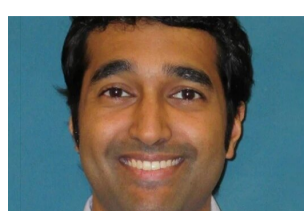




Publications of the Week

CRISPR-Based Rapid Molecular Diagnostic Tests for Fusion-Driven Leukemias

First Author: Rahul Vedula (*pictured*) | Senior Author: Coleman Lindsley
 Blood | Dana-Farber Cancer Institute, the Broad Institute, Brigham and Women's Hospital, and the McGovern Institute



Researchers developed CRISPR-based RNA-fusion transcript detection assays using SHERLOCK (specific high-sensitivity enzymatic reporter unlocking) for the diagnosis of fusion-driven leukemias. They validated these assays using diagnostic samples from patients with leukemia from academic centers and dried blood spots from low-resource environments, demonstrating 100% sensitivity and specificity.

[Abstract](#) | [Press Release](#)

CDK5–Cyclin B1 Regulates Mitotic Fidelity

First Authors: Xiao-Feng Zheng and Aniruddha Sarkar | Senior Authors: Alexander Spektor and Dipanjan Chowdhury (*pictured*)
 Nature | Harvard Medical School, Dana-Farber Cancer Institute, and the Broad Institute



CDK1 has been known to be the sole cyclin-dependent kinase (CDK) partner of cyclin B1 to drive mitotic progression. Here, researchers demonstrate that CDK5 is active during mitosis and is necessary for maintaining mitotic fidelity. CDK5 is an atypical CDK owing to its high expression in post-mitotic neurons and activation by non-cyclin proteins p35 and p392. [Abstract](#) | [Press Release](#)

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Awards

UMass Chan Cancer Biologist Receives New Innovator Award for Developing DNA Sequencing Technology

UMass Chan Medical School



Dr. William Flavahan (*pictured*) from UMass Chan Medical School has been awarded a five-year, \$1.5 million National Institutes of Health Director's New Innovator Award. Dr. Flavahan will use this award to create accessible and affordable databases through the synthesis of "training libraries" to track how DNA is modified and damaged, with potential applications for cancer and neurodegenerative diseases. [Read More](#)

Whitehead Fellow Dr. Aditya Raguram Receives a National Institutes of Health Early Independence Award

Whitehead Institute



Whitehead Fellow Dr. Aditya Raguram (*pictured*) has received a 2024 National Institutes of Health Director's Early Independence Award. The prestigious funding award will support his work developing cell-derived bioparticles into safe and efficient vehicles for delivering therapeutic proteins into cells with the ultimate goal of using bioparticles loaded with therapeutic proteins or RNAs to treat specific diseases. [Read More](#)

Nicholas Bellono Unravels the Mysteries of Diverse Sensory Systems: Wins 2024 Young Investigator Award from the Society for Neuroscience

Harvard University Department of Molecular and Cellular Biology (MCB)



MCB's Dr. Nicholas Bellono (*pictured*) has been honored with the 2024 Tianqiao and Chrissy Chen Young Investigator Award from the Society for Neuroscience. Dr. Bellono's research focuses on the molecular and cellular mechanisms underlying sensory adaptation with an emphasis on the evolution of novel sensory systems in diverse species like cephalopods and sea robins. [Read More](#)

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Local News

Largest-Ever Genetic Study of Epilepsy Finds Possible Therapeutic Targets

Broad Institute



The largest and most diverse study to date of epilepsy's genetic factors has revealed new potential targets for treatment, both shared by and unique to different subtypes of epilepsy. The findings, led by Dr. Benjamin Neale (*pictured*), point to factors involved in how neurons communicate and fire, suggesting potential targets for new therapies. In the future, the results could also help doctors tailor treatments to a patient's genome. [Read More](#)

One Scientist's Unexpected Journey from Puerto Rico to Massachusetts General Hospital

Bench Press



Dr. Wilfredo Garcia-Beltran (*pictured*) was born and raised in Puerto Rico. He describes himself as a nerdy kid captivated by the world of science, never able to pass up the chance to use a microscope, and was raised by parents who were not scientists or doctors but nourished his passion for learning. An idea began to resonate with him early on — perhaps he was meant to pursue a career in science. [Read More](#)

