

Publications of the Week
A Conserved Bacteroidetes Antigen Induces Anti-Inflammatory Intestinal T Lymphocytes

 First Author: Djenet Bousbaine (*pictured, left*) | Senior Authors: Hidde Ploegh (*center*) and Angelina Bilate (*right*)
 Science | MIT and Boston Children's Hospital


CD4⁺CD8 $\alpha\alpha$ ⁺ intraepithelial lymphocytes (CD4IELs) are a class of intestinal innate-like T cells that contribute to various immune responses, including oral tolerance. Their development depends on the gut microbiota, but the precise antigens that these cells recognize have remained elusive. The authors report that β -hexosaminidase, a highly conserved enzyme produced by commensals from the Bacteroidetes phylum, drives CD4IEL differentiation in the gut. [Profile](#) | [Abstract](#)

Evybactin Is a DNA Gyrase Inhibitor That Selectively Kills *Mycobacterium tuberculosis*

 First Authors: Yu Imai and Glenn Hauk | Senior Author: Kim Lewis (*pictured*)
 Nature Chemical Biology | Northeastern University


The antimicrobial resistance crisis requires the introduction of novel antibiotics. The use of conventional broad-spectrum compounds selects for resistance in off-target pathogens and harms the microbiome. This is especially true for *Mycobacterium tuberculosis*, where treatment requires a six-month course of antibiotics. The authors show that a novel antimicrobial from *Photobacterium denitrificans* is a potent and selective antibiotic acting against *M. tuberculosis*. [Abstract](#)

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Awards
Pioneering Engineer-Researcher to Receive 2022 Szent-Györgyi Prize for Progress in Cancer Research

National Foundation for Cancer Research



The National Foundation for Cancer Research has announced that Dr. Rakesh Jain (*pictured*) has been selected to receive the 2022 Szent-Györgyi Prize for Progress in Cancer Research. The blue-ribbon Prize selection committee, consisting of renowned leaders in cancer research, elected Dr. Jain for his pioneering research and breakthrough discoveries on overcoming barriers posed by the tumor microenvironment which led to the improved delivery and efficacy of anti-cancer medicines. [Read More](#)

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Local News
Activated STING Pathway Can Prime Natural Killer Cells to Fight Cancer

Dana-Farber Cancer Institute



Stimulator of interferon genes (STING) agonists are being tested for their potential to boost the anti-cancer immune response. But these agonists, which worked in the laboratory or in mice, have failed to have much success in humans. "There's a big disconnect between what happens in mice and what happens in people," says Dr. David Barbie (*pictured*), a physician-scientist in the Lowe Center for Thoracic Oncology at Dana-Farber. [Read More](#)

When Recovery Goes Awry

Harvard Medical School



Inflammation is the body's first line of defense, occurring as droves of immune cells rush to the site of injury or acute illness to make repairs and stem further damage. When successful, inflammation helps the body survive and heal after trauma. However, when recovery following an inflammatory response goes awry, it signals that damage is still occurring — and the inflammation itself can cause further injury, leading to more-severe illness or even death. [Read More](#)

First Report from Metastatic Prostate Cancer Research Project Highlights Patient Perspectives

Broad Institute



The Metastatic Prostate Cancer (MPC) Project is a first-of-its-kind data-gathering initiative launched in 2018 by collaborators at the Broad and Dana-Farber to better understand the genetics and biology of MPC, which can drive different patterns of disease. It falls under the larger umbrella of Count Me In, an initiative that launched its first project in 2015 with the goal of giving cancer patients from diverse geographical, racial, and socioeconomic backgrounds opportunities to participate in research that has often excluded them. [Read More](#)

Deep Learning Algorithm May Streamline Lung Cancer Radiotherapy Treatment

Brigham and Women's Hospital



Brigham and Women's Hospital researchers and collaborators, working under the Artificial Intelligence (AI) in Medicine Program of Mass General Brigham, developed and validated a deep learning algorithm that can identify and outline a non-small cell lung cancer tumor on a computed tomography scan within seconds. "The biggest translation gap in AI applications to medicine is the failure to study how to use AI to improve human clinicians, and vice versa," said Dr. Raymond Mak (*pictured*). [Read More](#)

Research Spotlight: Could a Blood Pressure Hormone Work as a Treatment for Immune Dysregulation in Sepsis?

