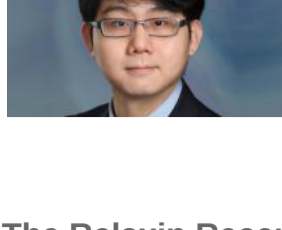


Publications of the Week

Multimodal Charting of Molecular and Functional Cell States via *In Situ* Electro-Sequencing

First Author: Qiang Li | Senior Author: Jia Liu *(pictured)*
Cell | Broad Institute, Harvard, and Massachusetts General Hospital




Paired mapping of single-cell gene expression and electrophysiology is essential to understand gene-to-function relationships in electrogenic tissues. The authors developed *in situ* electro-sequencing that combines flexible bioelectronics with *in situ* RNA sequencing to stably map millisecond-timescale electrical activity and profile single-cell gene expression from the same cells across intact biological networks, including cardiac and neural patches. [Abstract](#)

The Relaxin Receptor RXFP1 Signals Through a Mechanism of Autoinhibition

First Author: Sarah Erlandson | Senior Author: Andrew Kruse *(pictured)*
Nature Chemical Biology | Blavatnik Institute and Harvard



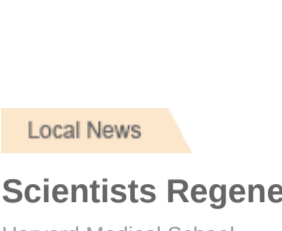
The relaxin family peptide receptor 1 (RXFP1) is the receptor for relaxin-2, an important regulator of reproductive and cardiovascular physiology. RXFP1 is a multi-domain G protein-coupled receptor with an ectodomain consisting of a low-density lipoprotein receptor class A module and leucine-rich repeats. The authors determine the cryo-electron microscopy structure of active-state human RXFP1, bound to a single-chain version of the endogenous agonist relaxin-2 and the heterotrimeric Gs protein. [Abstract](#)

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Awards

Anne-Marie Abban-Demitrus Receives AAUW Fellowship

BU Biology



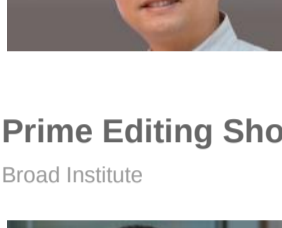
Biology PhD student, Anne-Marie Abban-Demitrus *(pictured)*, recently received a \$25,000 International Fellowship from the American Association of University Women (AAUW). This fellowship provides support for women pursuing full-time graduate or postdoctoral study in the US to women who are not US citizens or permanent residents, and who intend to return to their home country to pursue a professional career. [Read More](#)

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Local News

Scientists Regenerate Hair Cells That Enable Hearing

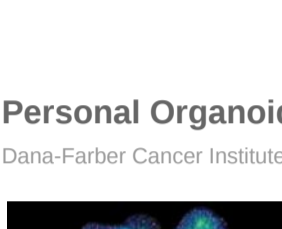
Harvard Medical School



A research team led by Dr. Zheng-Yi Chen *(pictured)*, an Associate Professor of Otolaryngology and Associate Scientist in the Eaton-Peabody Laboratories at Mass Eye and Ear, has reported creating a drug-like cocktail of different molecules that successfully regenerated hair cells in a mouse model by reprogramming a series of genetic pathways within the inner ear. [Read More](#)

Prime Editing Shows Proof of Concept for Treating Sickle Cell Disease

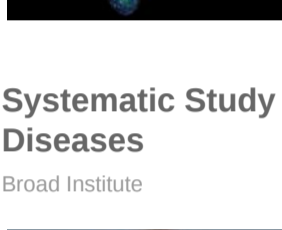
Broad Institute



A mutation in the gene that encodes a subunit of the oxygen-carrying molecule, hemoglobin, causes sickle cell disease (SCD). Scientists at St. Jude Children's Research Hospital and the Broad Institute of MIT and Harvard, led by Dr. David Liu *(pictured)*, showed a precise genome editing approach, prime editing, can change mutated hemoglobin genes back to their normal form in SCD patient cells, which restores normal blood parameters after transplantation into mice. [Read More](#)

Personal Organoids Could Help Individualize Cancer Treatment

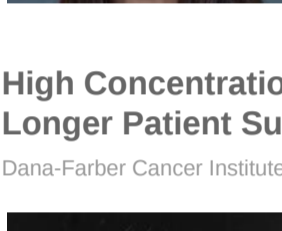
Dana-Farber Cancer Institute



To date, there are no model or cellular-based systems that are able to predict if an anti-cancer therapy will have efficacy for an individual patient before it is prescribed. Researchers at Dana-Farber are investigating an N-of-1 treatment paradigm in which a patient's cancer is developed into patient-derived organoids, which are 3D cultures of tumor cells from an individual patient. [Read More](#)

