Volume 3.31: August 16, 2021

Publications of the Week

Yap/Taz Inhibit Goblet Cell Fate to Maintain Lung Epithelial Homeostasis

First Author: Julia Hicks-Berthet *(pictured, right)* | Senior Author: Xaralabos Varelas *(left)*
Cell Reports | Boston University School of Medicine and Massachusetts General Hospital

Proper lung function relies on the precise balance of specialized epithelial cells that coordinate to maintain homeostasis. The authors describe essential roles for the transcriptional regulators YAP/TAZ in maintaining lung epithelial homeostasis, reporting that conditional deletion of *Yap* and *Wwtr1/Taz* in the lung epithelium of adult mice results in severe defects, including alveolar disorganization and the development of airway mucin hypersecretion. **Profile | Abstract**

FHL2 Anchors Mitochondria to Actin and Adapts Mitochondrial Dynamics to Glucose Supply

First Author: Himanshi Basu *(pictured, left)* | Senior Author: Thomas Schwarz *(right)*
Journal of Cell Biology | Boston Children's Hospital and Harvard Medical School

Mitochondrial movement and distribution are fundamental to their function. The authors report a mechanism that regulates mitochondrial movement by anchoring mitochondria to the F-actin cytoskeleton. This mechanism is activated by an increase in glucose influx and the consequent O-linked-N-acetylglucosaminylation of trafficking kinesin protein, a component of the mitochondrial motor-adaptor complex. The protein four and a half LIM domains protein 2 (FHL2) serves as the anchor. **Abstract**

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Awards

Awards & Recognitions: August 2021

Harvard Medical School

Dr. Judy Garber *(pictured)*, Harvard Medical School Professor of Medicine and Chief of the Division for Cancer Genetics and Prevention at Dana-Farber, was named to receive the Association of American Cancer Institutes' 2021 Distinguished Scientist Award, which will be presented virtually in October. Dr. Garber is being recognized for her breakthrough translational research on the treatment of triple-negative or basal-like breast cancer. **Read More**

Barouch Awarded Ledlie Prize

Harvard Medical School

When Chinese researchers released the SARS-CoV-2 genome sequence to scientists around the world, Dr. Dan Barouch *(pictured)* and his lab began a grueling sprint that would culminate in an effective vaccine for COVID-19 developed by Johnson & Johnson, and one of three granted emergency use authorization in the US. For that achievement, Harvard has awarded Dr. Barouch the coveted George Ledlie Prize. **Read More**

Tufts Scientists Receive Grants from Massachusetts Life Sciences Center

Tufts University

Three Tufts scientists and their teams have received capital funding this month from the Massachusetts Life Sciences Center to support research ranging from drug delivery to disease detection technologies. Dr. Igor Sokolov *(pictured)*, a Professor of Mechanical and Biomedical Engineering, received a grant for a project aiming to develop noninvasive detection of bladder cancer through advanced nanoscale imaging and machine learning analysis, along with industry partner Cellenis. **Read More**

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Local News

How a Rare Population of Cancer Cells Contributes to Relapse

Broad Institute

A team of researchers at Harvard Medical School and the Broad Institute of MIT and Harvard has shown that a small fraction of persister cells, called cycling persister cells, not only survive when exposed to cancer drugs, but retain the ability to grow and multiply even under constant drug treatment. "This work gives us unprecedented insight into the dynamics of cell state changes after drug treatment," said Dr. Joan Brugge *(pictured)*. **Read More**

Bio-Inspired, Blood-Repelling Tissue Glue Could Seal Wounds Quickly

MIT News

Inspired by the sticky substance that barnacles use to cling to rocks, MIT engineers have designed a strong, biocompatible glue that can seal injured tissues and stop bleeding. "We are solving an adhesion problem in a challenging environment, which is this wet, dynamic environment of human tissues. At the same time, we are trying to translate this fundamental knowledge into real products that can save lives," says Dr. Xuanhe Zhao *(pictured)*. **Read More**

