

**Publications of the Week**
**Expansion of Tumor-Associated Treg Cells upon Disruption of a CTLA-4-Dependent Feedback Loop**

 First Author: Francesco Marangoni (pictured, left) | Senior Author: Thorsten Mempel (right)  
 Cell | Massachusetts General Hospital and Harvard Medical School


Foxp3<sup>+</sup> T regulatory (Treg) cells promote immunological tumor tolerance, but how their immune-suppressive function is regulated in the tumor microenvironment remains unknown. The authors used intravital microscopy to characterize the cellular interactions that provide tumor-infiltrating Treg cells with critical activation signals. [Profile](#) | [Abstract](#)

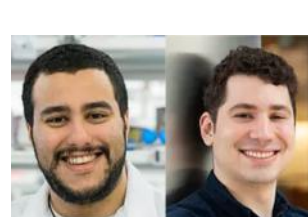
**Tick-Over Mediated Complement Activation Is Sufficient to Cause Basal Deposit Formation in Cell-Based Models of Macular Degeneration**

 First Author: Blanca Chirchillo | Senior Author: Rosalia Fernandez Godino (pictured)  
 The Journal of Pathology | Harvard Medical School


Despite numerous unsuccessful clinical trials for anti-complement drugs to treat age-related macular degeneration (AMD), the complement system has not been fully explored as a target to stop drusen growth in patients with dry AMD. The authors propose that the resilient autoactivation of complement component 3 by hydrolysis of its internal thioester (tick-over) plays a critical role in the formation of drusenoid deposits underneath the retinal pigment epithelium. [Profile](#) | [Abstract](#)

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**Awards**
**MIT Technology Review Names McGovern Fellows Top Innovators under 35**

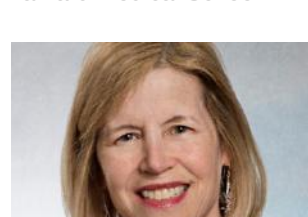
McGovern Institute



McGovern Institute Fellows Drs. Omar Abudayeh (pictured, left) and Jonathan Gootenberg (right) have both been named to MIT Technology Review's annual list of exceptional innovators under the age of 35. The annual list recognizes "exceptionally talented technologists whose work has great potential to transform the world." [Read More](#)

**Awards & Recognitions: July 2021**

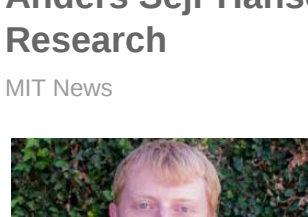
Harvard Medical School



Dr. JoAnn Manson (pictured), the Michael and Lee Bell Professor of Women's Health at Harvard Medical School and Brigham and Women's, was named to receive the 2021 Dr. Nannette Wenger Award from the American Society for Preventive Cardiology. At the organization's annual summit in July, Manson will receive the award and present the Wenger lecture. Her talk discusses the VITAL trial. How VITAL are vitamin D and omega-2s for cardiometabolic health? [Read More](#)

**Anders Sejr Hansen Awarded Prestigious Pew-Stewart Grant for Cancer Research**

MIT News



Dr. Anders Sejr Hansen (pictured), Assistant Professor of Biological Engineering at MIT, has been named a Pew-Stewart Scholar for Cancer Research for 2021. The Pew-Stewart Scholars Program for Cancer Research is a national initiative designed to support promising early-career scientists whose research will accelerate discovery and advance progress toward a cure for cancer. [Read More](#)

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**Local News**
**Squishy, Stealthy Neural Probes**

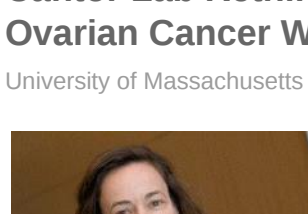
McGovern Institute



Slender probes equipped with electrodes, optical channels, and other tools are widely used by neuroscientists to monitor and manipulate brain activity in animal studies. Scientists at MIT have devised a way to make these usually rigid devices become soft and pliable when they are implanted in the brain. Researchers led by McGovern Institute scientist Dr. Polina Anikeeva (pictured) built the new devices by embedding their functional components in a water-absorbing hydrogel. [Read More](#)

**Cantor Lab Rethinks How Common Chemotherapy Drug Used in Breast and Ovarian Cancer Works**

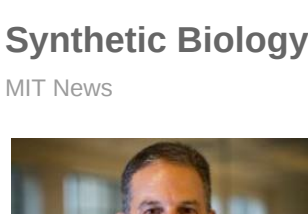
University of Massachusetts Medical School



