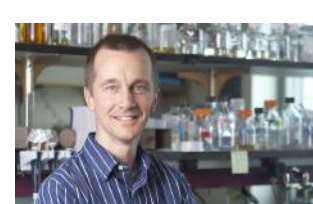


Publications of the Week
Shutoff of Host Transcription Triggers a Toxin-Antitoxin System to Cleave Phage RNA and Abort Infection

 First Author: Chantal Guegler | Senior Author: Michael Laub (pictured)
 Molecular Cell | MIT


Toxin-antitoxin (TA) systems are widespread in bacteria, but their activation mechanisms and bona fide targets remain largely unknown. The authors characterized a type III TA system, *toxIV*, that protects *E. coli* against multiple bacteriophages, including T4. Using RNA sequencing, they found that the endonuclease ToxN is activated following T4 infection and blocks phage development primarily by cleaving viral mRNAs and inhibiting their translation.

[Abstract](#)
The MicroRNA *miR-696* Is Regulated by SNARK and Reduces Mitochondrial Activity in Mouse Skeletal Muscle Through Pgc1α Inhibition

 First Author: Andre Queiroz | Senior Authors: Laurie Goodyear (pictured) and Leonardo Silveira
 Molecular Metabolism | Joslin Diabetes Center and Brigham and Women's Hospital


Using *in silico* analyses, the authors identified 219 unique miRNAs that potentially bind to the 3'UTR region of a critical mitochondrial regulator, the peroxisome proliferator-activated receptor gamma coactivator 1 alpha (Pgc1α), and found that *miR-696* had one of the highest interactions. Overexpression of SNF1-AMPK-related kinase (SNARK) in C2C12 cells increased *miR-696* transcription while knockdown of SNARK significantly decreased *miR-696*. [Abstract](#)

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Awards
Winner of 2021 Armen H. Tashjian Award for Excellence in Endocrine Research

Harvard T. H. Chan School of Public Health



Dr. Edward Chouchani (pictured) of Harvard Medical School is the winner of the 2021 Armen H. Tashjian Jr. Award for Excellence in Endocrine Research. This award was established to recognize scholars early in their careers who are pursuing novel areas of discovery in endocrine and related areas of research.

[Read More](#)
2021 FNIH Lurie Prize in Biomedical Sciences Winner Revolutionized Imaging to Reveal Structures Hidden in Cells

Foundation for the National Institutes of Health



The Foundation for the National Institutes of Health (FNIH) has named Dr. Xiaowei Zhuang (pictured) the winner of the 2021 Lurie Prize in Biomedical Sciences for pioneering the development of super-resolution microscopy and genome-scale imaging showing new spatial and functional organizations of molecules and cells. Dr. Zhuang's innovative work with microscopy has enabled researchers to visualize the positioning of molecules in cells with high resolution. [Read More](#)

2021 Morgan Medal: Ruth Lehmann

Genetics Society of America



One of life's great mysteries is how a single egg cell can contain all the information needed to create a fully specialized complex organism, including more egg cells. Dr. Ruth Lehmann (pictured), Director of the Whitehead Institute at MIT, has done a tremendous amount to solve that mystery. Beginning in her graduate student days, she uncovered a pathway that controls germ cell specification within the embryo.

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Earth's Other Rainforest

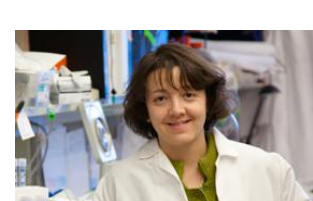
Wyss Institute



Could engineering marine bacteria lower atmospheric carbon dioxide? In Wyss postdoc Dr. Max Schubert's (pictured) view, solving climate change requires two kinds of people: those who dream big and those who make the dreams happen. As a self-described doer, Dr. Schubert has stepped up to the bench to start figuring out how that's possible. He's focusing on *Synechococcus cyanobacteria*: an ancient, blue-green type of phytoplankton. [Read More](#)

Researchers Identify Potential Targets for Novel Treatments for Lung Cancer

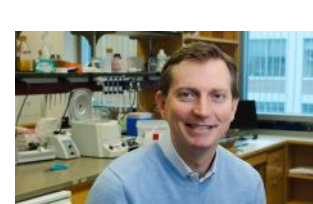
Beth Israel Deaconess Medical Center



Adenocarcinomas, a non-small cell lung cancer, account for about 40 percent of cancer diagnoses, but few treatments are available for the disease. A team led by Dr. Elena Levantini (pictured), a research associate in Hematology-Oncology in the laboratory of Dr. Daniel Tenen at Beth Israel Deaconess Medical Center, evaluated a novel agent, PTC596, capable of decreasing tumor growth in preclinical studies performed on a mouse model of mutant K-RAS lung cancer. [Read More](#)

Two Heads Are Better Than One, But Two Disciplines Are Even Better

MIT Biology



At first glance, Dr. Bonnie Berger's mathematics lab and Dr. Joey Davis's (pictured) biology lab are as different as the buildings that house them. And yet, a recent collaboration between these two labs shows how their disciplines complement each other. The partnership started when Elen Zhong, a graduate student from the Computational and Systems Biology Program, decided to use a computational pattern-recognition tool to study the shapes of molecular machines. [Read More](#)

