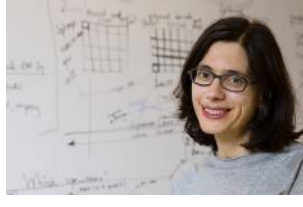


Publications of the Week

Single-Nucleus Cross-Tissue Molecular Reference Maps Toward Understanding Disease Gene Function

First Authors: Gökcen Ersohan and Eugene Drozhkiyansky | Senior Authors: Aviv Regev (pictured), Kristin Andlie, Orit Rozember Rosen, François Agut, and Ayellet Segre

Science | Broad Institute, Harvard Medical School, Massachusetts Eye and Ear, and Brigham and Women's Hospital

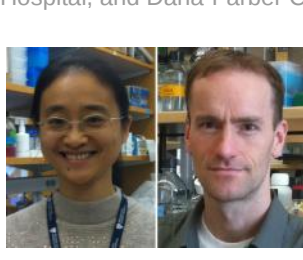


The function of disease genes active in different cell types is modulated to meet the needs of the different tissues and organs in which the cells reside. The authors applied single-nucleus RNA sequencing to frozen, banked samples from eight healthy human organs from 16 donors and characterized cell populations across tissues, including tissue-resident myeloid and fibroblast populations, and their role in tissue support and immunity. [Abstract](#) | [Press Release](#)

Immune Recall Improves Antibody Durability and Breadth to SARS-CoV-2 Variants

First Author: Yuezhou Chen (pictured, left) | Senior Author: Duane Wesemann (right)

Science Immunology | Brigham and Women's Hospital, Harvard Medical School, Ragon Institute, Boston Children's Hospital, and Dana-Farber Cancer Institute



Key features of immune memory are greater and faster antigen-specific antibody responses to repeat infection. In the setting of immune-evading viral evolution, it is important to understand how far antibody memory recognition stretches across viral variants when memory cells are recalled to action by repeat invasions. The authors analyzed SARS-CoV-2 variant recognition, dynamics of memory B cells, and secreted antibody over time after infection, vaccination, and boosting. [Abstract](#)

[View All Publications](#)

Awards

Sheila Chapman, MD, Receives BUSM Faculty Diversity Award

Boston University School of Medicine (BUSM)



Dr. Sheila Chapman (pictured) is the recipient of the inaugural BUSM Faculty Diversity Award. The award will be presented annually to faculty who have done an extraordinary job at addressing and improving diversity and a culture of inclusion throughout the school, specifically by demonstrating an impact on recruitment of students, staff, and faculty; mentorship and sponsorship of underrepresented faculty, staff, students, and student groups; and creating or running programs designed to improve diversity, equity, and inclusion. [Read More](#)

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Local News

Skin Drug Treatments May Regress Dangerous Birthmarks and Prevent Melanoma

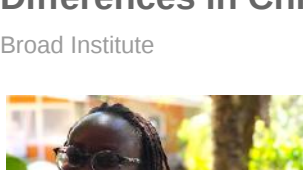
Massachusetts General Hospital



About one in 20,000 infants is born with a congenital giant nevus — a huge, pigmented mole that may cover much of the face and body. Due to the mole's appearance and its risk of later developing into skin cancer, many patients decide to have their children undergo extensive surgery to remove the entire lesion, which can cause scars. Researchers at Massachusetts General Hospital recently created multiple preclinical models of this condition and used them to show that several drugs can be applied to the skin to cause the lesions to regress. [Read More](#)

A Genetics Study in Africa Is Helping to Destigmatize Neurodevelopmental Differences in Children

Broad Institute



Growing up in Nairobi, Kenya, Patricia Kikemol (pictured) spent years watching a young family member struggle with a neurodevelopmental disability. The family faced many challenges: finding a doctor who could pin down a diagnosis, lack of affordable education, and harsh stigma in a country where children with neurodevelopmental differences, such as autism spectrum disorder, are often seen as stubborn or undisciplined. These experiences led Kikemol to study behavior and child development. [Read More](#)

