

Publications of the Week

Actionable Cytopathogenic Host Responses of Human Alveolar Type 2 Cells to SARS-CoV-2

First Author: Ryan Hekman *(pictured, second from left)* | Senior Author: Andrew Emili
 Molecular Cell | Boston University



The authors performed a quantitative phosphoproteomic survey of induced pluripotent stem cell-derived alveolar epithelial type 2 cells infected with SARS-CoV-2 at air-liquid interface. Time course analysis revealed rapid remodeling of diverse host systems, including signaling, RNA processing, translation, metabolism, nuclear integrity, protein trafficking, and cytoskeletal-microtubule organization, leading to cell cycle arrest, genotoxic stress, and innate immunity.

[Profile](#) | [Abstract](#)

Endogenous Antisense RNA Curbs CD39 Expression in Crohn's Disease

First Author: Rasika Harshie | Senior Author: Maria Serena Longhi *(pictured)*
 Nature Communications | Beth Israel Deaconess Medical Center



The authors report a mechanism of CD39 regulation that relies on the presence of an endogenous antisense RNA, transcribed from the 3'-end of the human CD39^{ENTPD1} gene. CD39-specific antisense was increased in regulatory T cells and T-helper 17 cells of Crohn's disease patients over controls. It largely localizes in the cell nucleus and regulates CD39 by interacting with nucleolin and heterogeneous-nuclear-ribonucleoprotein-A1.

[Abstract](#)

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Awards

Six from Harvard Medical School Elected 2020 AAAS Fellows

Harvard Medical School



Six Harvard Medical School scientists and clinicians, including Dr. Marcia Goldberg *(pictured)*, have been elected by their peers as 2020 Fellows of the American Association for the Advancement of Science (AAAS). They are among this year's 489 members awarded this honor by virtue of their scientifically or socially distinguished efforts to advance science or its applications.

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Six MIT Faculty Elected 2020 AAAS Fellows

MIT News

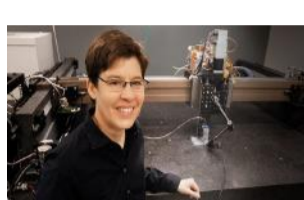


Six MIT faculty members have been elected as fellows of the American Association for the Advancement of Science (AAAS). Among them is Dr. Catherine Drennan *(pictured)*, a Professor in the Departments of Biology and Chemistry. The new fellows are among a group of 489 AAAS members elected by their peers in recognition of their scientifically or socially distinguished efforts to advance science.

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Wyss Institute Celebrates Highly Cited and Top Translational Researchers

Wyss Institute



Web of Science Group has announced its Highly Cited Researchers 2020 list, which identifies researchers who demonstrated significant influence in their chosen field or fields through the publication of multiple highly cited papers during the last decade. Dr. Jennifer Lewis *(pictured)* is among the ten faculty members from the Wyss Institute included on the list.

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57 Mass General Investigators Named Highly Cited Researchers of 2020

Mass General Research Institute



Clarivate Analytics' Web of Science Group recently released their annual list of Highly Cited Researchers. The list identifies scientists and social scientists who have demonstrated significant influence through publication of multiple papers, highly cited by their peers, during the last decade. Dr. Galit Alter *(pictured)* is among the 58 investigators from the Mass General Research Institute who made the list.

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Local News

Study Identifies Genes That Help Drive Growth in Melanoma Subtypes

Dana-Farber

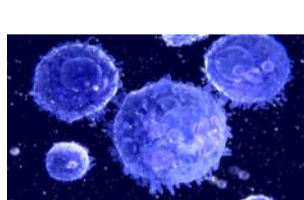


Dr. Eliezer Van Allen *(pictured)* and researchers at Dana-Farber have assembled the largest-to-date molecular dataset on melanoma and used it to uncover new details about the genomic subtypes of the disease. They found that each subtype has a "preference" for certain mutated genes and pathways, and that some of these alterations may make the tumors more susceptible to immunotherapy within the context of their respective subtype.

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Catamaran Bio Launches with \$42 Million Financing to Develop Off the Shelf CAR-NK Cell Therapies to Treat Solid Tumors

Catamaran Bio

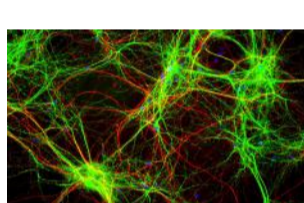


Cambridge-based Catamaran Bio, Inc. has launched with \$42 million in financing that will be used to advance the company's two lead chimeric antigen receptor-natural killer (CAR-NK) cell therapy programs. Catamaran's TAILWIND Platform integrates proprietary capabilities to create novel, allogeneic CAR-NK cell therapies by harnessing the natural cancer-fighting properties of NK cells and enhancing them with the power of synthetic biology and innovative NK cell engineering and manufacturing.

