



Penn brainSTIM Center
YEAR IN REVIEW
2025

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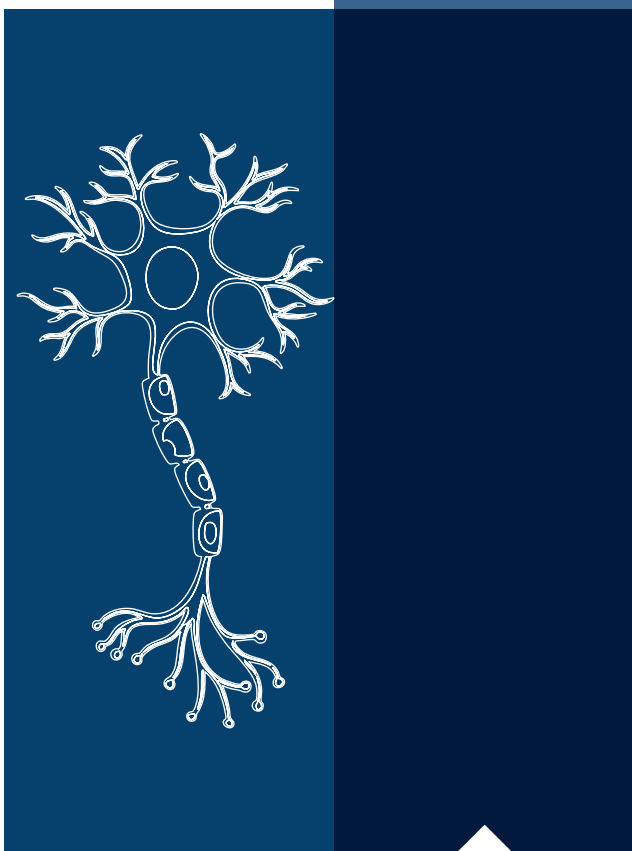
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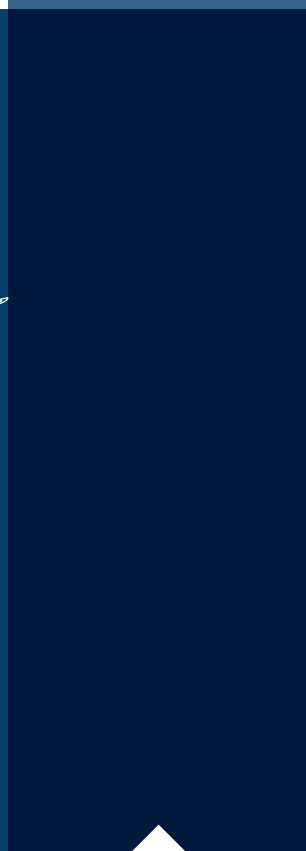
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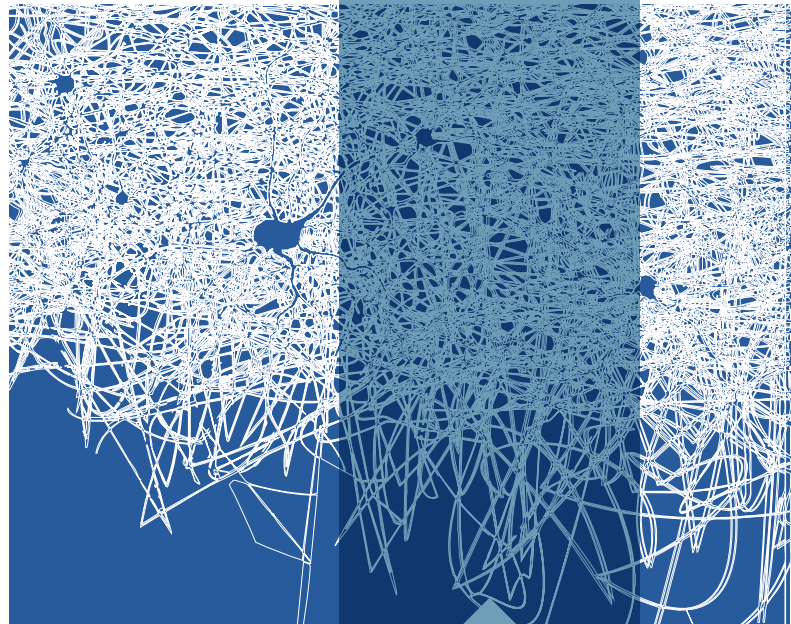
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Words from the Director

