

Publications of the Week
Tumor Cells Dictate Anti-Tumor Immune Responses by Altering Pyruvate Utilization and Succinate Signaling in CD8⁺ T Cells

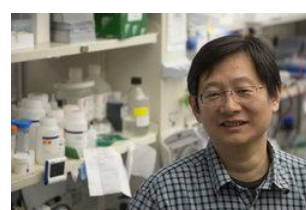
First Author: Iliana Elia (*pictured, front row, center*) | Senior Author: Marcia Haigs (*front row, far right*)
 Cell Metabolism | Blavatnik Institute, Harvard Medical School, Brigham and Women's Hospital, and Dana-Farber Cancer Institute



The tumor microenvironment (TME) is a unique metabolic niche that can inhibit T cell metabolism and cytotoxicity. To dissect the metabolic interplay between tumors and T cells, the authors establish an *in vitro* system that recapitulates the metabolic niche of the TME and allows them to define cell-specific metabolism. They identify tumor-derived lactate as an inhibitor of CD8⁺ T cell cytotoxicity, revealing an unexpected metabolic shunt in the TCA cycle. [Abstract](#)

Targeting Micro-Environmental Pathways by PROTACs as a Therapeutic Strategy

First Authors: Jing Liu and Yunhua Peng | Senior Author: Wenyi Wei (*pictured*)
 Seminars in Cancer Biology | Beth Israel Deaconess Medical Center and Harvard Medical School



The Tumor microenvironment (TME) composes of multiple cell types and non-cellular components, which supports the proliferation, metastasis, and immune surveillance evasion of tumor cells, as well as accounts for the resistance to therapies. Therefore, therapeutic strategies using small molecule inhibitors and antibodies to block potential targets in TME are practical for cancer treatment. [Abstract](#)

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Local News
Microparticles Could Be Used to Deliver “Self-Boosting” Vaccines

MIT News



Most vaccines, from measles to COVID-19, require a series of multiple shots before the recipient is considered fully vaccinated. To make that easier to achieve, MIT researchers in Dr. Ana Jaklenec's (*pictured*) group have developed microparticles that can be tuned to deliver their payload at different time points, which could be used to create “self-boosting” vaccines. [Read More](#)

Cross-Presented and Accounted For

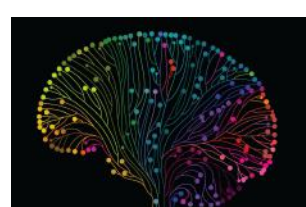
Koch Institute



Immune checkpoint blockade therapies represent one of the most promising developments in cancer research and treatment, enabling cytotoxic killer T cells to attack and destroy tumor cells by removing their molecular “brakes.” A team of researchers led by Dr. Stefani Spranger (*pictured*) in collaboration with Dr. Forest White is shedding more light on the underlying biological mechanisms that lead to successful responses to checkpoint blockade therapy. [Read More](#)

New Antibody Therapy Shows Promise for Advanced Pediatric Brain Cancer

Massachusetts General Hospital



Effective and safe treatments are needed for medulloblastoma — the most common type of cancerous brain tumor in children — especially for patients whose cancer has spread to the spinal cord. A recent Phase I clinical trial led by researchers at Atrium Health Levine Children's Hospital and Massachusetts General Hospital has generated promising results for a new blocking antibody therapy that targets a protein critical to medulloblastoma cells' ability to multiply and spread. [Read More](#)

Study Describes Mechanism of Chromosomal Disarray in Cancer Cells

Dana-Farber Cancer Institute



In a recent study, researchers led by Drs. David Pellman (*pictured*) and Shangming Tang generated cells with micronuclei, plucked out the micronuclei, and examined the chromosomal material within them. When the Dana-Farber researchers purified the micronuclei from the cells they'd generated, they found a huge throng of RNA-DNA hybrids, far more than is found on chromosomes from a normal cell's nucleus. [Read More](#)

International Consortium Launches Catalog of Overlooked Parts of the Genome

Broad Institute



Dr. John Prensner (*pictured*) from the Broad Institute discusses a new effort to identify oft-missed protein-coding sequences in the human genome called non-canonical open reading frames (ORFs), which could yield insights into disease and what makes humans unique. Last year, researchers found that, of 553 ORFs they examined, about half showed signs of producing proteins; many had implications for the survival of cancer cells. [Read More](#)

