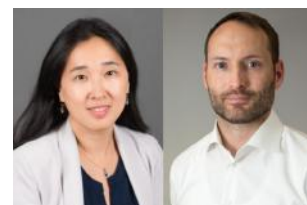


Publications of the Week

Human Airway Lineages Derived from Pluripotent Stem Cells Reveal the Epithelial Responses to SARS-CoV-2 Infection

First Author: Ruobing Wang (pictured, left) | Senior Author: Finn Hawkins (right) | American Journal of Physiology-Lung Cellular and Molecular Physiology | Boston Children's Hospital, Boston University, Boston Medical Center, and Harvard Medical School



The authors present a human induced pluripotent stem cell (iPSC)-derived airway epithelial platform, composed of the major airway epithelial cell types, that is permissive to SARS-CoV-2 infection. Subsets of iPSC-airway cells express the SARS-CoV-2 entry factors angiotensin-converting enzyme 2 and transmembrane protease, serine 2. Multiciliated cells are the primary initial target of SARS-CoV-2 infection. [Profile](#) | [Abstract](#)

GABA Transmission from mAL Interneurons Regulates Aggression in *Drosophila* Males

First Author: Saheli Sengupta | Senior Author: Edward Kravitz (pictured) | PNAS | Harvard Medical School



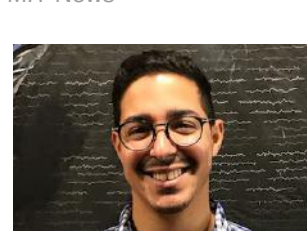
Using the fruit fly model of *Drosophila melanogaster*, the authors demonstrate that activation of a group of gamma-aminobutyric acid (GABA)-ergic central brain neurons, known to respond to sex-specific pheromonal stimuli, enhances aggression in dyadic male encounters. Inactivation of this neuronal group decreases aggression and increases the reciprocal social behavior of courtship. [Abstract](#)

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Awards

School of Science Announces 2022 Infinite Expansion Awards

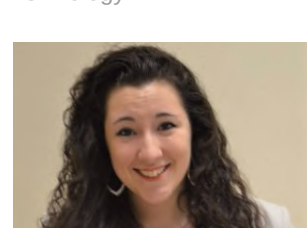
MIT News



The MIT School of Science has announced eight postdocs and research scientists as recipients of the 2022 Infinite Expansion Award. Dr. Héctor de Jesús-Cortés (pictured), a postdoc at the Picower Institute, has been nominated for his "awe-inspiring commitment of time and energy to research, outreach, education, mentorship, and community." [Read More](#)

Kailyn Doiron Receives Fujifilm Fellowship

BU Biology



Kailyn Doiron (pictured) has received the Summer 2021 Fujifilm Fellowship! This fellowship program specifically aims to provide young scientists with the specialized skills required to translate their research findings into practical medical applications for patients. In addition to funding, Fujifilm Fellows are enrolled in a specialized program called the Therapeutics Graduate Program, a new curriculum focusing on pharmacology, toxicology, and drug discovery. [Read More](#)

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Local News

Artificial Intelligence System Rapidly Predicts How Two Proteins Will Attach

MIT News



MIT researchers created a machine-learning model that can directly predict the complex that will form when two proteins bind together. "Some of these interactions are very complicated, and people haven't found good ways to express them. This deep-learning model can learn these types of interactions from data," says Dr. Octavian-Eugen Ganea (pictured). [Read More](#)

Understanding the Microbiome's Role in Diabetes

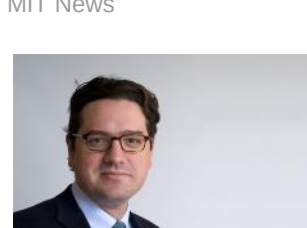
Center for Microbiome Informatics and Therapeutics



An international team of researchers, including members of MIT's Center for Microbiome Informatics and Therapeutics, has presented the first study to examine how diabetes affects the microbiome in a large group of high-risk patients who had never before received treatment. The unique study provides a much clearer picture of how the microbiome might be affected in diabetes and sets the groundwork for future research into new potential interventions. [Read More](#)

Making RNA Vaccines Easier to Swallow

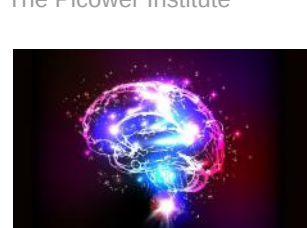
MIT News



Like most vaccines, RNA vaccines have to be injected, which can be an obstacle for people who fear needles. Now, a team of MIT researchers has developed a way to deliver RNA in a capsule that can be swallowed, which they hope could help make people more receptive to the vaccines. Dr. Giovanni Traverso (pictured) and his colleagues used the capsule they developed to deliver up to 150 micrograms of RNA to the stomach of pigs. [Read More](#)

'Traveling' Nature of Brain Waves May Help Working Memory Work

The Picower Institute



After more than a century of study, the significance of brain waves is still not fully known. An especially underappreciated aspect of the phenomenon is that waves spatially propagate, or "travel," through brain regions over time. A new study by researchers at the Picower Institute measured how waves travel in the brain's prefrontal cortex during working memory to investigate the functional advantages that this apparent motion may produce. [Read More](#)

How Omicron Escapes from Antibodies

MIT News



A new study from MIT suggests that the dozens of mutations in the spike protein of the Omicron variant help it to evade all four of the classes of antibodies that can target the SARS-CoV-2 virus that causes COVID-19. This includes antibodies generated by vaccinated or previously infected people, as well as most of the monoclonal antibody treatments that have been developed, says Dr. Ram Sasisekharan. [Read More](#)

