Boston Children's Hospital | F.M. Kirby Neurobiology Center

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Quarterly Newsletter

Fall/Winter 2025

KIRBY CENTER HIGHLIGHTS

Clifford Woolf, MB, BCh, PhD named to National Academy of Medicine

We are thrilled to share that Dr. Clifford Woolf, Director of the Kirby Neurobiology Center at Boston Children's Hospital , has been elected to the National Academy of Medicine (NAM)—one of the highest honors in the field of health and medicine.

Election to NAM recognizes individuals who have made outstanding contributions to medical science, health care, and public health. Dr. Woolf's pioneering research has transformed our understanding of the mechanisms of pain and neural plasticity, paving the way for new approaches to treating chronic pain and neurodegenerative diseases.

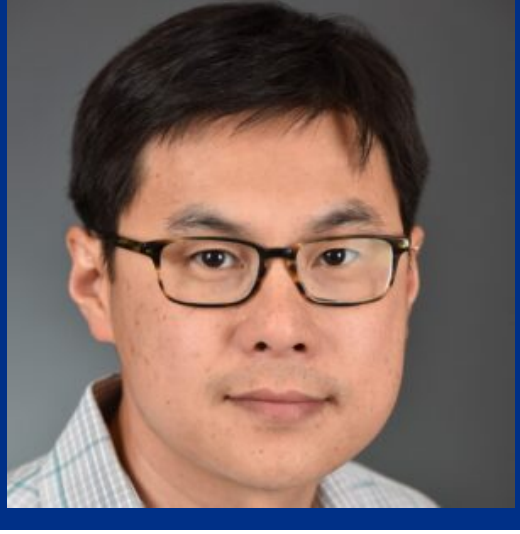
This well-deserved recognition reflects not only his groundbreaking discoveries but also his leadership and mentorship within the neuroscience community.

Wei-Chung Allen Lee, PhD received a 2025 Blavatnik Institute Early Career Investigator Award

Totaling $5 million, these grants are designed to fuel high-potential research led by truly exceptional junior faculty.

We are proud that Dr. Lee is among this year's awardees for his project analyzing regions deep within the brain in search of clues about how organisms choose between opposing instinctive behaviors: offense, or prey pursuit, and defense, or predator avoidance. He aims to deepen understanding of the neuronal circuits at play and how such circuits give rise to innate behaviors required for survival.

Learn more about the awards and recipients here.



Translational Neuroscience Center receives $35 million donation

In October, Boston Children's Hospital received a transformative $35 million gift from Hansjörg Wyss to expand the newly renamed **Rosamund Stone Zander and Hansjörg Wyss Translational Neuroscience Center**. The donation builds on a foundational 2020 gift from his late wife, Rosamund Stone Zander, and accelerates the Center's mission to bring new therapies to children with rare and ultra-rare brain disorders.

The Center, led by Department of Neurology Chair Mustafa Sahin, MD, PhD, unites experts in neurogenetics, medicinal chemistry, and gene editing across seven specialized cores, working closely with patient advocacy groups to speed clinical trial readiness for disorders linked to intellectual disability, autism, and epilepsy. This new funding will expand translational and clinical research, support early-stage pilot studies, and train clinician-researchers to lead complex, multisite trials.

Blue Sky Day 2025

Saturday, October 25th, the Rett Syndrome Angels, the Fagiolini Lab, and the Rett Syndrome Program at Boston Children's Hospital, led by Dr. David Lieberman,

united to celebrate the incredible strength, courage, and love that define this community.

Each year, the girls — supported by their families and the Harvard Swim Team — climb the steps of Harvard Medical School, a moving reminder of resilience and hope in the face of challenge.

We're honored to stand beside the families, clinicians, and researchers who make this day so special, and to continue working together toward a future as bright as the Blue Sky above.

IN THE MEDIA

Recent News Links

Gwen Géléoc talks about her research on personalized gene therapies for people with Usher syndrome (Podcast)

Scientists explain why nothing feels quite like the first time by tracking dopamine during fly sex | Crickmore Lab

Dopamine desensitization in fruit flies shows how repeated actions lose appeal over time | Crickmore Lab

Scientists Finally Figure Out How to Get CBD to the Brain for Pain Relief | Zhigang He Lab

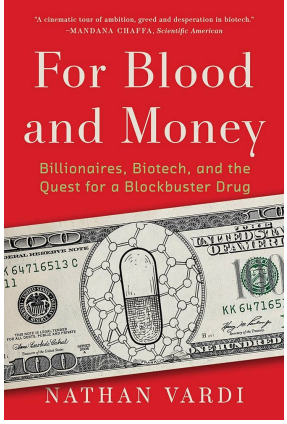
EVENTS

Kirby Center Holiday Celebrations

For Halloween, we hosted our annual neuro-inspired pumpkin carving contest. The pumpkins were displayed and voted on during the Halloween celebration: winners were the Chen and Koehler labs! Check out all the creative work done by our labs.

