



Division of Medical Sciences  
2020-2021 Ph.D. Degree Recipients

*Harvard University  
The Graduate School of  
Arts and Sciences*

*Division of Medical  
Sciences  
at Harvard Medical  
School*



We are proud to honor our students receiving Ph.D.'s in the fields of: Bioinformatics and Integrative Genomics, Biological and Biomedical Sciences, Immunology, Neuroscience, Speech and Hearing Bioscience and Technology, and Virology.



## Ph.D. Degree Recipients



### **Chidiebere Akusobi**

Biological and Biomedical Sciences  
Interrogating Genetic Diversity  
in *Mycobacterium abscessus* with  
Transposon-Sequencing  
Advisor: Eric Rubin

### **Tiffany Amariuta**

Biological and Biomedical Sciences  
Functional characterization of genetic  
variation with in silico predictions of  
cell-type-specific regulatory elements  
Advisor: Soumya Raychaudhuri

### **Inwha Baek**

Biological and Biomedical Sciences  
Single molecule studies of RNA  
polymerase II transcription initiation  
and elongation  
Advisor: Stephen Buratowski

### **Kimbria Blake**

Biological and Biomedical Sciences  
*Staphylococcus aureus* activates  
sensory neurons in the skin to cause  
pain or itch during infection  
Advisor: Isaac Chiu

### **Jacqueline Brady**

Biological and Biomedical Sciences  
Investigating the contribution of Fc  
function to effective antibody-based  
HIV prevention  
Advisor: Alejandro Balazs

### **Timothy Branigan**

Virology  
Regulation of cell cycle transitions and  
CHKI inhibitor sensitivity by MMB-  
FOXMI feedback loops  
Advisor: James DeCaprio

### **Blake Chancellor**

Biological and Biomedical Sciences  
Transcriptomic Analyses of  
Brain White Matter in Human  
Neurodegenerative Tauopathies  
Advisor: Susan Dymecki

### **Priscilla Cheung**

Biological and Biomedical Sciences  
Characterization and functional  
modulation of the cancer stem cell  
state in colorectal cancer  
Advisor: Fernando Camargo

### **Connor Clairmont**

Biological and Biomedical Sciences  
The Function and Regulation of  
REV7 in DNA Repair Pathway  
Choice  
Advisor: Alan D'Andrea

### **Lars Clark**

Biological and Biomedical Sciences  
Receptor binding and antibody  
neutralization of emerging RNA  
viruses  
Advisor: Jonathan Abraham

**Kameron Clayton**

Speech and Hearing Bioscience and Technology  
Corticothalamic circuits for active listening  
Advisor: Daniel Polley

**Rebecca Clements**

Biological and Biomedical Sciences  
Molecular requirements for morphogenesis in *Plasmodium falciparum*, the human malaria parasite  
Advisor: Jeffrey Dvorin

**Joe Daccache**

Immunology  
Stem-like CD8 T cells are Essential for Cellular Immunity but Restrain Antibody Responses During Influenza Infection  
Advisor: Peter Sage

**Kayla Davis**

Biological and Biomedical Sciences  
Functional analysis of Miro GTPase domains in the mitochondrial motor adaptor complex  
Advisor: Thomas Schwarz

**Carlos Donado Parra**

Immunology  
A Two-Cell Model for IL-1 $\beta$  Release Mediated by Death-Receptor Signaling  
Advisor: Michael Brenner

**Jefte Drijvers**

Immunology  
Metabolic regulation of anti-tumor CD8 $^{+}$  T cell responses  
Advisor: Arlene Sharpe

**Cesar Echavarria**

Neuroscience  
Neuronal Responses to Visual Texture Features Across Rat Visual Cortex  
Advisor: David Cox

**Mike Ernandes**

Virology  
Oxidized Phospholipids as Antivirals and Immune Modulators  
Advisor: Jonathan Kagan