Dear brainSTIM Community,

Looking back at 2025, I'm struck by how much the brainSTIM Center has grown, not only in size and scientific reach, but in the strength of the community that drives our mission. This past year has been defined by collaboration, creativity, and a shared commitment to advancing the science and clinical translation of neuromodulation.

Education and training remained central to our work. Our third annual brainSTIM Intensive TMS Workshop once again brought together a diverse cohort of learners for hands-on exploration of TMS principles, methodology, and emerging applications. Across the year, our seminar partnerships with CNDS and CBIS offered rich opportunities for intellectual exchange, spanning topics from affective neuroscience to computational modeling. We also launched a new initiative, the brainSTIM Center Trainee Program, to foster mentorship, skills development, and community-building among students, residents, and postdoctoral fellows across Penn.

Our presence within the broader neuromodulation landscape reached new heights as well. We were proud to have significant representation at scientific gatherings, including the ANT Neurometing at The Franklin Institute, and to co-host the Penn Translational Neuroscience Center (PTNC) Neuromodulation Symposium—both of which highlight the rapid pace of innovation in brainstimulation technologies. These events brought leading researchers, clinicians, and engineers to Penn and underscored our Center's growing role as a catalyst for interdisciplinary discovery.

Throughout the pages of this report, you will see the impressive accomplishments of our faculty: major grants, national awards, impactful publications, and pioneering clinical and translational work. From advances in focused ultrasound and adaptive deep brain stimulation, to cutting-edge research in TMS, neuroengineering, and brain-computer interfaces, our community continues to push the boundaries of what neuromodulation can achieve.

We were thrilled this year to welcome Dr. Bijan Pesaran, whose internationally recognized expertise in systems neuroscience and neural engineering adds tremendous depth to our collaborative network. We were also delighted to welcome Dr. Charles F. Palmer as a Center Scientist who brings dual training in neurology and psychiatry and a research focus on personalized neuromodulation approaches including TMS, DBS, and focused ultrasound. Additionally, we are pleased to welcome Dr. Jeremy Charles as a Center Scientist, where he joins our community with a growing interest in integrating neuromodulation into patient care. Finally, we want to acknowledge Drs. Golkoo Hosseini and Lauren Hammer, who have demonstrated increasing leadership this year in fulfilling brainSTIM's educational mission.

As we reflect on an extraordinary year and look ahead to 2026, I am deeply grateful to our faculty, trainees, staff, and partners whose dedication makes brainSTIM such a vibrant intellectual home. The progress captured in this Year in Review is a testament to what we can accomplish together—and a glimpse of the even more impactful future we are building.

Thank you for your continued support and engagement with our mission.

Sincerely,

Roy Hamilton, MD, MS

Director, Penn brainSTIM Center

01 Center Initiatives

EDUCATION

Workshop: The brainSTIM Center hosted its third annual TMS Workshop in 2025, featuring lectures by brainSTIM faculty, practical demonstrations, and hands-on training sessions designed to advance skills in transcranial magnetic stimulation.

Seminars: Throughout 2025, brainSTIM organized a range of engaging seminars:

- **Neuromodulation and Neuroimaging Relevant to Affective Disorders:** Continuing its collaboration with the Center for Neuromodulation in Depression and Stress (CNDS) and the Center for Brain Imaging and Simulation (CBIS), brainSTIM co-hosted a weekly virtual speaker series focused on Neuromodulation and Neuroimaging in Affective Disorders.
- **ANT Neuromeeting:** Dr. John Medaglia, Dr. Roy Hamilton, Dr. Nicholas Balderston, and Dr. Desmond Oathes presented their work at the second ANT Neuromeeting held in North America.

