SCIENCE in BOSTON

STEMCELL™ TECHNOLOGIES

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Publications of the Week

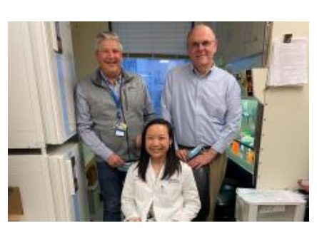
Persistence and Decay of Human Antibody Responses to the Receptor Binding Domain of SARS-CoV-2 Spike Protein in COVID-19 Patients

First Author: Anita Iyer *(pictured, left)* | Senior Author: Richelle Charles *(pictured, right)*
Science Immunology | Massachusetts General Hospital and Harvard Medical School

The authors measured plasma and/or serum antibody responses to the receptor-binding domain of the spike protein of SARS-CoV-2 in 343 North American patients infected with SARS-CoV-2 up to 122 days after symptom onset, and compared them to responses in 1548 individuals whose blood samples were obtained prior to the pandemic. **Profile | Abstract**

Augmenting Emergency Granulopoiesis with CpG Conditioned Mesenchymal Stromal Cells in Murine Neutropenic Sepsis

First Author: Julie Ng *(pictured, front)* | Senior Author: James Lederer *(pictured, left)*
Blood Advances | Brigham and Women's Hospital and Harvard Medical School



Mesenchymal stromal cells (MSCs) are an integral part of the hematopoietic niche and express toll-like receptors, making them candidate cells to sense and translate pathogenic signals into an innate immune response. The authors demonstrate that MSCs administered therapeutically in a murine model of radiation-associated neutropenia have dual actions to confer a survival benefit in *Pseudomonas aeruginosa* pneumo-sepsis that is not from improved bacterial clearance. **Profile | Abstract**

GATA6 Mutations in hiPSCs Inform Mechanisms for Maldevelopment of the Heart, Pancreas, and Diaphragm

First Authors: Arun Sharma *(pictured, right)* and Lauren Wasson *(left)* | Senior Author: Christine Seidman
eLife | Harvard Medical School

Damaging *GATA6* variants cause cardiac outflow tract defects, sometimes with pancreatic and diaphragmic malformations. To define molecular mechanisms for these diverse developmental defects, the authors studied transcriptional and epigenetic responses to *GATA6* loss of function and missense variants during cardiomyocyte differentiation of isogenic human induced pluripotent stem cells (hiPSCs). **Profile | Abstract**

View All Publications

Awards

Six MIT Alumni Named to 2020 Fortune 40 Under 40 List

Slice of MIT

To mark a year of "monumental change," the editors of *Fortune* decided to upend the publication's annual "40 Under 40" feature, forgoing a single list and instead highlighting 40 influential people in each of five categories: finance, technology, health care, government and politics, and media and entertainment. Six MIT alumni made this year's list. **Read More**

Introducing the 2020-2021 Convergence Scholars

Koch Institute

The Marble Center for Cancer Nanomedicine and the MIT Center for Precision Cancer Medicine have announced the 2020-2021 class of Convergence Scholars. The Convergence Scholars Program provides postdoctoral trainees with opportunities to further their experiences and skills beyond the research laboratory. Among the group is Dr. Tahoura Samad *(pictured)* in the Bhatia Lab. **Read More**

View All Awards

Local News

How Do Our Immune Systems Develop in the First Days of Life?

Technology Networks

What is exactly the dynamic of the immune system development in the first days of life? To answer this question, researchers from the Precision Vaccines Program at Boston Children's Hospital have received funding from the Human Immunology Project Consortium/National Institute of Allergy and Infectious Diseases to study the timing of activation of different components of the immune system during the first week of life. **Read More**

Biopreservation Could Revolutionize the Future of Medicine — How Mass General Researchers are Helping Us Get There

Mass General Research Institute

Researchers from the Center for Engineering in Medicine & Surgery at Massachusetts General Hospital have received a grant from the National Science Foundation to establish an engineering research center that will develop new technologies to get us closer to cold-induced suspended animation to preserve and restore living materials without damage. **Read More**

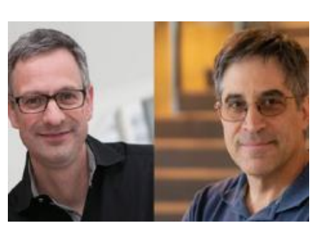
Getting to the Roots of Fragile X Syndrome

Tufts Now

Most research on fragile X syndrome (FXS), the most common inherited intellectual disability, has focused on the brain's neurons, the cells that transmit electrical and chemical impulses. But for a decade, Dr. Yongjie Yang *(pictured)*, Associate Professor of Neuroscience at Tufts University School of Medicine, has pursued a different path, investigating the involvement of glia cells, particularly astroglia, which support neuron function and make up more than half the brain. **Read More**