**Maurizio Fazio**

Biological and Biomedical Sciences  
Identifying novel genetic drivers of melanoma initiation, metastasis, and drug resistance using zebrafish  
Advisor: Leonard Zon

**Meaghan Flagg**

Virology  
Mechanisms of disrupted intestinal epithelial homeostasis during HIV infection  
Advisor: Douglas Kwon

**Justin Fleming**

Speech and Hearing Bioscience and Technology  
Multisensory Integration of Spatio-Temporal Information in Attention and Working Memory  
Advisor: Barbara Shinn-Cunningham

**Michelle Frank**

Neuroscience  
Molecular Characterization of the Olivocochlear Efferent System  
Advisor: Lisa Goodrich

**Jeanne Gallee**

Speech and Hearing Bioscience and Technology  
Heterogeneity within primary progressive aphasia (PPA): differences between variants in functional communication, and a new sub-variant of logopenic variant PPA  
Advisor: Evelina Fedorenko

**Alexander Garruss**

Bioinformatics and Integrative Genomics  
Accelerating the Understanding and Design of Intracellular Biosensors by Massively Multiplexed Experimentation and Machine Learning  
Advisor: George Church

**Hannah Goldberg**

Speech and Hearing Bioscience and Technology  
Novel gene therapy strategies for Usher syndrome  
Advisor: Gwenaelle Geleoc

**Kenneth Gray**

Biological and Biomedical Sciences  
Construction of an atlas of the mouse and human mammary glands using mass cytometry  
Advisor: Joan Brugge

**Richard Guerra**

Biological and Biomedical Sciences  
A Novel Method for the Production of Single-Stranded DNA for Demand-Meeting Applications in DNA Nanotechnology, Biological Imaging, and Genome Editing  
Advisor: William Shih

**Chong Guo**

Neuroscience  
Synaptic and Circuit Specializations for Temporal Processing in the Cerebellar Cortex  
Advisor: Wade Regehr

**Catherine Gutierrez**

Biological and Biomedical Sciences  
Genetic Determinants and Evolutionary Trajectories of Chronic Lymphocytic Leukemia  
Advisor: Catherine Wu

**Allison Hamilos**

Neuroscience  
Dynamic dopaminergic activity controls the timing of self-timed movement.  
Advisor: John Assad

**Toby Herrmann**

Virology  
Molecular mechanisms of rhesus rotavirus entry  
Advisor: Stephen Harrison

**Janani Iyer**

Speech and Hearing Bioscience and Technology

Novel imaging methodologies for improved study and diagnosis of sensorineural hearing loss

Advisor: Konstantina Stankovic

**Matthew Jakubik**

Biological and Biomedical Sciences  
Small chromosomal structural variants are detected by the meiotic machinery in *C. elegans*

Advisor: Chao-ting Wu

**Christina Jayson**

Biological and Biomedical Sciences  
Targeting of proteins from the endoplasmic reticulum to lipid droplets: a specific requirement for mitochondrial proteins

Advisor: Tobias Walther

**Vinita Joshi**

Virology

Delineating HIV-1 Evolutionary Pathways in an Individual with a Broadly Neutralizing Antibody Response

Advisor: Todd Allen

**Marshall Karpel**

Virology

Vaccine responses in the context of impaired self-tolerance

Advisor: Shiv Pillai

**Mehak Khan**

Neuroscience

Cellular and synaptic mechanisms controlling cerebellar output

Advisor: Wade Regehr

**Sonia Kim**

Biological and Biomedical Sciences

Quantitative analysis of clonal architecture across the human cerebral cortex using somatic mutations

Advisor: Christopher Walsh

**Sebastian Koochaki**

Biological and Biomedical Sciences

CBL and the Negative Regulation of Cytokine Receptor Signaling

Advisor: Benjamin Ebert

**Kate Lachance**

Biological and Biomedical Sciences

Gene expression regulation from the nucleus to the mitochondria

Advisor: Stirling Churchman

**Nelson LaMarche**

Immunology

Role of invariant natural killer T cell subsets in adipose tissue homeostasis

Advisor: Michael Brenner

**Jonathan Lee**

Biological and Biomedical Sciences

Accelerating the functional prioritization of gene regulatory biomarkers in acute myeloid leukemia