Research from the lab of Dr. Sharon Cantor (pictured), Professor of Molecular, Cell & Cancer Biology, upends the conventional model of how chemotherapy works. In particular, she provides a new understanding of a poly adenosine diphosphate-ribose polymerase inhibitor, a chemotherapy drug commonly used against breast and ovarian cancer. [Read More](#)

**Synthetic Biology Circuits Can Respond Within Seconds**

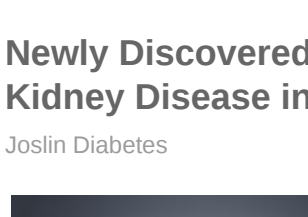
MIT News



Synthetic biology offers a way to engineer cells to perform novel functions, such as glowing with fluorescent light when they detect a certain chemical. Usually, this is done by altering cells so they express genes that can be triggered by a certain input. MIT synthetic biologists led by Dr. Ron Weiss (pictured) have now developed an alternative approach to designing such circuits, which relies exclusively on fast, reversible protein-protein interactions. [Read More](#)

**Newly Discovered Proteins Provide Protection against Progression of Kidney Disease in Diabetes**

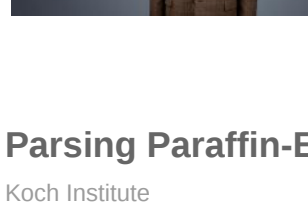
Joslin Diabetes



Elevated levels of three specific circulating proteins are associated with protection against kidney failure in diabetes, according to research from the Joslin Diabetes Center. "As well as acting as biomarkers for advancing kidney disease risk in diabetes, the proteins may also serve as the basis for future therapies against progression to the most serious types of kidney disease," said Dr. Andrzej Krolewski (pictured). [Read More](#)

**Parsing Paraffin-Embedded Tissue Samples**

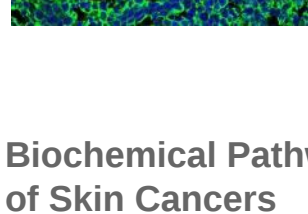
Koch Institute



Going back decades, biopsies, tumor sections, and other tissue samples from cancer patients have been preserved by a two-step process: first the sample is fixed in formaldehyde, or formalin, to preserve proteins and vital structures within the tissue. Then, it is embedded in a block of paraffin wax, which makes it easier to slice samples into the sizes required for mounting on a microscope slide. [Read More](#)

**Biochemical Pathway to Skin Darkening Holds Implications for Prevention of Skin Cancers**

Massachusetts General Hospital



A skin pigmentation mechanism that can darken the color of human skin as a natural defense against ultraviolet (UV)-associated cancers has been discovered by scientists at Massachusetts General Hospital. "Skin pigmentation and its regulation are critically important because pigments confer major protection against UV-related cancers of the skin, which are the most common malignancies found in humans," says senior author Dr. David Fisher (pictured). [Read More](#)

**Memory Making Involves Extensive DNA Breaking**

The Picower Institute



The urgency to remember a dangerous experience requires the brain to make a series of potentially dangerous moves: Neurons and other brain cells snap open their DNA in numerous locations — more than previously realized, according to a new study — to provide quick access to genetic instructions for the mechanisms of memory storage. The extent of these DNA double-strand breaks in multiple key brain regions is surprising and concerning, said study senior author Dr. Li-Huei Tsai (pictured). [Read More](#)

**Groundbreaking Research Helps Advance Treatment of Rare, Fast Growing Brain Tumor**

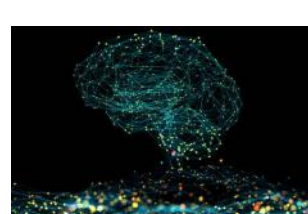
Boston Children's Hospital



Researchers from the Dana-Farber/Boston Children's Cancer and Blood Disorders Center recently found that levels of a specific protein detected through a patient's urine can track a tumor's size and responsiveness to treatment in children with diffuse intrinsic pontine gliomas. This discovery helps steer the course for more innovative and less invasive treatment options. [Read More](#)

**BUSM Awarded \$4.1M to Support the Next Generation of Trail-Blazers in Multidisciplinary Lung Science**

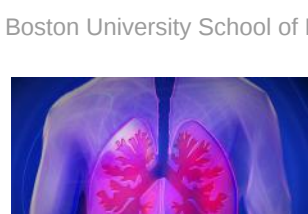
Boston University School of Medicine



Boston University School of Medicine's longest NIH-funded research training program, "Biology of the Lung: A Multi-Disciplinary Program," has been awarded a five-year, \$4.1M grant to provide multidisciplinary training and exposure to collaborative lung biology in three scientific areas that are special strengths at Boston University: Development and Regenerative Medicine; Immunology and Infection; and Biomedical Data Sciences. [Read More](#)