CLINICAL & INDUSTRY PARTNERSHIPS

Our collaborations with leading industry partners continue to expand. ANT Neuro, experts in neurodiagnostic technology, again contributed to this year's TMS Workshop with their interactive TMS-EEG demonstration, and also brought along their neuronavigation robot for attendees to explore. The Center also hosted an on-site visit from the company to showcase their newest technologies to facilitate connections with interested Penn faculty.

We are also continuing our partnership with QuantalX, a device company with whom we negotiated an equipment loan last year. As we move into 2026, we look forward to strengthening existing partnerships, building new ones, and expanding our clinical service portfolio through dynamic collaborations.

BRAINSTIM CENTER TRAINEE PROGRAM

This year, we are excited to launch a new initiative: the brainSTIM Center Trainee Program. Created to strengthen our growing neuromodulation community at Penn, the program is designed to foster networking, collaboration, and hands-on training for graduate students, junior research staff, residents, and postdoctoral fellows. Through interdisciplinary engagement and shared scientific development, the program aims to build a stronger sense of community, expand technical and research skills, and connect trainees with peers and mentors across the university. We look forward to supporting the next generation of neuromodulation researchers through this new effort.

TMS WORKSHOP 2025



Attendees prepare a participant for EEG recording demonstrating ANT's TMS compatible EEG systems.



Dr. Nicholas Balderston engaging in an interactive seminar discussion.



Olu Faseyitan leads hands-on training session of TMS.



Dr. Sudha Kessler, leading TMS safety presentation.



Dr. John Medaglia giving a presentation on closed-loop TMS EEG.



Dr. Desmond Oathes responding to questions during his presentation on interleaved TMS/fMRI.

02



The Penn brainSTIM Center held its third annual brainSTIM Intensive 3-Day TMS Workshop, taking place September 17 through 19, 2025. This immersive program combined hands-on training with didactic lectures led by experts in the field, offering participants a comprehensive foundation in transcranial magnetic stimulation (TMS). Topics included the principles and mechanisms of TMS, safety guidelines, and the latest clinical and research advancements. Attendees also explored TMS targeting and experimental design, as well as integrated approaches such as TMS/fMRI and TMS/EEG. This year's workshop was led by **Dr. Nicholas Balderston**.



Dr. Nicholas Balderston present his labs research at Neurometing.



Dr. Roy Hamilton shares insights on clinical applications of neuromodulation.

ANT

Neurometing

April 9 - 10, 2025

The Franklin Institute

03



A presentation by Dr. John Medaglia.



Dr. Desmond Oathes presenting at Neurometing

The 34th annual ANT Neuromeeting, 2nd US Edition, held April 9–10, 2025 at the Franklin Institute in Philadelphia, served as a dynamic forum for scientific exchange, continuing the event’s three-decade tradition of uniting researchers and clinicians to inspire advancements in neuroscience. Over two days, leading experts from around the world participated in talks, workshops, and product demonstrations, with Day One focused on EEG and Day Two centered on neuromodulation.

The meeting featured presentations from prominent thought-leaders, including from brainSTIM Center faculty members **Desmond Oathes, PhD, Nicholas Balderston, PhD, Roy Hamilton, MD, MS, and John Medaglia, PhD.** Other speakers included Marlene Behrmann, PhD (University of Pittsburgh), Bin He, PhD (Carnegie Mellon University), Hasan Ayaz, PhD (Drexel University), and Heather Green, PhD, CCC-SLP (CHOP), all contributing to a highly engaging and collaborative program.

04

PTNC NEUROMODULATION SYMPOSIUM

The brainSTIM Center partnered with the Penn Medicine Translational Neuroscience Center (PTNC) to host the 2025 PTNC Neuromodulation Symposium held in March over 1 ½ days at the University of Pennsylvania. The organizing committee—led by Drs. Roy Hamilton, Desmond Oathes, and Theresa Tritto—brought together clinicians, engineers, and neuroscientists to explore the latest advances in brain-stimulation technologies.