Advisor: Frank Slack

**Phong Lee**

Virology  
Assembly of Centromeric  
Nucleosomes in Budding Yeast  
Advisor: Stephen Harrison

**Mitchell Leibowitz**

Biological and Biomedical Sciences  
Chromothripsis as an On-Target  
Consequence of CRISPR-Cas9  
Genome Editing  
Advisor: David Pellman

**John Lian**

Biological and Biomedical Sciences  
Biological Characterization of  
Differential Function and Activation  
Between Closely-Related TGF $\beta$  Family  
Ligands  
Advisor: Richard Lee

**Jacob Luber**

Bioinformatics and Integrative  
Genomics  
Systems Interrogation of Host-  
Microbiome Immunomodulation and  
Metabolism  
Advisor: Meromit Singer

**Scott Luro**

Biological and Biomedical Sciences  
Quantifying and Screening Dynamic  
Phenotypes in Bacteria  
Advisor: Johan Paulsson

**Gaurav Luthria**

Bioinformatics and Integrative  
Genomics  
Quantitative analysis of dynamic  
tumor cell phenotypes regulated by  
tumor associated macrophages.  
Advisor: Miles Miller

**Kristine Lyon**

Neuroscience  
Dopamine receptor D2 expression in  
serotonergic neurons: sex differences  
and role in behavioral modulation  
Advisor: Susan Dymecki

**Jasper Maniates-Selvin**

Neuroscience  
The Structure of Motor Control  
Circuits in Adult Drosophila  
Advisor: Wei-Chung Allen Lee

**Michael Marquis**

Neuroscience  
Diverse physiology and function of  
dopaminergic neurons in behaving  
Drosophila  
Advisor: Rachel Wilson

**Brittany Mayweather**

Biological and Biomedical Sciences  
GDF11 Expression and Roles during  
Adult Hippocampal Neurogenesis  
Advisor: Lee Rubin

**Max Mertens**

Virology  
The Relationship Between Herpes  
Simplex Virus 1 and the Cellular DNA  
Damage Response  
Advisor: David Knipe

**Lauren Mifflin**

Biological and Biomedical Sciences  
RIPKI-Regulated Neuroinflammation  
and Cell Death in Amyotrophic  
Lateral Sclerosis and Alzheimer's  
Disease  
Advisor: Junyong Yuan

**John Min**

Biological and Biomedical Sciences  
On the advent of CRISPR Gene-  
Drives and our shared future  
Advisor: George Church

**Olivia Murton**

Speech and Hearing Bioscience and  
Technology  
Health monitoring with voice analysis:  
acoustic correlates of heart failure,  
irregular pitch periods, and dysphonia  
Advisor: Daryush Mehta

**Sivapratha Nagappan Chettiar**

Neuroscience  
To keep or not to keep: The molecular  
mechanisms of activity-dependent  
synaptic refinement  
Advisor: Hisashi Umemori

**Nishita Parnandi**

Biological and Biomedical Sciences  
The regulatory functions of TIRR in  
DNA repair and p53-mediated cell  
fate  
Advisor: Dipanjan Chowdhury

**Jesse Pyle**

Virology  
Functional regulation of an arenavirus  
polymerase complex  
Advisor: Sean Whelan

**Jason Qian**

Biological and Biomedical Sciences  
Development of nucleic acid detection  
methods for  
object provenance and viral diagnostics  
Advisor: Michael Springer

**Brian Rabe**

Biological and Biomedical Sciences  
Investigation of the Multiple Roles of  
Notch Signaling in Embryonic Retinal  
Development Using Novel High-  
Throughput Techniques  
Advisor: Constance Cepko