In honor of the holiday season, we hosted our annual winter celebration, filled with food and fun. Labs competed in a gingerbread house competition, won by the Engle lab!

Brainy Book Club Update



On December 11th, the Brainy Book Club met to discuss Nathan Vardi's book, *For Blood and Money: Billionaires, Biotech, and the Quest for a Blockbuster Drug.* Our discussion was focused on the process of drug discovery and ethics surrounding the biotech industry.

Embrace-A-Family

The Kirby Center again participated in the Boston Children's Embrace-a-Family fundraiser, for which we raised nearly $1,100.

Funds raised through this program were used to purchase gift cards for patient families in need, in collaboration with the Social Work department. Every year hundreds of BCH families benefit from the program. Thank you all for your participation!

Annual Food Drive

September is Hunger Action Month, a nationwide effort to raise awareness about hunger in America and inspire action. In honor of this campaign, the Kirby Center hosted a collection for Family Food Connections. This BCH-run food pantry, located in Jamaica Plain, serves many patient families, as well as the surrounding community. We donated essential pantry items (such as olive oil, condiments, and spices), healthy snacks, and breakfast items. Thank you for your contributions to help those less fortunate and in need.

Postdoc Appreciation Week

Every September the National Postdoc Association hosts "Postdoc Appreciation Week." We are grateful for our postdocs every day, but this creates an opportunity to show them some extra love. This year we hosted a brunch with coffee, food, and goodie bags - a small token of our appreciation for all the incredible work they do!

TRAINEE & LAB NEWS

2025 HMS PiNBAC Synaptogenesis Symposium

In November, the HMS PiNBAC program hosted their 4th Annual Synaptogenesis Symposium. This symposium began with presentations from the PiNBAC trainees and continued with a poster session featuring over 50 research assistants from the broader neuroscience community. Congrats to Ada Glynn (Schwarz Lab) for being selected to present their work, "Alternative Pathways for TRAK1 Recruitment to the Mitochondria."

Beauty of the Brain Image Contest

Congrats to Gabriela Carrillo, PhD & Fiona Mensching from the Engle Laboratory for winning the annual "Beauty of the Brain Image Contest" that is sponsored by Harvard Brain Science Initiative!

Their image "The Developing Cranial Motor System" shows outgrowth of the developing cranial motor nerves in an embryonic mouse at embryonic day 12.5. Cranial nerves are segmented and pseudocolored to allow for tracking of the nerves from their nuclei in the brain as they grow out towards their target muscles.

Check out the gallery with all the submissions

2025 BCH Staff Photo Exhibition

Jeff Holt, PhD submitted one of his astro-photography images to the 2025 BCH Staff exhibition, Micro to Macro. His picture of the Total lunar eclipse was selected

for "Most Dramatic Picture". The exhibition can be seen in the Hale building hallway past the cafeteria.

The Kirby Center is now on LinkedIn

Be sure to follow our page to stay up-to-date on all the Kirby news!

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

Maya Chopra, MBBS, FRACP, received funding from the TNC to support her work with the Brain Gene Registry.

Darius Ebrahimi-Fakhari, MD, PhD, received a Specialized Center-Cooperative Agreement (U54) from NIH to support, “Spastic Paraplegia Centers of Excellence Research Network (SP-CERN) - RDCRC.”

Zhigang He, PhD, BM, received funding from the Adelson Medical Research Foundation for his project, “Developing novel neural repair strategies after CNS injury.”

Zhigang He, PhD, BM, and the Viral Core were awarded funding from Boston Children's Equipment and Core Resources Allocation Committee to purchase an Eppendorf centrifuge.

Jonathan Lipton, MD, PhD, received funding from the NIH via MGB for his project with Dr. Michael Whalen, “Mechanisms of Circadian and Synaptic Dysfunction after repetitive Mild TBI (Y4-5).”

Emily Osterweil, PhD, received funding from the Fraxa Research Foundation for her project, “Identifying New Therapeutic Approaches Using a Novel Human FXS Model.”