The symposium highlighted innovations in neuromodulation techniques, personalization and precision medicine, neuroethics, and neuroengineering. The brainSTIM Center’s expertise was strongly represented, with more than half of all presentations delivered by Center members. Esteemed external speakers included Dr. Helen Mayberg, Dr. Benjamin Rapoport, Dr. Alik Widge, and Dr. Marom Bikson.

Program sessions emphasized both scientific breakthroughs and clinical relevance, featuring discussions on personalized and adaptive neuromodulation for psychiatric and neurological disorders. The most memorable session of the symposium included a powerful and unique patient panel comprising individuals receiving various neuromodulation treatments including TMS, ECT, VNS, and DBS for a range of disorders. Overall, the event underscored Penn’s leadership in both invasive and non-invasive neuromodulation techniques, highlighting their application in both research and clinical care.



Iahn Cajigas, MD, PhD (Penn) spoke about implantable brain-computer interfaces for restoring motor function.



Flavia Vitale, PhD (Penn) spoke about an engineered dry EEG system.



Helen Mayberg, MD (Mount Sinai & Icahn School of Medicine) spoke about biomarkers in DBS for depression.



Lauren Hammer, MD (Penn) spoke about personalized DBS in Parkinson’s Disease.



Marom Bikson, PhD (CCNY) spoke about a new wearable disposable neuromodulation device.



Frances Jensen, MD and Raquel Gur, MD (Co-Directors of the PTNC) gave closing remarks to end the symposium.

FACULTY SPOTLIGHTS

Dr. Charles Palmer



What initially drew you to the field of neuromodulation, and what aspects of your work do you find most meaningful or impactful?

“What initially drew me to neuromodulation was seeing patients in both neurology and psychiatry suffer from the limitations of our current treatments. Medications are often only partially effective or produce intolerable side effects, and it never made sense to me that we treat very different brains in largely the same way. As it becomes increasingly clear that many (all?) neuropsychiatric conditions are really brain circuit disorders, neuromodulation offers a better approach by directly engaging the circuits that generate symptoms. Therapies like DBS, TMS, and ECT are already among the most effective interventions we have for many brain disorders and to me it seems obvious that these types of approaches are the future of patient care. As we’ve come to understand many neuropsychiatric conditions as brain circuit disorders, neuromodulation offers a more direct and precise way to engage the circuits that generate symptoms. My motivation to do research has always been to develop more of these therapies, expand their indications, and improve them so that they can help more patients. I came to Penn in large part to have access to all the neuromodulatory tools available, incl. the ability to offer patients access to clinical trials when other options have failed.”

Could you tell us about some of the projects you’re currently involved in?

“I am currently involved in projects that span invasive and noninvasive neuromodulation across psychiatric and neurological disease. I serve as the clinical lead on a project investigating stereo-EEG-guided DBS for OCD. I organize and run the inpatient evaluation phase in which we map OCD symptoms to guide DBS placement to address obsessions, compulsions, anxiety and depression. I then program patients’ DBS longitudinally while also contributing efforts to identify behavioral biomarkers & optimize how we program DBS for OCD in our own four-lead DBS patients but also more broadly. I am also interested in low-intensity focused ultrasound (LIFU), a very exciting but poorly-understood technology. I’ve developed a neurophysiology-based paradigm to better understand targeting and stimulation paradigms, which I plan to apply to applications in PD, depression, and OCD. Much of my clinical work involves exploring new ways to deliver TMS, including clustered protocols, extending treatment to patient populations who have not traditionally had access to TMS, particularly patients with comorbid neurological disease. I also collaborate on efforts to optimize ECT delivery to minimize cognitive side effects and better understand novel mechanisms. Across these projects, the unifying aim is to develop more precise, biomarker-informed, and personalized models of neuromodulation that improve patient outcomes.”

