



**Boston  
Children's  
Hospital**

**F.M. Kirby  
Neurobiology  
Center**

**FALL 2023**

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Website**

# **KIRBY CENTER NEWS & UPDATES**

## **Welcome to the Kirby Center Jordan Farrell, PhD!**

**Jordan Farrell, PhD** was recruited to the Rosamund Stone Zander Translational Neuroscience Center and has joined the F.M. Kirby Neurobiology Center faculty. The **Farrell Laboratory**, located in the Center for Life Science building, aims to understand how basic mechanisms that support healthy brain functions become hijacked in epilepsy to drive pathophysiology. He joins us from Stanford University where he completed his postdoctoral work and received a K99/R00 Pathway to Independence Award from the NIH National Institute of Neurological Disorders and Stroke. We welcome Dr. Farrell and look forward to his contributions to our missions.



## **Dr. Sahin elected to the National Academy of Medicine**

On October 9, **Mustafa Sahin, MD, PhD** was named to the National Academy of Medicine. 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. In addition to his role as a faculty member in the **Kirby Center**, Dr. Sahin is the Managing Director of the **Rosamund Stone Zander Translational Neuroscience Center**, Associate Chief of Research in the Department of Neurology, and Director of the Translational



Research Program at Boston Children's. Work in Dr. Sahin's lab has identified the mechanisms by which tuberous sclerosis leads to neuronal mis-wiring and led to the identification of potential therapies for this and related disorders.



## Blue Sky Day Returns!

On October 14, Michela Fagiolini, PhD, and her lab assisted with the annual **Blue Sky Day** celebration in honor of Rett Syndrome Awareness Month. Families from the Rett Syndrome community came together to celebrate those with Rett and help raise awareness for the genetic disorder. The event was held in the Harvard Medical School Quad with a lunch in the Center for Life Sciences. Many of the families who attended are part of the **Rett Syndrome Program at Boston Children's**. The event was coordinated by the **Rett Syndrome Angels** with the





help of Dr. Fagiolini and members of the Kirby Center.



## Kirby Center Retreat



On November 9, the Kirby Center hosted its first retreat since Covid. Over 150 faculty and trainees attended a day full of presentations, posters, and discussions. Congrats to those recognized for their posters: **Rasheen Powell, PhD** (Woolf Lab), **Franklin Caval-Holme, PhD & Philippe Morquette, PhD** (Do Lab), **Takuma Sonoda, PhD** (Chen Lab), and **Hannah Choh** (Andermann Lab).

Congratulations to **Michela Fagiolini, PhD** and **Takao Hensch, PhD** for receiving the Champions of Progress award at the 2023 CDKL5 Forum in London! This award recognized their amazing research advances as well as the community outreach they do. Congrats on this honor!

On October 18, **Dr. Ann Poduri**, Director of the Epilepsy Genetics and Neurogenetics programs and Associate Chief of Academic Development in the Department of Neurology, spoke about her epilepsy research at Fenway High School in Boston as part of Massachusetts

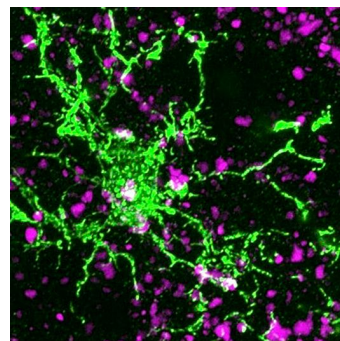


STEM Week! The kids learned about genetics and heredity, how genes can help provide answers to families, & more!

## RESEARCH IN THE NEWS & MEDIA

### Stevens Lab works to understand the development of Huntington's Disease

**Dan Wilton, PhD** (Stevens Lab) recently had his findings published in *Nature Medicine*, revealing how the process of Huntington's disease begins well before symptoms appear — and shows that in mice, the process can be blocked to prevent cognitive problems related to Huntington's. Read more on the study and its implications in the [HMS News article](#).



### Brielle Ferguson, PhD featured as Research Rising Star

Dr. Ferguson and her research were recently featured in the [BCH Research Rising Stars](#) series. Her research centers around attention and particularly deals with mapping out the neurons and circuits associated with attention. She hopes her research can lead to developing better therapies for neurological disorders linked to attention such as schizophrenia, ADHD, epilepsy, and autism spectrum disorder.

BCH Answers Blog feature on Epilepsy Genetics Program

**Ann Poduri, MD, MPH**, is the director of the Neurogenetics and Epilepsy Genetics programs. Her group recently published a study that collaborated with groups around the world implementing rapid whole-genome sequencing in clinical setting to aid in the treatment of infants with epilepsy. [See the full Answers blog post here.](#)



## EVENTS

On October 31, the Kirby Center hosted a workshop with Neurodiversity in the Workplace to learn about best practices to welcome and support neurodiverse colleagues. Over 250 attendees learned important terms, nuances, approaches, and techniques to help us make Boston Children's Hospital a more neuro-inclusive workplace. Thank you to **Dr. Michela Fagiolini** for connecting us with [NITW!](#)



### Successful Blood Drive

At the start of August, Neurobiology and Neurosurgery went head-to-head in a blood drive battle. In total, 19 Donors participated with five from Neurosurgery and fourteen from the Kirby Center.