The Bacterial Flagellar Engine Has a Bidirectional Gearshift

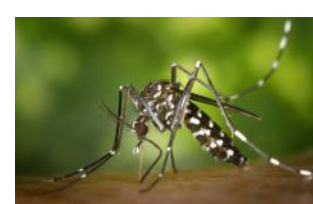
Harvard University Department of Molecular and Cellular Biology



It turns out that the miniature engine of *E. coli* has some neat tricks up its sleeve. Just like modern cars can automatically change gears to adapt to changing terrains, the flagellar motor can also adapt to changes in the mechanical load. But unlike cars, which adjust the transmission from the engine to the wheels, *E. coli* modifies the engine itself. Researchers in Dr. Howard Berg's (pictured) lab studied this process using electrorotation. [Read More](#)

Accumulation of Infected Red Blood Cells in the Adipose Tissue Is Essential For Development of Cerebral Malaria

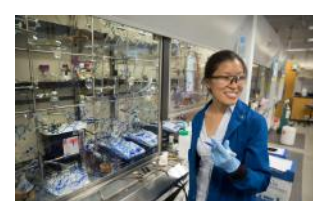
Harvard T. H. Chan School of Public Health



White adipose tissue (WAT) plays a fundamental role in the development of cerebral malaria in mouse models and humans, according to a new study led by Harvard T.H. Chan School of Public Health scientists in collaboration with an international team of researchers. The study details the process by which red blood cells infected with malaria-causing *Plasmodium* parasites are sequestered in small blood vessels throughout WAT, where they stimulate leptin production. [Read More](#)

Dissecting the 'Undruggable'

The Harvard Gazette



About 85 percent of proteins, including those associated with Alzheimer's and Parkinson's, are beyond the reach of current drugs. One critical and abundant sugar, O-GlcNAc, is found on more than 5,000 proteins, many of them considered "undruggable." But now, researchers at Harvard led by Dr. Christina Woo (pictured) have designed a new, highly selective O-GlcNAc pencil and eraser — tools that can add or remove the sugar from a protein with no off-target effects. [Read More](#)

Dionis Mineev on Using Crisscross Assembly for Diagnostics

Wyss Institute



Dr. Dionis Mineev (pictured) truly values the creative design process, whether he's using it to produce a beautiful painting or to build a new DNA structure. He is the team lead on the Crisscross Nanosciences Validation Project and is working with his team to create a rapid, low-cost, point-of-care diagnostic device. Crisscross is a programmable DNA self-assembly method that allows researchers to initiate the assembly of large DNA structures, starting from a tiny seed structure. [Read More](#)

Sleep Easy

The Harvard Gazette



Work led by investigators at Massachusetts General Hospital could lead to new prevention and treatment strategies for infant diseases. Increased numbers and clusters of pulmonary neuroendocrine cells (PNECs) have been observed in various breathing-related illnesses. To better understand PNECs and their effects in the body, researchers analyzed lung and airway tissues from humans and mice. [Read More](#)

These Worms' Stem Cells Are Developmental Shapeshifters

Whitehead Institute



Researchers at the Whitehead Institute proposed a new model for how neoblasts commit to their fates and go on to create fully differentiated cells. "We're proposing something happens that is very different from the conventional view," said Dr. Peter Reddien (pictured). "We think that stem cells can make broad jumps in state without going through a series of fate-restricting divisions. We call it the single-step fate model." [Read More](#)

Researchers Find Genetic Vulnerability in Pediatric Neuroblastoma

Broad Institute



To pave the way toward more targeted drugs for childhood cancers, researchers at the Broad Institute, the Dana-Farber Cancer Institute, and Boston Children's Hospital have been looking for genes that pediatric cancer cells depend on for their growth and survival. "We can use these large-scale datasets to start understanding ways to specifically target the cancer cells," said Dr. Francisca Vazquez (pictured), an author of the study. [Read More](#)

Cancer Cells Soften As They Metastasize, Study Suggests

MIT News



When cancer cells metastasize, they often travel in the bloodstream to a remote tissue or organ, where they then escape by squeezing through the blood vessel wall and entering the site of metastasis. A study from MIT now shows that tumor cells become much softer as they undergo this process. Dr. Anya Roberts (pictured) is the lead author of the paper. [Read More](#)

Reimagining the Ribosome

Broad Institute



A bioengineer by training, Dr. Ahmed Badran (pictured) has a bold plan to make new types of ribosomes that augment the genetic code used by all life on Earth. Dr. Badran hopes that his new ribosomes will one day be able to assemble extraordinary proteins and be used to make better drugs, keep crops healthy, and probe biology in creative ways — if he can just convince these ancient molecules to try something new. [Read More](#)

FDA Clears Investigational New Drug Application for ALS Gene Therapy Candidate

University of Massachusetts Medical School Communications



Apic Bio, a gene therapy company developing treatment options for patients with rare genetic diseases and co-founded by the University of Massachusetts' Dr. Robert Brown Jr. (pictured), announced that the FDA has cleared its investigational new drug application for APB-102, a gene therapy candidate designed to treat a common cause of familial amyotrophic lateral sclerosis (ALS). [Read More](#)

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April 29 9:00 AM	Dana-Farber Targeted Protein Degradation: A Chemical Biology Approach to DUBs Online
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