**Immune Cells Help Maintain Wiring in the Brain**

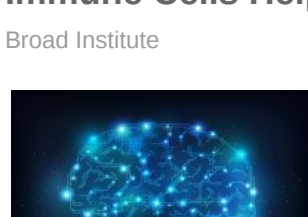
Broad Institute



From the bark of a puppy to the patter of rain against the window, our brains receive countless signals every second. Most of the time, we tune out inconsequential cues — the buzz of a fly, the soft rustle of leaves in the tree — and pay attention to important ones—the sound of a car horn, a bang on the door. This allows us to function, navigate and, indeed, survive in the world around us. [Read More](#)

**Rappaports Lend Their Name, Endowment to Basic Neuroscience at McLean**

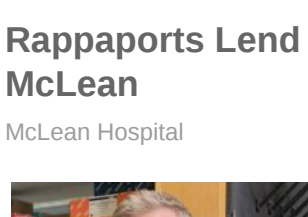
McLean Hospital



Phyllis and Jerome (Jerry) Lyle Rappaport have made a generous gift to endow McLean Hospital's Basic Neuroscience Division, now called the Phyllis and Jerome Lyle Rappaport Center of Excellence in Basic Neuroscience Research. In connection with their gift, the Rappaports have established the Phyllis and Jerome Lyle Rappaport Endowed Chair in Psychiatry, currently held by Dr. Bill Carlezon (pictured) as the inaugural incumbent. [Read More](#)

**T Cells against the Variants**

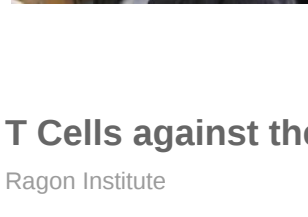
Ragon Institute



Dr. Gaurav Gaiha (pictured), a member of the Ragon Institute of Massachusetts General Hospital, MIT and Harvard, studies HIV, one of the fastest-mutating viruses known to humankind. But HIV's ability to mutate isn't unique among RNA viruses — most viruses develop mutations, or changes in their genetic code, over time. [Read More](#)

**Three Questions: Anna Jagielska on Printing Artificial Axons**

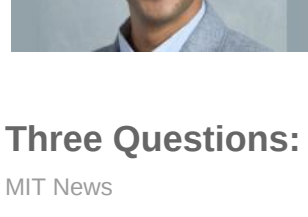
MIT News



Tens of millions of people worldwide suffer from neurodegenerative diseases such as Alzheimer's, Parkinson's, multiple sclerosis, and Lou Gehrig's disease — but no effective treatments exist for these conditions. Research scientist Dr. Anna Jagielska (pictured) of the MIT Department of Materials Science and Engineering thinks repairing the myelin wrapping around axons is key to preserving neurological function and slowing or stopping neurodegeneration. [Read More](#)

**The Power of Two**

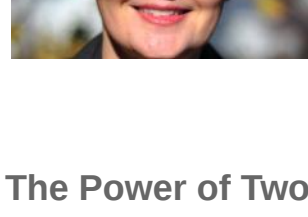
MIT News



Graduate student Ellen Zhong (pictured) helped biologists and mathematicians reach across departmental lines to address a longstanding problem in electron microscopy. Her research builds on a technique from the 1970s called cryo-electron microscopy, which lets researchers take high-resolution images of frozen protein complexes. [Read More](#)

**Protected Time for Research**

Harvard Medical School



This past year, as a new attending physician in pediatric gastroenterology at Boston Children's Hospital, Dr. Dennis Spencer (pictured) has been juggling his clinical responsibilities and his clinical research, studies which he hopes "may unearth a new probiotic that would allow us to bolster the gut's microbiome and protect those at risk for opportunistic infections." [Read More](#)

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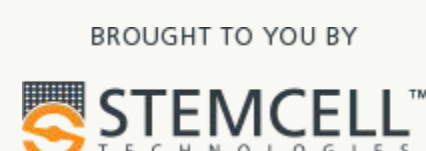
July 15 1:00 PM	Harvard Topics in Bioengineering: Eun Ji Chung Online
July 22 1:00 PM	Grant Writing Workshop Series Online
July 26 8:00 AM	Communicating the Future: Engaging the Public in Basic Science Online
July 28 11:00 AM	Literature Review Workshop Online
August 18 12:00 PM	Use Social Media to Promote Your Department/Center/Lab Online

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