**David Radke**

Biological and Biomedical Sciences  
Evolutionary dynamics of deletions  
removing regulatory features in the  
human noncoding genome  
Advisor: Shamil Sunyaev

**Pauline Schmit**

Biological and Biomedical Sciences  
Novel High-Throughput Methods  
to Study AAV Immunity Using  
Combinatorial Capsid Libraries  
Advisor: Luk Vandenberghe

**Max Schubert**

Biological and Biomedical Sciences  
High throughput functional variant  
screens via in-vivo production of  
single-stranded DNA  
Advisor: George Church

**Joel Sher**

Biological and Biomedical Sciences  
Genetic analysis of cell envelope  
assembly and polar growth in  
*Corynebacterium glutamicum*  
Advisor: Thomas Bernhardt

**Aditi Shukla**

Biological and Biomedical Sciences  
poly(UG)-tailed RNAs and  
Transgenerational  
Epigenetic Inheritance in *C. elegans*  
Advisor: Scott Kennedy

**Brandon Sit**

Biological and Biomedical Sciences  
Insights into *Vibrio cholerae* vaccine  
development and physiology from  
small animal models of intestinal  
colonization and disease  
Advisor: Matthew Waldor

**Jiunn Song**

Biological and Biomedical Sciences  
Genetic Determinants of Protein  
Targeting from the Endoplasmic  
Reticulum to Lipid Droplets  
Advisor: Tobias Walther

**Mark Springel**

Biological and Biomedical Sciences  
Corticospinal neurons provide broad  
input to the spinal cord dorsal horn  
to modulate touch information  
processing  
Advisor: David Ginty

**Atsushi Taguchi**

Biological and Biomedical Sciences  
Biochemical reconstitution and  
characterization of peptidoglycan  
synthases and glycosidases  
Advisor: Suzanne Walker

**Jerry Wang**

Biological and Biomedical Sciences  
Mesoscopic physiological interactions  
in the human cortex reveal small-world  
network properties and associations  
with behavior  
Advisor: Gabriel Kreiman

**Qingbo Wang**

Bioinformatics and Integrative  
Genomics  
Integrating large-scale genomics data  
to improve variant interpretation in  
coding and non-coding regions  
Advisor: Mark Daly

**Alyson Warr**

Biological and Biomedical Sciences  
Functional Genomics at the EHEC-  
Intestinal Interface: Mechanisms of  
Pathogenicity and the Host Response  
Advisor: Matthew Waldor

**Michelle Watts**

Biological and Biomedical Sciences  
Modulating proteostatic stress in  
human motor neurons to identify  
neuroprotective targets  
Advisor: Lee Rubin



**Olivia Weeks**

Biological and Biomedical Sciences  
Environmental and Genetic  
Perturbations During Development  
Shape Multi-Organ Health Outcomes  
Advisor: Wolfram Goessling

**Qiyu Zhang**

Neuroscience  
Ultrastructural insights  
into mammalian cutaneous  
mechanoreceptors  
Advisor: David Ginty

**Keiko Weir**

Neuroscience  
A Molecular Trigger for Sea Anemone  
Stinging  
Advisor: Nicholas Bellono

**Brad Wierbowski**

Biological and Biomedical Sciences  
Molecular mechanisms of Sonic  
hedgehog release and delivery  
Advisor: Adrian Salic

**Kaylyn Williamson**

Biological and Biomedical Sciences  
Defining transcription factor-  
chromatin remodeler interactions and  
their impact on DNA accessibility and  
gene expression  
Advisor: Cigall Kadoch

**Jenny Yan**

Biological and Biomedical Sciences  
Poly(UG)-tailed RNAs are potent  
mediators of gene silencing in  
*C.elegans*  
Advisor: Scott Kennedy

**Lynn Yap**

Neuroscience  
Bidirectional perisomatic inhibitory  
plasticity of a Fos neuronal network  
Advisor: Michael Greenberg



Congratulations Graduates, and  
Welcome to the Division of Medical Sciences  
Alumni Association!



