



Publications of the Week

The Meninges Host a Distinct Compartment of Regulatory T Cells That Preserves Brain Homeostasis

First Author: Miguel Marin-Rodero | Senior Author: Diane Mathis *(pictured)*
 Science Immunology | Harvard Medical School, Boston Children's Hospital, and the Broad Institute



Information on how meningeal immunocytes guard brain homeostasis in healthy individuals remains limited. This study highlights the heterogeneous, polyfunctional regulatory T cell (T_{reg}) compartment in the meninges. A T_{reg} subtype specialized in controlling interferon-gamma responses and another dedicated to regulating follicular B cell responses were substantial components of this compartment.

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

AI Model Learns Generalized “Language” of Regulatory Genomics, Predicts Cellular Stories

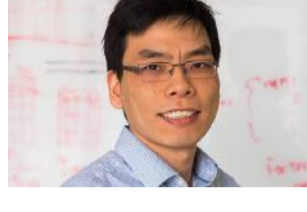
First Authors: Nauman Javed *(pictured)* and Thomas Weingarten | Senior Author: Bradley Bernstein
 Cell Genomics | Harvard Medical School, Broad Institute, and Dana-Farber Cancer Institute



Sequence-based deep learning models have emerged as powerful tools for deciphering the cis-regulatory grammar of the human genome but cannot generalize to unobserved cellular contexts. Here, researchers present EpiBERT, a multi-modal transformer that learns generalizable representations of genomic sequence and cell type-specific chromatin accessibility through a masked accessibility-based pre-training objective. [Abstract](#)

ChromoGen: Diffusion Model Predicts Single-Cell Chromatin Conformations

First Authors: Greg Schuette and Zhuohan Lao | Senior Author: Bin Zhang
 Science Advances | MIT



Characterization of chromatin structure heterogeneity remains elusive due to the labor-intensive and time-consuming nature of these experiments. To address these challenges, researchers introduce ChromoGen, a generative model based on state-of-the-art artificial intelligence techniques that efficiently predicts three-dimensional, single-cell chromatin conformations *de novo* with both region and cell type specificity. [Abstract](#) | [Press Release](#)

[View All Publications](#) ↗

Awards

Introducing the 2024 Karches Prize Winners

The Koch Institute



The Koch Institute congratulates the winners of the 2024 Peter Karches Mentorship Prize — Shandon Amos *(pictured)*, Christina Cabana, Dr. Ivan Pires, and Dr. Jason Yu. The Peter Karches Mentorship Prize is awarded annually to up to four Koch Institute postdocs, graduate students, or research technicians who demonstrate exemplary mentorship of undergraduate researchers or high school students in their labs. [Read More](#)

Dr. Evelina Fedorenko Receives Troland Award From National Academy of Sciences

McGovern Institute



The National Academy of Sciences announced that McGovern Investigator Dr. Evelina Fedorenko *(pictured)* has received a 2025 Troland Research Award for her groundbreaking contributions towards understanding the language network in the human brain. The Troland Research Award is given annually to recognize unusual achievement by early-career researchers within the broad spectrum of experimental psychology. [Read More](#)

Maria Valadez Ingersoll Receives 16th Annual GSI Grand Prize

Boston University Biology



Maria Valadez Ingersoll *(pictured)*, a PhD student in the Gilmore and Davies labs at Boston University (BU), was recently awarded the BU Genome Science Institute (GSI) Research Symposium Grand Prize for presenting her current research. The GSI Research Symposium is an interdisciplinary event emphasizing research in Genetics and Genomics. [Read More](#)

CLRF Lipid Science Prize 2025

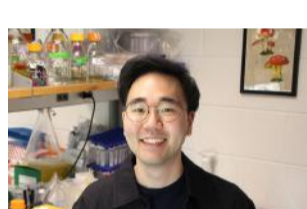
Camurus Lipid Research Foundation (CLRF)



The Camurus Lipid Research Foundation announced that the 2025 Lipid Prize is awarded to Professor Robert S. Langer Jr. *(pictured)* from MIT. Dr. Langer receives the award for his groundbreaking and interdisciplinary research focused on the design and characterization of complex materials, including lipid and polymer systems, and the application of these in drug-delivery, tissue engineering, and regenerative medicine. [Read More](#)

Postdoc Spotlight: Dr. Colin Kim, 2024 Hanna H. Gray Fellow

Harvard University Department of Molecular and Cellular Biology



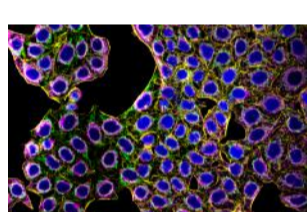
Postdoc Dr. Colin Kim *(pictured)* of the Nett Lab has been chosen as a 2024 Hanna H. Gray Fellow. The prestigious Howard Hughes Medical Institute-funded fellowship provides up to 1.5 million dollars of funding to promising researchers as they complete their postdoctoral training and establish their own labs. “My initial reaction was “Wow, what an incredible honor!”” Dr. Kim says. [Read More](#)