Cancer Biologists Discover a New Mechanism for an Old Drug

MIT News



Since the 1950s, a chemotherapy drug known as 5-fluorouracil has been used to treat many types of cancer, including blood cancers and cancers of the digestive tract. Doctors have long believed that this drug works by damaging the building blocks of DNA. However, a new study led by Dr. Michael Yaffe (*pictured*) from MIT has found that in cancers of the colon and other gastrointestinal cancers, it actually kills cells by interfering with RNA synthesis. [Read More](#)

Early Life Stress Shapes Attention Deficits in Male (But Not Female) Mice

Harvard University Department of Molecular and Cellular Biology (MCB)



In a new study published in *Science Translational Medicine*, the Hensch Lab at MCB shares evidence that erratic maternal caregiving during a critical period leads to attention deficits in male mice. Interestingly, they did not find the same effect in female mice. This study was undertaken by Drs. Takao Hensch, Yuichi Makino, and Nate Hodgson (*pictured, left to right*). [Read More](#)

The Way Sensory Prediction Changes Under Anesthesia Tells Us How Conscious Cognition Works

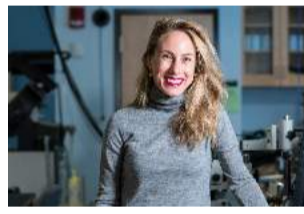
The Picower Institute for Learning and Memory at MIT



Our brains constantly work to make predictions about what's going on around us, for instance to ensure that we can attend to and consider the unexpected. A new study led by Dr. Earl Miller (*pictured*) examines how this works during consciousness and also breaks down under general anesthesia. The results add evidence for the idea that conscious thought requires synchronized communication. [Read More](#)

Tiny Magnetic Discs Offer Remote Brain Stimulation Without Transgenes

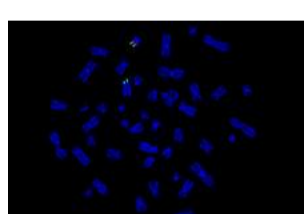
McGovern Institute



Novel magnetic nanodiscs could provide a much less invasive way of stimulating parts of the brain, paving the way for stimulation therapies without implants or genetic modification. The scientists envision that the tiny discs, which are about 250 nanometers across, would be injected directly into the desired location in the brain. Dr. Polina Anikeeva (*pictured*) leads the development of these nanoparticles. [Read More](#)

Establishing Boundaries of the Genetic Kind

Whitehead Institute



In the 1980s, scientists knew little about the X and Y chromosomes. What they did understand was that every cell in the body contains 23 pairs of chromosomes. Each of these pairs is similar, except one. While females typically have two X chromosomes, males have one X chromosome and one Y chromosome. But which gene on the Y chromosome causes a developing embryo to become a male remained an enticing mystery for geneticists worldwide. [Read More](#)

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Interesting Articles

Leadership Development Program for Researchers

Brigham and Women's Hospital



A new course aims to prepare investigators for challenges inherent in establishing and maintaining a successful research program. This nine-month long program features both didactic and interactive sessions. Early-career faculty and trainees who complete this career-development course will sharpen their career focus and gain knowledge regarding the strategies that promote success in leading an impactful research program. Applications close on October 25. [Read More](#)

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Upcoming Events in Boston

- October 23 10:00 AM **Scilligence Formulation for Drug Discovery**
Online and at Scilligence Corporation
- October 28 2:30 PM **Find Funding in Biomedical Innovation: Working with ARPA-H**
Cognitive NeuroImaging Center
- October 28 3:00 PM **Neurophotonics in Medicine, Symposium**
Boston University School of Medicine
- October 29 5:30 PM **Director's Dialogue with Uli Stolz: Chronic Disease at an Inflection Point**
Whitehead Institute for Biomedical Research
- October 30 2:30 PM **BRI Lung Research Day**
Marshall A. Wolf Conference Center

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Science Jobs in Boston

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Northeastern University

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Cell Press

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The Broad Institute

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Takeda

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