Volume 5.05: February 13, 2023

Publications of the Week

Low Protease Activity in B Cell Follicles Promotes Retention of Intact Antigens After Immunization

First Author: Aereas Aung | Senior Author: Darrell Irvine *(pictured)*
Science | Koch Institute, Broad Institute, Harvard University, Ragon Institute, Wyss Institute, Howard Hughes Medical Institute, Brigham and Women's Hospital, and MIT

To generate protective immune responses, vaccine antigens are designed to mimic native protein structures on foreign pathogens. After vaccination, antigens are transported from the injection site by lymphatic vessels to the draining lymph nodes, tissues where immune responses are initiated. The authors found that in order to mount a successful antibody response, incoming antigens need to be localized to specific sites within the lymph nodes called follicles. **Abstract**

Encoding of Environmental Illumination by Primate Melanopsin Neurons

First Authors: Andreas Liu and Elliott Milner | Senior Author: Michael Tri Do *(pictured)*
Science | Boston Children's Hospital and Harvard Medical School

Light is an important environmental factor for most organisms because it regulates many physiological functions and behaviors. Central to this regulation is a photoreceptive molecule called melanopsin and its actions within the intrinsically photosensitive retinal ganglion cells (ipRGCs), neurons that send signals from the retina to the brain. The authors developed a method of identifying primate ipRGCs and used it to investigate how they sense the visual world. **Abstract**

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Awards

Awards & Recognitions: January 2023

Harvard Medical School (HMS)

Dr. Esteban Orellana Vinueza *(pictured)*, HMS Research Fellow in Biological Chemistry and Molecular Pharmacology at Boston Children's Hospital, is investigating whether changes that modify the shape, stability, and function of transfer RNAs play a role in the development of cancer. He received the Damon Runyon-Dale F. Frey Award. **Read More**

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Local News

Not So Inactive X Chromosome

Whitehead Institute

Whitehead Institute member Dr. David Page *(pictured)* has spent his career understanding how the differences between X and Y chromosomes contribute to sex differences, but a recent project is taking his lab in a new direction: understanding how the differences between X chromosomes contribute to sex differences. New research from Dr. Page and postdoctoral researcher Dr. Adrianna San Roman reveals just how different the two types of X chromosomes are. **Read More**

New Polymers Could Enable Better Wearable Devices

MIT News

Certain electronics that integrate with the human body work by converting the ion-based signals of biological tissue into the electron-based signals used in transistors. But the materials in these devices are often designed to maximize ion uptake while sacrificing electronic performance. To remedy this, researchers in Dr. Aristide Gumyusenge's *(pictured)* group developed a strategy to design these materials that brings their ionic and electronic capabilities into balance. **Read More**

NeuShen Therapeutics Funds ALS Research at UMass Chan Medical School

UMass Chan Medical School

UMass Chan Medical School has signed a three-year sponsored research agreement with NeuShen Therapeutics to investigate a gene therapy treatment for amyotrophic lateral sclerosis (ALS). "UMass Chan and NeuShen will work together to tackle ALS, which represents an unmet medical need," said Dr. Guangping Gao *(pictured)*, who will co-lead the program. **Read More**

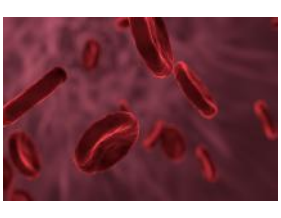
Overturning a Century of Misunderstanding Microbes

Slice of MIT

Dr. Jared Kehe, Co-Founder and Chief Scientific Officer of Concerto Biosciences, explains how the company aims to "overturn a century of misunderstanding microbes" as dangerous agents of death that must be eradicated with pharmaceutical warfare (read: antibiotics). While some do cause disease, most range from harmless to essential for the health of our bodies and planet. **Read More**

Garuda Therapeutics Secures $62 Million Series B Financing to Advance Off-the-Shelf Blood Stem Cell Technology Platform

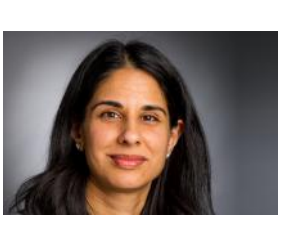
BusinessWire



Garuda Therapeutics, a company creating off-the-shelf, durable blood stem cell-based cellular therapies, has announced a $62 million Series B financing led by Northpond Ventures, OrbiMed Advisors, Cormorant Asset Management, and Aisling Capital, along with participation from Sectoral Asset Management, Mass General Brigham Ventures, Alexandria Venture Investments, and other elite investors and individuals. **Read More**

Dana-Farber Research Supports FDA Approval of New Therapy for Metastatic Breast Cancer

Dana-Farber Cancer Institute



Sacituzumab govitecan, a novel antibody drug-conjugate therapy, has been granted accelerated approved by the US Food and Drug Administration (FDA) for the treatment of metastatic HR+, HER2- breast cancer. The FDA action was based on the results of TROPICS-02, a study that Dana-Farber's Dr. Sara Tolaney *(pictured)* helped lead. **Read More**

Sparse, Small, but Diverse Neural Connections Help Make Perception Reliable, Efficient

The Picower Institute

The brain's cerebral cortex produces perception based on the sensory information it's fed through a region called the thalamus. "How the thalamus communicates with the cortex is a fundamental feature of how the brain interprets the world," said Dr. Elly Nedivi *(pictured)*. Dr. Nedivi and her team report that thalamic inputs into superficial layers of the cortex are not only rare, but also surprisingly weak, and quite diverse in their distribution patterns. **Read More**

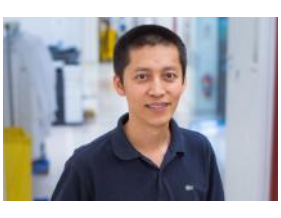
Attacking COVID-19's Moving Antibody Target

Wyss Institute

An in-depth study from a research team at the Wyss Institute demonstrates that the Institute's portable electrochemical sensing technology, known as eRapid, could be an ideal instrument to enable the inexpensive, multiplexed detection of different SARS-CoV-2-directed antibodies at the point-of-care. The team showed that specifically engineered eRapid sensors can detect antibodies targeting the virus' so-called N protein from ultra-small samples of blood plasma and dried blood spots with 100% sensitivity and specificity within less than ten minutes. **Read More**

Tracing a Plant Chemistry Puzzle to Its Roots

Whitehead Institute



Graduate student Colin Kim had been making good progress on a scientific puzzle that had fascinated him since he joined Whitehead Institute Member Dr. Jing-Ke Weng's *(pictured)* lab, trying to understand how coumarin synthase, an enzyme that plants use to make agriculturally and medicinally important molecules called coumarins, does its job. **Read More**

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Upcoming Events in Boston

February 15 5:00 PM	**Biomedical Informatics Entrepreneurs Salon: Daniel Day, Meta** Online
February 22 12:00 PM	**Stem Cells in Space** Online
February 28 10:00 AM	**2023 Rare Disease Day** Massachusetts State House
March 8 12:00 PM	**Clarifying the Mysteries of Choosing Statistical and Machine-Learning Methods in Genomics Research** Online
March 14 4:00 PM	**Soma Weiss Student Research Day** TMEC Atrium

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