

### Publications of the Week

## A Genome-Wide Optical Pooled Screen Reveals Regulators of Cellular Antiviral Responses

First Author: Rebecca Carlson | Senior Author: Paul Blainey (*pictured*)  
 PNAS | Broad Institute, Whitehead Institute, Massachusetts General Hospital, Koch Institute, and MIT



The authors carry out a genome-wide CRISPR knockout screen using high-resolution multiparameter imaging of cellular responses to Sendai virus infection coupled with *in situ* cDNA sequencing by synthesis to identify 80,408 single guide RNAs in 10,366,390 cells. This is over an order of magnitude more genomic perturbations than demonstrated previously using an *in situ* sequencing by synthesis readout. [Abstract](#)

## Dynamics and Specificities of T Cells in Cancer Immunotherapy

First Author: Giacomo Oliveira | Senior Author: Catherine Wu (*pictured*)  
 Nature Reviews Cancer | Dana-Farber Cancer Institute, Harvard Medical School, Broad Institute, and Brigham and Women's Hospital



Over the past decade, the advent of multidimensional single-cell technologies has provided the unprecedented ability to dissect the constellation of cell states of lymphocytes within a tumor microenvironment. In particular, the rapidly expanding capacity to definitively link intratumoral phenotypes with the antigen specificity of T cells provided by T cell receptors has now made it possible to focus on investigating the properties of T cells with tumor-specific reactivity. [Abstract](#)

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### Awards

## Athma Pai Awarded National Science Foundation CAREER Grant

UMass Chan Medical School



Dr. Athma Pai (*pictured*), Assistant Professor of RNA Therapeutics, was awarded a nearly \$1 million CAREER grant from the National Science Foundation to use new high-throughput genomics approaches to study the regulation of mRNA splicing. "Splicing is at the heart of making different versions of RNA molecules from the same gene," explained Dr. Pai. [Read More](#)

## William Hahn Is a 2023 Award of Excellence Honoree by Hope Funds

Dana-Farber Cancer Institute



Dr. William Hahn (*pictured*), Executive Vice President and Chief Operating Officer at Dana-Farber Cancer Institute, is one of three exceptional individuals honored by Hope Funds with its 2023 Award of Excellence in the areas of Basic Science and Medicine. The Award of Excellence honors those who have made outstanding contributions to basic, clinical, and medical research in cancer, or conducted prominent advocacy and philanthropy on behalf of cancer research. [Read More](#)

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### Local News

## Wyss Institute's Lab-on-a-Molecule Drug Discovery Project Receives Funding from Northpond Labs

Wyss Institute



The Wyss Institute, Boston Children's Hospital, and Northpond Labs have entered into an agreement whereby Northpond Labs will support the Institute's "Lab-on-a-Molecule" project. "With support from Northpond Labs we hope to find novel activators for multiple different conditions, including therapeutics such as allosteric regulators and molecular glues," said Dr. Wesley Wong (*pictured*). [Read More](#)

## How Simple Multicellularity Can Evolve into Regulated Reproduction

Harvard University Department of Cellular and Molecular Biology



The development of multicellularity has been a remarkable turning point in Earth's biological history, enabling greater morphological diversity and the formation of new organizational structures. Dr. Andrew Murray's (*pictured*) lab wanted to explore the conditions that could drive basic cell clusters to reproduce in a controlled manner, alternating between multicellular growth and dissolving into single cells to colonize new environments. [Read More](#)

## Scientists Track Evolution of Microbes on the Skin's Surface

MIT News



Human skin is home to millions of microbes. One of these microbes, *Staphylococcus aureus*, is an opportunistic pathogen that can invade patches of skin affected by eczema, also known as atopic dermatitis. In a new study, Dr. Tami Lieberman's (*pictured*) group at MIT and their collaborators discovered that this microbe can rapidly evolve within a single person's microbiome. [Read More](#)

## UMass Chan Scientists Deliver siRNA Therapy to Lung

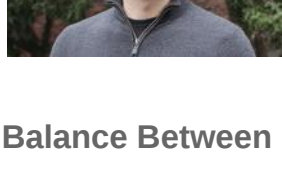
UMass Chan Medical School



Published in *PNAS*, a study by a multidisciplinary team of RNA biologists, chemical biologists, immunologists, and virologists describes the delivery of small interfering RNA (siRNA) molecules locally to lung tissue. "Achieving robust [gene] silencing at this level that is well tolerated hasn't been achieved before," said Dr. Vignesh Hariharan, co-author of the study and a Postdoctoral Associate in the lab of Dr. Anastasia Khvorova (*pictured*). [Read More](#)

## Sensory Receptor Evolution in Octopus and Squid

Harvard University Department of Molecular and Cellular Biology



Dr. Nick Bellono's (*pictured*) lab recently discovered a family of octopus-specific chemotactile receptors (CRs) that are used by octopus arms to detect poorly-soluble natural products, thereby defining a form of contact-dependent, aquatic chemosensation. CRs form ion channel complexes to mediate diverse signal detection and filtering. [Read More](#)

## Balance Between Proteins Keeps Sperm Swimming Swiftly

Whitehead Institute



Whitehead Institute member Dr. Yukiko Yamashita (*pictured*) and former graduate student Dr. Jun Park have discovered why an imbalance between types of protamines in sperm causes infertility in the fruit fly (*Drosophila melanogaster*). The finding, published in *PNAS*, showed a mechanism that balances different types of protamines to ensure male fertility. [Read More](#)

## New Method Tracks Gene Expression in Single Cells over Space and Time

Broad Institute



A new method built by Dr. Xiao Wang (*pictured*) and a team at the Broad Institute is the first large-scale approach to track mRNAs over both space and time in individual cells. Known as TEMPMap (temporally resolved *in situ* sequencing and mapping), the method simultaneously measures the subcellular movements of many RNA molecules, with the potential to follow a molecule from its birth through to its death. [Read More](#)

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### Upcoming Events in Boston

- April 19**  
 12:00 PM  
**Cell and Gene Therapy Catapult Boston Showcase**  
 MassBio
- April 20**  
 5:00 PM  
**Biomedical Informatics Entrepreneurs Salon: Linda Avey**  
 Online
- April 25**  
 8:30 AM  
**2023 State of Possible Conference**  
 Royal Sonesta Boston
- April 26**  
 12:00 PM  
**Is It Possible to Bioprint Human Hearts?**  
 Online
- April 29**  
 9:00 AM  
**Microbial Sciences 20<sup>th</sup> Annual Symposium**  
 Northwest Labs

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### STEMCELL Jobs

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### Other Science Jobs in Boston

- Associate Director, Clinical Science**  
Olema Oncology
- Associate Director, Project Management (siRNA/Biotherapeutics)**  
Novartis
- Scientist, CNS 1**  
Arbor Biotechnologies
- Part-Time Administrative Lab Coordinator**  
Harvard Medical School
- Research Technician**  
Massachusetts General Hospital

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