

**Publications of the Week**
**Structural Principles of B-Cell Antigen Receptor Assembly**

 First Authors: Ying Dong and Xiong Pi | Senior Author: Hao Wu [\(pictured\)](#)  
 Nature | Harvard Medical School and Boston Children's Hospital


The B-cell antigen receptor (BCR) is composed of a membrane-bound immunoglobulin of class M, D, G, E or A for antigen recognition and a disulfide-linked Igα and Igβ heterodimer that functions as the signaling entity through their intracellular immunoreceptor tyrosine-based activation motifs. The authors report cryogenic electron microscopy structures of mouse full-length IgM BCR at 8.2 Å resolution and its Fab-deleted form at 3.3 Å resolution. [Abstract](#) | [Press Release](#)

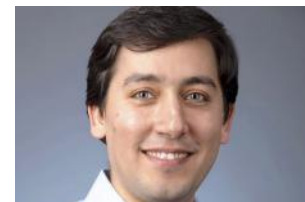
**Cellular Barcoding to Decipher Clonal Dynamics in Disease**

 First Author: Vijay Sankaran | Senior Author: Leonard Zon [\(pictured\)](#)  
 Science | Boston Children's Hospital, Harvard Medical School, Dana-Farber Cancer Institute, and the Broad Institute


Cellular barcoding techniques have been widely used to study developmental biology, and now they are being used to study human diseases, helping us gain unanticipated insights into disease mechanisms. The authors provide an overview of current cellular barcoding approaches. They describe applications in clonality analysis and lineage tracing in human hematopoiesis and cancer and discuss potential future applications. [Abstract](#)

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**Awards**
**NIH Honors Two BU Researchers "Poised to Blaze New Paths of Discovery"**

The Brink



Two Boston University researchers have won prestigious National Institutes of Health (NIH) awards that recognize "exceptionally creative scientists" and support projects that are considered high risk — but potentially transformative. Dr. Hadi Nia [\(pictured\)](#), a College of Engineering Assistant Professor of Biomedical Engineering, and Mary Dr. Willis, a School of Public Health Assistant Professor of Epidemiology, are both 2022 NIH Director's Award winners. [Read More](#)

**Kara McKinley Named Packard Fellow for Science and Engineering**

Harvard Stem Cell Institute



Dr. Kara McKinley [\(pictured\)](#) has been named one of the 2022 class of Packard Fellows for Science and Engineering. Dr. McKinley and 19 other innovative early-career scientists and engineers will each receive \$875,000 over five years to pursue their research. The award will support Dr. McKinley and her lab as they study how the human uterine lining (endometrium) is able to rebuild every month during menstruation, with the goal of improving care for people with endometrial diseases and/or menstrual experiences that interfere with their quality of life. [Read More](#)

**Marc Lenburg Receives \$4.6M NIH Grant to Better Identify Lung Cancer**

BU Chobanian &amp; Avedisian School of Medicine



Lung cancer screening by chest computed tomography can detect lung cancer earlier and make the disease less deadly, but even among nodules that are at intermediate risk, only a small minority are cancerous. Dr. Marc Lenburg [\(pictured\)](#), Professor of Medicine in the Section of Computational Medicine at BU, aims to address this issue. He has been awarded a five-year, \$4.6 million U2C grant from the National Institutes of Health (NIH). [Read More](#)

**Xiao Wang Awarded 2022 Packard Fellowship**

MIT Chemistry



Dr. Xiao Wang [\(pictured\)](#), an Assistant Professor of Chemistry and Core Member of the Broad Institute, has been awarded a 2022 Packard Fellowship by the David and Lucille Packard Foundation. Established in 1988, Packard Fellowships for Science and Engineering allow the nation's most promising professors to pursue science and engineering research early in their careers with few funding restrictions and limited reporting requirements. [Read More](#)