Study Finds Cells Take Out the Trash Before They Divide

MIT News



MIT researchers in Dr. Scott Manalis' (pictured) lab have discovered that before cells start to divide, they do a little cleanup, tossing out molecules that they appear not to need anymore. Using a new method they developed for measuring the dry mass of cells, the researchers found that cells lose about four percent of their mass as they enter cell division. [Read More](#)

MassBiologics Research into Preventive Shot for Lyme Disease Continues to Move Forward

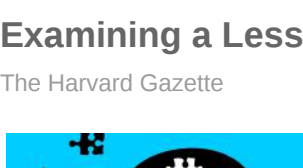
UMass Chan Medical School



A Phase 1 clinical trial of a preventive Lyme disease shot developed by MassBiologics of UMass Chan Medical School is nearing completion and the next trial phase may begin as soon as next spring, according to Dr. Mark Klemper, Professor of Medicine and former Executive Vice Chancellor for MassBiologics. The pre-exposure prophylaxis being tested delivers a monoclonal antibody to provide immediate immunity against Lyme disease. [Read More](#)

Examining a Lesser-Known Dementia Driver

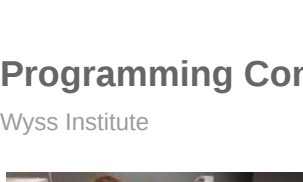
The Harvard Gazette



LATE, which stands for limbic-predominant age-related TDP-43 encephalopathy, is the third most common disorder that causes dementia in older individuals. In LATE, a protein called TDP-43 (which stands for transactive response DNA binding protein of 43 kDa) accumulates in brain cells. Once it accumulates, it injures and ultimately destroys the cells. [Read More](#)

Programming Complex Tissue Organizations in Three Dimensions

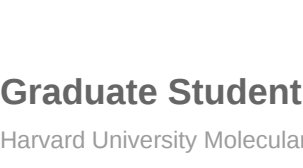
Wyss Institute



Tissue engineers have developed a variety of approaches to recreate organs and tissues *in vitro* outside the human body for use in regenerative therapies, drug screening, and disease modeling. However, they still lack precise control over the exact composition of cell types and their spatial organization into functional units within the 3D spaces of their constructs. Now, a collaborative and highly multidisciplinary research team led by Dr. Jennifer Lewis (pictured) has developed an integrated approach to overcome these challenges. [Read More](#)

Graduate Student Spotlight: Kate Shulgina

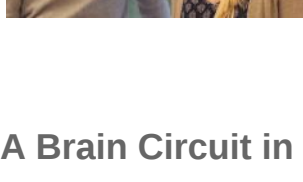
Harvard University Molecular and Cellular Biology (MCB)



Graduate student Kate Shulgina (pictured, right) has spent six years in Dr. Sean Eddy's (left) lab developing a computational tool called Codetta that predicts variations in the genetic code that cells use to translate RNA sequences into proteins. Shulgina is a student in Harvard's Systems, Synthetic, and Quantitative Biology program and one of many graduate students from university-wide programs who conduct research in MCB labs. [Read More](#)

A Brain Circuit in the Thalamus Helps Us Hold Information in Mind

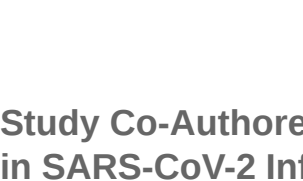
McGovern Institute



As people age, their working memory often declines, making it more difficult to perform everyday tasks. One key brain region linked to this type of memory is the anterior thalamus, which is primarily involved in spatial memory — memory of our surroundings and how to navigate them. In a study of mice, MIT researchers have identified a circuit in the anterior thalamus that is necessary for remembering how to navigate a maze. [Read More](#)

Study Co-Authored by UMass Chan Researchers Finds Broad Differences in SARS-CoV-2 Infectiousness

UMass Chan Medical School



Wide variation in the amount or infectiousness of SARS-CoV-2 among people in early stages of COVID-19 may be an explanation for the phenomenon of "super-spreaders," according to a study by UMass Chan researchers and collaborators from several institutions that was recently published in *Nature Microbiology*. The research provides an in-depth view of SARS-CoV-2 infection through serial viral testing by PCR test, antigen test, and viral culture to measure viral growth. [Read More](#)

