

**Publications of the Week**
**Drug GRADE: An Integrated Analysis of Population Growth and Cell Death Reveals Drug-Specific and Cancer Subtype-Specific Response Profiles**

First Author: Hannah Schwartz (pictured, back row, left) | Senior Author: Michael Lee (front row, right)  
Cell Reports | UMass Medical School



Most drugs affect both proliferation and death, but in different proportions and with different relative timing. The authors created a data visualization and analysis platform called drug GRADE, which characterizes the degree to which death contributes to an observed drug response. GRADE captures drug- and genotype-specific responses, which are not captured using traditional pharmacometrics.

[Profile](#) | [Abstract](#)

**The Role of Bone Morphogenetic Protein Signaling in Non-Alcoholic Fatty Liver Disease**

First Author: Timothy Thayer | Senior Author: Rajeev Malhotra (pictured)  
Scientific Reports | Massachusetts General Hospital



Bone morphogenetic protein (BMP) signaling is known to contribute to hepatic fibrosis, but the role of BMP signaling in the development of non-alcoholic fatty liver disease (NAFLD) is unclear. In this study, treatment with either of two BMP inhibitors reduced hepatic triglyceride content in diabetic mice. BMP inhibitor-induced decrease in hepatic triglyceride levels was associated with decreased mRNA encoding Dgat2, an enzyme integral to triglyceride synthesis. [Profile](#) | [Abstract](#)

**Tau Molecular Diversity Contributes to Clinical Heterogeneity in Alzheimer's Disease**

First Author: Simon Dujardin | Senior Author: Bradley Hyman (pictured)  
Nature Medicine | Massachusetts General Hospital, Boston Children's Hospital, Merck, and Harvard Medical School



The authors hypothesized that the kinetics of tau spread may vary if the properties of the propagating tau proteins vary across individuals with Alzheimer's disease (AD). They carried various assays to characterize tau in 32 patients with AD. They found striking patient-to-patient heterogeneity in the hyperphosphorylated species of soluble, oligomeric, seed-competent tau. [Abstract](#)

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**Awards**
**Dana-Farber Researcher Receives Highest Honor from Society for Immunotherapy of Cancer**

Dana-Farber



The Society for Immunotherapy of Cancer has announced that Dr. Gordon Freeman (pictured) of Dana-Farber Cancer Institute is the co-recipient of the 2020 Richard V. Smalley, MD, Memorial Award and Lectureship, the society's highest honor. The research conducted by Freeman and the co-recipients formed the foundation for developing immune checkpoint blockade immunotherapies.

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**Dana-Farber Faculty Recognized with AACR 2020 Team Science Awards**

Dana-Farber



Six Dana-Farber faculty members, including Dr. Rameen Beroukhi (pictured), have been recognized by the American Association for Cancer Research (AACR) with 2020 AACR Team Science Awards for their role in the Cancer Genome Atlas Project (TCGA). Since its inception in 2006, TCGA has opened new avenues of research to improve the prevention, diagnosis, and treatment of numerous cancers.

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**Yasaman Gholamalipour Awarded Fellowship by Huntington's Disease Society of America**

UMass Medical School

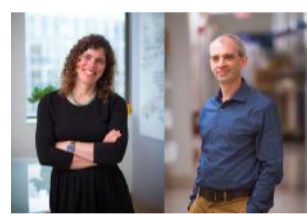


UMass Medical School postdoctoral associate Dr. Yasaman Gholamalipour (pictured) has been awarded the Huntington's Disease Society of America Berman-Topper Family HD Career Development Fellowship for 2020. The HDSA fellowship provides \$80,000 of funding per year for three years to scientists and clinicians who intend to make Huntington's disease a part of their long-term career plan.

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**Two Whitehead Institute Members Named to Endowed Professorships**

Whitehead Institute



The Whitehead Institute has announced appointments to two endowed chairs. Institute Member Dr. Mary Gehring (pictured, left), whose research focuses on plant epigenetics, has been appointed to the Landon T. Clay Career Development Chair. Dr. Iain Cheeseman (pictured, right), whose research focuses on the kinetochore, has been appointed to the Margaret and Herman Sokol Chair in Biomedical Research. [Read More](#)

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**Local News**
**A Focused Approach to Imaging Neural Activity in the Brain**

MIT News



When neurons fire an electrical impulse, they also experience a surge of calcium ions. By measuring those surges, researchers can indirectly monitor neuron activity. One drawback to this technique is the crosstalk generated by the axons and dendrites that extend from neighboring neurons. MIT engineers have now developed a way to overcome that issue, by creating calcium indicators, or sensors, that accumulate only in the body of a neuron. [Read More](#)

**Brain Targeting Program: Shuttles for Brain Delivery of Therapeutics and Diagnostics**

Wyss Institute



In its Brain Targeting Program, a Wyss Institute team is developing improved approaches to target drugs and diagnostics to the brain. Leveraging the human blood-brain barrier (BBB) chip technology developed by Dr. Donald Ingber's team, combined with advanced antibody R&D capabilities, the program is developing next-generation human antibody shuttles specific for known and potential novel BBB transport proteins. [Read More](#)

**A Fish Called Spondo**

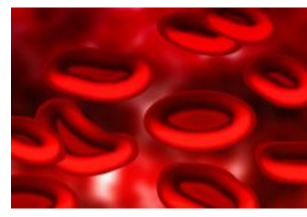
Harvard Medical School



A spine is a spine is a spine — or is it? By combining paleontology, cell biology and developmental genetics, Dr. Matthew Harris from the Blavatnik Institute and colleagues have pinpointed a key player distinguishing fish and human spines and discovered a way to reverse that evolutionary divergence. In doing so, they created a zebrafish model for congenital scoliosis, a malformation of the spine that's present at birth. [Read More](#)

