



Publications of the Week

Structures, Functions, and Adaptations of the Human LINE-1 ORF2 Protein

First Authors: Eric Baldwin, Trevor van Eeuwen, David Hoyos, Arthur Zalevsky, Egor Tchesnokov, Roberto Sánchez, Bryant Miller, and Luciano Di Stefano | Senior Authors: Kathleen Burns (pictured), Matthias Götte, Michael Rout, Eddy Arnold, Benjamin Greenbaum, Donna Romero, John LaCava, and Martin Taylor
Nature | ROME Therapeutics, Dana Farber Cancer Institute, Whitehead Institute, Massachusetts General Hospital, and Harvard Medical School



Open Reading Frame 2 protein (ORF2p) reverse transcriptase and endonuclease activities have been implicated in the pathophysiology of cancer, autoimmunity, and aging, making ORF2p a potential therapeutic target. However, a lack of structural and mechanistic knowledge has hampered efforts to rationally exploit it. Here, researchers report structures of the human ORF2p 'core' by X-ray crystallography and cryo-electron microscopy in multiple conformational states. [Abstract](#) | [Press Release](#)

Higher-Order Protein Assembly Controls Kinetochores Formation

First Authors: Gunter Sissoko and Ekaterina Tarasovets | Senior Author: Iain Cheeseman (pictured)
Nature Cell Biology | Whitehead Institute and MIT



To faithfully segregate chromosomes during vertebrate mitosis, kinetochore-microtubule interactions must be restricted to a single site on each chromosome. To investigate the impact of higher-order assembly on kinetochore formation, researchers generated oligomers of the inner kinetochore protein CENP-T using two distinct, genetically engineered systems in human cells. [Abstract](#) | [Press Release](#)

KCTD1/KCTD15 Complexes Control Ectodermal and Neural Crest Cell Functions and Their Impairment Causes Aplasia Cutis

First Author: Jackelyn Raymundo | Senior Author: Alexander Mermers (pictured)
The Journal of Clinical Investigation | Harvard Medical School and Massachusetts General Hospital



Aplasia cutis congenita (ACC) is a congenital epidermal defect of the midline scalp and has been proposed to be due to a primary keratinocyte abnormality. Why it forms mainly at this anatomic site has remained a longstanding enigma. Here, researchers investigate to genes, *KCTD1* and *KCTD15*, that are commonly implicated as ACC disease-causing mutations. [Abstract](#) | [Press Release](#)

[View All Publications](#)

Awards

Dr. Vladimir Botchkarev Receives Skin Aging & Challenges Best Scientific Award 2023

Boston University Chobanian & Avedisian School of Medicine



Dr. Vladimir Botchkarev (pictured) has received the Skin Aging & Challenges Best Scientific Award 2023, recognizing his exceptional contributions to scientific research for his work "Skin Aging in Long-Lived Naked Mole-Rats: Mechanisms and Perspectives." His detailed study of naked mole-rat skin aging transcriptome sheds light on how these creatures remarkably resist age-related skin cancer, offering vital insights for human skin biology. [Read More](#)

Researcher Receives American Cancer Society Grant to Study Colorectal Cancer in Black Women

Boston University Chobanian & Avedisian School of Medicine



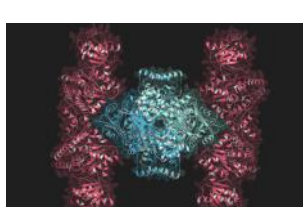
Dr. Jessica Petrick (pictured), Assistant Professor of Medicine, has been awarded a four-year, \$792,000 grant from the American Cancer Society for her research "Dietary Carbohydrate Quality and Circulating Bile Acids in Relation to Colorectal Carcinogenesis in Black Women." Black Americans have the highest colorectal cancer incidence and mortality rates of any racial/ethnic group in the US. [Read More](#)

[View All Awards](#)

