

Publications of the Week

Increased Stem Cell Proliferation in Atherosclerosis Accelerates Clonal Hematopoiesis

First Author: Alexander Heyde | Senior Author: Kamilla Nesterova (pictured)
Cell | Harvard Medical School and Massachusetts General Hospital Research Institute



Clonal hematopoiesis, a condition in which individual hematopoietic stem cell clones generate a disproportionate fraction of blood leukocytes, correlates with higher risk for cardiovascular disease. The mechanisms behind this association are incompletely understood. The authors show that hematopoietic stem cell division rates are increased in mice and humans with atherosclerosis. [Abstract](#)

Chemokine CCL5 Promotes Robust Optic Nerve Regeneration and Mediates Many of the Effects of CNTF Gene Therapy

First Author: Li-Xia | Senior Author: Lary Barozzi (pictured)
PNAS | Boston Children's Hospital and Harvard Medical School



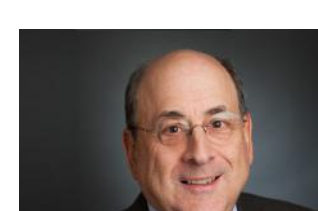
Ciliary neurotrophic factor (CNTF) is a leading therapeutic candidate for glaucoma and other ocular diseases and is widely used experimentally to promote axon regeneration after optic nerve injury. This study identifies a potent, previously unknown agent for optic nerve regeneration and raises general questions about interpreting results of gene therapy studies. [Abstract](#)

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Awards

Stuart Orkin Receives \$500,000 Gruber Genetics Prize for His Groundbreaking Research on the Genetics of Inherited Blood Disorders

Dana-Farber Cancer Institute



The 2021 Gruber Genetics Prize recognizes hematologist-oncologist and geneticist Dr. Stuart H. Orkin (pictured) of Dana-Farber/Boston Children's Cancer and Blood Disorders Center, for his pioneering discoveries of the genetic underpinnings of blood disorders. His remarkable body of work has not only revolutionized our understanding of how these illnesses occur but has also led to promising new gene-based therapies for thalassemia and sickle cell disease. [Read More](#)

Catherine Dulac Receives NOMIS Distinguished Scientist and Scholar Award

Harvard Molecular and Cellular Biology (MCB)



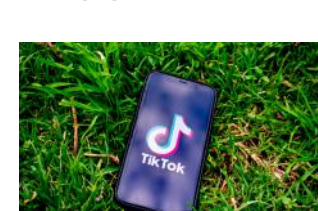
Each year, the international NOMIS Foundation selects two notable academics as recipients of the NOMIS Distinguished Scientist and Scholar Award, and this year MCB faculty Dr. Catherine Dulac (pictured) is one of the honorees. "Receiving the NOMIS Award was a great surprise and an auspicious start to the new year," says Dulac. [Read More](#)

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Local News

Tik-Tokking All about Science

MIT News



In January, MIT juniors and fraternal twins Malik and Miles George uploaded their first science video to their new TikTok account. The video, a short joke about the complexity of the Krebs Cycle, got 83 likes. The two pondered if they would join the ranks of popular science media personalities like Hank Green and Bill Nye. Now, more than a month later, they've amassed nearly 50,000 followers. [Read More](#)

Membrane around Tumors May Be Key to Preventing Metastasis

MIT News



MIT researchers have found that a common biological membrane has elastic qualities similar to a balloon, but also different in ways that may help prevent cancer cells from metastasizing. The study was led by Dr. Ming Guo (pictured), Associate Professor of Mechanical Engineering at MIT. Guo's co-authors include MIT postdoc Dr. Yu Long Han. [Read More](#)

Eyeless Roundworms Sense Color

MIT News



Despite lacking eyes and the light-sensitive molecules required for vision, tiny roundworms, about 1 millimeter in length, can sense the color of the light in their environment. "One of the joys of being a biologist is the opportunity to discover things about nature that no one has ever imagined before," says Dr. Robert Horvitz, the co-senior author of the study. [Read More](#)

Original Error

Harvard Medical School



At least in some cases, the original cancer-causing mutation could have appeared as many as 40 years ago, according to a new study by researchers at Harvard Medical School and Dana-Farber Cancer Institute. Reconstructing the lineage history of cancer cells in two individuals with a rare blood cancer, the team calculated when the genetic mutation that gave rise to the disease first appeared. [Read More](#)

Study Reveals How Egg Cells Get So Big

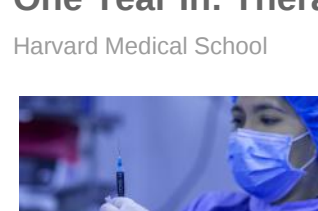
MIT News



A new study in fruit flies, by a team of MIT biologists and mathematicians, reveals that the process through which the oocyte grows significantly and rapidly before fertilization relies on physical phenomena analogous to the exchange of gases between balloons of different sizes. Drs. Jörn Dunkel and Adam Martin (pictured) are the senior authors of the paper. [Read More](#)

