

Publications of the Week
Precise DNA Cleavage Using CRISPR-SpRYgests

 First Author: Kathleen Christie | Senior Author: Benjamin Kleinstiver (pictured)
 Nature Biotechnology | Massachusetts General Hospital, Harvard Medical School, and the Broad Institute


Methods for *in vitro* DNA cleavage and molecular cloning remain unable to precisely cleave DNA directly adjacent to bases of interest. Restriction enzymes must bind specific motifs, whereas wild-type CRISPR-Cas9 or CRISPR-Cas12 nucleases require protospacer adjacent motifs. The authors explore the utility of their previously reported near-PAMless SpCas9 variant, named SpRY, to serve as a universal DNA cleavage tool for various cloning applications. [Abstract](#) | [Press Release](#)

Targeting Replication Stress in Cancer Therapy

 First Author: Alexandre André da Costa | Senior Author: Panagiotis Konstantinopoulos (pictured)
 Nature Reviews Drug Discovery | Dana-Farber Cancer Institute


Replication stress is a major cause of genomic instability and a crucial vulnerability of cancer cells. This vulnerability can be therapeutically targeted by inhibiting kinases that coordinate the DNA damage response with cell cycle control, including ATR, CHK1, WEE1 and MYT1 checkpoint kinases. In addition, inhibiting the DNA damage response releases DNA fragments into the cytoplasm, eliciting an innate immune response. [Abstract](#)

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Awards
MIT Biologist Richard Hynes Wins Lasker Award

MIT News



MIT Professor Dr. Richard Hynes (pictured), a pioneer in studying cellular adhesion, has been named a recipient of the 2022 Albert Lasker Basic Medical Research Award. Dr. Hynes, the Daniel K. Ludwig Professor for Cancer Research and a member of MIT's Koch Institute for Integrative Cancer Research, was honored for the discovery of integrins, proteins that are key to cell-cell and cell-matrix interactions in the body. [Read More](#)

Four from MIT Receive NIH New Innovator Awards for 2022

MIT News



The National Institutes of Health (NIH) has awarded grants to four MIT faculty members as part of its High-Risk, High-Reward Research program. This year, Drs. Lindsay Case (pictured), Siniša Hrvatin, Deblina Sarkar, and Caroline Uhler have been chosen to receive the New Innovator Award, which funds exceptionally creative research from early-career investigators. [Read More](#)

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Local News
Providing New Pathways for Neuroscience Research and Education

MIT News



Payton Dupuis' (pictured) interest in biology research began where it does for many future scientists — witnessing a relative struggling with an incurable medical condition. For Dupuis, that family member was her uncle, who suffered from complications from diabetes. Witnessing the impacts of the disease inspired her to pursue a career in scientific research. Since then, that passion has taken Dupuis around the country to participate in various summer research programs in the biomedical sciences. [Read More](#)

Dana-Farber Joins Parker Institute for Cancer Immunotherapy to Accelerate Cures for the World's Gravest Cancers

Dana-Farber Cancer Institute



Dana-Farber Cancer Institute, one of the world's leading cancer research and treatment centers, has partnered with the Parker Institute for Cancer Immunotherapy (PICI), the leading network of immuno-oncology expertise in the world, as a member of the PICI Network with a goal to better understand the tumor microenvironment across cancer types and translate these basic discoveries to the clinic as impactful cancer immunotherapies. [Read More](#)

Breaking Through the Mucus Barrier

MIT News



One reason that it's so difficult to deliver large protein drugs orally is that these drugs can't pass through the mucus barrier that lines the digestive tract. "By displacing the mucus, we can maximize the dispersion of the drug within a local area and enhance the absorption of both small molecules and macromolecules," says Dr. Giovanni Traverso (pictured). [Read More](#)

Wiggling Toward Bio-Inspired Machine Intelligence

MIT News



Juncal Arbeláiz Mugica (pictured) is a native of Spain, where octopus is a common menu item. However, Arbeláiz appreciates octopus and similar creatures in a different way, with her research into soft-robotics theory. At MIT, Arbeláiz is an applied math student who is working on the fundamentals of optimal distributed control and estimation in the final weeks before completing her PhD this fall. [Read More](#)

With Fractured Genomes, Alzheimer's Neurons Call for Help

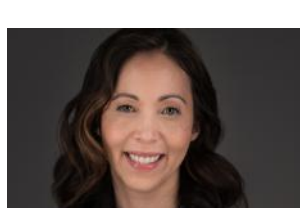
MIT News



A new study by researchers in the Picower Institute provides evidence from both mouse models and postmortem human tissue of a direct link between two problems that emerge in Alzheimer's disease: a buildup of double-stranded breaks in the DNA of neurons and the inflammatory behavior of microglia, the brain's immune cells. [Read More](#)