Each donation can help up to 4 patients so this drive helped up to 76 BCH patients. Thank you to all the participants!

From November 11-15, neuroscientists from across the country and around the world convened in Washington D.C. for the annual Society for Neuroscience meeting. Many of our faculty and trainees were in attendance. There were many who presented posters and spoke at symposiums. Special congratulations to **Dr. Zhigang He** for his Presidential Special Lecture!

### Spooky Hour Pumpkin Contest

In honor of Halloween, our labs took part in a neuro-themed pumpkin carving contest. We had many



amazing jack-o-laterns. The winner was the Umemori Lab for Mus pumpkinus GPump imaging!



On November 11, Boston Children's hosted its second Ride to Cure Kids. This indoor cycling event raises money for the Boston Children's Research Accelerator Fund, which fast-tracks promising research into treatments and cures for sick kids worldwide. The Kirby Center joined with members from the Department of Neurology to form a team, which raised nearly \$1,700 towards the \$68,000+ raised at the event.

## TRAINEE & LAB NEWS

Congrats to **Angelica D'Amore, PhD** (Sahin lab) who was invited to be Review Editor for Neurogenomics in *Frontiers in Neuroscience* and *Frontiers in Genetics*!

Congrats to **Dr. Sal Brito** (Schwarz lab) on his thesis defense! The title of his defense was "Threat processing via the septohippocampal system".

Did you know we feature trainees every Friday on Twitter?

Never miss a Kirby Center Spotlight by following us on Twitter!

### Welcome to Harry Cramer, PhD!

Harry Cramer, PhD is the new Assistant Director of the IDRC Cellular Imaging Core, which provides investigators with affordable access to state-of-the-art instrumentation, powerful image analysis software and

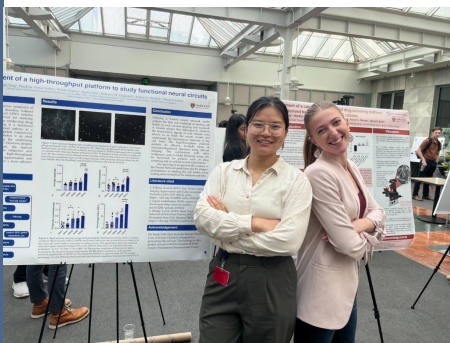
insightful training for light microscopy and image analysis.



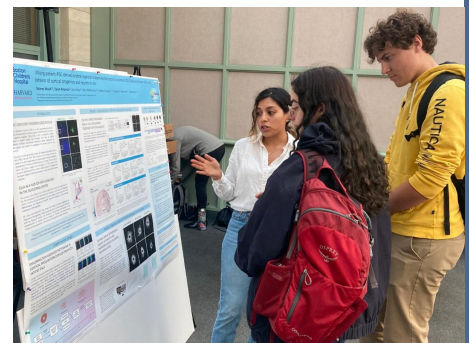
**Jed Hubbs, PhD** and his wife welcomed daughter Faye on September 13th. Congrats, Jed!



**Darius Ebrahimi-Fakhari, MD, PhD** and his wife welcomed baby Nora on August 29th. Congrats, Darius!



Congrats to the many RAs who presented at the Second Annual Synaptogenesis RA Symposium hosted by Harvard Medical School's Neurobiology program!



## Support for Fellows Entering the Job Market

If you are entering the market and would like assistance preparing to do so, please email [SJ Cunningham](#) and [Mike Do](#) well in advance of your first deadline. If you communicate your particular needs/research interests (e.g., "I am a biophysicist with neuroethological leanings for whom English is a second language"), we will convene a Practice Committee of Kirby faculty members who are appropriate for your research. This Committee will:

1. Review a draft of your application.
2. Provide coaching on preliminary interviews.
3. Offer feedback on your job talk.
4. Take you through a mock chalk talk.
5. Provide advice on closing the deal.

When reaching out to us, please copy your advisor and ask them to give the green light for this process. We are most effective when your application, talk, and chalk talk are each at the fine-tuning stage.

Note that BCH offers a related service. Please choose one to avoid overburdening our faculty.

# AWARDS & PUBLICATIONS

## Recent Awards

**Chinfei Chen, MD, PhD** and **Hisashi Umemori, MD, PhD** were awarded a multi-PI R21 from the NIH for their project, "Elucidating synaptic motifs in the visual thalamus".

**Darius Ebrahimi-Fakhari, MD, PhD** received funding as a Center of Excellence from the Spastic Paraplegia Foundation.

**Zhigang He, PhD, BM** received an administrative supplement for his NIH R01 for the project, "Mechanism and optimization of CBD-mediated analgesic."

