SCIENCE in BOSTON

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Publications of the Week

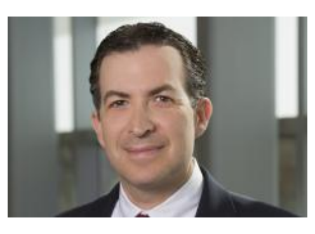
Direct Tumor Killing and Immunotherapy through Anti-SerpinB9 Therapy

First Author: Liwei Jiang | Senior Author: Reza Abdi *(pictured, fourth from right)*
Cell | Brigham and Women's Hospital and Harvard Medical School

The authors describe a paradigm to control cancer growth that is based on both direct tumor killing and the triggering of protective immunity. Genetic ablation of serine protease inhibitor SerpinB9 (Sb9) resulted in the death of tumor cells in a granzyme B (GrB)-dependent manner. Sb9-deficient mice exhibited protective T cell-based host immunity to tumors in association with a decline in GrB-expressing immunosuppressive cells within the tumor microenvironment. **Profile | Abstract**

A Macrophage-Specific lncRNA Regulates Apoptosis and Atherosclerosis by Tethering HuR in the Nucleus

First Author: Viorel Simion | Senior Author: Mark Feinberg *(pictured)*
Nature Communications | Brigham and Women's Hospital and Dana-Farber Cancer Institute



Using RNA-seq profiling of the intima of lesions, the authors identified a macrophage-specific lncRNA *MAARS* (macrophage-associated atherosclerosis lncRNA sequence). *MAARS* interacts with HuR/ELAVL1, an RNA-binding protein and important regulator of apoptosis. Overexpression and knockdown studies verified *MAARS* as a critical regulator of macrophage apoptosis and efferocytosis *in vitro*, in an HuR-dependent manner. **Profile | Abstract**

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Local News

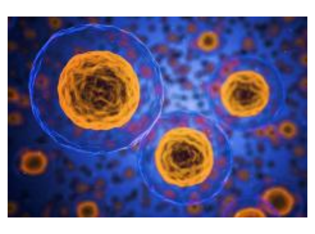
Map Shows How Cancer Cells Spread through the Body

Broad Institute

A team led by researchers at the Broad Institute's Cancer Program has shown that it is possible to predict metastasis of human cancer cells in animal models. They found that whether a cancer spreads, how well it spreads, and to which organ, depends on a number of genetic and clinical factors. The team pulled together the features associated with metastasis for 500 human cancer cell lines to create the Metastasis Map, the first ever map of how different cancers spread. **Read More**

New Study Reveals How Melanoma Cells Survive Targeted Therapies

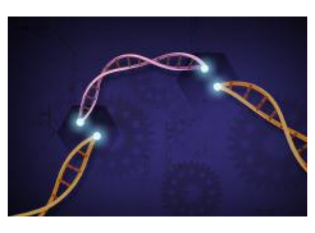
Harvard Medical School



Researchers at Harvard Medical School have identified a new mechanism for how certain melanoma cancer cells can evade targeted therapy. They discovered that drug treatment leaves behind a population of "persister" melanoma cells that are able to survive and slowly divide due to sporadic, short-lived pulses of a growth signal that is triggered by proteins outside of the cell and rewires growth pathways into a configuration unaffected by drugs. **Read More**

CRISPR Gene Editing Delivers Promise for Sickle-Cell Disease, Beta Thalassemia

Genetic Engineering & Biotechnology News



Boston-based Vertex Pharmaceuticals and partner CRISPR Therapeutics have reported a consistent and sustained positive response in 10 patients treated for a pair of blood disorders — sickle-cell disease and beta thalassemia — with their CRISPR-Cas9 gene-edited therapy CTX001 in a pair of Phase I/II trials. These are the first clinical studies of a CRISPR gene-editing candidate sponsored by U.S. companies. **Read More**

'SCOUT' Helps Researchers Find and Quantify Significant Differences among Organoids

