

## Publications of the Week

## ZNF410 Represses Fetal Globin by Singular Control of CHD4

First Author: Divya Vignani (pictured, far left) | Senior Author: Daniel Bauer (center, left)  
Nature Genetics | Dana-Farber Cancer Institute, Boston Children's Hospital, Harvard, Broad Institute, and Massachusetts General Hospital



Known fetal hemoglobin (HbF) silencers have potential on-target liabilities for rational  $\beta$ -hemoglobinopathy therapeutic inhibition. Through transcription factor CRISPR screening, the authors identify zinc-finger protein (ZNF) 410 as an HbF repressor. ZNF410 does not bind directly to the genes encoding  $\gamma$ -globins, but rather its chromatin occupancy is concentrated solely at CHD4, encoding the NuRD nucleosome remodeler, which is itself required for HbF repression. [Profile | Abstract](#)

## O-GlcNAc Modification of Nuclear Pore Complexes Accelerates Bidirectional Transport

First Author: Tae Yeon Yoo | Senior Author: Timothy Mitchison (pictured)  
Journal of Cell Biology | Harvard Medical School



Phenylalanine-glycine (FG)-repeat domains in nuclear pore complexes (NPCs) are a major site of O-linked N-acetylglucosamine (O-GlcNAc) modification, but the functional role of this modification in nucleocytoplasmic transport is unclear. The authors developed high-throughput assays based on optogenetic probes to quantify the kinetics of nuclear import and export in living human cells. [Abstract](#)

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## Awards

## Leaders in Neuroscience and Genetics Recognized

Harvard Medical School



Dr. Christopher Walsh (pictured), the Bullard Professor of Pediatrics and Neurology at Harvard Medical School and Boston Children's Hospital, will share the 2021 Gruber Neuroscience Prize with Dr. Christine Peit of the Institut Pasteur and Collège de France for their groundbreaking work in revealing the genetic and molecular mechanisms behind inherited neurodevelopmental disorders. [Read More](#)

## Angela Ho and Christina Gallo Receive NIA/NIH Grants

Boston University Biology



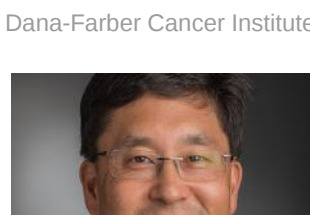
Dr. Angela Ho (pictured) and Christina Gallo recently received grants from the National Institute on Aging (NIA) at the National Institutes of Health (NIH). Dr. HO's goal is to determine the specificity of the cell-permeable amyloid precursor protein (APP) mimetic peptide to disrupt the APP-Mint interaction and reduce amyloid-beta accumulation in Alzheimer's disease mouse models. [Read More](#)

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## Local News

## Scientists Seek to Expand 'Universe' of Drug Targets in Cancer

Dana-Farber Cancer Institute



Many drugs aimed at mutated cancer genes, known as oncogenes, don't work as expected, or are initially effective, but falter as drug-resistant cancer cells rapidly emerge and the patients relapse. Nevertheless, a new report published in *Cell* says that targeted therapy may yet have a bright future. The optimism is based on discoveries of new types of cancer targets that have not been attacked with drugs. The first author of the report is Dr. William Hahn (pictured). [Read More](#)

## Anesthetic May Affect Tau Spread in the Brain to Promote Alzheimer's Disease Pathology

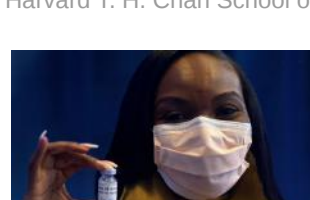
Massachusetts General Hospital



Previous research has suggested that an inhaled anesthetic called sevoflurane may promote the brain changes of Alzheimer's disease. A new study in cells and mice reveals that sevoflurane causes the Alzheimer's-related protein tau to leave neurons and enter immune cells (microglia) in the brain. "This tau spreading could be prevented by inhibitors of tau phosphorylation or extracellular vesicle generation," said Dr. Zhongcong Xie (pictured). [Read More](#)

## Leading Coronavirus Scientist Kizzmekia Corbett to Join Harvard T. H. Chan School of Public Health to Continue Vaccine Development Research

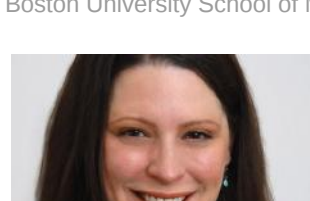
Harvard T. H. Chan School of Public Health



The Harvard T. H. Chan School of Public Health has announced that Dr. Kizzmekia Corbett (pictured) will join the School as an Assistant Professor in the Department of Immunology and Infectious Diseases. Corbett comes to Harvard following more than six years at the National Institute of Allergy and Infectious Diseases' Vaccine Research Center, where she was instrumental in groundbreaking research that directly led to development of the Moderna COVID-19 vaccine. [Read More](#)