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A Single-Cell Atlas of Nerve Cells in the Gut Reveals Web of Connections

Broad Institute



The cells that make up the enteric nervous system (ENS) and transmit signals from the gut to the brain are rare and fragile, making them difficult to isolate and study. A team led by researchers at the Broad Institute and Massachusetts General Hospital has now overcome these challenges with new methods that they developed to generate a single-cell map of the ENS in humans and mice.

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Imaging Method Reveals a "Symphony of Cellular Activities"

MIT News



MIT researchers have now developed a way to image up to five different molecule types at a time, by measuring each signal from random, distinct locations throughout a cell. This approach could allow scientists to learn much more about the complex signaling networks that control most cell functions, says Dr. Edward Boyden, the Y. Eva Tan Professor in Neurotechnology at MIT.

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Missed Signals? A New Way We Vary from Each Other Biologically

Boston Children's Hospital



Genetics has made huge strides over the past 20 years, from the sequencing of the human genome to a growing understanding of factors that turn genes on and off, namely transcription factors and the DNA "enhancer" sequences they bind to. New research from Boston Children's Hospital introduces another previously unknown layer of human genetics. It finds genetic variation in a gene's ability to react to chemical signals from the outside.

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Tau Protein Changes Correlate with Alzheimer's Disease Dementia Stage

Boston Children's Hospital



Research into Alzheimer's disease has long focused on understanding the role of two key proteins, beta amyloid and the tau protein. In new research from their joint laboratory, Drs. Judith Steen and Hanno Steen at Boston Children's Hospital show for the first time that this pathological tau protein changes its forms over time, which could mean it will take multiple drugs to target it effectively.

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Antiviral Defense from the Gut

Harvard Medical School



The role of the gut microbiome in disease and health has been well established. Yet, how the bacteria residing in our guts protect us from viral infections is not well understood. Now, for the first time, Harvard Medical School researchers have described how this happens in mice and have identified the specific population of gut microbes that modulates both localized and systemic immune response to ward off viral invaders.

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A Research Tool of a Different Color

Whitehead Institute



Whitehead Institute Member Dr. David Sabatini's lab has developed a tool, called MelanoIP, with which researchers can rapidly and specifically isolate melanosomes from the cell and analyze their contents. Using this tool, researchers can uncover the identity of the proteins at work there and explain mechanistically how genetic variation contributes to differences in skin color.

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Cancer Crosstalk: In Order to Spread, Ovarian Cancer Cells Cooperate

Harvard Medical School

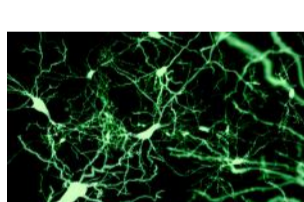


Any given tumor is composed of a multitude of cell types that can each look or behave differently from its neighbors. An emerging body of research suggests that these differences can influence disease progression or the way a tumor responds to drugs. Now, a new study by Harvard Medical School scientists shows that such cell diversity can also play a critical role in a cancer's ability to invade distant sites throughout the body, a process known as metastasis.

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Found: A Genetic Link to Molecular Events that Precede Symptoms in Alzheimer's Disease

Tufts Now



Researchers at Tufts University School of Medicine have discovered a molecular mechanism that causes a "traffic jam" of enzymes traveling up and down neuronal axons, leading to the accumulation of amyloid beta — a key feature and cause of Alzheimer's disease. The enzyme, BACE1, gets backed up, causing the axons to clog and swell because of the increased production of the toxic amyloid protein.

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Proteogenomics Enhances the Identification of Therapeutic Vulnerabilities in Breast Cancer

Broad Institute



A team co-led by Dr. Michael Gillette at the Broad Institute has applied powerful proteogenomics approaches to better understand the biological complexity of breast cancer. With this approach, the researchers were able to propose more precise diagnostics for known treatment targets, identify new tumor susceptibilities for translation into treatments for aggressive tumors and implicate new mechanisms whereby breast cancers resist treatment.

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Upcoming Events in Boston

December 1 11:00 AM	MassBio Town Hall – 2021 Biotech Outlook Online
December 2 4:00 PM	MIT Alumni Virtual Research Slam Online
December 2 6:30 PM	Hit Me with Your Best Shot: Vaccines and COVID-19 Online
December 2 - 4 7:00 AM	2020 HMS Research Cores Online Poster Showcase Online
December 4 2:00 PM	The History of Now: Plagues and Pandemics Series Online

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- Scientist III, Protein Biochemistry Discovery**
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