

Publications of the Week

Follicular T Cells Optimize the Germinal Center Response to SARS-CoV-2 Protein Vaccination in Mice

First Author: Cecilia Cavazzoni | Senior Author: Peter Sage *(pictured)*
Cell Reports | Brigham and Women's Hospital, Merck Exploratory Science Center, and Harvard Medical School



Follicular helper T (T_H) cells promote, whereas follicular regulatory T (T_{FR}) cells restrain, germinal center (GC) reactions. However, the precise roles of these cells in the complex GC reaction remain poorly understood. The authors perturb T_H or T_{FR} cells after SARS-CoV-2 spike protein vaccination in mice. They find that T_H cells promote the frequency and somatic hypermutation of spike-specific GC B cells and regulate clonal diversity. [Abstract](#)

Assembly of RNA Polymerase II Transcription Initiation Complexes

First Author: Lucas Farnung | Senior Author: Seychelle Viss *(pictured)*
Current Opinion in Structural Biology | Blavatnik Institute, Harvard Medical School, and MIT



The first step of eukaryotic gene expression is the assembly of RNA polymerase II and general transcription factors on promoter DNA. This highly regulated process involves approximately 30 different proteins that together form the preinitiation complex (PIC). Decades of work have gone into understanding PIC assembly using biochemical and structural approaches. These efforts have yielded significant but partial descriptions of PIC assembly. [Abstract](#)

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Awards

David Ginty Named Winner of 2022 Scolnick Prize

McGovern Institute



The McGovern Institute for Brain Research has announced that Harvard neurobiologist Dr. David Ginty *(pictured)* has been selected for the 2022 Edward M. Scolnick Prize in Neuroscience. Dr. Ginty, who is the Edward R. and Anne G. Leffer Professor of Neurobiology at Harvard Medical School, is being recognized for his fundamental discoveries into the neural mechanisms underlying the sense of touch. [Read More](#)

Neuro Concentrators Nidhi Patel and Marissa Sumathipala Awarded Gates Cambridge Scholarships

Harvard University Department of Molecular and Cellular Biology



Nidhi Patel *(pictured, left)* and Marissa Sumathipala *(right)* have been awarded prestigious Gates Cambridge Scholarships that will support their postgraduate studies and research at the University of Cambridge, UK. Sumathipala will pursue both a Master's and a PhD in Clinical Neurosciences, with the goal of someday establishing her own lab that will conduct translational neuroscience. [Read More](#)

Seven New Faculty Join the MIT School of Science

MIT School of Sciences



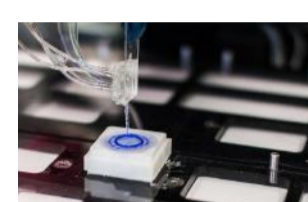
This winter, seven new faculty members join the MIT School of Science in the departments of Biology and Brain and Cognitive Sciences. Dr. Alison Ringel *(pictured)* is a T cell immunologist with a background in biochemistry, biophysics, and structural biology. She investigates how environmental factors such as aging, metabolism, and diet impact tumor progress and the immune responses that cause tumor control. [Read More](#)

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Local News

Harvard University Licenses Kidney Engineering Technology to Trestle Biotherapeutics to Facilitate New Kidney Replacement Therapies

Wyss Institute



A newly launched startup is building upon innovations developed over several years at the Wyss Institute for Biologically Inspired Engineering at Harvard University. Harvard John A. Paulson School of Engineering & Applied Sciences, and Brigham and Women's Hospital to engineer functional kidney tissue for renal repair and replacement therapy. [Read More](#)

On a Mission to Alleviate Chronic Pain

McGovern Institute



About 50 million Americans suffer from chronic pain, which interferes with their daily life, social interactions, and ability to work. MIT Professor Dr. Fan Wang *(pictured)* wants to develop new ways to help relieve that pain, by studying and potentially modifying the brain's own pain control mechanisms. Her recent work has identified an "off switch" for pain, located in the brain's amygdala. [Read More](#)

Analysis Offers New Insights on the Placebo Effect and How to Harness Its Therapeutic Potential

Massachusetts General Hospital



A network of brain regions activated by the placebo effect overlaps with several regions targeted by brain-stimulation therapy for depression, according to a new analysis by a team that included several researchers from Massachusetts General Hospital, who collaborated with colleagues at Sunnybrook Health Sciences Centre at the University of Toronto. [Read More](#)

Singing in the Brain

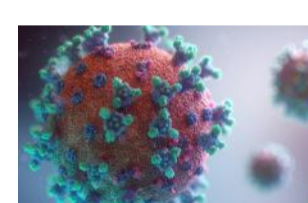
McGovern Institute



For the first time, MIT neuroscientists have identified a population of neurons in the human brain that lights up when we hear singing, but not other types of music. These neurons, found in the auditory cortex, appear to respond to the specific combination of voice and music, but not to either regular speech or instrumental music. Exactly what they are doing is unknown and will require more work to uncover, the researchers say. [Read More](#)

Hoist with Its Own Petard

Harvard Medical School



Scientists have discovered a possible new way to fight COVID-19 by turning part of SARS-CoV-2 against itself. This new strategy shows promise in mice and in human cells in a lab dish, according to the team led by researchers from the Blavatnik Institute at Harvard Medical School and Boston Children's Hospital. The study offers an innovative approach for scientists working to develop drugs that attack SARS-CoV-2 and other harmful viruses. [Read More](#)

Combination Therapy Found to Prolong Survival of Hormone-Sensitive Prostate Cancer

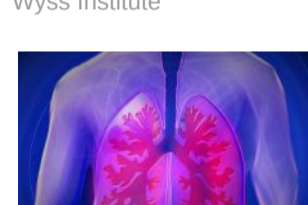
Genetic Engineering & Biotechnology News



