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

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KIRBY CENTER HIGHLIGHTS



Judith Steen Receives 2026 HUPO Clinical & Translational Proteomics Award

Congratulations to Judith Steen, PhD, on receiving the prestigious 2026 Human Proteome Organization (HUPO) Clinical & Translational Proteomics Award! The award recognizes outstanding research advancing the use of protein science in patient care.

Dr. Steen's research focuses on tau, a protein associated with Alzheimer's disease and many other neurodegenerative disorders. Her lab has developed innovative analytical and computational technologies to study tau and the chemical modifications that occur as neurodegenerative diseases progress.

Through their FLEXIVerse platform and FLEXITau technology, Dr. Steen and her team have made several important discoveries. Their research revealed that chemical modifications to tau accumulate in a predictable sequence throughout disease progression, essentially creating a molecular clock that can help track the development of neurodegeneration. The

team also identified specific tau modifications that appear before symptoms develop, including pTau217, a biomarker now measured in an FDA-cleared blood test.

Additionally, the lab developed a machine-learning approach known as the "tau code," which uses patterns of tau modifications to distinguish between different tau-related diseases with greater than 84% accuracy. These findings could have important implications for improving early diagnosis, identifying patients for clinical trials, and developing more targeted treatments for different neurodegenerative diseases.

This recognition highlights the impact of Dr. Steen's work in bringing advances in proteomics from the laboratory into clinical applications. She also credits the patients and families who have contributed tissue and blood samples, as well as the trainees, collaborators, and funding organizations who have supported the lab's research.

Congratulations to Dr. Steen and the entire Steen Lab on this well-deserved recognition and their continued contributions to advancing our understanding of neurodegenerative disease!

Learn more about Dr. Steen's award and research: **https://lnkd.in/eJhcDbrU**



Celebrating Our BHCC Summer Interns

The F.M. Kirby Neurobiology Center wrapped up another successful summer of its Bunker Hill Community College (BHCC) internship program, celebrating the hard work and accomplishments of this summer's interns at a research poster session in the Center for Life Science building.

Throughout the program, interns gained hands-on research experience in Kirby and Kirby-affiliated faculty labs, exploring a range of neuroscience topics. Their projects included investigating the molecular mechanisms of neurodegenerative diseases, examining the effects of cancer treatments on the enteric nervous system, and screening potential epilepsy-causing genes using zebrafish models.

During the poster session, interns presented their research projects to members of the Kirby Center community, sharing their findings, discussing their experiences, and highlighting the skills they developed throughout the summer. The presentations offered an opportunity for interns to showcase their progress, engage with researchers, and reflect on their growth as emerging scientists.

The internship program provides students with valuable exposure to scientific research, mentorship, and the diverse career paths available in science. We are proud of all our BHCC interns accomplished this summer and grateful to the faculty, mentors, and lab members who supported them along the way.

Congratulations to our interns on a successful summer, and best wishes as they continue their education and pursue their future careers in science!



A Fond Farewell to Dr. Clifford Woolf

As Dr. Clifford Woolf prepared for retirement, the Kirby Neurobiology Center came together for a final celebration honoring his remarkable career and the lasting impact he has made on our community.

Faculty gathered for a special lunch in Dr. Woolf's honor, sharing memories, celebrating his accomplishments, and presenting him with gifts in appreciation of his many years of scientific leadership and mentorship. The celebrations continued with a department-wide gathering, bringing colleagues and trainees together to thank Dr. Woolf and wish him well in his next chapter.

Throughout his career, Dr. Woolf has made extraordinary contributions to neuroscience research while inspiring and mentoring generations of scientists. His influence extends far beyond his scientific discoveries, reflected in the many trainees he has guided, the colleagues he has supported, and the community he has helped build at the Kirby Neurobiology Center and beyond. We are all better for experiencing his kindness, encouragement, support and friendship.

While he will be greatly missed, his scientific legacy and commitment to mentorship will continue to shape the field for years to come.

Congratulations on an incredible career, Dr. Woolf! The Kirby Neurobiology Center is grateful for all you have contributed and wishes you the very best in retirement.



16th Annual Blue Sky Day

On Saturday, October 24, the Kirby Neurobiology Center was proud to participate in the 16th Annual Blue Sky Day, hosted by Rett Syndrome Angels in recognition of Rett Syndrome Awareness Month. The event brought together individuals and families affected by Rett syndrome, researchers, clinicians, and advocates to celebrate the strength, courage, and love of this incredible community.

