

Publications of the Week

Loss of Heterozygosity of Essential Genes Represents a Widespread Class of Potential Cancer Vulnerabilities

First Author: Caitlin Nichols (pictured, front row, second from right) | Senior Author: Rameen Beroukhi (top left) Nature Communications | Dana-Farber, the Broad Institute and Brigham and Women's Hospital



Hundreds of thousands of non-driver genes undergo loss of heterozygosity (LOH) events per tumor, generating discrete differences between tumor and normal cells. The authors interrogated LOH of polymorphisms in essential genes as a novel class of therapeutic targets. They hypothesized that monoallelic inactivation of the allele retained in tumors could selectively kill cancer cells but not somatic cells, which retain both alleles. [Profile](#) | [Abstract](#)

Hair-Bearing Human Skin Generated Entirely from Pluripotent Stem Cells

First Author: Jyoon Lee | Senior Author: Kari Koehler (pictured) Nature | Boston Children's Hospital



Reconstructing appendage-bearing skin in cultures and in bioengineered grafts is a biomedical challenge that has yet to be met. The authors report an organoid culture system that generates complex skin from human pluripotent stem cells. During an incubation period of 4–5 months, they observed the emergence of a cyst-like skin organoid composed of stratified epidermis, fat-rich dermis and pigmented hair follicles that are equipped with sebaceous glands. [Abstract](#)

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Awards

Nobel Laureate Phillip A. Sharp, PhD, Honored with 2020 AACR Award for Lifetime Achievement in Cancer Research

American Association for Cancer Research



The American Association for Cancer Research (AACR) has recognized Dr. Phillip Sharp (pictured), Fellow of the AACR Academy and Nobel Laureate, with the 17th AACR Award for Lifetime Achievement in Cancer Research. Sharp, an Institute Professor at MIT's David H. Koch Institute for Integrative Cancer Research, is being honored for his exceptional body of groundbreaking and high-impact basic research, including his seminal co-discovery of RNA splicing. [Read More](#)

Hudson Hoagland Society Announces Annual Grants to Five UMMS Researchers

UMass Medical School



Five researchers from UMass Medical School (UMMS), including Dr. Trudy Morrison (pictured), have received 2020 Worcester Foundation Research Grants, which are supported by gifts to the Hudson Hoagland Society. The society is predicated on the understanding that biomedical research leads scientists and society in unexpected directions, and that support for pioneering research is a necessity. [Read More](#)

Tyler Jacks, PhD, Honored with 2020 AACR Princess Takamatsu Memorial Lectureship

American Association for Cancer Research



The American Association for Cancer Research (AACR) has recognized MIT's Dr. Tyler Jacks (pictured) with the 2020 AACR Princess Takamatsu Memorial Lectureship. He is being recognized for transforming cancer research and the development of therapeutic treatments through his remarkable advancement of genetically engineered mouse models and other seminal discoveries. [Read More](#)

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Local News

Base Editing Restores Partial Hearing in Mice

Broad Institute



Using a genome editing technique known as base editing, researchers from Boston Children's Hospital and the Broad Institute of MIT and Harvard have restored hearing in mice with a known recessive genetic mutation. With this technique, researchers repaired one single error in the *Tmc2* gene known to cause a hereditary form of deafness. [Read More](#)

Novartis Inks Deal to Make Mass General and Brigham's COVID-19 Vaccine Candidate

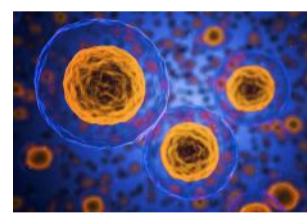
Financial Post



Novartis' gene therapy unit, AveXis, has signed a manufacturing deal to help produce a novel genetic COVID-19 vaccine candidate being developed by U.S. researchers in Massachusetts. Massachusetts General Hospital and Massachusetts Eye and Ear are developing a vaccine candidate that relies on adeno-associated viral vector technology to produce immunity. [Read More](#)

Cellular Players Get Their Moment in the Limelight

Whitehead Institute



In recent years, Whitehead Institute members Drs. David Sabatini and Walter Chen developed a method for isolating organelles for analysis, which outstrips previous methods in its ability to purify organelles both rapidly and specifically. Their latest work extends the method for use on peroxisomes, organelles that play essential roles in human physiology. [Read More](#)

Next Frontier in Bacterial Design

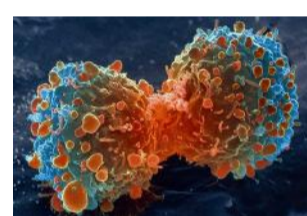
Harvard Medical School



A decades-old bacterial engineering technique called recombinering is valuable and versatile, but has remained woefully underused because it has been limited mainly to *Escherichia coli*. A new genetic engineering method developed by investigators in the Blavatnik Institute promises to super-charge recombinering and open the bacterial world at large to this underutilized approach. [Read More](#)

Study Reveals Factors Influencing Outcomes in Advanced Kidney Cancer Treated with Immunotherapy