[View All Awards](#) ↗

Local News

A Genome-Wide Atlas of Cell Morphology Reveals Gene Functions

The Broad Institute



Visualizing cells after editing specific genes can help scientists learn new details about the function of those genes. But using microscopy to do this at scale can be challenging, particularly when studying thousands of genes at a time. Now, researchers at the Broad Institute have developed an approach that brings the power of microscopy imaging to genome-scale CRISPR screens in a scalable way. [Read More](#)

MIT Method Enables Ultrafast Protein Labeling of Tens of Millions of Densely Packed Cells in Organ-Scale Tissues

The Picower Institute



A new technology developed by Dr. Kwanghun Chung *(pictured)* at MIT enables scientists to label proteins across millions of individual cells in fully intact 3D tissues with unprecedented speed, uniformity, and versatility. Using the technology, Dr. Chung's team was able to richly label whole rodent brains and other large tissue samples in a single day. [Read More](#)

Bringing Order to Disorder: Dr. Jhullian Alston

Boston Children's Hospital



Proteins typically fold into orderly, predictable three-dimensional structures that dictate how they will interact with other molecules. Dr. Jhullian Alston *(pictured)* is drawn to intrinsically disordered proteins, whose key feature is a lack of structure. They are difficult to study and far less explored. “They’re floppy, they don’t have specific folds, they can’t slot into each other like Legos as folded proteins do,” he says. [Read More](#)

Research Spotlight: Innovative Nanovaccine Found to Trigger an Anti-Tumor Response for Rare Cancer

Massachusetts General Hospital



Previous research has revealed that acral melanomas exhibit more genetic alterations in the KIT oncogene. Dr. Hensin Tsao *(pictured)* and his team created an innovative hybrid biomimetic nanovaccine, which is designed to fight melanoma by creating a “bionic” cell that has an outer layer of a mouse KIT melanoma wrapped around an inner nanoparticle. [Read More](#)

MCB's Dr. Richard Losick Publishes Final Research Paper, Concluding Six Decades of Microbiology Breakthroughs

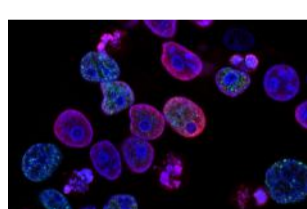
Harvard University Department of Molecular and Cellular Biology (MCB)



After nearly six decades of groundbreaking work in molecular biology, Dr. Richard Losick *(pictured, right)* has published his final research paper in the *Proceedings of the National Academy of Sciences*. The study, led by former postdoc Dr. Adnan Syed *(left)*, sheds new light on the mechanisms by which the pathogen *Staphylococcus aureus* forms biofilms. [Read More](#)

Research Spotlight: New Imaging Method Could Improve Patient Selection for Cancer Immunotherapy

Massachusetts General Hospital



Patient selection for cancer immunotherapy requires precise, quantitative readouts of biomarker expression in intact tumors that can be reliably compared across multiple subjects over time. Researchers wanted to develop a new, more accurate method for measuring PD-L1 expression in tumors using fluorescence lifetime detection of anti-PD-L1 antibodies. [Read More](#)

[View All Local News](#) ↗ | [Submit an Article](#) ↗

Upcoming Events in Boston

- February 16 6:00 PM **Adult Night at Science Park**
Museum of Science
- February 19 - 21 8:00 AM **Optimizing Upstream & Downstream Process Development for Cell & Gene Therapies**
Hilton Boston Back Bay
- February 20 7:30 PM **Generative AI and the New Dawn of Life Sciences and Healthcare**
Museum of Science
- February 25 9:30 AM **Stories from the Lab: Three African Women Scientists on Building Capacity and Becoming a Leader**
Online
- February 25 1:30 PM **10th Annual Rare Disease Day Event: An Era of Innovation for Rare Diseases**
Broad Institute

[View All Events](#) ↗ | [Submit an Event](#) ↗

Science Jobs in Boston

- Technical Associate I, Fedorenko Lab**
McGovern Institute for Brain Research
- Research Scientist, Ting Lab**
Mass General Brigham
- Senior Research Support Associate, Lamason Lab**
MIT
- Chromatography Senior Scientist**
Sanofi
- Vertex Fall 2025 Co-op, Research**
Vertex Pharmaceuticals

[View 65 Other Science Jobs](#) ↗ | [Submit a Job](#) ↗



Submit your articles and events by reaching out to us at info@scienceinboston.com.

BROUGHT TO YOU BY



STEMCELL Technologies
Products | Services

STEMCELL Science News
Free Weekly Updates on Your Field

The Stem Cell Podcast
Interviews and Updates on Stem Cell Science