

Publications of the Week

**Non-Cleavable Hinge Enhances Avidity and Expansion of CAR T Cells for Acute Myeloid Leukemia**

First Author: Mark Leick | Senior Author: Marcela Maus *(pictured)*  
Cancer Cell | Massachusetts General Hospital and Harvard Medical School



Chimeric antigen receptor (CAR) T cell therapy is effective in lymphoid malignancies, but there has been limited data in myeloid cancers. The authors start with a CD27-based CAR to target CD70 ("native") in acute myeloid leukemia, and find modest efficacy *in vivo*, consistent with prior reports. They then use orthogonal approaches to increase binding on both the tumor and CAR T cell sides of the immune synapse. [Abstract](#) | [Press Release](#)

**Central Memory T Cells Are the Most Effective Precursors of Resident Memory T Cells in Human Skin**

First Author: Tiago Matos | Senior Author: Rachael Clark *(pictured)*  
Science Immunology | Brigham and Women's Hospital and Harvard Medical School



Skin resident memory T cells (T<sub>RM</sub>) are important mediators of frontline immunity in response to cutaneous pathogens. The authors compared the capacity of circulating central memory, migratory memory, and effector memory subsets from human blood to differentiate toward a T<sub>RM</sub> phenotype using *in vitro* stimulation and *in vivo* transfer to immunodeficient mice bearing human skin xenografts. [Abstract](#)

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Local News

**Joslin Diabetes Center Receives \$8.5 Million for NIH-Sponsored Diabetes Research Center Program**

Joslin Diabetes



Joslin Diabetes Center, the preeminent institution for diabetes research and care, affiliated with Harvard Medical School and a part of Beth Israel Lahey Health, has again been awarded \$8.5 million from the National Institutes of Health (NIH)/National Institute of Diabetes and Digestive and Kidney Diseases in continued support for Joslin's Diabetes Research Center program. [Read More](#)

**An Ode to Science**

Wyss Institute



Wyss Technology Development Fellow Dr. Angelo Mao *(pictured)* has always been interested in science and writing poetry, choosing to attend Harvard University for his undergraduate degree instead of a more technical school because Harvard offers strong science and humanities programs. He now works with Dr. Jim Collins on various synthetic biology projects. [Read More](#)

**Anesthetic Drastically Diverts the Travels of Brain Waves**

The Picower Institute



Under propofol general anesthesia, very slow frequency traveling waves transform and dominate, redirecting and disrupting the higher frequency traveling waves associated with conscious function. A study in the *Journal of Cognitive Neuroscience* by MIT scientists at The Picower Institute for Learning and Memory shows that propofol substantially alters how different frequencies of brain waves travel across the brain's surface, or cortex. [Read More](#)

**Researchers Identify Key Regulators of Urinary Concentration in the Kidney**

Massachusetts General Hospital



Proper function of the kidney is critical for concentrating urine, regulating blood pressure, and for the tight control of electrolyte levels in the blood. The kidney achieves these important functions through many microscopic functional units, called nephrons. These nephrons consist of different segments with distinct functions. How these segments form during development and how their function is maintained in the adult is only partially understood. [Read More](#)

**Tackling Chemical Synthesis and Advocacy**

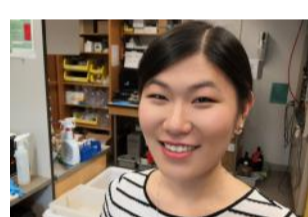
MIT News



Azin Saebi *(pictured)* was born and raised in Iran, emigrating to the US with her family at 18 after graduating from high school. Now a fifth-year graduate student in chemistry, Saebi never intended to stay permanently; she initially expected to go back to Iran to attend university. With that in mind, when leaving for the US, she only packed a bag with enough belongings for a couple of months and had even booked a return flight. [Read More](#)

**Directing Evolution in Search of a Better Plastic-Degrading Enzyme**

MIT Biology



After graduating with her undergraduate degree in molecular genetics from the University of Toronto in 2016, En Ze Linda Zhong-Johnson *(pictured)* celebrated with a trip to Alaska. There, she saw a pristine landscape unlike the plastic-littered shores of the Toronto waterfront. "What I saw up there was so different from what I saw in the city," Zhong-Johnson says. "I realized there shouldn't be all this waste floating everywhere, in our water, in our environment. It's not natural." [Read More](#)

**Data Deep Dive**

Harvard Medical School (HMS)



"We collect a lot of research data, but not a lot of it is very accessible yet, so the question is how do you mobilize complex data so people can get to it in a useful way," said Dr. Peter Sorger *(pictured)*, the HMS Otto Krayer Professor of Systems Pharmacology. Minerva, available online to anyone, is named after the Roman goddess of wisdom. It allows users to access in-depth maps of tissue samples gathered during research, ranging from cancerous tumors to heart muscle in distress. [Read More](#)

**New Miniature Heart Could Help Speed Heart Disease Cures**

The Brink



There's no safe way to get a close-up view of the human heart as it goes about its work. Scientists have tried different ways to get around this fundamental problem: they've hooked up cadaver hearts to machines to make them pump again, attached lab-grown heart tissues to springs to watch them expand and contract. Now, an interdisciplinary team of engineers, biologists, and geneticists has developed a new way of studying the heart: they've built a miniature replica of a heart chamber from a combination of nanoengineered parts and human heart tissue. [Read More](#)

**Researchers Find Genetic "Achilles Heel" in Ovarian and Uterine Cancers**

Broad Institute



Although the outlook for people with some types of cancers has improved in the past 20 years, outcomes for patients with uterine and ovarian cancers remain much the same. Now, researchers from the Cancer Dependency Map project at the Broad Institute have identified a hidden vulnerability in ovarian and uterine cancers — as well as a way to exploit it that could inspire new, much-needed drugs for these cancers. [Read More](#)

**Newly Identified Regulator in Prostate Cancer Cells Could Serve as Drug Target for Advanced Tumors**

Dana-Farber Cancer Institute



A Dana-Farber-led team has identified a critical regulator of androgen receptor (AR) signaling that prostate cancer cells depend on, according to their publication in *Cell Reports*. "These results suggest that the growth-inhibitory effects of protein arginine methyltransferase 1 inhibition in prostate cancer cells are specifically mediated through the AR axis," say the researchers, led by Dr. Srinivas Viswanathan *(pictured)*. [Read More](#)

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**Upcoming Events in Boston**

May 5 8:30 AM	<b>2022 State of Possible Conference</b> Royal Sonesta Boston
May 10 4:00 PM	<b>Genomic Integration of the SARS-CoV-2 Virus and the Potential Relevance for the Course of COVID-19</b> Whitehead Institute
May 17 9:00 AM	<b>Securing the Future of Agriculture</b> MIT
May 25 9:00 AM	<b>Innovators in Therapeutics Speaker Series with Ted Love</b> Online
June 17 8:00 AM	<b>20<sup>th</sup> Annual Cancer Research Symposium</b> Koch Institute

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**Science Jobs in Boston**

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