Systematic Study of Free Fatty Acids Reveals New Roles in Metabolic Diseases

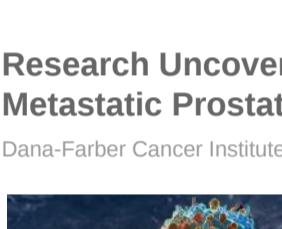
Broad Institute



Researchers from the lab of Dr. Anna Greka *(pictured)*, an institute member at the Broad Institute of MIT and Harvard, have developed a platform called FALCON (Fatty Acid Library for Comprehensive ONtologies) that can systematically profile the effects of a wide range of different free fatty acids in any cell type of interest, including cellular models of disease. [Read More](#)

High Concentrations of Immune Cells Within Tumors Associated with Longer Patient Survival

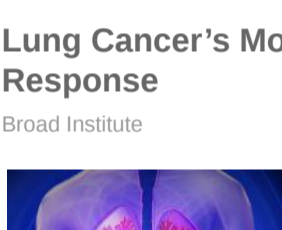
Dana-Farber Cancer Institute



Using a new test that unites cell-imaging technology with machine learning, researchers have found that patients whose tumors contain high concentrations of specific immune cells are likely to survive longer than patients with tumors carrying lower densities of these cells. The test, called ImmunoPROFILE, uses fluorescent staining to mark different types of immune cells within a tumor. [Read More](#)

Research Uncovers Alternate Mechanism for Producing Key Protein in Metastatic Prostate Cancer

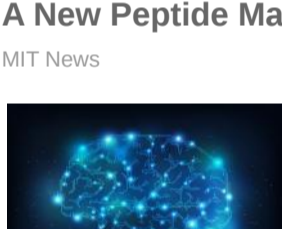
Dana-Farber Cancer Institute



In 15-20% of patients with castration-resistant prostate cancer, prostate-specific membrane antigen (PSMA) production stops at advanced stages of the disease. In a new study, Dana-Farber Cancer Institute scientists shed new light on the mechanism that raises and lowers PSMA expression in prostate cancer cells. The findings may help physicians select PSMA-targeting therapies for specific patients, researchers say. [Read More](#)

Lung Cancer's Molecular Features Shed Light on Immunotherapy Response

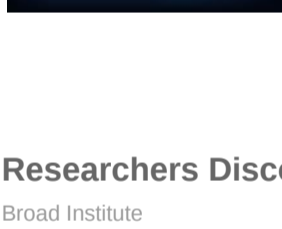
Broad Institute



A new study led by researchers at the Broad Institute of MIT and Harvard and Massachusetts General Hospital reveals key molecular features of lung tumors that could explain why some patients respond to these treatments while others do not. The team has pinpointed several genetic and other biological factors that may influence the response of non-small cell lung cancer patients to immunotherapies that inhibit the PD-1 or PD-L1 proteins. [Read More](#)

A New Peptide May Hold Potential as an Alzheimer's Treatment

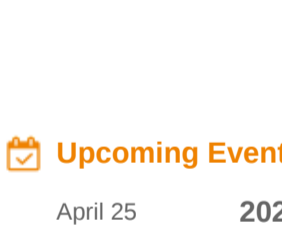
MIT News



MIT neuroscientists have found a way to reverse neurodegeneration and other symptoms of Alzheimer's disease by interfering with an enzyme that is typically overactive in the brains of Alzheimer's patients. When the researchers treated mice with a peptide that blocks the hyperactive version of an enzyme called CDK5, they found dramatic reductions in neurodegeneration and DNA damage in the brain. These mice also showed improvements in their ability to perform tasks such as learning to navigate a water maze. [Read More](#)

Researchers Discover New Risk Factor for Liver Disease

Broad Institute



More than ten percent of people over 70 have clonal hematopoiesis of indeterminate potential, or CHIP, which is over 70 have clonal hematopoiesis of indeterminate potential, or CHIP, which is a genetic condition where some of the body's blood-forming cells have acquired cancer-causing mutations and proliferate. Scientists have linked CHIP to increased risk of leukemia and heart disease, and now a new study adds chronic liver disease to the list of disorders strongly associated with CHIP. [Read More](#)

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8:30 AM

2023 State of Possible Conference
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Is It Possible to Bioprint Human Hearts?
Online
- April 29
9:00 AM

Microbial Sciences 20th Annual Symposium
Northwest Labs
- May 4
6:30 pm

Moving Science from .edu to .com: A Revisit
Whitehead Institute & Online
- June 14 - 17
9:00 AM

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How to Communicate Your Science to the Public

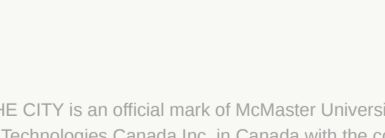
Webinar by Dr. Kristina McBurney & Leanna Bedell



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