Disarming the Body's Defenders

Harvard Medical School



A team led by researchers at Harvard Medical School has identified a way that tumor cells can turn off the immune system, allowing the tumor to grow unchecked. "We now know that a metabolite produced by tumor cells can impact nearby immune cells to make the surrounding environment less hostile for the cancer," said senior author Dr. Marcia Haigis (pictured). [Read More](#)

Researchers Evaluate Protein- and mRNA-Based Immunization Strategies against HIV

Ragon Institute



The development of a durable and effective HIV vaccine is still elusive after almost forty years of research, but a new study testing a germline-targeting vaccination strategy provides insights that may bring scientists one step closer. A new study in *Immunity* from the Ragon Institute and Scripps Research tests novel vaccine candidates and improves scientists' understanding of how to elicit broadly neutralizing antibodies through vaccination and improve B cell immune responses. [Read More](#)

New Bayer Research and Innovation Center in Boston Fuels Innovation and Partnership

Bayer



Bayer recently welcomed its partners and media to its new Bayer Research and Innovation Center in Cambridge, MA. The state-of-the-art innovation facility is home to the company's precision molecular oncology laboratory and reflects the investment Bayer is making to advance the future of oncology and science and generate breakthrough solutions to the world's most complex challenges. [Read More](#)

UMass Chan Working with Evaxion to Evaluate Vaccine Candidates for Gonorrhea

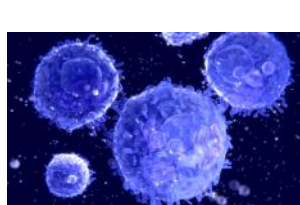
UMass Chan Medical School



UMass Chan Medical School has received a National Institutes of Health grant for the preclinical development of gonorrhea vaccine candidates identified by Evaxion, a clinical-stage biotech company in Denmark. "We have zeroed in on a couple of proteins that seem to be working reliably," said Dr. Sanjay Ram (pictured), Professor of Medicine. [Read More](#)

CAR T-Cell Therapy Targeting GPRC5D Antigen Proves Effective in First Trial in Patients with Resistant Multiple Myeloma

Dana-Farber Cancer Institute



A therapy made of immune system T cells engineered to target a somewhat enigmatic cell protein produced impressive results in its first clinical trial in patients with multiple myeloma, researchers at Dana-Farber Cancer Institute, Memorial Sloan Kettering Cancer Center, and Roswell Park Comprehensive Cancer Center report in a new study. [Read More](#)

Brain Organoids Replicate Key Events in Human Brain Development

Broad Institute



In a new study, researchers at the Broad Institute have found that human brain organoids replicate many important cellular and molecular events of the developing human cortex, the part of the brain responsible for movement, perception, and thought. "This tells us that we can use these human brain organoids to study processes of human brain development that otherwise we would never be able to study," says senior author Dr. Paola Arlotta (pictured). [Read More](#)

Bionic Pancreas Better for Managing Type 1 Diabetes

The Brink



There's no cure for type 1 diabetes. But a bionic pancreas, invented by BU biomedical engineers, and in the works for almost 20 years, is moving closer to giving the nearly two million Americans with the chronic disease fresh hope. In a new study, researchers found the wearable automated insulin delivery device, iLet, was better at managing blood glucose levels than existing standard-of-care methods. The iLet was developed in the lab of Dr. Ed Damiano (pictured), a BU College of Engineering Professor of Biomedical Engineering. [Read More](#)

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Upcoming Events in Boston

October 12 3:00 PM	Strategic Communications Workshop: Using Twitter and LinkedIn Effectively to Promote Your Research Online
October 17 1:00 PM	Genome Engineering Seminar Series Online
October 21 9:00 AM	BIDMC Cancer Symposium 2022 Online
October 27 4:00 PM	Third Annual Gilbert S. Omenn Lecture Countway Library
November 3 8:00 AM	The Forsyth Institute 5th Scientific Symposium: Craniofacial Biology, Disease, and Regeneration Forsyth Institute and Online

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STEMCELL Technologies

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Broad Institute

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Massachusetts General Hospital

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Cue Biopharma

Associate Director, Translational Sciences

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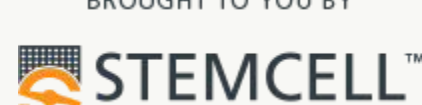
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