One Year In: Therapeutics

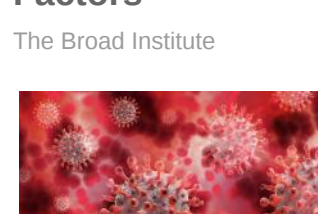
Harvard Medical School



Developing safe, effective therapies is a notoriously difficult process. *Harvard Medicine News* spoke with Drs. Jonathan Abraham and Mark Namchuk, the co-leaders of MassCPR's therapeutics working group, about the challenges of developing safe, effective therapies for COVID-19, and why it is critical that we stay the course. [Read More](#)

Massive Single-Cell Study Suggests Biological Roots of COVID-19 Risk Factors

The Broad Institute



It's rare for current events to inform the work of scientists as acutely as during a pandemic. In February 2020, a team of scientists from the international initiative of the Human Cell Atlas, including scientists at the Broad Institute of MIT and Harvard, sifted through a dataset on healthy human cells to look for ones the SARS-CoV-2 virus might be infecting. [Read More](#)

A 'Miracle Poison' for Novel Therapeutics

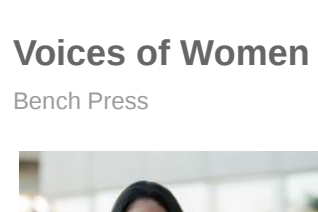
The Harvard Gazette



A team of researchers from Harvard University and the Broad Institute have, for the first time, proved they can rapidly evolve botulinum toxin to target a variety of different proteins, creating a suite of bespoke, super-selective proteases with the potential to aid in neuroregeneration, regulate growth hormones, calm rampant inflammation, or dampen the life-threatening immune response called cytokine storm. [Read More](#)

Voices of Women in Science: Fatima Cody Stanford

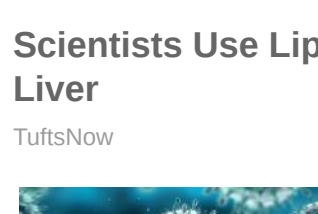
Bench Press



The month of March was named Women's History Month in 1987 to celebrate the critical contributions of women to American history. To celebrate, we reached out to women scientists across Mass General to learn more about their journeys. The first guest blog post is written by Dr. Fatima Cody Stanford (pictured). Dr. Stanford is a trailblazing obesity medicine physician-scientist at Mass General who is studying the intersection of medicine, public health, policy, and disparities. [Read More](#)

Scientists Use Lipid Nanoparticles to Precisely Target Gene Editing to the Liver

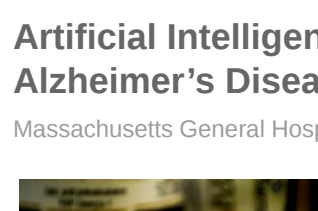
TutisNow



In a new study published by researchers at Tufts University and the Broad Institute of MIT and Harvard, a team has shown that they can use lipid nanoparticles to efficiently deliver CRISPR machinery into the liver of mice, resulting in specific genome editing and the reduction of blood cholesterol levels by as much as 57% — a reduction that can last for at least several months with just one shot. [Read More](#)

Artificial Intelligence Reveals Current Drugs That May Help Combat Alzheimer's Disease

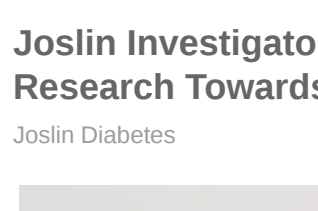
Massachusetts General Hospital



New treatments for Alzheimer's disease are desperately needed, but numerous clinical trials of investigational drugs have failed to generate promising options. Now a team at Massachusetts General Hospital and Harvard Medical School has developed an artificial intelligence-based method to screen currently available medications as possible treatments for Alzheimer's disease. [Read More](#)

Joslin Investigators Join New, Regional Center of Excellence Focused On Research Towards a Cure for Type 1 Diabetes

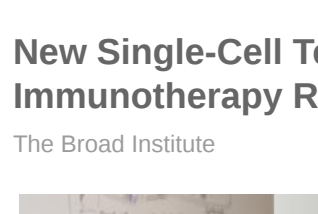
Joslin Diabetes



Joslin Diabetes Center is excited to be a part of the new Juvenile Diabetes Research Foundation Center of Excellence in New England. This new center will be a cross-collaboration among Joslin, the Harvard Stem Cell Institute, the UMMS Diabetes Center of Excellence at UMass Medical School, and the Jackson Laboratory. [Read More](#)

New Single-Cell Technology Points to Mechanism of Cancer Immunotherapy Resistance