This year's celebration united Rett Syndrome Angels, the Fagiolini Lab, and the Rett Syndrome Program at Boston Children's Hospital, led by Dr. David Lieberman. A special Blue Sky Day tradition is the annual climb up the steps of Harvard Medical School, where girls living with Rett syndrome are joined by their families. This inspiring tradition celebrates their resilience and the incredible support surrounding them.

We are grateful to Dr. Michela Fagiolini, Dr. David Lieberman, and their teams for their continued dedication to Rett syndrome research and support for the community. Special thanks to Rett Syndrome Angels and everyone who helped make this day so meaningful!



IN THE MEDIA



Different Journeys, One Shared Purpose: Advancing Spinal Cord Injury Research

September is Spinal Cord Injury (SCI) Awareness Month, an opportunity to highlight the impact of spinal cord injuries and the importance of research to improve recovery and treatment options.

In the video below from Wings for Life, graduate student Jason Biundo, who works in the labs of Zhigang He, PhD, BM, and Beth Stevens, PhD, at the Kirby Neurobiology Center, shares his story of resilience, determination, and a commitment to advancing spinal cord injury research. After sustaining a spinal cord injury in 2019, Jason pursued a career in research at Harvard Medical School, dedicating himself to better understanding spinal cord injuries and contributing to progress in the field.

Jason's journey recently intersected with that of Brooke, who became the first woman to skateboard across America after her stepfather sustained a spinal cord injury. Through this remarkable journey, Brooke raised more than $55,000 for Wings for Life and spinal cord injury research.

Earlier this year, Brooke visited Jason at a Wings for Life-funded laboratory, uniting two individuals whose different experiences inspired a shared commitment to progress. Their meeting highlights the powerful connection between personal experience, scientific discovery, and the collective effort to improve the lives of people affected by spinal cord injuries.

The Kirby Neurobiology Center is proud to highlight Jason's work and ongoing research efforts dedicated to understanding the nervous system and advancing new possibilities for recovery after injury.

Watch the video: **Meet Brooke and Jason**

New Research from the Woolf Lab Offers a Promising Approach to Chronic Pain Treatment

Chronic neuropathic pain remains a major challenge to treat, in part because of the complex mechanisms underlying how pain signals are generated and transmitted. New research from the lab of Dr.Clifford Woolf at the Kirby Neurobiology Center describes an innovative approach to reducing pain by disrupting interactions within nociceptors, the specialized nerve cells responsible for detecting painful stimuli.

This research offers new insight into potential strategies for treating chronic pain and is already helping advance therapeutic development. The mechanisms behind this approach have been licensed to Mimetic Medicines, a local biotechnology company led by a former Woolf lab postdoctoral fellow. The company is using these findings to inform the development of new therapeutics aimed at addressing pain.

This work highlights the potential for discoveries in basic neuroscience research to translate into innovative treatments for patients living with chronic pain.

Read more about the research: **https://lnkd.in/eFPpVZ9d**

Dr. Jonathan Lipton Joins Research Exploring a Potentially Undiscovered Internal Clock in the Brain



Jonathan Lipton, MD, PhD, of the Kirby Neurobiology Center, is part of an innovative research collaboration investigating whether the brain has an undiscovered internal clock that helps maintain healthy brain function.

Supported by funding from the W. M. Keck Foundation, the project brings together Dr. Lipton with Dr. Eric Strieter and Dr. Margaret Stratton of the University of Massachusetts Amherst to explore a potential timekeeping mechanism that may work alongside the body's circadian clock.

Circadian rhythms help coordinate many of the body's daily biological processes. Researchers are now investigating whether an additional internal clock may play a role in regulating and maintaining brain function, opening new avenues for understanding the biology of the brain.

This collaborative project highlights Dr. Lipton's contributions to neuroscience research and the importance of investigating fundamental biological mechanisms that could reshape our understanding of brain health.

Read the full announcement from UMass Amherst:
https://www.umass.edu/news/article/these-researchers-believe-we-each-have-undiscovered-internal-clock-and-wm-keck

EVENTS

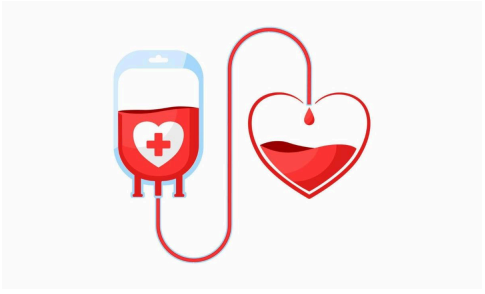
Neurobiology Seminar Series returns

The **Neurobiology Seminar Series** presented by HMS and BCH returns for another season of presentations by accomplished neuroscientists from across the country on Mondays during the school year. Guests hosted by the Kirby Center present in Folkman Auditorium Mondays at 12:15 and viewing is typically also available on Zoom.