Alexander Rotenberg, MD, PhD, received funding from A-Synaptic Corporation for the Preliminary evaluation of the safety and efficacy of CBD delivery with the a-synaptic GT4 transdermal delivery system for the treatment of refractory seizures in individuals diagnosed with Dravet Syndrome and Lennox -Gestaut Syndrome. Dr. Rotenberg also received NIH funding to support his project, “Developing brain penetrable AAV gene therapy for succinic semialdehyde dehydrogenase deficiency.”

Mustafa Sahin, MD, PhD, received funding from multiple sources, including:

- Rhebolution Medicines for his project, “Using ASOs to target RHEB in Tuberous Sclerosis Complex.”
- Biogen to fund a Tuberous Sclerosis Complex Biomarker Study
- Sergey Brin Family Foundation for his project “Aligning Research to Impact Autism (ARIA)”.

Judith Steen, PhD, was awarded supplemental funding from The Michael J. Fox Foundation for her project, “Development of a FLEXISyn Assay for the absolute Quantification of α-Synuclein and its Post-translational Modifications,” and

Recent Publications

Woolf Lab. A machine learning tool with light-based image analysis for automatic classification of 3D pain behaviors. *Cell Rep Methods.* Sept 2025.

Umemori Lab. Network Activity Shapes Inhibitory Synaptic Development in the Mouse Hippocampus. *J Neurosci.* Oct 2025.

Human Neuron Core. Human iPSC-derived glutamatergic neurons with pathogenic KCNQ2 variants display hyperactive bursting phenotypes. *Neurobiol Dis.* Nov 2025.

Fagiolini Lab. Visual Recovery Reflects Cortical MeCP2 Sensitivity in Rett Syndrome. *Ann Clin Transl.* Nov 2025.

received philanthropic funding to support her Alzheimer's Disease research.

Beth Stevens, PhD received funding from the Simons Foundation for her project, "Contribution of sleep and neuro-immune-vascular homeostasis to healthy cognitive aging." Dr. Stevens was also awarded funding from the Cure Alzheimer's Fund for her project, "How Body–Brain Inflammatory Signals via Border Macrophages Alter the Neuroimmune Landscape and Drive Alzheimer's Pathology."

Clifford Woolf, MB, BCh, PhD, received funding from the Adelson Medical Research Foundation for his project, "Promote regeneration and prevent neuropathy and neuropathic pain."

Mantu Bhaumik, PhD (Mouse Gene Manipulation Core), was awarded funding from Boston Children's Equipment and Core Resources Allocation Committee to purchase a biosafety cabinet designated for gene targeting mouse embryonic stem cells and culture of cell lines.

Elizabeth Buttermore, PhD (Human Neuron Core), was awarded a TNC Pilot Award to support her project, "Designing and validating prime editors for patient-specific variants from seven NDDs."

Gabriela Carillo, PhD (Engle Lab), received funding from HHMI to support career development activities during her postdoctoral training period.

Kelvin De Leon, PhD (Ferguson Lab), was awarded a K00 from the NIH for his project, "Cellular and circuit characterization of attention in developmental and epileptic encephalopathies (DEEs)."

James Kiraly, PhD (Z. He Lab), received a T32slot via Mass Eye and Ear to support his postdoctoral research.

Nils Korte, PhD (Stevens Lab), was awarded a Charles A. King Trust Fellowship to support his project, "Regulation of Dopamine by Cells of the Blood-Brain Barrier."

Kwangjun Lee, PhD (Arbab Lab), received a Thrasher Research Fund Early Career Award for his project, "Restoring motor neuron function in pediatric spinal muscular atrophy through base editing."

Yuchu Liu, PhD (Z. He Lab), was awarded funding from Spaulding Rehabilitation Hospital for his project, "Manipulating Reticulospinal Neurons To Promote Functional Recovery After SCI."

Kellen Winden, MD, PhD (Sahin Lab), was awarded funding from the Rothberg Family Foundation for his project, "Exploring Pathways Leading to Seizures in Tuberous Sclerosis Complex (TSC)." Dr. Winden also received funding from the Pediatric Epilepsy Research Foundation for his project Tuberous Sclerosis Complex Fetal Evaluation & Treatment Accelerator.

Crickmore Lab. Behavioral devaluation by local resistance to dopamine. *Nar Neurosci.* Nov 2025.

Ebrahimi-Fakhari Lab. Longitudinal Dynamics of Plasma Neurofilament Light Chain in Hereditary Spastic Paraplegia Type 11 (HSP-SPG11) and Type 15 (HSP-ZFYVE26). *Mov Disord.* Dec 2025.

Sahin Lab. Neuronal hyperactivity becomes mTORC1 independent due to transcriptional changes in tuberous sclerosis complex disease models. *Cell Rep.* Dec 2025.