

### Publications of the Week

#### Programmable CRISPR-Responsive Smart Materials

First Author: Max English | Senior Author: James Collins (*pictured*)  
 Science | The Wyss Institute and the Broad Institute



Stimuli-responsive materials activated by biological signals play an increasingly important role in biotechnology applications. The authors exploit the programmability of CRISPR-associated nucleases to actuate hydrogels containing DNA as a structural element or as an anchor for pendant groups. These materials allow for a range of *in vitro* applications in tissue engineering, bioelectronics, and diagnostics. [Abstract](#)

#### Therapeutic Genome Editing of Triple-Negative Breast Tumors Using a Noncationic and Deformable Nanolipogel

First Author: Peng Guo | Senior Author: Marsha Moses (*pictured*)  
 PNAS | Boston Children's Hospital



Triple-negative breast cancer (TNBC) is a devastating breast cancer subtype that occurs more frequently in women under 50 years of age, in African American women, and in individuals carrying a *BRCA1* gene mutation. The authors report the synthesis and application of a novel CRISPR nanotherapeutic to effectively knock out Lipocalin 2 (*Lcn2*), a breast cancer-promoting gene, in TNBC tumors via *in vivo* genome editing, leading to a significant suppression of TNBC tumor growth. [Abstract](#)

#### Resolving Medulloblastoma Cellular Architecture by Single-Cell Genomics

First Author: Mariella Filbin (*pictured*) | Senior Author: Paul Northcott  
 Nature | Boston Children's Hospital and Dana-Farber Cancer Research Institute



Medulloblastoma is a malignant childhood cerebellar tumor type that comprises distinct molecular subgroups. Whereas genomic characteristics of these subgroups are well defined, the extent to which cellular diversity underlies their divergent biology and clinical behavior remains largely unexplored. The authors used single-cell transcriptomics to investigate intra- and intertumoral heterogeneity in 25 medulloblastomas spanning all molecular subgroups. [Abstract](#)

[View All Publications](#)

### Awards

#### GSBS receives Innovations in Research and Research Education Award

UMass Medical School



The Graduate School of Biomedical Sciences (GSBS) at the University of Massachusetts has received a 2019 Innovations in Research and Education Award from the Association of American Medical Colleges. The school's submission, *Integrating Career and Professional Development in the PhD Curriculum*, tied for third place in the competition developed to highlight innovations that support the next generation of researchers. [Read More](#)

[View All Awards](#)

### Local News

#### Pancreas-on-a-Chip

Harvard Gazette



Harvard scientists have combined organ-on-a-chip and stem cell technologies to make a powerful tool for diabetes research and beta cell transplantation. In a study led by Harvard University's Douglas Melton (*pictured*), microfluidics and human insulin-producing beta cells have been integrated in an islet-on-a-chip. By combining two powerful technologies, scientists are taking diabetes research to a whole new level. [Read More](#)

#### How a Zebrafish Model May Hold a Key to Biology

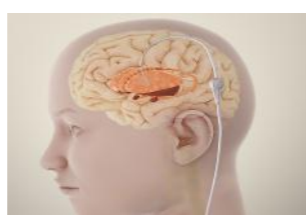
Harvard Gazette



Scientists from Harvard University have found striking similarities in computation and heat representation between known zebrafish biological neural networks and their artificially trained neural networks. The authors think that it may be possible to create artificial networks for other animals. If it is, they could prove to be important guides to understanding biological networks. [Read More](#)

#### A Much Less Invasive Way to Monitor Pressure in the Brain

MIT News



Traumatic brain injuries, as well as infectious diseases such as meningitis, can lead to brain swelling and dangerously high pressure in the brain. Current techniques for measuring pressure within the brain are so invasive that the measurement is only performed in the patients at highest risk. However, that may soon change, now that a team of researchers from MIT and Boston Children's Hospital has devised a much less invasive way to monitor intracranial pressure. [Read More](#)

#### The Electricity in Your Body Could Be the Key to Curing a Debilitating Disease

News@Northeastern



More than 30 million adults in the United States suffer from debilitating pain, stiffness, and swelling in their joints caused by osteoarthritis. There are medications that can treat the symptoms, prevent cartilage from breaking down and, in some cases, even restore function to the joints. But getting these drugs into the cartilage has been a challenge. Dr. Ambika Bajpayee (*pictured*) believes she has the solution: bio-electricity. [Read More](#)