UMMS Scientists to Expand 4D Nucleome Research with $13 Million NIH Grants

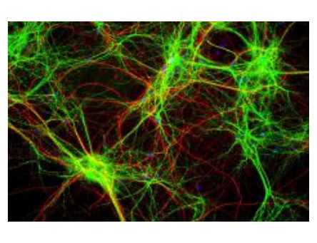
UMass Med Now



Dr. Job Dekker *(pictured, left)* and Dr. Paul Kaufman *(pictured, right)* at UMass Medical School (UMMS) have received two five-year grants totaling $13 million to explore how the 4D genome structure influences gene expression, cellular function, development and disease as it reshapes itself over time. The grants are part of the NIH's 4D Nucleome Program. **Read More**

Neuron-Based Gene Expression Study Reveals Insights on Fear and Its Regulation

McLean Hospital



A new study by investigators at McLean Hospital and Massachusetts General Hospital reveals that the expression of a particular gene may function as a switch to regulate feelings of fear and its extinction. The findings point to a potential new target for diagnosing, treating, and preventing fear-related psychiatric illnesses. The research focuses on neurons in the central amygdala that produce a corticotropin-releasing hormone and are involved in the brain's response to threats. **Read More**

Researchers Create Human Airway Stem Cells from Patients' Cells, Advancing Regenerative Research for Lung Diseases

Boston Medical Center

For the first time, researchers have successfully created airway basal stem cells *in vitro* from induced pluripotent stem cells by reprogramming blood cells taken from patients. Led by Dr. Finn Hawkins *(pictured)* at the Center for Regenerative Medicine at Boston Medical Center and Boston University, these findings represent a critical first step towards airway regeneration, which will advance the field of regenerative medicine as it relates to airway and lung diseases. **Read More**

A COVID-19 DNA Nanoswitch: A New Kind of Test for a New Kind of Virus

Boston Children's Hospital

When the COVID-19 pandemic shut down research laboratories across the country, several labs at Boston Children's Hospital geared up, including that of Dr. Wesley Wong *(pictured)*. He and his team responded to the threat by developing a new, easy diagnostic test for COVID-19. "Our technology, a DNA nanoswitch, is a new way of probing a test sample for evidence of infection," says Wong. **Read More**

Targeted Inhibitor of Mutated *KRAS* Gene Shows Promise in Early Trial for Lung, Bowel, and Other Solid Tumors

Dana-Farber

A novel agent that targets a mutated form of the *KRAS* gene — the most commonly altered oncogene in human cancers and one long considered "undruggable" — shrank tumors in most patients in a clinical trial with manageable side effects. The work was led by Dr. Pasi Jänne *(pictured)*, Director of the Lowe Center for Thoracic Oncology at Dana-Farber. **Read More**

Silencing Gene Expression to Cure Complex Diseases

MIT News

Many people think of new medicines as bullets, and in the pharmaceutical industry frequently used terms like "targets" and "hits" reinforce that idea. Immuneering co-founder and CEO Dr. Ben Zeskind, an MIT alumnus, prefers a different analogy. His company, which specializes in bioinformatics and computational biology, sees many effective drugs more like noise-canceling headphones. **Read More**

Tyler Jacks, Founding Director of MIT's Koch Institute, to Step Down

MIT News

The Koch Institute for Integrative Cancer Research at MIT, a National Cancer Institute-designated cancer center, has announced that Dr. Tyler Jacks *(pictured)* will step down from his role as Director, pending selection of his successor. Jacks, the David H. Koch Professor of Biology, has served as director for more than 19 years, first for the MIT Center for Cancer Research and then for its successor, the Koch Institute. **Read More**

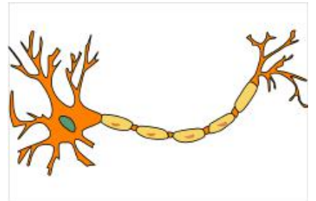
Study Finds PTSD Interacts with Klotho Gene, May Cause Premature Aging in the Brain

BU School of Medicine

Researchers from the National Center for post-traumatic stress disorder (PTSD) at VA Boston Healthcare System and BU School of Medicine have found that a variant in the klotho gene, a gene previously associated with longevity, interacts with PTSD to predict accelerated aging in brain tissue. These same researchers had previously shown this effect in living subjects when epigenetic age was measured in blood. **Read More**

New Strategies for Restoring Myelin on Damaged Nerve Cells

Boston Children's Hospital



In new research from the laboratory of Dr. Zhigang He of the F.M. Kirby Neurobiology Center, scientists discovered a two-pronged approach to restore myelin on regenerated axons in a mouse model of optic nerve injury. Their findings may have implications for disease associated with myelin loss, like multiple sclerosis. **Read More**

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Upcoming Events in Boston

November 6 1:00 PM	**Tufts University Health & Life Sciences Career Fair** Online
November 10 3:00 PM	**Amgen Biotech Seminar Series: Careers in Biotech** Online
November 12 8:00 AM	**Virtual Discover Brigham 2020** Online
November 12 5:00 PM	**Story Slam: Tales from the Bench and Beyond** Online
November 12 6:00 PM	**Beyond Academia: A Career Panel Discussion for Life Science PhDs** Online

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