**Mustafa Sahin, MD, PhD** was awarded an NIH supplement for his project, "Developmental Synaptopathies Associated with TSC, PTEN and SHANK3 Mutations".

**Clifford Woolf, MB, BCh, PhD** and **Jed Hubbs, PhD** received a Boston Children's Hospital Technology Development Award for their collaborative project, "Novel CBD Analogs for Treatment of Pain."

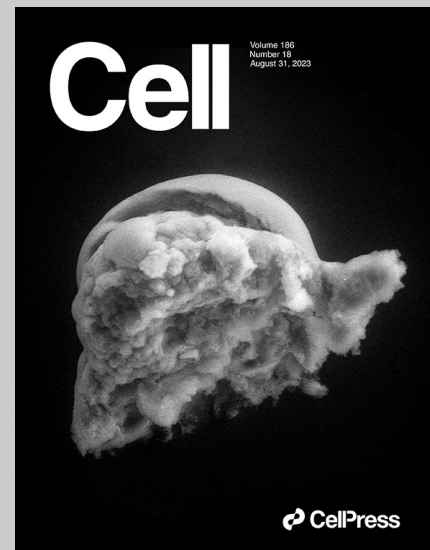
**Beth Stevens, PhD** received funding from the Dauten Family Foundation for work on pediatric CSF proteomics for psychiatric biomarker discovery.

**Karl Koehler, PhD** received an administrative supplement for his NIH R01 project, "Generation of human skin organoids from pluripotency."

**Michela Fagiolini, PhD**, together with BCH Department of Neurology Investigator **Irina Anselm, MD**, was awarded an ICCTR Planning Grant Award from Boston Children's for their project titled "Establishing novel functional biomarkers for Creatine Deficiency Syndromes".

**Mandana Arbab, PhD** was named a 2024 Next Generation Fund recipient from the Broad Institute.

## Recent Featured Publications



**Sahin Lab.** Increased degradation of FMRP contributes to neuronal hyperexcitability in tuberous sclerosis complex. *Cell Rep.* Aug 2023.

**Stevens Lab.** Exposure of iPSC-derived human microglia to brain substrates enables the generation and manipulation of diverse transcriptional states in vitro. *Nat Immunol.* August 2023.

**Holt/Gèlèoc Lab.** TMEM63 proteins function as monomeric high-threshold mechanosensitive ion channels. *Neuron.* August 2023.

**Sahin/Rotenberg Lab.** Seizure reduction in TSC2-mutant mouse model by an mTOR catalytic inhibitor. *Ann Clin Transl Neurol.* August 2023.



**Jedd Hubbs, PhD** received an NIH R03 grant for his project, "Characterization and Early Assays Development in FOXG1 Deficient Neurons."

**Aakanksha Jain, PhD** (Woolf Lab) was awarded a NIH K99/R00 Pathway to Independence Award from the National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS) for her project, "Elucidating the neuroimmune mechanisms underlying pain and inflammation in autoimmune arthritis."

**Christopher McGraw, MD, PhD** (Poduri Lab) received a grant from the Loulou Foundation for his project, "Mouse CDKL5 prime editing."

**Keunjung Heo, PhD** (Woolf Lab) was named a Ellen R. and Melvin J. Gordon Fellow in Neurobiology at HMS for her project, "Study the role of non-muscle myosin II in motor nerve regeneration after injury using a novel compound."

**Sophia Wienbar, PhD** (Do Lab) was awarded a Helen Hay Whitney Foundation Fellowship for her project titled "Channel biophysics of a mammalian spiking photoreceptor".

The Gene Editing Core, managed by **Mantu Bhaumik, PhD** and directed by **Clifford Woolf, MB, BCh, PhD**, received funding from Boston Children's to implement a new technology called iGonad.

**Umemori Lab.** The projection-specific signals that establish functionally segregated dopaminergic synapses. Cell. August 2023.

**RSZ-TNC.** Toward representative genomic research: the children's rare disease cohorts experience. Ther Adv Rare Dis. August 2023.

**Poduri Lab.** Evaluation of the feasibility, diagnostic yield, and clinical utility of rapid genome sequencing in infantile epilepsy (Gene-STEPS): an international, multicentre, pilot cohort study. Lancet Neurol. Oct 2023.

**Stevens Lab.** FEAST: A flow cytometry-based toolkit for interrogating microglial engulfment of synaptic and myelin proteins. Nat Commun. Oct 2023.

**Koehler Lab.** Mapping oto-pharyngeal development in a human inner ear organoid model. J Clin Neurophysiol. Oct 2023.

**Stevens Lab.** Microglia and complement mediate early corticostriatal synapse loss and cognitive dysfunction in Huntington's disease. Nat Med. Oct 2023.

**Lipton Lab.** Synaptic BMAL1 phosphorylation controls circadian hippocampal plasticity. Sci Adv. Oct 2023.

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