#### Study Links Certain Metabolites to Stem Cell Function in the Intestine

MIT News



Molecules called ketone bodies may improve stem cells' ability to regenerate new intestinal tissue. MIT biologists, led by Omer Yilmaz (*pictured*), have discovered an unexpected effect of a ketogenic, or fat-rich, diet: They showed that high levels of ketone bodies, molecules produced by the breakdown of fat, help the intestine to maintain a large pool of adult stem cells, which are crucial for keeping the intestinal lining healthy. [Read More](#)

#### Lyme Disease Preventative Developed at Umms Moves Closer to Clinical Trial

UMass Medical School



The Lyme pre-exposure prophylaxis (Lyme PrEP) being developed by MassBiologics at UMass Medical School may be headed to a Phase I clinical trial as soon as next year, and brought to market in 2022. Lyme PrEP provides a monoclonal antibody that protects against the disease, said Dr. Mark Klemmner (*pictured*), Executive Vice Chancellor for MassBiologics and Professor of Medicine. [Read More](#)

#### Somerville's Finch Raises \$53M to Develop Bacteria Pills for *Clostridium difficile*, Autism

Boston Business Journal



Somerville biotech Finch Therapeutics Group could be one of the first local startups hoping to use natural bacteria to fight chronic diseases to bring a product to the market. Led by Mark Smith (*pictured*), they nabbed \$53 million in new financing from investors including OCV Partners and Symbiosis LLC — which also invested in local bacteria-leveraging startup Vedanta Biosciences. The Series C round follows the company's \$36 million fundraising in March 2018. [Read More](#)

#### Head to Head: Study Comparing Three Similar Frontline Drugs for Advanced Breast Cancer Reveals Important Differences

Harvard Medical School



Every year, more than 250,000 women in the U.S. are diagnosed with breast cancer. When detected early, patients with the most common form—which tests positive for hormone receptors (HR+) and negative for the HER2 receptor—usually respond well to treatment. But for those in advanced stages, few treatment options existed until the recent emergence of a new class of drugs known as CDK4/6 inhibitors. [Read More](#)

[View All Articles](#) | [Submit an Article](#)

### Upcoming Events in Boston

- September 5 5:00 PM **STEMCELL Career Open House**  
STEMCELL Cambridge
- September 6 8:30 AM **2nd Annual Dana-Farber Chemical Biology Symposium**  
Jimmy Fund Auditorium
- September 9 7:00 AM **AI Applications for Drug Discovery and Development**  
Boston Convention and Exhibition Center
- September 10 11:45 AM **From Bedside to Bench—Streamlined Workflow for Disease-Modeling Using Patient-Specific iPSC-Derived Neurons**  
STEMCELL Cambridge
- September 11 2:30 PM **Career Pathways for Researchers Interested in Government and Regulatory Agencies**  
Harvard Medical School

[View All Events](#) | [Submit an Event](#)

### STEMCELL Jobs

- Scientific Inside Sales Representative (Cambridge, MA)**  
[STEMCELL Technologies](#)
- Scientific Sales Representative, Cell Separation Products (Cambridge, MA)**  
[STEMCELL Technologies](#)
- Associate Product Manager, Pluripotent Stem Cell Biology (Vancouver, BC)**  
[STEMCELL Technologies](#)
- Customer Master Data Specialist (Vancouver, BC)**  
[STEMCELL Technologies](#)
- Senior Mechanical Engineer, Lab Automation (Vancouver, BC)**  
[STEMCELL Technologies](#)

[View 98 Other STEMCELL Jobs](#)

### Other Science Jobs in Boston

- Computational Biologist II**  
Broad Institute
- Clinical Scientist**  
CRISPR Therapeutics
- Research Associate/Senior Research Associate, Analytical Development**  
Flagship Pioneering
- Sr. Research Associate / Research Scientist – Cellular Analytical Development**  
Semma Therapeutics
- Senior Research Associate, Vaccine Discovery**  
Takeda

[View 49 Other Science Jobs](#) | [Submit a Job](#)


Submit your articles and events by reaching out to us at [info@scienceinboston.com](mailto:info@scienceinboston.com).

BROUGHT TO YOU BY



**STEMCELL Technologies**  
 Products | Services

**STEMCELL's Science Newsletters**  
 Free Weekly Updates on Your Field

**The Stem Cell Podcast**  
 Interviews and Updates on Stem Cell Science