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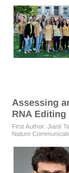
Publications of the Week

The Landscape of Tumor Cell States and Spatial Organization in H3-K27M Mutant Diffuse Midline Glioma Across Age and Location

First Authors: Ron Liu, Li Jiang, and Erik Samuelsson | Senior Authors: Michelle Monje, Mats Nilsson, and Mariella Filbin *(pictured, front row, centre)*
Nature Genetics | Dana-Farber Boston Children's Cancer and Blood Disorders Center and the Broad Institute



Histone 3 lysine27-to-methionine (H3-K27M) mutations most frequently occur in diffuse midline gliomas (DMGs) of the childhood pons but are also increasingly recognized in adults. Through dissecting the single-cell transcriptomic, epigenomic, and spatial architectures of a comprehensive cohort of patient H3-K27M DMGs, the authors delineate how age and anatomical location shape glioma cell-intrinsic and -extrinsic features in light of the shared driver mutation. **Profile | Abstract | Press Release**

Assessing and Advancing the Safety of CRISPR-Cas Tools: From DNA to RNA Editing

First Author: Jianli Tao | Senior Author: *Roberto Chiarle (pictured)*
Nature Communications | Boston Children's Hospital and Harvard Medical School

CRISPR-Cas gene editing has revolutionized experimental molecular biology over the past decade and holds great promise for the treatment of human genetic diseases. The authors review the development of CRISPR-Cas9/Cas12/Cas13 nucleases, DNA base editors, prime editors, and RNA base editors, focusing on the assessment and improvement of their editing precision and safety, pushing the limit of editing specificity and efficiency. **Abstract**

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Awards

BU's Christopher Chen Elected a National Academy of Inventors Fellow

The Brink

A BU biomedical engineer, Dr. Christopher Chen *(pictured)*, was recently named a National Academy of Inventors Fellow in recognition of a career filled with patents and inventions — many building toward potentially life-saving breakthroughs. In just the past year, Dr. Chen has cofounded a regenerative medicine company — securing $110 million in funding to boost its organ-healing technology — and helped build a miniature beating heart that could speed efforts to repair damage from a heart attack. **Read More**

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Local News

Researchers Discover Why Only Some People Experience Long-Term Benefits from Peanut Allergy Treatments

Massachusetts General Hospital

Food allergies are caused by IgE antibodies that are generated by the immune system and bind to allergens such as peanuts, triggering a reaction that in extreme cases can be potentially life-threatening. New research by scientists at Massachusetts General Hospital, the University of Paris Saclay, and the National Institute of Environmental Health Sciences reveals why oral immunotherapy can lead to sustained tolerance in some individuals but only transient tolerance in others. **Read More**

Harnessing the Immune System to Fight Cancer

Whitehead Institute

Sometimes research takes scientists to unexpected places, even alpaca farms. Dr. Tobiloba Oni *(pictured)* is one of two Valhalla Fellows at the Whitehead Institute who are researching ways to harness our natural defenses to combat cancer, an approach called immunotherapy. Dr. Oni found himself at an alpaca farm last summer not to admire the alpacas' fluffy coats and endearing underbites, but to draw blood. **Read More**

FinnGen Study Highlights Underappreciated Complexity of Dosage in Genetic Variation

Broad Institute

An international team of scientists led by researchers at the University of Helsinki and the Broad Institute examined the effects of 44,370 genetic variants on more than 2000 diseases in almost 177,000 Finnish biobank participants. The study focused on so-called coding genetic variants, i.e., variants that are known to change the protein product of the gene. **Read More**

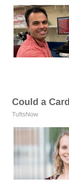
Denic Lab Discovers an Ancient and Essential Translation Factor Chaperone

Harvard University Department of Molecular and Cellular Biology

Recently, a high-throughput sequencing approach to identify the essential genes in an archaeal model organism, *Sulfolobus islandicus*, discovered only 80 genes conserved between present-day archaeal and eukaryotic organisms to be essential in both domains of life. Of these 80, a single has remained poorly characterized: *ZPR1*. Dr. Vlad Denic's *(pictured)* group found that Zpr1 is indeed an essential requirement for proper folding of one of the most conserved and abundant proteins in cells. **Read More**

NEIDL Researchers Discover New SARS-CoV-2 Weak Spot — Which Could Inspire Improved Vaccines

The Brink



In a paper published online in *Nature*, BU researchers identify the mutations that help Omicron dodge prior immunity and show that a previously unheralded virus protein — known as NSP6 — might be an essential factor in the variant's lower disease-causing potential, or its pathogenicity. The study's senior author, BU virologist Dr. Mohsan Saeed *(pictured)*, says their research could have a major positive impact, potentially helping provide a new target for vaccines and therapeutics. **Read More**

Could a Cardiac Drug Stop Breast Cancer Metastasis?

TuftsNow

Triple-negative breast cancer is notoriously hard to treat. Assistant Professor Dr. Madeleine Oudin's *(pictured)* lab at the Tufts School of Engineering studies how to tame those cancer cells into submission. With Laidlaw Scholar Deepti Srinivasan, a senior biomedical engineering major and an aspiring physician, Dr. Oudin investigated how manipulating potassium channel activity could alter those cells' bioelectric signals — making the cancer less likely to spread. **Read More**

MassBio's 2022 Massachusetts Biopharma Funding Report Shows Strong Industry Investment Despite Market Reset and Ongoing Economic Uncertainty

MassBio

MassBio released its 2022 Massachusetts Biopharma Funding Report, which showed another strong year for Massachusetts' world-leading early-stage research and development cluster. The calendar year ending on December 31, 2022 saw the second highest total of venture capital funding to Massachusetts-based biopharma companies, $8.72 billion, surpassing 2020's $8 billion and only falling short of 2021's $13.66 billion. **Read More**

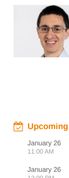
Common Brain Network for Psychiatric Illness Discovered

Brigham and Women's Hospital

Psychiatric illnesses, such as schizophrenia and depression, affect nearly one in five adults in the United States, and nearly half of patients diagnosed with a psychiatric illness also meet the criteria for a second. A new study by investigators from Brigham and Women's Hospital investigated four pre-existing, publicly available neurological and psychiatric datasets, and pinpointed a network of brain areas underlying psychiatric illnesses. **Read More**

New Gene Target Could Potentially Boost Effectiveness of Cancer Immunotherapy

Broad Institute



Immune checkpoint inhibitors are important medications that boost the immune system's response against various cancers, but some patients' cancer cells are unaffected by the drugs or develop resistance during treatment. Researchers led by Dr. Robert Manguso's *(pictured)* team from Massachusetts General Hospital and the Broad Institute recently identified an immune evasion gene that is turned on in some of these cells, and they found that silencing the gene enhanced the cells' susceptibility to immunotherapy. **Read More**

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12:00 PM
Boston's Booming Biotech Ecosystem
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Biomedical Informatics Entrepreneurs Salon: Iris Grossman, ElevenTx
Harvard Medical School & Online

January 26
5:30 PM
The Importance of Broad Science Literacy: Lessons from Covid, Climate Change, and More
Whitehead Institute & Online

January 27
12:30 PM
Xenotransplantation: Transplanting Genetically-Modified Pig Kidneys into Patients
Online

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