

Publications of the Week

Cryo-EM Structure of the RADAR Supramolecular Anti-Phage Defense Complex

First Authors: Brianna Duncan-Lowey and Nitzan Tal | Senior Author: Philip Kranzusch (*pictured*)
Cell | Harvard Medical School and Dana-Farber Cancer Institute



Restriction by an adenosine deaminase acting on RNA (RADAR) is a two-protein bacterial defense system that was reported to defend against phage by “editing” messenger RNA. The authors determine cryo-electron microscopy structures of the RADAR defense complex, revealing RdrA as a heptameric, two-layered AAA+ ATPase and RdrB as a dodecameric, hollow complex with twelve surface-exposed deaminase active sites. [Abstract](#)

Epstein–Barr Virus as a Leading Cause of Multiple Sclerosis: Mechanisms and Implications

First Author: Kjetil Bjornevik | Senior Author: Alberto Ascherio (*pictured*)
Nature Reviews Neurology | Harvard University and Brigham and Women’s Hospital



Epidemiological studies have provided compelling evidence that multiple sclerosis (MS) is a rare complication of infection with the Epstein–Barr virus (EBV), a herpesvirus that infects more than 90% of the global population. The authors discuss the evidence linking EBV to the development of MS and the mechanisms by which the virus is thought to cause the disease. [Abstract](#)

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Awards

Searching for Bacteria That Protect Against Inflammatory Bowel Disease

MIT Center for Microbiome Informatics and Therapeutics (CMIT)



CMIT researchers have identified a bacterial signal that promotes the development of special immune cells that might help prevent immune disorders such as Crohn’s disease and ulcerative colitis. The presence of this molecular signal, common to many microbes of the gut, reduced the severity of symptoms in a colitis mouse model, the researchers reported in a summer issue of *Science*. [Read More](#)

Rare Genetic Variants Can Reveal Much About Disease Biology

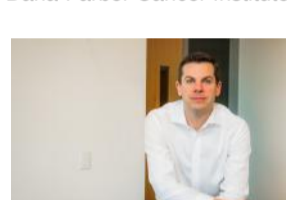
Broad Institute



Geneticists have debated the roles rare mutations might play in causing and studying common diseases. Natural selection tends to sift out such mutations, and as a result scientists have struggled both to find them and to measure their influence on disease risk compared to common single nucleotide polymorphisms. Now in a study published in *Nature*, researchers at the Broad Institute have done just this for 22 complex traits and diseases. [Read More](#)

Study Suggests Possible Way to ‘Smac’ Cancer

Dana-Farber Cancer Institute



In animals, a process of programmed cell death called apoptosis ensures cells die when they should. An opposing force, governed by inhibitor of apoptosis proteins (IAPs), guards against excessive cell death. In a new study, Dr. Eric Fischer (*pictured*) and a team at Dana-Farber Cancer Institute used cryo-electron microscopy to reveal for the first time how one IAP, a protein called BIRC6, operates at a molecular level to inhibit programmed cell death. [Read More](#)

Studies of Unusual Brains Reveal Critical Insights into Brain Organization, Function

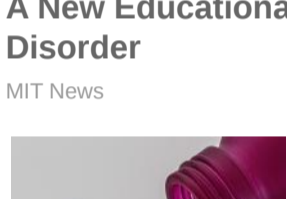
McGovern Institute



EG (a pseudonym) is an accomplished woman in her early 60s: she is a college graduate and has an advanced professional degree. She has a stellar vocabulary and has mastered a foreign language (Russian) to the point that she sometimes dreams in it. She also has, likely since birth, been missing her left temporal lobe, a part of the brain known to be critical for language. In 2016, EG contacted McGovern Institute Investigator Dr. Evelina Fedorenko to see if her team might be interested in including her in their research. [Read More](#)

A New Educational Program for Scientists Working on Substance Use Disorder

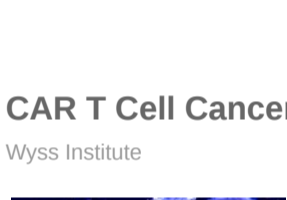
MIT News



A team from MIT Open Learning and Brown University has been awarded a grant from the National Institute on Drug Abuse, part of the National Institutes of Health, to create a program to train substance use disorder researchers in entrepreneurship and biomedical product development. The program’s main goal is to advance the inception and development of products and services to deliver effective prevention, diagnostic, and treatment solutions for people with substance use disorder. [Read More](#)

CAR T Cell Cancer Immunotherapy Gets Personal

Wyss Institute





A collaboration between bioengineers at the Wyss Institute and Harvard John A. Paulson School of Engineering and Applied Sciences, led by Dr. David Mooney, and cancer-immunologists at the Dana-Farber Cancer Institute, led by Dr. Catherine Wu, has demonstrated that personalizing CAR T cell stimulation during manufacturing can significantly enhance the consistency and potency of the resulting CAR T cell products. [Read More](#)

Researchers Look for Ways to Start Puberty ‘On Time’

Boston Children’s Hospital



Boston Children’s researchers are trying to further the study of an important genetic player in pubertal timing: Makorin Ring Finger Protein 3 (MKRN3). A recent study in the brains of mice led by Dr. Stephanie Roberts (*pictured*) found that adding more copies of *Mkrrn3* in the brain during a time when this protein is typically low could delay puberty. It’s a promising finding that could someday lead to future treatment options for children experiencing puberty too soon or too late. [Read More](#)

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Upcoming Events in Boston


- February 22 12:00 PM **Stem Cells in Space** Online
- February 28 10:00 AM **2023 Rare Disease Day** Massachusetts State House
- March 8 12:00 PM **Clarifying the Mysteries of Choosing Statistical and Machine-Learning Methods in Genomics Research** Online
- March 14 4:00 PM **Soma Weiss Student Research Day** TMEC Atrium
- March 24 12:30 PM **Cell Therapies for Parkinson’s Disease: How Far Have We Come, and Where Are We Going?** Online

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Science Jobs in Boston

- Research Scientist II, Tech Transfer - Thrive**
Exact Sciences
- Senior Principal Scientist**
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- Research Scientist I, Molecular Biomarkers**
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