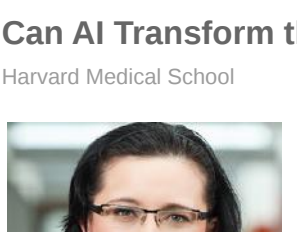
Volume 4.45: November 21, 2022

Publications of the Week

Velcrin-Induced Selective Cleavage of tRNA^{Leu}(TAA) by SLFN12 Causes Cancer Cell Death

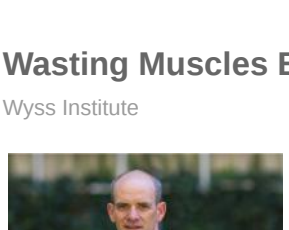
First Author: Sooncheol Lee | Senior Author: Heidi Greulich *(pictured)*
Nature Chemical Biology | The Broad Institute and Dana-Farber Cancer Institute



Velcrin compounds kill cancer cells expressing high levels of phosphodiesterase 3A (PDE3A) and Schlafen family member 12 (SLFN12) by inducing complex formation between these two proteins, but the mechanism of cancer cell killing by the PDE3A–SLFN12 complex is not fully understood. The authors report that the physiological substrate of SLFN12 RNase is tRNA^{Leu}(TAA). **Profile | Abstract**

Bioelectric Regulation of Intestinal Stem Cells

First Author: Afroditi Petsakou | Senior Author: Norbert Perrimon *(pictured)*
Trends in Cell Biology | Harvard Medical School and Howard Hughes Medical Institute



Ion channels, pumps, and exchangers regulate the transport of ions, such as Na^+, Cl^-, K^+, and Ca^{2+}, in and out of cells, and gap junctions allow the movement of ions across cells. Ion imbalance is highly associated with intestinal disorders and even cancer; therefore, a genetic model capable of decoding *in vivo* how ion regulation affects intestinal stem cell proliferation could have great therapeutic value. **Abstract**

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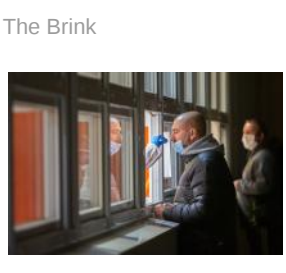
Awards

Amanda Whipple Receives R35 Grant from the NIH

Harvard University Department of Molecular and Cellular Biology (MCB)



MCB faculty Dr. Amanda Whipple *(pictured)* has received an R35 Maximizing Investigators' Research Award from the National Institutes of Health (NIH). The award provides five years of funding to promising early career principal investigators, with the goal of ensuring recipients' stability and flexibility as their labs branch out in pursuit of new research questions. **Read More**

Dana-Farber Cancer Institute and the Richard K. Lubin Family Foundation Announce Inaugural Recipients of the Lubin Family Foundation Scholar Award

Dana-Farber Cancer Institute

The four inaugural recipients of the Lubin Family Foundation Scholar Award have been announced by Dana-Farber Cancer Institute and the Richard K. Lubin Family Foundation. Lubin Scholars are among the most promising physician-scientists pursuing cancer-relevant basic or translational laboratory-based research. One recipient, Dr. Justin Becker *(pictured)*, is researching the role of endogenous retroviruses in metastatic melanoma. **Read More**

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Local News

Can AI Transform the Way We Discover New Drugs?

Harvard Medical School

A multi-institutional team led by Harvard Medical School biomedical informatician Dr. Marinka Zitnik *(pictured)* has launched a platform that aims to optimize artificial intelligence (AI)-driven drug discovery by developing more realistic data sets and higher-fidelity algorithms. The Therapeutics Data Commons is an open-access platform that serves as a bridge between computer scientists and machine-learning researchers on one end and biomedical researchers, biochemists, clinical researchers, and drug designers on the other end. **Read More**

Wasting Muscles Built Back Better

Wyss Institute

Bioengineers at the Wyss Institute and the Harvard John A. Paulson School of Engineering and Applied Sciences have developed a mechanically active adhesive which functions as a soft robotic device. "We developed a new integrated multi-component system for the mechanostimulation of muscle that can be directly placed on muscle tissue to trigger key molecular pathways for growth," said Dr. David Mooney *(pictured)*. **Read More**

What Happened to the Robots in BU's COVID-19 Testing Lab? They're Getting a New Mission