Form Follows Function — Structure of Cell Growth Regulator GATOR2 Finally Revealed

Whitehead Institute



An important function of our cells' signaling pathways is to coordinate growth with environmental cues, such as the availability of nutrients in the cell's environment. Cell growth plays an important role in normal cell function — for example, building muscle in response to exercise — and it also goes awry in diseases such as cancer. The protein complex GATOR2 plays an important role in sensing and relaying information to the mammalian target for rapamycin complex 1. [Read More](#)

Two Different White Blood Cell Types Play Opposing Roles in Affecting Heartbeat Irregularities After Heart Attack

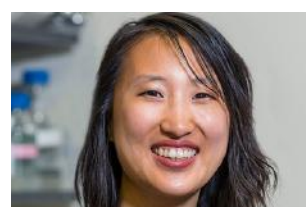
Massachusetts General Hospital



New research led by Dr. Matthias Nahrendorf (*pictured*) and a team of investigators at Massachusetts General Hospital reveals that two different white blood cell types influence ventricular tachycardia (VT) in the heart, suggesting that treatments that influence these cells may help reduce patients' risk of sudden cardiac death. The work is based on the knowledge that cardiac conditions (such as heart attacks) that increase the risk of VT and other heartbeat irregularities lead to massive changes in the white blood cell populations surrounding the heart. [Read More](#)

Yiyin Erin Chen and Sam Chunte Peng Named as Core Members of Broad Institute and MIT

Broad Institute



The Broad Institute has named Dr. Erin Chen (*pictured*), a dermatologist and microbiologist, and Dr. Sam Peng, a biophysicist and physical chemist with expertise in single-molecule imaging, as core institute members. Dr. Chen's lab will study the communication between the immune system and the diverse microbes that colonize every surface of the human body, and Dr. Peng's lab will develop novel probes and microscopy techniques to visualize the dynamics of individual molecules in living cells. [Read More](#)

Andrés Cubillos-Ruiz on Making Antibiotics Safer for Your Gut

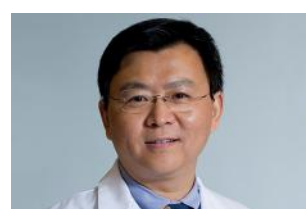
Wyss Institute



Dr. Andrés Cubillos-Ruiz (*pictured*) has long been fascinated by the power of microbes. Before coming to the Wyss, he studied how ocean microbes maintain the whole ecosystem of the planet through their metabolic actions. Seeing them work on such a large scale, he grew curious about the ones inside our bodies. Now, he is working to protect the microbes in our gut from the harmful effects of antibiotics using engineered live biotherapeutic products. [Read More](#)

Alzheimer's Disease Biomarkers Can Predict Postoperative Delirium

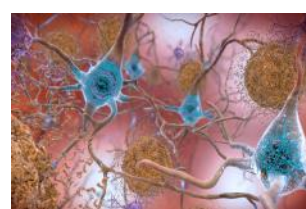
Massachusetts General Hospital



A new study led by Dr. Zhongcong Xie (*pictured*) reveals that two newly identified plasma biomarkers of Alzheimer's disease can predict postoperative delirium, one of the most common postoperative complications in older patients. The findings indicate the potential overlap between the mechanisms that cause Alzheimer's disease and postoperative delirium. [Read More](#)

Could a Computer Diagnose Alzheimer's Disease and Dementia?

The Brink



It takes a lot of time — and money — to diagnose Alzheimer's disease. After running lengthy in-person neuropsychological exams, clinicians have to transcribe, review, and analyze every response in detail. But researchers at Boston University have developed a new tool that could automate the process and eventually allow it to move online. [Read More](#)

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August 2 11:00 AM	American Heart Association Funding Webinar Online
August 11 5:00 PM	STAT Locals Cambridge Brewing Co., Kendall Square
September 14–16 8:00 AM	Forsyth Dentech 2022 Forsyth Institute & Online
September 20 10:00 AM	Precision Medicine 2022: The New “Normal”? Joseph B. Martin Conference Center & Online

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