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Publications of the Week

Shigella flexneri Disruption of Cellular Tension Promotes Intercellular Spread

First Author: Jeffrey Duncan-Lowey *(pictured, back row, center)* | Senior Author: Marcia Goldberg *(front row, fourth from left)*
Cell Reports | Massachusetts General Hospital and Harvard Medical School

The authors show that IpaC, a *Shigella flexneri* type 3 secretion system protein, binds the host cell-adhesion protein β-catenin and facilitates efficient protrusion formation. *S. flexneri* producing a point mutant of IpaC that cannot interact with β-catenin is defective in protrusion formation and spread. Spread is restored by chemical reduction of intercellular tension or genetic depletion of β-catenin. **Profile | Abstract**

Tolerogenic Nanoparticles Suppress Central Nervous System Inflammation

First Author: Jessica Kenison | Senior Author: Francisco Quintana *(pictured)*
PNAS | Brigham and Women's Hospital, the Broad Institute, BU School of Medicine, and AnTolRx, Inc.

The authors describe a nanoliposome (NLP)-based platform for the induction of antigen-specific tolerance via the modulation of signaling by the aryl hydrocarbon receptor. These NLPs suppress disease pathology and pathogenic autoimmunity in preclinical models of multiple sclerosis, providing a candidate antigen-specific therapeutic approach for the management of autoimmune disorders. **Profile | Abstract**

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Local News

Researchers Demonstrate How Chronic Alcohol Consumption Causes Inflammation in the Brain

Beth Israel Deaconess Medical Center

In a new study, scientists at Beth Israel Deaconess Medical Center shed light on the mechanisms by which chronic alcohol consumption causes damage to brain cells and cells of the central nervous system, which in turn potentially triggers addictive behavior. The findings also suppest possible targets for a therapeutic approach to chronic alcohol use disorder. **Read More**

Metabolism Influences Parasite's Resistance to Drugs

Science Daily

New insight on how a parasite can resist current therapies has been published in the open-access *eLife* journal from Peter Dumoulin *(pictured)* and colleagues at the Harvard T.H. Chan School of Public Health. The study in cultures of human cells infected with *Trypanosoma cruzi*, the parasite that causes Chagas disease, suggests that its metabolic state influences the effectiveness of azole drugs that inhibit its growth. **Read More**

Harvard Business School and Harvard's Department of Stem Cell and Regenerative Biology Receive $25 Million Gift to Fund Life Sciences Leadership

The Harvard Gazette

Harvard Business School (HBS) and Harvard's Department of Stem Cell and Regenerative Biology have received a $25 million gift from The Chris and Carrie Shumway Foundation. The gift will help bridge the worlds of business and science by fostering an environment of collaboration and innovation at HBS and across Harvard, supporting work on pathbreaking research and educating a new generation of leaders in the life sciences. **Read More**

Scientists Reverse Age-Related Vision Loss, Glaucoma Damage in Mice

Harvard Medical School

Harvard Medical School scientists have successfully restored vision in mice by turning back the clock on aged eye cells in the retina to recapture youthful gene function. The team's work represents the first demonstration that it may be possible to safely reprogram complex tissues, such as the nerve cells of the eye, to an earlier age. **Read More**

Genetic Treatment Plus Exercise Reverses Fatigue in Mice with Muscle Wasting Disease

Massachusetts General Hospital

A study carried out by researchers at Massachusetts General Hospital and collaborators has found that adding exercise to a genetic treatment for myotonic dystrophy type 1 was more effective at reversing fatigue than administering the treatment alone in a study using a mouse model of the disease. In fact, exercise alone provided some benefit, whereas the genetic treatment alone did not. **Read More**

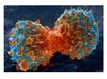
Bioprinting Algae to Grow Human Organs

The Naked Scientists

Over the past few years, medical scientists have been using 3D printing to create artificial human tissues with the goal of, one day, replacing their natural diseased counterparts. But cells need oxygen, and it's tough to engineer these 'bioprinted' body parts so that — while they're growing — they don't die of oxygen starvation or a toxic build up of carbon dioxide before blood vessels can plumb themselves in. Dr. Shrike Zhang's *(pictured)* team at Harvard Medical School is trying to solve the problem using algae. **Read More**

Combination Therapy Might Improve Outcomes in Treatment-Resistant Liver Cancer

Massachusetts General Hospital



A combination cancer therapy that is effective against treatment-resistant hepatocellular carcinoma (HCC) by inhibiting tumor growth and increasing survival has been identified by researchers at Massachusetts General Hospital. In a new paper, the investigators describe how the dual therapy improved survival in mouse models of HCC beyond what each therapy could have achieved alone. **Read More**

An Ionic Forcefield for Nanoparticles

The Harvard Gazette

Nanoparticles struggle to get past the immune system's first line of defense: proteins in the blood serum that tag potential invaders. Because of this, only about one percent of nanoparticles reach their intended target. Dr. Eden Tanner *(pictured)*, a former postdoctoral fellow in Dr. Samir Mitragotri's group at the Harvard School of Engineering and Applied Sciences, has developed an ionic forcefield that prevents proteins from binding to and tagging nanoparticles. **Read More**

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Upcoming Events in Boston

December 8
10:00 AM
BioPharma Manufacturing in Massachusetts: A Talent Powerhouse Continues to Fuel Growth
Online

December 8
4:00 PM
MIT Biology Colloquium Series: Dr. Paul Turner
Online

December 10
12:15 PM
Accelerating Breakthroughs in the Life Sciences
Online

December 10
5:30 PM
Equity, Diversity, and Inclusion in Health Care in the Time of COVID-19
Online

December 16
4:00 PM
Virtual BioXchange
Online

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Science Jobs in Boston

Director of Research
Harvard Medical School

Assistant Professor, Neuroscience
Tufts University School of Medicine

Scientific Sales Representative, Cell Culture Products
STEMCELL Technologies

Scientist/Senior Scientist, Protein Purification Process Development
Cue Biopharma

Senior Scientist, *In Vivo* Pharmacology
Xilio Therapeutics

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Submit your articles and events by reaching out to us at info@scienceinboston.com.