**Bear Elected Member of National Academy of Medicine**

The Picower Institute



The National Academy of Medicine has announced that its members have elected Dr. Mark Bear [\(pictured\)](#), Picower Professor of Neuroscience in the Picower Institute, to join their esteemed ranks. Election to the Academy is considered one of the highest honors in the fields of health and medicine and recognizes individuals who have demonstrated outstanding professional achievement and commitment to service, the Academy noted in announcing the election of 100 new members including Dr. Bear. [Read More](#)

**Researcher Awarded Funding to Support Vaccine against Nipah Virus**

BU Chobanian &amp; Avedisian School of Medicine



Dr. Anthony Griffiths [\(pictured\)](#), Associate Professor of Microbiology, has received a 15 month, grant of up to \$5.2 million in funding from the Coalition for Epidemic Preparedness Innovations. Funds from this award will be used to support the development of vaccines against the highly deadly Nipah virus. Dr. Griffiths and his team of scientists are working to understand the biology of emerging and re-emerging viruses and to deploy their knowledge to support the development of vaccines and therapies. [Read More](#)

**Dana-Farber's Kornelia Polyak Elected to the National Academy of Medicine**

Dana-Farber Cancer Institute



Dr. Kornelia Polyak [\(pictured\)](#), Professor of Medicine, Medical Oncology at Dana-Farber Cancer Institute, has been elected to the prestigious National Academy of Medicine. In announcing Dr. Polyak's election, the Academy noted her work "documenting the clinical and functional relevance of intratumoral cellular heterogeneity." [Read More](#)

**Arup Chakraborty Wins Max Delbrück Prize in Biological Physics**

MIT Chemistry



MIT Professor Dr. Arup Chakraborty [\(pictured\)](#) was recently honored with the 2023 Max Delbrück Prize in Biological Physics by the American Physical Society. Dr. Chakraborty earned the prize "for the leading role in initiating the field of computational immunology, aimed at applying approaches from physical sciences and engineering to unravel the mechanistic underpinnings of the adaptive immune response to pathogens, and to harness this understanding to help design vaccines and therapy." [Read More](#)

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**Inversions, Inversions Everywhere**

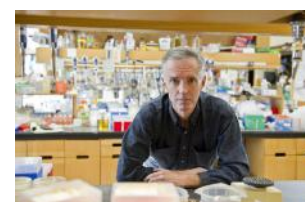
Harvard University Molecular and Cellular Biology



Chromosomal inversions are a form of genetic mutation in which a segment of DNA reverses orientation along a chromosome. In a recent study from Dr. Hopi Hoekstra's [\(pictured\)](#) lab, published in *Nature Ecology and Evolution*, they used a combination of methods and approaches in population genomics to scan the deer mouse genome for inversion polymorphisms (that is, inversions that are found in some but not all individuals within the species). [Read More](#)

**Sherlock Biosciences Licenses Wyss Institute's Ambient Nucleic Acid Amplification Technology from Harvard to Develop Highly Accurate, Low-Cost Diagnostics for Point-of-Need**

Wyss Institute



The Wyss Institute and Sherlock Biosciences announced that Sherlock has secured an exclusive world-wide license from Harvard University's Office of Technology Development that enables the amplification of nucleic acid molecules at ambient temperatures. The company will integrate the method, which was developed at the Wyss Institute by Dr. James Collins [\(pictured\)](#) and his team, to advance instrument-free diagnostic assays that can detect pathogen or disease-related nucleic acids at the point-of-need. [Read More](#)

**How E. coli Bacteria Activate a Toxin They Produce in a Way That Avoids Self-Harm**

Harvard University Department of Molecular and Cellular Biology



Colibactin is an example of a toxin, produced as part of microbial warfare, which induces double-stranded breaks in the DNA of cells in the intestinal epithelium and is correlated with higher incidences of diseases such as colorectal cancer. A collaboration between Drs. Rachelle Gaudet's and Emily Balskus's [\(pictured\)](#) groups aims to understand how CtlB and related enzymes activate their respective toxins. [Read More](#)