Massachusetts General Hospital



Dr. Daniel Leisman (*pictured*), a resident in the Department of Medicine at Massachusetts General Hospital, is the lead author of a new study in *PNAS* titled, "Angiotensin II Enhances Bacterial Clearance via Myeloid Signaling in a Murine Sepsis Model." In this study, angiotensin-II acted directly on immune cells to enhance bacterial killing functions, increase bacterial clearance, and modulate systemic inflammatory responses without increasing inflammatory injury. [Read More](#)

Wyss Institute at Harvard University Launches SPEAR Bio To Empower Disease Research, Patient Care, and Drug Development With Its Small-Sample, Ultrasensitive, Protein-Detection Technology

Wyss Institute



The Wyss Institute and Spear Bio announced that the Institute's DNA nanotechnology-driven ultrasensitive SPEAR protein-detection technology has been licensed to the newly formed Boston-based startup. Pioneered in the group of Wyss Core Faculty member Dr. Peng Yin (*pictured*), the SPEAR technology enables ultrasensitive protein detection in small patient samples. [Read More](#)

When Alzheimer's Degrades Cells That Cross Hemispheres, Visual Memory Suffers

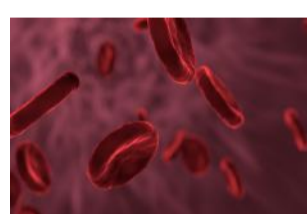
The Picower Institute



A new study from Dr. Li-Huei Tsai's (*pictured*) team at MIT finds that Alzheimer's disease disrupts at least one form of visual memory by degrading a newly identified circuit that connects the vision processing centers of each brain hemisphere. The results of the study, published in *Neuron* by a research team based at the Picower Institute, come from experiments in mice, but provide a physiological and mechanistic basis for prior observations in human patients. [Read More](#)

FDA Approves Bluebird Bio's Lentiviral Gene Therapy to Treat Beta-Thalassemia

Genetic Engineering & Biotechnology News



The FDA has approved Bluebird Bio's Zynteglo as the first cell-based gene therapy for the treatment of adult and pediatric patients with beta-thalassemia who require regular red blood cell transfusions. The drug, betibeglogene autotemcel, is a one-time gene therapy product administered as a single dose. Each dose of Zynteglo is a customized treatment created using the patient's own bone marrow stem cells that are genetically modified to produce functional beta-globin. [Read More](#)

Large Analysis Pinpoints Rare, Diverse Genetic Changes in Autism

Broad Institute



A new study of genes underlying neurodevelopmental variability has uncovered more than 70 genes that are strongly associated with autism, several for the first time, and hundreds of genes associated with more broadly defined neurodevelopmental conditions. The analysis is the largest of its kind to date and includes more than 150,000 participants, 20,000 of whom have been diagnosed with autism. [Read More](#)

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OSTP Issues Guidance to Make Federally Funded Research Freely Available Without Delay

The White House



The White House Office of Science and Technology Policy (OSTP) updated US policy guidance to make the results of taxpayer-supported research immediately available to the American public at no cost. In a memorandum to federal departments and agencies, Dr. Alondra Nelson, the head of OSTP, delivered guidance for agencies to update their public access policies as soon as possible to make publications and research funded by taxpayers publicly accessible, without an embargo or cost. [Read More](#)

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- September 15-16**
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 Forsyth Institute & Online
- September 15**
 12:30 PM
2022 Patient Advocacy Summit
 MassBioHub & Online
- September 20**
 10:00 AM
Precision Medicine 2022: The New "Normal"?
 Joseph B. Martin Center & Online
- September 20**
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Using Chemical and Biomedical Engineering to Advance Biomedicine
 Whitehead Institute

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