

Publications of the Week
Single-Cell RNA Sequencing Reveals Evolution of Immune Landscape During Glioblastoma Progression

First Authors: Alan Yee, Shrutti Rawal, and Bethany Delcuze | Senior Author: Al Charest *(pictured)*
 Nature Immunology | Beth Israel Deaconess Medical Center, Harvard Medical School, Tufts University, and Massachusetts General Hospital



Glioblastoma (GBM) is an incurable primary malignant brain cancer hallmarked with a substantial protumorigenic immune component. Using single-cell transcriptomics and flow cytometry, the authors unveiled large-scale comprehensive longitudinal changes in immune cell composition throughout tumor progression in an epidermal growth factor receptor-driven genetic mouse GBM model. [Abstract](#)

Immunosuppression Broadens Evolutionary Pathways to Drug Resistance and Treatment Failure During *Acinetobacter baumannii* Pneumonia in Mice

First Authors: Wenwen Huo and Lindsay Busch | Senior Author: Ralph Isberg *(pictured)*
 Nature Microbiology | Tufts University, Northeastern University, and Boston College



Acinetobacter baumannii is increasingly refractory to antibiotic treatment in healthcare settings. The authors reproduced several routes to fluoroquinolone resistance, performing evolution experiments using sequential lung infections in mice that are replete with or depleted of neutrophils, providing key insights into the evolution of drug resistance. [Abstract](#)

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Awards
From the Lab to Your Life

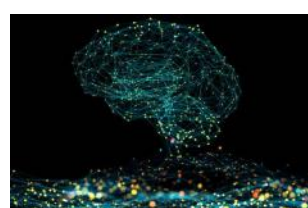
The Brink



The BU Ignition Awards help fast-track the commercialization of promising new research. Dr. Béla Suki *(pictured)* received an award for his device that uses precision-cut lung slices from organ donors to mimic real breathing and lets researchers measure the stiffness of the tissue, which can be a key component of lung disease. [Read More](#)

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Local News
A Key Parkinson's Disease Protein Lives a "Double Life"

Broad Institute



One of the hallmarks of Parkinson's disease (PD) is the accumulation in the brain of a protein known as alpha-synuclein. A new study led by investigators at Brigham and Women's Hospital, Harvard Stem Cell Institute, and the Broad Institute of MIT and Harvard shines new light on the role of alpha-synuclein, uncovering a new function for the protein with relevance for PD and related conditions. [Read More](#)

How the Brain Makes Us Feel Sick

Harvard University Department of Molecular and Cellular Biology



When humans have an infection, like a cold or the flu, they are fatigued and achy, have a reduced appetite and elevated body temperature. In a new study from Dr. Catherine Dulac's *(pictured)* lab, published in *Nature*, researchers discovered how neurons in the brain directly read signals from the body's immune system and how those signals alter neural circuit activity to trigger symptoms of sickness. [Read More](#)

Improved Progression-Free Survival in Patients with Multiple Myeloma Following Three-Drug Therapy with Autologous Stem Cell Transplant

Dana-Farber Cancer Institute



Patients with multiple myeloma who have been treated with a three-drug combination therapy have a growing number of choices for subsequent treatment. Results of a new study led by Dr. Paul Richardson *(pictured)* at Dana-Farber Cancer Institute can help patients and their physicians weigh benefits and risks of each option. [Read More](#)

The Quest for a Heart Attack Cure

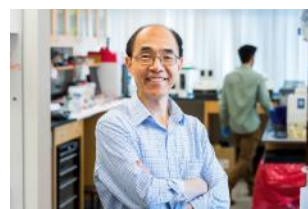
The Brink



Dr. David Bishop is the Director of CELL-MET, a National Science Foundation Engineering Research Center in Cellular Metamaterials led by BU, which is focused on developing treatments for cardiac disease. Together, Dr. Bishop and his colleagues are taking a bold new approach: growing viable heart tissue in the lab from scratch. [Read More](#)

Three Distinct Brain Circuits in the Thalamus Contribute to Parkinson's Symptoms

MIT News



Parkinson's disease is best-known as a disorder of movement. Patients often experience tremors, loss of balance, and difficulty initiating movement. The disease also has lesser-known symptoms that are nonmotor, including depression. In a study of a small region of the thalamus, MIT neuroscientists have now identified three distinct circuits that influence the development of both motor and nonmotor symptoms of Parkinson's. [Read More](#)

Molecules Found in Mucus Can Thwart Fungal Infection

MIT News



Candida albicans is a yeast that often lives in the human digestive tract and mouth, as well as urinary and reproductive organs. MIT researchers in Dr. Katharina Ribbeck's *(pictured)* lab have now identified components of mucus that can interact with *Candida albicans* and prevent it from causing infection. These molecules, known as glycans, are a major constituent of mucins, the gel-forming polymers that make up mucus. [Read More](#)

Study Overturns Dogma About Cell Division; Could Unlock New Cancer Drug Target

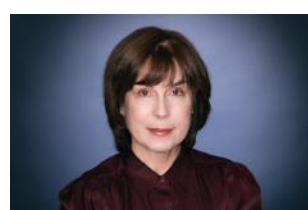
Dana-Farber Cancer Institute



Proteins that control cell growth are often potential targets for cancer drugs. Conventional thought was that some of these kinases were off limits for targeting due to their essential function in normal cells. But new research from Dr. Peter Sicinski's *(pictured)* group indicates one such protein, CDC7, may in fact be an attractive therapeutic target. [Read More](#)

Previous COVID-19 or MIS-C Does Not Protect Kids from Omicron

Boston Children's Hospital



You would think that having had COVID-19 once, you'd have antibodies that would protect you against repeat infections. But studies of adults have shown that Omicron doesn't go by that logic. A new study, led by Dr. Adrienne Randolph *(pictured)* of Boston Children's Hospital and Dr. Surender Khurana of the Food and Drug Administration, confirms that the same is true for children. [Read More](#)

How the Brain Responds to Surprising Events

MIT News



When your brain needs you to pay attention to something important, one way it can do that is to send out a burst of noradrenaline, according to a new MIT study. This neuromodulator, produced by a structure deep in the brain called the locus coeruleus, can have widespread effects throughout the brain. In a study of mice, the MIT team found that one key role of noradrenaline, also known as norepinephrine, is to help the brain learn from surprising outcomes. [Read More](#)

Novel Immunotherapy Mechanism Suppresses Breast Cancer Development

Massachusetts General Hospital



Researchers in Dr. Shawn Demehri's *(pictured)* group have discovered the mechanism by which specific immune cells can block breast cancer development and even suppress a developed tumor. In mice studies, the team observed that CD4⁺ T helper 2 cells reverted high-grade breast tumors to making cells similar to a non-cancerous breast gland. [Read More](#)

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Upcoming Events in Boston

June 13-14 12:00 PM	8th Semi-Annual New England CryoEM Symposium Online
June 14 2:00 PM	Ceremony: Harvard Catalyst Research Day Online
June 17 8:00 AM	20th Annual Cancer Research Symposium Koch Institute
June 22 1:00 PM	2022 RNA Therapeutics Symposium: From Concept to Clinic Online
June 23 5:30 PM	MassBio Young Professionals Kick-Off Event Castle Island Brewery

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