## Researchers Identify Genes Responsible for Loss of Lung Function

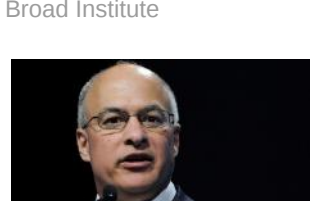
Boston University School of Medicine



Researchers have identified a panel of genes that are active in smokers and ex-smokers who experience faster loss of lung function over time. "Our discovery that airway genes change before a rapid decline in lung function should give patients with Chronic Obstructive Pulmonary Disease (COPD) a lot of hope," explained Dr. Katrina Steiling (pictured). [Read More](#)

## MD Anderson and Broad Institute Launch New Translational Research Platform Focused on Rare Cancers

Broad Institute



The University of Texas MD Anderson Cancer Center and the Broad Institute have announced the launch of a new translational research platform to study rare cancers and develop a first-of-its-kind resource for the scientific community. "Treatments for rare cancers have lagged behind common tumors in large part because we as a community lack the tools to study and understand their unique biology in the laboratory," said Dr. William Sellers (pictured). [Read More](#)

## Hale Family to Accelerate Pancreatic Cancer Research and Care with One of the Largest Single Gifts Ever to Dana-Farber Cancer Institute

Dana-Farber Cancer Institute



Continuing their family's deep commitment to conquering pancreatic cancer, Judith Hale (pictured, right), her son, Robert Hale Jr. (center), and his wife, Karen Hale (left), have pledged an additional \$50 million to Dana-Farber Cancer Institute. This gift, one of the largest single gifts in the Institute's history, will support the Hale Family Center for Pancreatic Cancer Research, founded in 2016. [Read More](#)

## In 'Minibrains,' Hindering Key Enzyme by Different Amounts Has Opposite Growth Effects

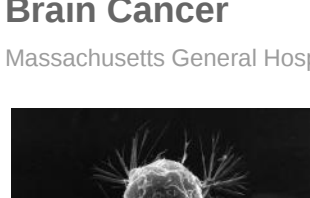
The Picower Institute



Like many around the world, the lab of Dr. Nirupama Sur (pictured) in the Picower Institute for Learning and Memory at MIT has embraced the young technology of cerebral organoids, or "minibrains," for studying human brain development in health and disease. By making a surprising finding about a common practice in the process of growing the complex tissue cultures, the lab has produced new guidance that can make the technology better. [Read More](#)

## Tumor-Promoting Immune Cells Retrained to Fight Most Aggressive Type of Brain Cancer

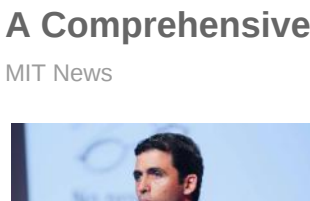
Massachusetts General Hospital



Using a targeted antibody called  $\alpha$ GITR, tumor-promoting immune cells called regulatory T cells can be reprogrammed into cancer-killing immune cells in glioblastomas. Combining the  $\alpha$ GITR antibody with immune-checkpoint-blocking drugs may benefit patients with glioblastomas, the most aggressive and uniformly fatal type of brain tumor. [Read More](#)

## A Comprehensive Map of the SARS-CoV-2 Genome

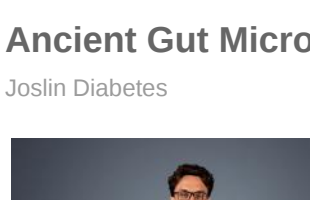
MIT News



MIT researchers have generated what they describe as the most accurate and complete gene annotation of the SARS-CoV-2 genome. "We were able to use this powerful comparative genomics approach for evolutionary signatures to discover the true functional protein-coding content of this enormously important genome," says Dr. Manolis Kellis (pictured). [Read More](#)

## Ancient Gut Microbiomes May Offer Clues to Modern Diseases

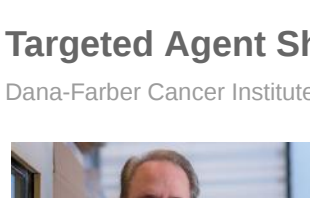
Joslin Diabetes



Joslin Diabetes Center scientists have found dramatic differences between gut microbiomes from ancient North American peoples and modern microbiomes, offering new evidence on how these microbes may evolve with different diets. The scientists analyzed microbial DNA found in indigenous human paleofeces from unusually dry caves in Utah and northern Mexico with extremely high levels of genomic sequencing, says Dr. Aleksandar Kostic (pictured). [Read More](#)