An international, randomized, double-blind, placebo-controlled, Phase III clinical trial led by scientists at Massachusetts General Hospital demonstrated that adding the androgen-receptor inhibitor darolutamide to androgen-deprivation therapy and chemotherapy extended the survival of men with metastatic, hormone-sensitive prostate cancer. [Read More](#)

Cantex Licenses Intellectual Property from Harvard University to Develop Repurposed Drug Identified by Wyss Institute to Treat Inflammatory Lung Diseases Including COVID-19

Wyss Institute



Cantex Pharmaceuticals and the Wyss Institute for Biologically Inspired Engineering at Harvard University have announced that Cantex has secured a global license from Harvard University's Office of Technology Development to develop azeliragon, a small-molecule drug in clinical development, into a treatment for inflammatory lung diseases including COVID-19. [Read More](#)

Population-Based Study Reveals Strong Genetic Links with Multiple Cardiometabolic Diseases and Traits

Broad Institute



In a study published in *Nature Genetics*, researchers at the Broad Institute of MIT and Harvard, Geisinger MyCode Study, the Regeneron Genetics Center, and other institutions studied the contribution of rare genetic variants to 83 different cardiometabolic diseases and traits, including heart failure, diabetes, kidney disease, and high cholesterol levels. The team found 57 significant associations between these variants and traits. [Read More](#)

How the Flagellar Motor Signals a Surface Encounter

Harvard University Department of Molecular and Cellular Biology



Bacterial cells can switch between distinct free-swimming and sessile lifestyles as they encounter and interact with solid surfaces. Dr. Alina Vriabliou *(pictured)* and the late Dr. Howard Berg developed genetically encoded fluorescent biosensors that allowed them to track dynamic cyclic di-GMP concentration changes as free swimming bacteria interact with a glass surface. [Read More](#)

Researchers Identify a Promising Drug for Treating Serious COVID-19 Complication in Children

Brigham and Women's Hospital



Scientists led by Dr. Lael Yonker *(pictured)* at Massachusetts General Hospital and Brigham and Women's Hospital have identified a promising drug candidate for the treatment of multi-inflammatory syndrome in children (MIS-C). MIS-C is a rare but severe and potentially life-threatening condition that usually develops in children weeks to months after they have experienced a mild or even asymptomatic case of COVID-19. [Read More](#)

Meselson Lab Publishes Evidence of Sexual Reproduction in Bdelloid Rotifers

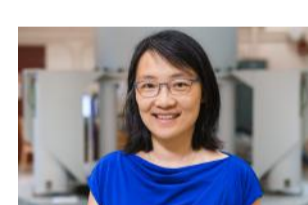
Harvard University Department of Molecular and Cellular Biology



Although there are several non-exclusive hypotheses for why most eukaryotes reproduce sexually, all of them have been challenged until now by the apparent existence of a highly successful class of animals that has long been thought to be entirely asexual — the rotifers of Class Bdellozoa. Dr. Matthew Meselson *(pictured)* and his associates have found clear genomic evidence that bdelloid rotifers do, after all, reproduce sexually, although only occasionally. [Read More](#)

Protein Structure Offers Clues to Drug-Resistance Mechanism

MIT News



MIT chemists have discovered the structure of a protein that can pump toxic molecules out of bacterial cells. Proteins similar to this one, which is found in *E. coli*, are believed to help bacteria become resistant to multiple antibiotics. Knowledge of this detailed structure may make it possible to design drugs that could block these transport proteins and help resensitize drug-resistant bacteria to existing antibiotics, says Dr. Mei Hong *(pictured)*. [Read More](#)

Alkem Licenses Technology from Harvard University, Aiming to Treat Ischemic Injury and Vascular Diseases

Wyss Institute



Alkem Laboratories has signed a license agreement with Harvard University's Office of Technology enabling Alkem to develop and commercialize a novel technology that may help meet the dire need for effective treatment of diabetic neuropathy and other injuries caused by vascular disease. Developed in the lab of Dr. David Mooney *(pictured)*, the technology is an injectable, biocompatible scaffold for the sustained release of tissue-regenerative molecules. [Read More](#)

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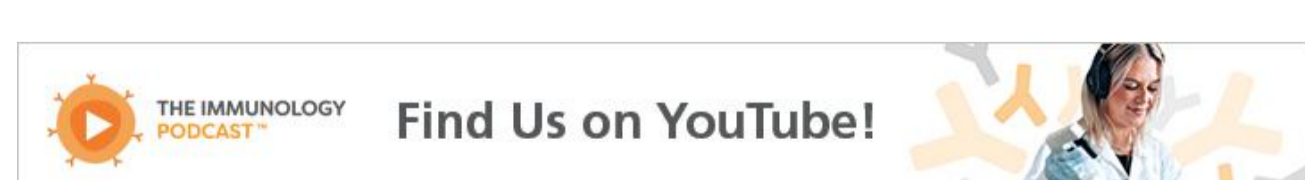
Upcoming Events in Boston

March 1 1:00 PM	Frontiers in Biostatistics: Considerations for Extracting Real-World Evidence from Real-World Data Online
March 2 4:00 PM	SeXX and Immunity MIT Campus
March 8 12:00 PM	PhD Career Prototype Series – Careers in the Pharmaceutical Industry Online
March 10 5:30 PM	2022 Koch Institute Image Awards Online
March 14 7:00 PM	The Code Breaker: A Conversation with Jennifer Doudna Online

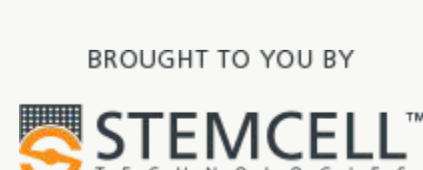
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Science Jobs in Boston

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