Nanotechnology Enables Visualization of RNA Structures at Near-Atomic Resolution

Wyss Institute



To understand what an individual RNA molecule does, its 3D structure needs to be deciphered at the level of its constituent atoms and molecular bonds. A research collaboration led by Dr. Peng Yin (pictured) at the Wyss Institute and Dr. Maofu Liao at Harvard Medical School has reported a fundamentally new approach to the structural investigation of RNA molecules. [Read More](#)

Meet a Whitehead Postdoc: Gavin Schlisel

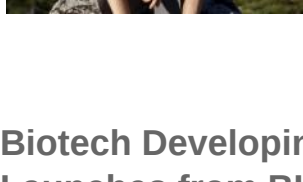
Whitehead Institute



Dr. Gavin Schlisel (pictured) is a postdoc in Dr. Pulin Li's lab studying cell signaling and how proteins move between cells. In their current work, they recreate developmental events in cell culture to observe the behavior of developmentally important genes, proteins and circuits. The question Dr. Schlisel is working on is how signaling proteins, which transmit information between cells, travel from their source to their destination. [Read More](#)

Biotech Developing "Tissue Therapeutics" to Treat Diseased Organs Launches from BU and MIT Labs

The Brink



One of the newest multimillion-dollar firms helping to drive the Boston biotech boom has its roots in a Boston University (BU) lab. Satellite Bio — fueled by technology codeloped by BU Biomedical Engineering Professor Dr. Christopher Chen (pictured, left) and MIT Bioengineering Professor Dr. Sangeeta Bhatia (right) — launched in April after announcing it had secured \$110 million in venture funding. [Read More](#)

Exploring Autoimmunity's Regulatory Roots

Broad Institute



A team of researchers from The Jackson Laboratory, Baranoya Research Institute, and the Broad Institute paired two high-throughput methods to examine genome-wide association study-defined variants associated with five autoimmune diseases. In the process, they were able to zero in on non-coding variants associated with autoimmune disorders, one of which appears to play a key role in keeping the immune system's T cells in check. [Read More](#)

Scent of a Human

Harvard Medical School



When construction wraps up, Dr. Josefine del Marmol's (pictured) new laboratory on the Harvard Medical School campus will look a lot like those that surround it, with rows of benches sporting chemicals, glassware, and computers. What will set it apart are the scents: the citrus aroma of a compound called limonene; the clove-like fragrance of another compound, eugenol; and the pungent odor of geosmin, reminiscent of a damp cave. [Read More](#)

Rapid Antigen COVID-19 Tests May Not be Keeping Pace with Variants of Concern, Researchers Find

Beth Israel Deaconess Medical Center



In a recent study, scientists at the Harvard T.H. Chan School of Public Health and Beth Israel Deaconess Medical Center used live virus culture to assess how well four rapid antigen tests are able to detect COVID variants of concern. The findings suggest that while the rapid antigen tests remain a useful tool for the detection of COVID-19 infections, continuous assessment and updating is likely needed in the context of variants of concern. [Read More](#)

"Seeing" the Unseen: A Way to Pinpoint Elusive Cardiac Conduction Tissue

Boston Children's Hospital



When patients with congenital heart issues have an operation, surgeons have to proceed with an "eye of faith" as they work around conduction tissue — a network of cells and electrical signals that control the beating of a heart. Not visible to the naked eye, conduction systems vary person to person, but they're particularly difficult to pinpoint in patients with complex congenital heart defects. When surgeons can't locate conduction tissue during surgery, they risk accidentally injuring it. [Read More](#)

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May 17 8:15 AM	Bioanalytical Considerations for Cell and Gene Therapies: An Open Discussion Forum MassBioHub
May 17 9:00 AM	Securing the Future of Agriculture MIT
May 17 4:00 PM	Biology Colloquium Series: Richard Lenski, Michigan State University Online
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

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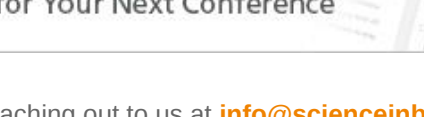
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