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Publications of the Week

Cryo-EM Structure of an Activated GPCR-G Protein Complex in Lipid Nanodiscs

First Author: Meng Zhang | Senior Author: Gerhard Wagner (pictured)
Nature Structural & Molecular Biology | Blavatnik Institute, Harvard Medical School, Dana-Farber Cancer Institute, and Brigham & Women's Hospital

G-protein-coupled receptors (GPCRs) are the largest superfamily of transmembrane proteins and the targets of over 30% of currently marketed pharmaceuticals. Although several structures have been solved for GPCR-G protein complexes, few are in a lipid membrane environment. The authors report cryo-EM structures of complexes of neurotensin, neurotensin receptor 1 and $G\alpha_i\beta_1\gamma_1$ in two conformational states, resolved to resolutions of 4.1 and 4.2 Å.

Abstract

Clinical Implications of Colorectal Cancer Stem Cells in the Age of Single-Cell Omics and Targeted Therapies

First Author: Markus Frank | Senior Author: Natasha Frank (pictured)
Gastroenterology | Boston Children's Hospital, Harvard Medical School, and Brigham & Women's Hospital

The cancer stem cell (CSC) concept emerged from the recognition of inherent tumor heterogeneity and suggests that within a given tumor, in analogy to normal tissues, there exists a cellular hierarchy composed of a minority of more primitive cells with enhanced longevity that give rise to shorter-lived, more differentiated cells, which on their own are not capable of tumor perpetuation. The authors discuss the potential implications of next-generation CSC analyses for currently approved and experimental targeted colorectal cancer therapies. Abstract

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Awards

Gyongyi Szabo, Chief Academic Officer, Awarded the Distinguished Scientific Achievement Award from the American Liver Foundation

Beth Israel Deaconess Medical Center

Gyongyi Szabob (pictured), Chief Academic Officer of Beth Israel Deaconess Medical Center and Beth Israel Lahey Health, has received the American Liver Foundation's 2020 Distinguished Scientific Achievement Award. This national award is considered one of the highest honors in the field of liver disease research and annually recognizes one individual who has demonstrated outstanding professional and academic achievements. Read More

Dr. Shobini Jayaraman Named March's Distinguished Staff of the Month

BU School of Medicine

The Dean's Office has announced that Dr. Shobini Jayaraman (pictured) has been named Distinguished Staff of the Month for March. Dr. Jayaraman is a senior research scientist in Physiology & Biophysics. "Dr. Jayaraman is not only a brilliant scientist, she also is compassionate and very generous. She goes beyond her duties to help faculty, staff and students use an instrument or perform specific procedures." Read More

2021 Shipley Pilot Grant Awards

BU School of Medicine

Congratulations to the recipients of the 2021 Shipley Pilot Grant Award, including Dr. Rachel Flynn (pictured), Assistant Professor of Pharmacology & Experimental Therapeutics. Dr. Flynn seeks to identify novel biomarkers that can predict progression to metastatic disease and ultimately, shift the standard of care for the treatment of more aggressive subtypes. Read More

Ashley Penvose Is the 2020 Winner of the Belamarich Award

Boston University Biology

The 2020 winner of the Belamarich Award for Outstanding Doctoral Dissertation in Biology goes to Dr. Ashley Penvose (pictured) for her work on determinants of the DNA binding and gene regulatory specificity for type II nuclear receptors. Dr. Penvose attained her doctoral degree in Cell and Molecular Biology at BU and was a graduate research fellow in the Sluggett lab from 2012 to 2019. Read More

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Local News

Study Offers an Explanation for Why the *APOE4* Gene Enhances Alzheimer's Risk

MIT News

One of the most significant genetic risk factors for developing Alzheimer's disease is a gene called *APOE4*, which is carried by almost half of all Alzheimer's patients. A new study from MIT shows that this gene has widespread effects on brain cells' ability to metabolize lipids and respond to stress. The researchers hope that their findings will lead to clinical studies of choline in people who carry the *APOE4* gene, who make up about 14 percent of the overall population. Read More

March Madness for Research Teams

TuftsNow

It's March — that time of year when college teams go head-to-head and we avidly follow them as they move up the bracket to the championship. We are talking, of course, about STAT Madness — a virtual competition among research teams for the best innovations in biomedicine of the year. This year, two teams from Tufts made the cut to the starting round of 64, selected by the competition's sponsor, STAT, a leading health, medicine, and life sciences news publication. Read More

Frederic Vigneault on Developing Therapeutic Technologies to Improve the Quality of Life for Patients

Wyss Institute

When Frederic Vigneault (pictured) joined the Wyss after working in industry, his first reaction was that the Wyss was like a science playground, with its constant stream of new ideas and opportunities to explore and translate innovations. He is currently working on three therapeutic Validation Projects as a member of the Advanced Technology Team. Read More

Researchers Identify Biochemical Process Responsible for Producing Toxic Tau

BU School of Medicine

Tau is a protein that helps stabilize the internal skeleton of nerve cells in the brain. Groups of toxic tau protein, termed tau oligomers, drive disease progression and memory loss in Alzheimer's disease. A new study from researchers at BU School of Medicine shows how these tau oligomers form, and, correspondingly, how they can be prevented. Read More