Machine Learning Discovers New Sequences to Boost Drug Delivery

MIT News

Duchenne muscular dystrophy, a rare genetic disease usually diagnosed in young boys, gradually weakens muscles across the body until the heart or lungs fail. MIT researchers including Carly Schissel *(pictured)* have now combined experimental chemistry with artificial intelligence to discover nontoxic, highly-active peptides that can aid delivery of phosphorodiamidate morpholino oligomers, which modify the dystrophin gene. **Read More**

Biological Engineers Find a New Target for Malaria Drugs

MIT News

Every year, more than 200 million people are infected with malaria, and nearly 500,000 die from the disease. Existing drugs can treat the infection, but the parasite that causes the disease has evolved resistance to many of them. An international team that includes MIT researchers has identified a potential new target: the acetyl coenzyme A synthetase, an enzyme that is necessary for the parasite's survival. **Read More**

The Search for a Regeneration Switch

Proto Magazine

An axolotl is hard to call cute, exactly. Paired off in rows of numbered tanks in a Harvard lab, the pale salamanders look out with pinprick eyes, and feathery red gills wave at each end of their wide smiles. Their primary appeal to scientists such as Dr. Jessica Whited *(pictured)*, an Assistant Professor with the Harvard Stem Cell Institute, is their shocking ability to regrow not only severed limbs but also to repair damaged internal organs such as the heart, lungs and ovaries. **Read More**

Scientists Discover How Immune Cells Survive Their Battle with Cancer

Massachusetts General Hospital

The body's immune system can recognize and attack cancer cells, but when those are able to overcome this assault, malignant tumors develop in patients. New research led by investigators at Massachusetts General Hospital uncovers some of the key factors that are needed for survival of immune cells in the battle against cancer. The findings point to potential therapeutic targets to tip the scales so that the immune system can effectively defeat aggressive cancers. **Read More**

New Method Opens the Door to Efficient Genome Writing in Bacteria

MIT News

Biological engineers at MIT have devised a new way to efficiently edit bacterial genomes and program memories into bacterial cells by rewriting their DNA. Using this approach, various forms of spatial and temporal information can be permanently stored for generations and retrieved by sequencing the cells' DNA. The new DNA writing technique, which the researchers call HiSCRIBE, is much more efficient than previously developed systems for editing DNA in bacteria. **Read More**

RNA-Modifying Protein Offers a Possible Lead for Treating Aggressive Cancers

Boston Children's Hospital

A protein that modifies RNAs, called METTL1, could be a target for treating some aggressive, difficult-to-treat cancers, suggests new research. "Our research gives strong evidence that targeting METTL1 is an effective treatment against certain cancers, helping to kill cancer cells while leaving the other cells in the body untouched," says Dr. Esteban Orellana *(pictured)*. **Read More**

A Test That Detects COVID-19 Variants in Your Spit

Wyss Institute

With the Delta variant wreaking havoc on unvaccinated populations and COVID-19 cases spiking around the world, the pandemic is far from over. Despite the impressively fast development of SARS-CoV-2 diagnostic tests over the last year and a half, the vast majority of patient samples must still be sent to a lab for processing, which slows down the pace of COVID-19 case tracking. **Read More**

New Drug Combo Shows Early Potential for Treating Pancreatic Cancer

MIT News

A team of MIT researchers has now developed an immunotherapy strategy and shown that it can eliminate pancreatic tumors in mice. "This work uses highly sophisticated, genetically engineered mouse models to investigate the details of immune suppression in pancreas cancer, and the results have pointed to potential new therapies for this devastating disease," says Dr. Tyler Jacks *(pictured)*. **Read More**

Upcoming Events in Boston

August 18 9:00 AM	**Microglia and Myelin: Improved Tools for Their Study and Molecular Interactions between Them** Online
August 18 12:00 PM	**Use Social Media to Promote Your Department/Center/Lab** Online
August 25 12:00 PM	**RDM Experts Mini-Workshop: Tools for Reproducible Research** Online
September 9 12:00 PM	**Topics in Bioengineering: Khuluod Al Jamal, Kings College London** Online
September 13 4:30 PM	**The Next Normal: Global Health** Online

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Research Assistant I
Boston Children's Hospital

Postdoctoral Research Fellow
Massachusetts General Hospital

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GoldfinchBio

Senior Scientist/Principal Scientist, Protein Purification Process Development
Cue Biopharma

Technical Associate I
MIT

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