Local News

Bacterial Defense System Defeated by Web of Proteins

Dana-Farber Cancer Institute



If you've seen the original Star Wars movie, you might wonder if the iconic Tie fighter was modeled after the strikingly similar looking Gabija protein complex, a bacterial defense system. From the right angle, they appear to share the same distinctive shape: a deadly center protected by two wings. They also share a purpose: defend the realm. [Read More](#)

Q&A: How to Jump-Start New Psychiatric and Neurological Drug Development

Broad Institute



Psychiatric and neurological disorders are widespread, yet the pace of drug development for these conditions lags far behind that of heart disease, cancer, and other conditions. In a recent review in *Science Translational Medicine*, Dr. Steven Hyman (pictured) sketched out a six-point framework for re-invigorating psychiatric and neurological drug development that addresses many of the unique challenges this field faces. [Read More](#)

Mass General Scientists Predict Big 'Breakthroughs' In Medicine For 2024

Bench Press



With the start of the new year, our curiosity turns to the groundbreaking advancements in the fields of science and medicine that we can expect in 2024. Emerging technologies and treatments such as CAR-T and CRISPR leave us wondering: What novel breakthroughs will emerge? Massachusetts General Hospital researchers such as Dr. Genevieve Boland (pictured) share their predictions for 2024's medical breakthroughs. [Read More](#)

Dr. Anthony Rothschild to Lead Psilocybin Study for Treatment-Resistant Depression at UMass Chan

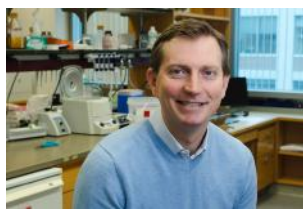
UMass Chan Medical School



The Center for Psychopharmacologic Research and Treatment at UMass Chan Medical School will be part of a Phase III multicenter trial to evaluate the effectiveness of psilocybin for treatment-resistant depression. Dr. Anthony Rothschild (pictured), the Irving S. and Betty Brudnick Chair in Psychiatry and Professor of Psychiatry, will lead the study. [Read More](#)

Newly Developed Model-Based Analysis Reveals Protein Proofreading in Ribosome Biogenesis

MIT Biology



One of the most critical complexes in cells is the ribosome, the large and elaborate machinery responsible for translating genetic code into proteins — but how do cells make and assemble the ribosomes? Research from the lab of Dr. Joey Davis (pictured) in the Department of Biology at MIT showcases the power of machine learning to solve biological puzzles. [Read More](#)

Cancer Test Shows Promise for Bringing the Benefits of Immunotherapy to More Patients

Brigham and Women's Hospital



Brigham researchers' findings from next-generation sequencing suggest that revising current cancer care guidelines could allow approximately 6,000 more patients in the US to benefit from immunotherapy treatment each year. "We don't want to miss these patients or we could be depriving them of a treatment that can have long-term benefits," said study lead Dr. Amin Nassar (pictured). [Read More](#)

[View All Local News](#) | [Submit an Article](#)

Upcoming Events in Boston

January 8 3:00 PM	PLC Meet and Greet in Carrie Hall Carrie Hall
January 16 1:00 PM	Methods for the Analysis of Data with Missing Values Online
January 17 4:30 PM	Biomedical Informatics Entrepreneurs Salon Gordon Hall
January 18 1:30 PM	Ethical Considerations of Access to Investigational Medicines Online
January 19 - 21 8:00 AM	3rd Cell Therapy Potency Assay Summit The Colonnade Hotel

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

Science Jobs in Boston

- Senior Scientist**
Dana-Farber Cancer Institute
- Project Manager**
Flagship Pioneering
- Research Associate, Process Development**
Vizgen
- Associate Scientist/Sr. Associate Scientist, RNA Oligonucleotide Chemistry**
Apex Systems
- Scientist or Senior Scientist, DNA Computing**
CATALOG

[View 37 Other Science Jobs](#) | [Submit a Job](#)



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

BROUGHT TO YOU BY



STEMCELL Technologies
Products | Services

STEMCELL Science News
Free Weekly Updates on Your Field

The Stem Cell Podcast
Interviews and Updates on Stem Cell Science