Picower Instiute

No two organoids are alike and none of them resemble actual brains. This "snowflake" problem has held back the science by making scientifically meaningful quantitative comparisons difficult to achieve. To help researchers overcome those limitations, MIT neuroscientists and engineers led by Dr. Kwanghun Chung *(pictured)* have developed a new pipeline for clearing, labeling, 3D imaging and rigorously analyzing organoids. **Read More**

BIDMC Launches Plan to InSPIRE Next Generation of Discovery

Beth Israel Deaconess Medical Center

Building on its long history of driving discovery, supporting innovation and translating scientific data to improve patient care and outcomes, Beth Israel Deaconess Medical Center (BIDMC) is embarking on a five-year Institutional Strategic Plan for Innovation, Research & Education (InSPIRE) to reimagine and support a modern, vital research enterprise. **Read More**

RNA Startup Remix Raises $81M from Atlas, Arch Venture

Boston Business Journal

Local life sciences investor Atlas Venture is continuing its push into RNA therapies with a new company: Remix Therapeutics. The Cambridge-based startup emerged from stealth mode with plans to finely tune the bodily process that takes RNA instructions and creates genes. By manipulating the system, Remix believes it can correct genetic dysregulation and eliminate harmful proteins that contribute to many diseases. **Read More**

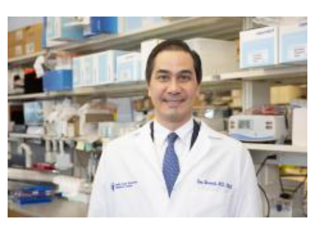
Native American Ancestry Associated with Lung Cancer Mutations in Latin American Patients

Broad Institute

Among patients with lung cancer from Latin America, genomic and ancestry analyses revealed that Native American ancestry was associated with increased mutations in the *EGFR* gene, independent of smoking status, according to results from a study published in *Cancer Discovery* from scientists at the Broad Institute and Dana-Farber. **Read More**

BIDMC Researchers Define Immune System's Requirements for Protection against Covid-19

Beth Israel Deaconess Medical Center



Since the novel coronavirus emerged at the end of last year, scientists around the world — including BIDMC immunologist Dr. Dan Barouch *(pictured)* — have been developing vaccines to protect against COVID-19 and to put an end to the global pandemic. In a new paper, Barouch and colleagues shed light on the role of antibodies and immune cells in protection against SARS-CoV-2, the virus that causes COVID-19, in rhesus macaques. **Read More**

Rochelle Walensky to Run the Centers for Disease Control and Prevention

The Harvard Gazette

President-elect Joseph Biden has named Dr. Rochelle Walensky *(pictured)*, Chief of Mass General Hospital's Division of Infectious Diseases and Professor of Medicine at Harvard Medical School, as the new administration's Director of the Centers for Disease Control and Prevention. Walensky became an expert in viral testing, prevention, and treatment through her work against AIDS. **Read More**

New Map Provides Scientists with Head Start on How to Destroy Cancer-Related Enzymes Rather than Just Block Them

Dana-Farber

Dr. Eric Fischer *(pictured)* and colleagues at Dana-Farber have provided a guide to approximately 200 kinases, the first comprehensive map for scientists working in a field that is expected to have a major impact on cancer treatment. The map, publicly available online, will assist researchers in designing molecules that target specific kinases for destruction. Such molecules could serve as the templates for drugs more effective than many of today's targeted cancer therapies. **Read More**

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Upcoming Events in Boston

December 16 1:00 PM	**A Look Ahead at Biotech in 2021** Online
December 16 4:00 PM	**Virtual BioXchange** Online
December 17 12:00 PM	**Dana Farber Targeted Protein Degradation Seminar** Online
December 17 4:00 PM	**MassBio Virtual Holiday Mixer** Online
January 21 12:00 PM	**Dana Farber Targeted Protein Degradation Seminar** Online

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