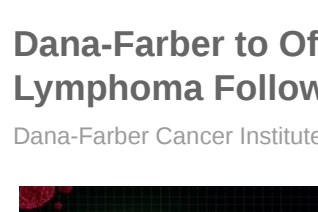
The Broad Institute



Cancer drugs called immune checkpoint inhibitors stimulate the immune system to kill cancer cells, but many patients develop resistance to these inhibitors. Researchers from the Broad Institute of MIT and Harvard, led by Broad core institute member Dr. Aviv Regev (pictured), have identified a molecular mechanism underlying this drug resistance in melanoma. [Read More](#)

Dana-Farber to Offer First CAR T-Cell Therapy for Indolent Follicular Lymphoma Following FDA Approval

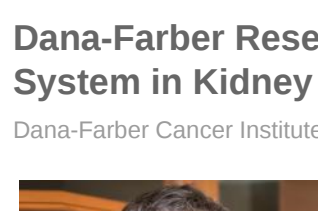
Dana-Farber Cancer Institute



The Food and Drug Administration (FDA) approval of the first CAR T-cell therapy for indolent follicular lymphoma, a slow growing, non-Hodgkin lymphoma, represents a key advance for patients with relapsed or refractory forms of the disease. Dana-Farber/Brigham and Women's Cancer Center will be a certified treatment center for the therapy. [Read More](#)

Dana-Farber Research Leads to Better Understanding of the Immune System in Kidney Cancer

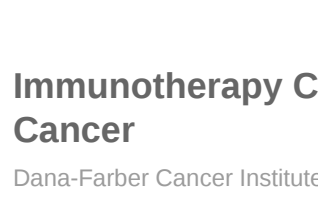
Dana-Farber Cancer Institute



In two new studies, researchers from Dana-Farber Cancer Institute and the Broad Institute of MIT and Harvard, led in part by Dr. Eleizer Van Allen (pictured), used the emerging technology of single-cell RNA sequencing to draw a clearer picture of how kidney tumors' microenvironments change in response to immunotherapy. The researchers believe that this work points to potential targets for new drug therapies. [Read More](#)

Immunotherapy Combination Improves Outcomes in Advanced Kidney Cancer

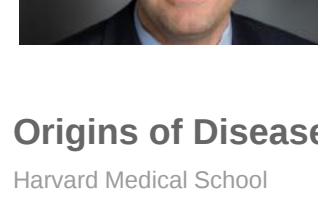
Dana-Farber Cancer Institute



An immunotherapy agent combined with a tyrosine kinase inhibitor drug significantly improved progression-free survival and reduced the risk of death compared to a single agent treatment in advanced kidney cancer patients, according to first results of a phase 3 clinical trial. Dr. Toni Choueiri (pictured) was the study's first author. [Read More](#)

Origins of Disease

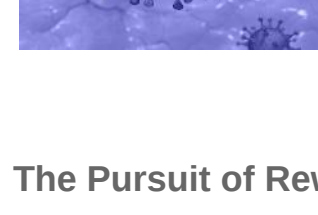
Harvard Medical School



Pathogenesis — or "origin of disease" — is the study of the processes that give rise to physiologic dysfunction and illness. In the case of COVID-19, it is the study of virus-induced mischief — how SARS-CoV-2 interacts with various cells, tissues, and organs to cause COVID-19. As the world inches along on its journey through this ever-evolving pandemic, understanding the "how" of COVID-19 could be the most important question of all. [Read More](#)

The Pursuit of Reward

McGovern Institute



The brain circuits that influence our decisions, cognitive functions, and ultimately, our actions are intimately connected with the circuits that give rise to our motivations. By exploring these relationships, scientists at McGovern are seeking knowledge that might suggest new strategies for changing our habits or treating motivation-disrupting conditions such as depression and addiction. [Read More](#)

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Upcoming Events in Boston

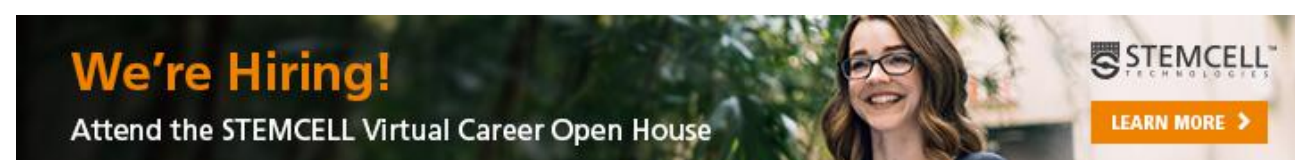
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| March 16 1:00 PM | Interdisciplinary Neuroscience Colloquia of Extramural Postdoctoral Talks Online |
| March 17 1:00 PM | Find New Leads from Peptides and Natural Ligands Online |
| March 18 11:00 AM | MassBio Virtual Speed Networking Online |
| March 22 4:00 PM | 2021 Phillip A. Sharp Lecture in Neural Circuits |
| March 23 4:00 PM | Biology Colloquium Series Online |

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Other Science Jobs in Boston

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| Senior Director, Biostatistics Moderna |
| Lead Staff Scientist, Biomaterials & Process Development Harvard Medical School |
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