The Brink

Over the past two years, BU's Clinical Testing Laboratory has processed an extraordinary number of COVID-19 tests — more than two million. At the pandemic's peak, the lab's eight state-of-the-art, liquid-handling robots — the indefatigable heart of a fully automated diagnostic facility — were running more than 6,000 tests a day, returning results in 24 hours, often less. Now, the multimillion dollar lab is giving its high-speed, super-efficient robots a new mission: power research from across the university. **Read More**

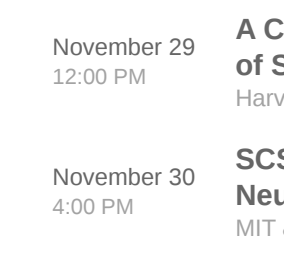
BEST-CLI Clinical Trial Indicates Optimal Treatment for Patients with Limb Threatening Ischemia

Brigham and Women's Hospital

More than 200 million people worldwide have peripheral artery disease (PAD) and more than 1-in-10 have a severe form of PAD known as chronic limb threatening ischemia (CLI), putting them at risk of leg amputation, cardiovascular disease, and death. A randomized, multicenter, international clinical trial led by investigators from Brigham and Women's Hospital, Massachusetts General Hospital, and Boston Medical Center, compared important clinical, patient experience, and cost outcomes for two approaches to treatment. **Read More**

Genome-Wide Screens Could Reveal the Liver's Secrets

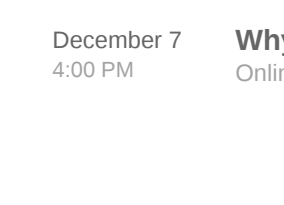
MIT News



The liver's ability to regenerate itself is legendary. Even if more than 70 percent of the organ is removed, the remaining tissue can regrow an entire new liver. Dr. Kristin Knouse *(pictured)*, an MIT Assistant Professor of Biology, wants to find out how the liver is able to achieve this kind of regeneration, in hopes of learning how to induce other organs to do the same thing. **Read More**

#WhyIScience Q&A: An Endocrinologist and Clinical Researcher Explores How Racism and Other Social Factors Affect Patients with Type 2 Diabetes

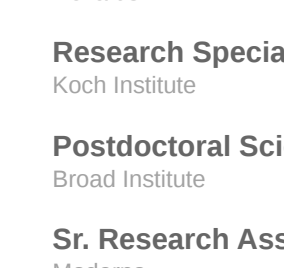
The Broad Institute



Dr. Sara Jane Cromer *(pictured)* was a medical student at Baylor University's Ben Taub Hospital in Houston, Texas when she first observed the impact of the "social determinants of health," which refers to how a person's socioeconomic status and other environmental factors affect their health. This experience inspired Dr. Cromer to dedicate her research to studying how the social determinants of health affect patients with type 2 diabetes. **Read More**

Research Spotlight: Neutrophils Will Overcome Their Inability to Swarm by Cooperatively Generating LTB4 Through Transcellular Biosynthesis

Massachusetts General Hospital



Neutrophils require the lipid mediator leukotriene B4 (LTB4) to swarm in response to a fungal target. LTB4 is synthesized by neutrophils as they swarm. Since swarming is a collective behavior, Drs. Bryan Hurley's *(pictured, center)* and Daniel Irima's groups sought to determine whether neutrophils can cooperate to generate this mediator through a transcellular biosynthetic mechanism, and whether this process can rescue defective swarming behavior for mutant cells not capable of synthesizing LTB4. **Read More**

X Chromosome Inactivation Surprisingly Found in Diverse Cancers in Men

Genetic Engineering & Biotechnology News

Cancer cells acquire genetic changes that allow them to grow and proliferate unchecked. Researchers in Dr. Srinivas Viswanathan's *(pictured)* lab at Dana-Faber Cancer Institute and their colleagues have now found another difference between cancer cells and normal cells. Their results showed that X chromosome inactivation, the process by which one of the two X chromosomes in female cells is inactivated, can also occur in male cancers. **Read More**

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Upcoming Events in Boston

November 29
12:00 PM
A Conversation with Special Guest, Dr. France Córdova, President of Science Philanthropy Alliance
Harvard Medical School & Online

November 30
4:00 PM
SCSB Colloquium Series: Maternal Gut Bacteria Dictate Offspring's Neurodevelopmental and Immune-Primed Phenotypes
MIT & Online

December 5
6:00 PM
Science on Stage
MIT Museum

December 6
4:00 PM
BioAgilytix Presents: Science After Hours at MassBioHub
MassBioHub

December 7
4:00 PM
Why Sex Matters in Health and Disease
Online

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