## Targeted Agent Shows Early Promise Against a Dangerous Infant Leukemia

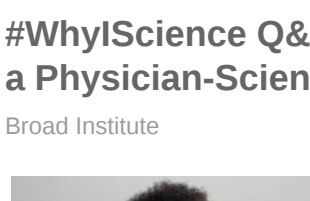
Dana-Farber Cancer Institute



A new study in mice and human cell lines finds promise in a targeted, orally bioavailable compound that inhibits a key growth pathway in mixed-lineage leukemia-rearranged leukemia. The strong findings set the stage for clinical trials in patients, says Dr. Scott Armstrong (pictured) of Dana-Farber Cancer Institute and Boston Children's Hospital. [Read More](#)

## #WhyScience Q&amp;A: An Undergraduate's Journey Motivates Her to Become a Physician-Scientist

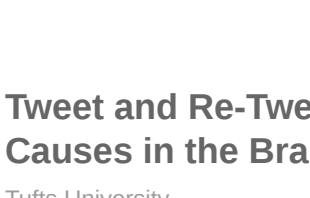
Broad Institute



The distance from the Democratic Republic of Congo to Stanford, California can be measured in miles or kilometers, but Harvard undergraduate student Esther Elonga (pictured) measures that journey in adventures. "I like the fact that life is like a Choose Your Own Adventure," said Elonga, who is also a researcher at the Broad Institute of MIT and Harvard. "Just go. Do what you're so passionate about. That is something I always look forward to." [Read More](#)

## Tweet and Re-Tweet: Songbird Stuttering Allows Researchers to Pinpoint Causes in the Brain

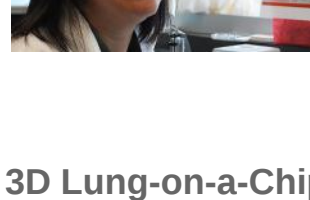
Tufts University



The cause of stuttering has long been a mystery, but researchers at Tufts University are beginning to unlock its causes and a strategy to develop potential treatments using a very curious model system – songbirds. The researchers, led by Dr. Mimi Kao (pictured), observed that a simple, reversible pharmacological treatment in zebra finches can stimulate rapid firing in a part of the brain that leads to large variations in their song patterns. [Read More](#)

## 3D Lung-on-a-Chip to Test New Therapies for COVID-19 and Other Lung Conditions

Genetic Engineering & Biotechnology News



Dr. Yu Shirko Zhang (pictured) and his colleagues from Brigham and Women's Hospital have designed a 3D lung-on-a-chip model of the distal lung and alveolar structures. The goal is to better understand respiratory diseases, including asthma, chronic obstructive pulmonary disease, influenza, pneumonia and COVID-19. This new chip model enables scientists to investigate how various COVID-19 therapies, such as remdesivir, impact the replication of the virus. [Read More](#)

## Scientists Discover How to Trick Cancer Cells to Consume Toxic Drugs

Massachusetts General Hospital



Attaching cancer drugs to the protein albumin often improves their uptake by tumors, but this strategy is not always effective and is not fully understood. Investigators led by Dr. Miles Miller (pictured) have found that tumors' consumption of albumin-bound cancer drugs is controlled by signaling pathways involved in the uptake of nutrients. Manipulating these pathways caused tumors to increase their consumption of albumin-bound cancer drugs. [Read More](#)

## To B or Not to B: Determining the Fate of a B Cell

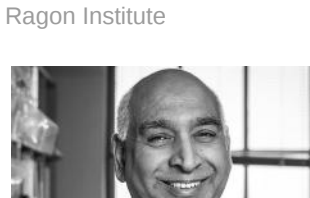
Ragon Institute



B1 and B2 cells have the same DNA, and therefore the same starting set of instructions. It is through epigenetic modifications that the same genome can be used to create unique instructions for each cell type. By carefully studying the DNA modifications present in both cell types and their precursors during different stages of development, Dr. Shiv Pillai (pictured) was able to identify an epigenetic signature that may determine whether a cell becomes a B1 or a B2 cell. [Read More](#)

## Plotting the End of Lyme Disease

Tufts University



As people weary of being cooped up during a pandemic winter look forward to a summer outside, residents across the northeastern United States are once again confronted with a familiar virulent pathogen lurking in the woods and fields. Unlike coronavirus, however, this dangerous microorganism doesn't float through the air — it enters the body through the bite of a tick. [Read More](#)

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## Upcoming Events in Boston



May 18  
6:30 PM  
Online  
**Unsung Research Heroes**

May 19  
5:00 PM  
Online  
**Biomedical Informatics Entrepreneurs Salon**

May 21  
9:00 AM  
Online  
**Hack the Hospital**

May 26  
3:00 PM  
Online  
**MassBio Virtual Career Fair**

May 27  
7:00 PM  
Online  
**When Miniaturization Meets Medicine: A Conversation with Sangeeta Bhatia**

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## Science Jobs in Boston

**Research Assistant I (Hirschhorn Lab)**  
Boston Children's Hospital

**Research Core Scientist II**  
Harvard University

**Senior Scientific Editor**  
Cell Stem Cell

**Scientist / Senior Scientist for In Vivo Pharmacology**  
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