If you have questions, please contact **SJ Cunningham**.







Blood Drive Battle

Family Food Connections Drive

In August, the Kirby Center hosted a food drive to benefit 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, healthy snacks and holiday food items!

In August, the Kirby Center, Neurosurgery, and Neurology engaged in a blood donation battle to benefit BCH's half pints. In the end, 25 people donated, which will benefit up to 100 patients.



On Friday October 30th we hosted our annual Halloween Pumpkin Contest. Labs carved up some amazing neuro-themed jack-o-lanterns to get in the spooky spirit. The winner of the contest was the Farrell Lab!

TRAINEE & LAB NEWS

Awards at the 2026 CDKL5 Forum

The Kirby Neurobiology Center is proud to celebrate two exciting recognitions from the 2026 CDKL5 Forum held in London and organized by the LOULOU Foundation. The international gathering brought together researchers, clinicians, families, and advocates united by a shared commitment to improving the lives of individuals affected by CDKL5 deficiency.

Congratulations to Mustafa Sahin, MD, PhD, and his team at Boston Children's Hospital, who received the 2026 Lab of the Year Award in recognition of their outstanding contributions to CDKL5 research. We also congratulate Rose Glass, PhD, recipient of the 2026 CDKL5 Forum Junior Fellowship Award, recognizing her contributions and commitment to advancing research in this field.

These honors highlight the dedication and collaborative efforts of the Kirby research community and the important role of organizations like the LOULOU Foundation in supporting scientific discovery.

We are proud to see our researchers recognized on an international stage and look forward to the continued progress toward better understanding CDKL5 deficiency and developing effective treatments for those affected.



Kirby Center Administrative Team Retreat

The Kirby Center administrative team recently enjoyed a day of team building, exploration, and celebration in Boston. The retreat began at the Museum of Fine Arts, Boston, where team members split into groups for a scavenger hunt led by Watson Adventures. Working together to solve clues and complete challenges throughout the museum, the teams enjoyed a fun and engaging way to strengthen connections outside the office.

Following the scavenger hunt, the team headed to Loco Taqueria & Oyster Bar in Fenway for lunch and some well-deserved time to relax and catch up.

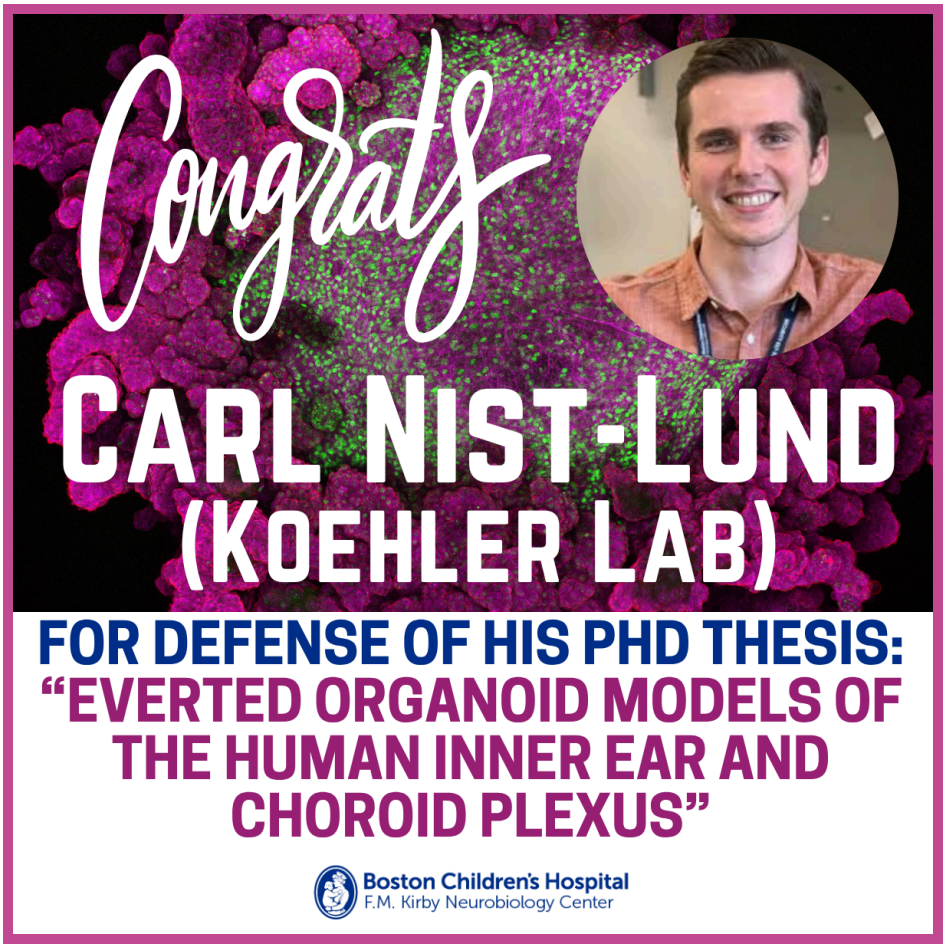
The retreat was a wonderful opportunity to step away from daily responsibilities, enjoy time together, and celebrate the people who make the Kirby Center administrative team such a valued part of the community.