**Meet a Whitehead Postdoc: Junsik Choi**

Whitehead Institute



Dr. Junsik Choi [\(pictured\)](#) is a postdoc in Whitehead Institute Member Dr. Mary Gehring's lab studying epigenetic inheritance in plants. The Gehring lab investigates DNA methylation and histone modification in plants, two epigenetic processes that are key players in carrying epigenetic information. Dr. Choi is interested in how nuclei affect and interact with epigenetic information. [Read More](#)

**Research Spotlight: Microbial Bile Acid Metabolism Regulates Gut Barrier Integrity and Liver Injury and Could Be a New Treatment Target**

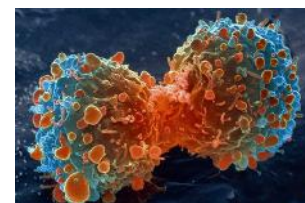
Massachusetts General Hospital



Drs. Darrick Li and Raymond Chung [\(pictured\)](#) of the Mass General Liver Center, led a recent study in *Science Advances*, "Inhibition of Microbial Deconjugation of Micellar Bile Acids Protects Against Intestinal Permeability and Liver Injury." In an established rat model of diet-induced cirrhosis that is characterized by disrupted epithelial barrier integrity, they showed that an abundant group of metabolites found in the human gut, conjugated bile acids, protect against pathogenic intestinal permeability. [Read More](#)

**Three of the World's Top Research Institutions Join Forces to Drive Progress against Pediatric Cancer**

Dana-Farber Cancer Institute



The Broad Institute of MIT and Harvard, Dana-Farber Cancer Institute and St. Jude Children's Research Hospital have announced the largest academic collaboration of its kind to transform and accelerate the identification of vulnerabilities in pediatric cancers and translate them into better treatments. The collaboration is supported by a new joint funding investment by all three institutions of more than \$60 million over five years. [Read More](#)

**Unlocking the Mysteries of How Neurons Learn**

MIT News



Raúl Mojica Soto-Albors [\(pictured\)](#) is a doctoral student in the MIT Department of Brain and Cognitive Sciences, where he uses a complex electrophysiology method termed "patch clamp" to investigate neuronal activity *in vivo*. "Neuroscientists have been very focused on the spiking of the neuron. But I am concentrating instead on patterns in the subthreshold activity of neurons," he explains. [Read More](#)

**Tufts Scientist Teams Up with Families to Find a Treatment for Rare Disease**

TuftsNow



Tufts University School of Medicine Professor Dr. Michele Jacob [\(pictured\)](#) is a neuroscientist, not a clinician, so it is unusual for her to work directly with patients. But when serendipity brought her together with a group of parents whose children have a rare developmental disorder caused by mutations in a gene she was researching, it was a win-win for all involved. Dr. Jacob and her team have been studying the *CTNNB1* gene product and its role in the brain for many years. [Read More](#)

**Study Finds Unexpected Protective Properties of Pain**

Harvard Medical School



Pain has been long recognized as one of evolution's most reliable tools to detect the presence of harm and signal that something is wrong — an alert system that tells us to pause and pay attention to our bodies. But what if pain is more than a mere alarm bell? What if pain is in itself a form of protection? A new study from Dr. Isaac Chiu's [\(pictured\)](#) lab at Harvard Medical School suggests that may well be the case in mice. [Read More](#)

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**Upcoming Events in Boston**

October 25 5:00 PM	<b>An Evening of Food &amp; Drink with Commercialization Experts</b> CIC Cambridge @ 1 Broadway
October 27 12:00 PM	<b>VendorFest Cambridge</b> Le Meridien Boston Cambridge
October 27 4:00 PM	<b>Third Annual Gilbert S. Omenn Lecture</b> Countyway Library
November 3 8:00 AM	<b>The Forsyth Institute 5<sup>th</sup> Scientific Symposium: Craniofacial Biology, Disease, and Regeneration</b> Forsyth Institute & Online
November 3 12:30 PM	<b>2022 Digital Health Impact</b> MassBioHub & Online

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