Burst of Radiation and Vesicles-Based Immunotherapy Suppress Brain Cancer Growth

Massachusetts General Hospital



Short bursts of radiation therapy dramatically enhanced the efficiency of targeting glioblastomas with natural nanoparticle-based immunotherapies, thus suppressing growth of the deadly tumor, inducing anti-tumor immunity, and prolonging survival in animal models, a research team at led by Dr. Bakhos Tannous (pictured) at Massachusetts General Hospital has discovered. [Read More](#)

Current COVID-19 Vaccines Induce Robust Cellular Immunity against Omicron Variant, Researchers Demonstrate

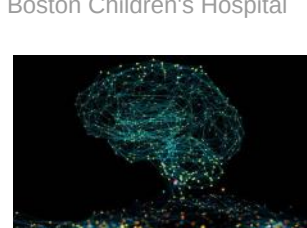
Beth Israel Deaconess Medical Center



A new study by researchers at Beth Israel Deaconess Medical Center demonstrated that cellular immunity — or the production of protective immune cells, such as so-called killer and memory cells — induced by current COVID-19 vaccines provided robust protection against severe disease caused by both the Delta and Omicron variants. [Read More](#)

Open-Label Placebo Offers New Treatment for Disorders of Gut-Brain Interaction in Children

Boston Children's Hospital



Pain-predominant disorders of gut-brain interaction in children — such as functional abdominal pain and irritable bowel syndrome — can lead to disabling symptoms, poor quality of life, and high use of health care resources. While optimal treatment for these conditions remains elusive, this patient population tends to have high placebo response rates. Although this can make it difficult to identify effective therapies, it can also present new opportunities for care. [Read More](#)

Blending Machine Learning and Biology to Predict Cell Fates and Other Changes

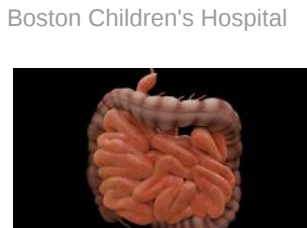
Whitehead Institute



The path of a ball thrown in the air can be described with a simple mathematical equation, and if you know the equation, you can figure out where the ball is going to land. Biological systems tend to be harder to forecast, but Drs. Jonathan Weissman (pictured), Xiaojie Qiu, and collaborators at the University of Pittsburgh School of Medicine are working on making the path taken by cells as predictable as the arc of a ball. [Read More](#)

Can We Harness Intestinal Cells to Treat Endocrine Disorders?

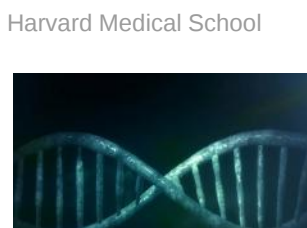
Boston Children's Hospital



Enteroendocrine cells punch above their weight. Comprising just about one percent of intestinal cells, they produce, as a group, around 15 different hormones. These not only regulate intestinal function and digestion, but also influence metabolic functions like insulin secretion and appetite regulation. A new technology platform developed at Boston Children's could set the stage for tapping enteroendocrine cells to reverse diabetes, obesity, and gastrointestinal conditions. [Read More](#)

Rethinking Cerebral Palsy Origins

Harvard Medical School



Cerebral palsy (CP) has widely been viewed as the result of perinatal oxygen deprivation or other birth-related factors like prematurity. For many children, this is true. But of the more than 700,000 individuals in the United States diagnosed with CP, about 20 percent have no clear explanation for the disorder's origin. Now, a first-of-its-kind study by Dr. Siddharth Srivastava and colleagues has found that up to one in four patients with CP have an underlying genetic condition. [Read More](#)

Unsung Heroes

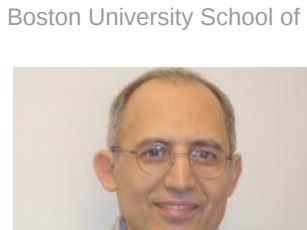
Harvard Medical School



For all their virtues, antibodies may have overshadowed another part of the immune system that has played a critical role in shielding us from the worst ravages of COVID-19: T cells. When antibodies fail to stop the virus from getting into our cells, T cells come to the rescue. They kill virus-infected cells, limiting the spread of the disease and halting tissue damage. [Read More](#)

Researchers Identify a New Protein that Enables SARS-CoV-2 Access into Cells

Boston University School of Medicine (BUSM)



A team of BUSM researchers has identified extracellular vimentin as an attachment factor that facilitates SARS-CoV-2 entry into human cells. "Identification of vimentin as a host attachment factor for SARS-CoV-2 can provide new insight into the mechanism of SARS-CoV-2 infection of the vascular system and can lead to the development of novel treatment strategies," said Dr. Nader Rahimi (pictured). [Read More](#)

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Upcoming Events in Boston

February 8 11:30 AM	Innovators in Therapeutics Speaker Series with Vas Narasimhan Online
February 8 12:00 PM	Research Connection Live: Science behind mRNA Vaccines Online
February 8 3:30 PM	Astellas Pharma Day MassBioHub & Online
February 10 5:00 PM	MassBio Trivia MassBioHub
February 11 12:30 PM	Should Alexa Diagnose Alzheimer's?: A Health Policy and Bioethics Consortium Online

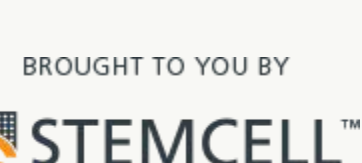
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