Congrats to Sneham Tiwari, PhD (Poduri Lab) for receiving the American Epilepsy Society Postdoctoral Research Fellowship for her project, "*Studying Mosaic depdc5 Zebrafish: Seizures, Hyper-excitability and Drug Screening*"



Congrats to Takuma Sonoda, PhD (Chen Lab) for accepting an Assistant Professor position at University of Virginia!



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.

RECENT AWARDS

Elizabeth Engle, MD, received funding from the Spinal Muscular Atrophy Foundation for the project, “Defining and Targeting Neuromuscular Junction Dysfunction in Human SMA Models” as well as donor funding to support her work, "KIF21A with Primary Peripheral Motor Neuropathy."

Darius Ebrahimi-Fakhari, MD, PhD, received funding from Jack’s Corner Foundation for his project, “Endocannabinoid Signaling and Synaptic Pruning inAP-4-Associated Hereditary Spastic Paraplegia.”

Jordan Farrell, PhD, was awarded an R01 from the NIH for his project, “Epileptiform corruption of dentate spikes in Alzheimer’s Disease.”

Brielle Ferguson, PhD, was awarded a Harvard Brain Science Initiative Bipolar Disorder Seed Grant for her project, “Examining Adolescent Cognition as An Early Predictor of Bipolar Disorder.”

Zhigang He, PhD, BM, was awarded an R01 from the NIH for his project, “Organization, plasticity, and regeneration of reticulospinal axons.”

Karl Koehler, PhD, received an R01 from the NIH for his project, “Generation of human skin organoids from pluripotency.” Dr. Koehler was also awarded funding from the LEO Foundation for his project, “Modeling and targeting bullous pemphigoid in skin organoids.”

Jonathan Lipton, MD, PhD, received funding from the Mathers Foundation for his project, “Riboregulation of the circadian timekeeping system.” Dr. Lipton was also awarded an R21 from the NIH for his project, “Prion-like properties of CLOCK as a protective reservoir for circadian timekeeping.”

Emily Osterweil, PhD, received an R01 from the NIH for her project, “Therapeutic targeting of proteostasis in Fragile X Syndrome" as well as funding from the National Fragile X Foundation for her project, “Investigating Fragile X Syndrome-Specific and Convergent Neurodevelopmental Disease Signatures.”

Ann Poduri, MD, MPH, received two awards from NIH: (1) an R56 from the NIH for her project, “Evaluating Candidate Genes for Evidence of Epilepsy,” and (2) an R21 from the NIH for her project, “Evaluating Candidate Genes for Sudden Unexpected Death in Pediatrics.” Dr. Poduri was also awarded funding from NINDS for Child Neurology Career Development Program.

Alexander Rotenberg, MD, PhD, received an R33 from the NIH for his project, “Gene Therapy for Succinic Semialdehyde Dehydrogenase Deficiency (SSADHD).”

Mustafa Sahin, MD, PhD, was awarded supplemental funding from the NIH to support the IDDRC cores.

Hisashi Umemori, MD, PhD, received an R01 from the NIH for his project, “Activity-dependent development of dopamine synapses, release modes, and actions.” Dr. Umemori also received a grant from the PCDH19 Alliance for his project, “Cellular and Network Mechanisms by Which PCDH19 Mosaicism Leads to Epilepsy.”

Navid Mousavi (Do Lab) was awarded a Lefler Predoctoral Fellowship from Harvard Medical School for his project, “Spatial Organization of Phototransduction Elements Within Intrinsically Photosensitive Retinal Ganglion Cells.”

Kevin Stieger, PhD (Z. He Lab) was awarded funding for his project, "Training in Sleep, Circadian, and Respiratory Neurobiology."

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