are going to be facing an epidemic — if not pandemic — of worsening mental health," says Dr. Sharmin Ghaznavi (pictured), the Associate Director and Director of Cognitive Neuroscience at the Center for the Neuroscience of Psychedelics at Massachusetts General Hospital, and an instructor in Psychiatry at Harvard Medical School. "The need for treatment options and a need to strengthen our systems of care is greater than it has ever been." [Read More](#)

When Equinox Appears, Repair Transitions into Regrowth

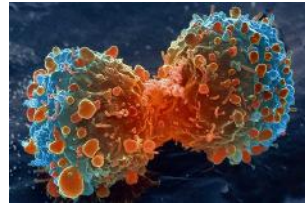
Whitehead Institute



Whitehead Institute Member Dr. Peter Reddien (pictured) has long studied a flatworm known as the planarian, capable of regrowing any part of its body, to understand the mechanisms underlying regeneration. New research identifies a previously undescribed gene, equinox, as playing a key role in initiating the transition from the initial wound healing stage into the regeneration stage in planarians. [Read More](#)

Scientists Develop and Monitor Two Approaches to Fix Blood Vessel Abnormalities That Make Tumors Difficult to Treat

Massachusetts General News



Tumors send out signals that impair normal blood flow, which makes them hard to treat with every type of cancer treatment, including radiation, chemotherapy, and immunotherapy. Impaired blood supply creates an environment low in oxygen levels — hypoxia — that causes the tumors to take on aggressive characteristics and become immuno-suppressed. To address this challenge, a team led by researchers at Massachusetts General Hospital developed two approaches to repair tumor blood vessels and improve their function. [Read More](#)

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Upcoming Events in Boston

May 25 9:00 AM	Innovators in Therapeutics Speaker Series with Ted Love Online
June 8 8:30 AM	The Neurobiology of Eating Behavior in Obesity: Mechanisms and Therapeutic Targets Online
June 10 9:10 AM	Life Sciences Day – "Belgium, the Health & Biotech Valley of Tomorrow" MassBioHub
June 13–14 12:00 PM	8th Semi-Annual New England CryoEM Symposium Online
June 17 8:00 AM	20th Annual Cancer Research Symposium Koch Institute

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