

Publications of the Week
Gut-Licensed IFN γ ⁺ NK Cells Drive LAMP1⁺TRAIL⁺ Anti-Inflammatory Astrocytes

 First Author: Liliana Sanmarco | Senior Author: Francisco Quintana (pictured)
 Nature | Brigham and Women's Hospital, the Broad Institute, and Boston University School of Medicine


Using high-throughput flow cytometry screening, single-cell RNA sequencing and CRISPR-Cas9-based cell-specific *in vivo* genetic perturbations in mice, the authors identified a subset of astrocytes that expresses the lysosomal protein LAMP1 and the death receptor ligand TRAIL. LAMP1⁺TRAIL⁺ astrocytes limit inflammation in the central nervous system by inducing T cell apoptosis through TRAIL-DR5 signaling. [Abstract](#)

Mechanism of Filament Formation in UPA-Promoted CARD8 and NLRP1 Inflammasomes

 First Author: L. Robert Hollingsworth | Senior Author: Hao Wu (pictured)
 Nature Communications | Harvard Medical School and Boston Children's Hospital


NLRP1 and CARD8 are related cytosolic sensors that upon activation form supramolecular signaling complexes known as canonical inflammasomes. The authors report cryo-EM structures of NLRP1-C-terminal (CT) and caspase recruitment domain (CARD) 8-CT assemblies, in which the respective CARDS form central helical filaments that are promoted by oligomerized, but flexibly linked, UPAs surrounding the filaments. [Abstract](#)

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Awards
Nick Peterson and Samantha Tse Named Ruth L. Kirschstein National Research Service Award Recipients

UMass Med News



Two MD/PhD students in the lab of Dr. Read Pukkila-Worley (pictured, center), Associate Professor of Medicine at UMass Medical School, have each received Ruth L. Kirschstein National Research Service Awards from the National Institutes of Health for their projects analyzing the ways a host recognizes bacteria that can cause disease. Nick Peterson (right) and Samantha Tse (left) were awarded these highly competitive grants. [Read More](#)

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Local News
Inspired by Kombucha Tea, Engineers Create "Living Materials"

MIT News



Engineers at MIT have developed a new way to generate tough, functional materials using a mixture of bacteria and yeast similar to the "kombucha mother" used to ferment tea. Using this mixture, also called a SCOBY (symbiotic culture of bacteria and yeast), the researchers were able to produce cellulose embedded with enzymes that can perform a variety of functions, such as sensing environmental pollutants. [Read More](#)

Botulism Breakthrough? Taming Botulinum Toxin to Deliver Therapeutics

Boston Children's Hospital



Botulism is caused by nerve-damaging toxins produced by *Clostridium botulinum* — the most potent toxins known. "Currently, there are anti-toxins, but these only work before the toxins enter the motor neurons," says Dr. Min Dong (pictured), a researcher in the Boston Children's Hospital Department of Urology and corresponding author on the paper. "What we have developed is the first therapy that can eliminate toxins after they get *inside* neurons." [Read More](#)

Investigational Drug Pridopidine Enters Healey ALS Platform Trial

Massachusetts General Hospital (MGH)



In 2020, the Sean M. Healey & AMG Center at MGH launched the first platform trial for amyotrophic lateral sclerosis (ALS), in which multiple treatments are tested and evaluated simultaneously to accelerate the development of therapies for people with ALS. Investigators have now added a fourth promising drug — pridopidine — to the trial, and the first participant has received study drug at the MGH site. [Read More](#)

Searching COVID-19 Publications: International Website Links Researchers, Collaborators

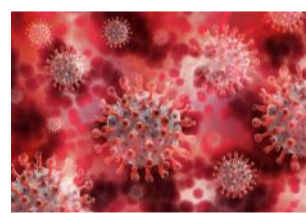
Harvard Medical School



The profiles of more than 300,000 coronavirus experts and their network of collaborators are now easily searchable through a newly released platform called COVIDAuthors. Developed by Dr. Griffin Weber, Associate Professor of Medicine and of Bioinformatics at Harvard Medical School. The website is freely accessible and is geared specifically to the needs of researchers looking for collaborators and for policymakers seeking local experts to consult. [Read More](#)

How Coronavirus Damages Lung Cells within Mere Hours

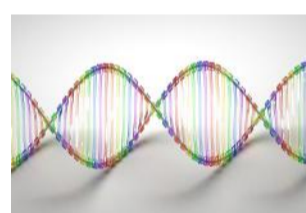
Boston University



What if scientists knew exactly what impact the SARS-CoV-2 virus had inside our lung cells, within the first few hours of being infected? A team of Boston University researchers embarked on a months-long, collaborative and interdisciplinary quest, combining multiple areas of expertise in virology, stem cell-derived lung tissue engineering, and deep molecular sequencing to begin answering those questions. [Read More](#)

Gene Therapy Strategy Found Effective in Mouse Model of Hereditary Disease Tuberous Sclerosis Complex

Massachusetts General Hospital



Patients with tuberous sclerosis complex, a genetic disorder characterized by the growth of noncancerous tumors in multiple organs of the body, have limited treatment options. A team led by investigators at Massachusetts General Hospital has now shown that gene therapy can effectively treat mice that express one of the mutated genes that cause the disease. [Read More](#)

Researchers Uncover Viral Small RNAs in Mosquito Cells

Boston University School of Medicine (BUSM)



BUSM researchers are now able to provide a new genomics resource that details the small RNA transcriptomes of four biomedically important mosquito species. This is the first study to provide a platform for biologists to compare the characteristics of these small RNAs between these four mosquitoes as well as the most widely used insects for genetic experiments, the fruit fly, *Drosophila*. [Read More](#)

Verve Therapeutics Announces Data Demonstrating Durable LDL Cholesterol Lowering after a One-Time Gene Editing Treatment in Non-Human Primates

Verve Therapeutics



Verve Therapeutics, a biotech company pioneering gene editing medicines to treat cardiovascular disease, has announced new data demonstrating both durable and consistent lowering of blood low-density lipoprotein cholesterol (LDL-C) levels at six months after a single gene editing treatment in non-human primates. Additionally, the company has selected VERVE-101 as its lead product to be developed initially for the treatment of heterozygous familial hypercholesterolemia. [Read More](#)

Atalanta Therapeutics Founded by UMass Medical School and Three Faculty Members

UMass Med News



Atalanta Therapeutics, a biotech founded by UMass Medical School and three faculty research scientists to pioneer treatment options for neurodegenerative diseases, has launched with financing by venture capital fund F-Prime Capital and strategic collaborations with Biogen and Genentech. The founders include Drs. Anastasia Khvorova, Craig Mello, and Neil Aronin (pictured left to right). [Read More](#)

Study Reveals Previously Unknown Mechanisms in the Kidney that Control Magnesium and Calcium Levels

Massachusetts General Hospital



While investigating the underlying causes of a rare skin disorder, a researcher at Massachusetts General Hospital discovered a previously unknown mechanism in the kidneys that is important for regulating levels of magnesium and calcium in the blood. The discovery highlights the role of a previously little-studied gene called *KCTD1*. [Read More](#)

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| January 19
4:00 PM | Immunity from Principles to Practice: Interrogating the Immune System through the Lens of Structure-Based Ligand Engineering
Online |
| January 20
10:00 AM | Witman Symposium
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| January 21
12:00 PM | Dana Farber Targeted Protein Degradation Seminar
Online |
| January 25 - 29
8:00 AM | MassBio Partnering Week
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