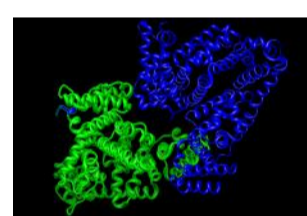
Dana-Farber



By analyzing tumors from patients treated with immunotherapy for advanced kidney cancer in three clinical trials, Dana-Farber Cancer Institute scientists have identified several features of the tumors that influence their response to immune checkpoint inhibitor drugs. The researchers say the study provides important clues about kidney cancer genetics and its interaction with the immune system. [Read More](#)

New Technology Enables Fast Protein Synthesis

MIT News



Many proteins are useful as drugs for disorders such as diabetes, cancer, and arthritis. Synthesizing artificial versions of these proteins is a time-consuming process that requires genetically engineering microbes or other cells to produce the desired protein. MIT chemists have devised a protocol to dramatically reduce the amount of time required to generate synthetic proteins. [Read More](#)

Platform Precisely Quantifies Antigens Presented on Cell Surfaces

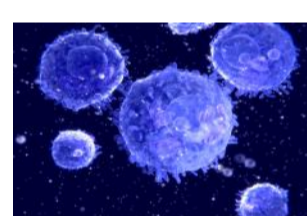
MIT News



Researchers and clinicians are exploring how to improve the success rate of immunotherapies for more cancer types and patients. Lauren Stogler (pictured) and colleagues at MIT have developed a technique for accurately quantifying changes in the immunopeptidome — the repertoire of surface-presenting peptide antigens. [Read More](#)

A Boost for Cancer Immunotherapy

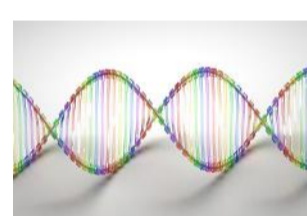
MIT News



Tumors are very good at suppressing the immune system, so immunotherapy treatments don't work for all patients. MIT engineers have now come up with a way to boost the effectiveness of one type of cancer immunotherapy. They showed that if they treated mice with existing drugs called checkpoint inhibitors, along with new nanoparticles that further stimulate the immune system, the therapy became more powerful than checkpoint inhibitors given alone. [Read More](#)

Expression of Certain Genes May Affect Vulnerability to Post-Traumatic Stress Disorder

McLean Hospital



Results from a new study suggest that whether certain genes are expressed — turned on or off — may play a role in susceptibility to post-traumatic stress disorder (PTSD). The study, which was conducted by an international team led by investigators at McLean Hospital, may provide insights for PTSD prevention and treatment. [Read More](#)

One Month, Nine Researchers, 2,000 COVID Tests: A Redeployment Story

Massachusetts General Hospital



In a typical year, the Department of Pathology at Massachusetts General Hospital is accustomed to dealing with astounding volume, processing about 13 million clinical lab tests. Yet when COVID-19 testing became a crucial aspect of care during the pandemic, the department's microbiology lab saw the pace quickening and called in reinforcements. [Read More](#)

Gathering Critical Clues

Harvard Medical School



A team led by Harvard Medical School and the Ragon Institute has collected samples from more than 400 COVID-19 patients in seven weeks, which are being shared with scientists across Boston-area hospitals and research institutes, informing research on COVID-19, from therapeutics to vaccine development to studies on immune response. [Read More](#)

How DNA Crossovers Can Drive Both Healthy and Abnormal Sperm Formation

Broad Institute



Geneticists at the Blavatnik Institute and Broad Institute have provided new insights into the fundamental process of aneuploidy. They simultaneously analyzed crossovers and aneuploidy on all chromosomes in more than 30,000 human sperm cells using a new genome-wide sequencing tool. The findings help answer a longstanding question about why and how crossover rates vary across sperm cells and across people. [Read More](#)

MD/PhD-Student-Led Research Finds Potential New Gene Target for Pediatric Liver Cancer

UMass Medical School



A team of UMass Medical School researchers has identified a promising new therapeutic target in hepatoblastoma, a rare, primarily pediatric liver cancer for which successful treatment strategies have been elusive. The study, which looks at the role in tumor survival of a cancer gene, YAP1, was led by Jordan Smith, an MD/PhD candidate in the lab of Dr. Wen Xue (pictured), Associate Professor of RNA therapeutics. [Read More](#)

OMNIVAX: Broadly Deployable Infection Vaccine Platform

Wyss Institute



Infectious diseases pose one of the greatest threats to public health. Wyss Institute researchers have combined their multidisciplinary expertise from infectious diseases, immunology, drug delivery, materials science, and protein engineering to develop OMNIVAX, a broadly applicable infection vaccine platform with unique capabilities to help overcome these threats. [Read More](#)

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Upcoming Events in Boston

June 9 11:00 AM	MassBio Town Hall with Special Guest Congresswoman Katherine Clark – Spotlight on the Federal Government's Response to COVID Online
June 9 1:00 PM	STAT+ Conversations: A Conversation with Merck on Developing COVID-19 Vaccines and Treatments Online
June 11 12:00 PM	Harvard Microbial Sciences Initiative Summer Seminar Online
June 11 12:00 PM	Building Better COVID-19 Tools Together: Using Scalable NGS to Accelerate Science Online
June 16 9:00 AM	BU Center for Regenerative Medicine Seminar: PI Showcase Featuring Jason Rock Online

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