**"Genetic Trades" of More than 50 Gene Variants Are Linked to Common Blood Disorder**

Broad Institute



Researchers at the Broad Institute, Harvard Medical School, and Brigham and Women's Hospital have uncovered a key genetic mechanism that helps drive clonal hematopoiesis, a common, age-related condition in which some blood stem cells acquire a mutation and then give rise to cells, or clones, that outgrow normal blood cells. [Read More](#)

**These Muscle Cells Are Guideposts to Help Regenerative Flatworms Grow Back Their Eyes**

Whitehead Institute



If anything happens to the eyes of the tiny, freshwater-dwelling planarian *Schmidtea mediterranea*, they can grow them back within just a few days. How they do this is a scientific conundrum — one that Peter Reddien's lab at the Whitehead Institute has been studying for years. The lab's latest project has identified a new type of cell that likely serves as a guidepost to help route axons from the eyes to the brain as the worms complete the difficult task of regrowing their neural circuitry. [Read More](#)

**Acid Test: Study Finds pH Connects Metabolism and Cell Signaling**

Harvard Medical School



A Harvard team studying embryonic development has identified a mechanism that helps explain how cells choose to become different types. The researchers, led by Dr. Olivier Pourquie (pictured), previously found that changes in metabolism influence how cells communicate with each other, which in turn affects what cell type they become. Now, they have pinpointed how metabolism and cell signaling are connected: by a change in the acidity, or pH levels, of the cellular environment. [Read More](#)

**Takeda and Carmine Enter \$900 Million Non-Viral Gene Therapy Collaboration**

BioSpace



Cambridge-based Carmine Therapeutics inked a research collaboration deal with Japan's Takeda Pharmaceutical to develop and commercialize non-viral gene therapies for two rare diseases. Typically, gene therapies rely on viruses as vectors for delivering gene therapies to target cells, usually adeno-associated viruses. Carmine's REGENT technology platform uses red blood cell extracellular vesicles. [Read More](#)

**Engineers Use "DNA Origami" to Identify Vaccine Design Rules**

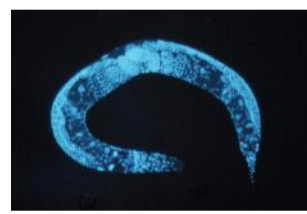
MIT News



By folding DNA into a virus-like structure, MIT researchers led by Dr. Mark Bathe (pictured) have designed HIV-like particles that provoke a strong immune response from human immune cells grown in a lab dish. Such particles might eventually be used as an HIV vaccine. The researchers are now working on adapting this approach to develop a potential vaccine for SARS-CoV-2, and they anticipate it could work for a wide variety of viral diseases. [Read More](#)

**How Worms Move: Dopamine Helps Nematodes Coordinate Motor Behaviors**

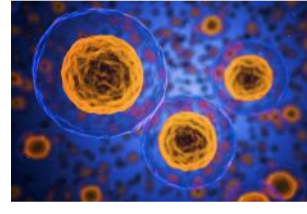
MIT News



When a worm speedily roams about a food patch, it methodically lays its eggs as it goes. A new study by neuroscientists at MIT's Picower Institute for Learning and Memory investigates this example of action coordination — where egg-laying is coupled to the animal's roaming — to demonstrate how a nervous system coordinates distinct behavioral outputs. [Read More](#)

**Largest Source of Alpha-1 Antitrypsin Deficiency Stem Cells Collected**

BU School of Medicine



Researchers from the Center for Regenerative Medicine at Boston University's School of Medicine have assembled the largest repository of patient derived stem cells from patients with alpha-1 antitrypsin deficiency (AATD). AATD is a genetic disease that can affect the liver or lung. Patients lack the alpha-1 protein (made by the liver) which is designed to protect tissues in the body from being attacked by its own enzymes. [Read More](#)

**After its \$2B Gilead Pact, Goldfinch Bio Nabs a Cool \$100M Series B**

Fierce Biotech



Still flying high from its major biobucks pact with Gilead Sciences, kidney disease biotech Goldfinch Bio has followed up with a \$100 million funding round. Based in Cambridge, Massachusetts, Goldfinch Bio aims to use a precision medicine approach to better treat kidney disease. Its pipeline is based on its Kidney Genome Atlas, a patient registry containing genomic, transcriptomic and proteomic data with thousands of anonymized clinical patient profiles. [Read More](#)

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**Upcoming Events in Boston**

|                    |   |
|--------------------|---|
| July 8<br>12:00 PM | <b>BrainMap: Making Sense of Time in the Human Mind</b><br>Online                     |
| July 8<br>12:00 PM | <b>Deciphering the Cell Cycle: The Role of Cell Cycle Control in Cancer</b><br>Online |
| July 9<br>12:00 PM | <b>Topics in Bioengineering: Dr. Raphael Levy</b><br>Online                           |
| July 15<br>3:00 PM | <b>Tissue Talks: Dr. Robert Langer</b><br>Online                                      |
| July 17<br>9:00 AM | <b>LabLinks: Targeting the DNA Damage Response in Cancer</b><br>Online                |

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**Other Science Jobs in Boston**

- Scientist, mRNA and LNP Characterization**  
Moderna
- Scientist/Senior Scientist, Proteomics**  
Translate Bio
- Scientist II, Electrophysiology and Neural Circuits**  
Sage Therapeutics
- Research Associate I, Blood Biopsy**  
Broad Institute
- Biochemistry Research Scientist, Respiratory Sciences**  
Novartis

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