Redirected Enzymes May Open Doors to Novel Therapeutics

The Broad Institute

Botulinum toxin is a powerful microbial poison approved by the FDA to treat a suite of maladies like chronic migraines, uncontrolled blinking, and certain muscle spasms. A team of researchers led by Dr. David Liu (pictured) has now shown that they can engineer the toxin to create a suite of adaptable and super-selective proteases (enzymes that cut proteins to either activate or deactivate them) targeting a vast array of disease-associated proteins. Read More

Break Through Cancer Launches Collaborative Model across Top U.S. Research Institutions in Pursuit of Cancer Cures

Dana-Farber Cancer Institute

Break Through Cancer has announced its formal launch as a public foundation designed to find new solutions to the most intractable challenges in cancer. The foundation is being launched with an extraordinary challenge pledge of $250 million from Mr. and Mrs. William H. Goodwin, Jr. and their family, and the estate of William Hunter Goodwin III. Read More

Basic Cell Health Systems Wear down in Huntington's Disease, Analysis Shows

MIT News

Researchers employed a software system called Geomic to integrate vast amounts of gene expression data from the brains of mice modeling Huntington's disease. By comparing multidimensional mathematical surfaces plotted from the data, they were able to gain new insights into how gene expression differs in the disease based on many dimensions such as time, cell type and the extent of mutation in the huntington gene. Read More

Preventative Shot for Lyme Disease, Developed at UMass Medical School, Enters Clinical Trial

UMass Med News

The first human clinical trial of Lyme PrEP, a seasonal shot to prevent Lyme disease, has begun enrolling volunteers to evaluate the safety and pharmacology of the treatment. A pre-exposure prophylaxis developed at MassBiologics of UMass Medical School, Lyme PrEP uses a monoclonal antibody that protects against the disease. Approximately 60 volunteers will be enrolled in the Phase I trial. Read More

Atherosclerosis Can Accelerate the Development of Clonal Hematopoiesis

Massachusetts General Hospital

Studies have shown that clonal hematopoiesis often goes hand in hand with atherosclerosis and cardiovascular disease. Patients with atherosclerosis suffer from hyperlipidemia and inflammation, two conditions that are known to chronically boost hematopoietic stem cell division rates. In a new study, researchers demonstrate that this increased division accelerates the development of clonal hematopoiesis. Read More

Spotlight on Rare Disease Research at Massachusetts General Hospital

Bench Press

Rare Disease Day takes place on the last day of February each year to raise awareness about rare diseases and their impact on patients' lives. Despite challenges, researchers at Mass General are continuing to look for new insights into the causes of rare diseases and potential pathways to treatment. This includes work by Drs. Alexander Marneros and Susan Cotman. Read More

Car T-Cell Therapy Generates Lasting Remissions in Patients with Multiple Myeloma

Dana-Farber Cancer Institute

In a major advance in the treatment of multiple myeloma, a CAR T-cell therapy has generated deep, sustained remissions in patients who had relapsed from several previous therapies, an international clinical trial has found. Based on these results, an application has been submitted to the FDA for approval of idecabtagene as a standard therapy for patients with relapsed or treatment-resistant myeloma. Read More

Antibody Mischief

Harvard Medical School

Compared with adults, children are far more likely to have minimal or no illness when infected with SARS-CoV-2. Yet, a small subset of them develop a serious inflammatory condition called multisystem inflammatory syndrome in children. Now a newly published study sheds much-needed light on the drivers behind such different disease manifestations in both children and adults. Read More

Unlocking the Colors of Insect Vision

The Harvard Gazette

Researchers have described a novel method for isolating light-sensitive proteins found in the eyes of insects — called opsins — and detailed their molecular history, structure, and function to determine what colors an insect can see. The researchers used the method to discover previously unknown opsins and their evolutionary history in the visual system of an iconic type of lycaenid butterfly, *Eumaeus atala*, also known as the Atala hairstreak. Read More

Postdoc Spotlight: María Angélica Bravo Núñez

Harvard University Department of Molecular and Cellular Biology

Postdoc Dr. María Angélica Bravo Núñez (pictured) of the Murray Lab was recently named as a 2021 Hanna H. Gray Fellow. Her decision to pursue a career in biology was strongly influenced by her high school biology teacher. Growing up in Mexico City, Bravo Núñez initially planned to focus on math. However, her teacher pointed out that Bravo Núñez was doing well in biology and chemistry, as well as math, and that studying biology would allow her to combine those interests. Read More

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Upcoming Events in Boston

March 9
11:00 AM
Massbio Town Hall: One Year On: How Has the Life Sciences Industry Changed to Address Current and Future Global Health Crises?
Online

March 11
3:30 PM
MassBio's Virtual St. Patrick's Day Mixer
Online

March 15
12:00 PM
Research Connection Live: Virtual Edition
Online

March 16
1:00 PM
Interdisciplinary Neuroscience Colloquia of Extramural Postdoctoral Talks
Online

March 17
1:00 PM
Find New Leads from Peptides and Natural Ligands
Online

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Other Science Jobs in Boston

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Moderna

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Harvard Medical School

Scientist, Center for Immuno-Oncology
Dana-Farber Cancer Institute

Postdoctoral Associate, Ion Channel Physiology
Broad Institute

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