What upcoming research directions or goals are you most excited to pursue?

“A major long-term goal is to reframe conditions currently conceptualized as ‘neurologic’ or ‘psychiatric’ as simply brain disorders. This mindset would allow for more holistic treatment for patients & destigmatize care. Clinically, neuromodulatory treatments are currently siloed behind subspecialty training, but expanding indications across fields (i.e. DBS in psychiatry, TMS in neurology) & normalizing their use can be a bridge to encouraging this “brain medicine” perspective. So, I’m looking forward to continuing to advocate for this through my research and translation to clinical applications. I’m also very excited to see the potential therapeutic implications of LIFU, already showing potential for circuit modulation of deep-brain targets.”

In your view, what makes the brainSTIM Center at Penn a vital resource, and how do you see collaboration with its faculty benefiting your work?

“The brainSTIM Center brings together an amazing multidisciplinary group who are all focused on advancing neuro-modulation. I’ve always found that innovation occurs at the interface of people from different backgrounds being able to sit at the same table and have conversations, something the brainSTIM Center uniquely encourages and supports. Coming from my own background often serving as a link between disparate fields, the huge variety of disciplines across the Center has felt like a perfect fit. Despite not being at Penn for long, I have already found an amazing mentorship team which includes many of the senior researchers in brainSTIM. I’m very excited to continue to form connections and collaborations and feel that the Center provides a perfect avenue to do this. I believe the future of neuromodulation is the future of brain medicine. To get there, we need treatments that improve quality of life, reduce side effects, shorten the time to effective intervention, and help us match the right patient to the right treatment at the right time. I hope my work contributes to making care across the brain more cohesive and more effective.”

FACULTY SPOTLIGHTS

Dr. Lauren Hammer



What initially drew you to the field of neuromodulation, and what aspects of your work do you find most meaningful or impactful?

“As a physician-scientist with a background in engineering, I have always been interested in building new technology. During my clinical training, as I developed a focus in movement disorders, I became particularly interested in understanding brain function from a network perspective. I was especially drawn to technologies that let us study and perturb these systems to better understand how they work.”

My work has focused on translational, human-subjects research at the interface of engineering and clinical care. I find the most meaning in working directly with patients and in developing neuromodulation technologies that move beyond proof-of-concept and have real potential to improve clinical care within the next decade.”

Could you tell us about some of the projects you’re currently involved in?

“My lab focuses on developing and translating next-generation neuromodulation technologies for patients with movement disorders. One major area of our work is identifying novel neural signal biomarkers in Parkinson’s disease (PD) to guide adaptive (closed-loop) deep brain stimulation. These are ‘smart’ systems that adjust therapy in real time based on brain activity. We are particularly interested in stimulation-entrained signals, including gamma-band activity, which may provide a more reliable signal to guide therapy. A second focus of our work is advancing neuromodulation for cerebellar network disorders. Although deep brain stimulation for essential tremor has been FDA-approved for as long as PD, the underlying physiology is still less well understood. We are working to define the neurophysiologic signatures of essential tremor to enable more precise neuromodulation strategies targeting cerebellar circuits.”

What upcoming research directions or goals are you most excited to pursue?

“One of the directions I am most excited about is extending our work into cerebellar neuromodulation for ataxia, where there are currently limited treatment options. To help enable this, my group is developing objective, scalable ways to measure motor coordination using wearable devices and touchscreen-based tasks so we can better quantify symptoms and track response to therapy. In parallel, we are exploring how artificial intelligence can help guide deep brain stimulation programming in PD. These tools could improve the efficiency and consistency of programming and expand access to a therapy that remains highly underutilized.”

In your view, what makes the brainSTIM Center at Penn a vital resource, and how do you see collaboration with its faculty benefiting your work?

“brainSTIM brings together scientists who think about the brain in terms of modulating networks. Because we study different diseases and use different approaches, there is a lot we can learn from each other -- far more than staying within a single niche of neuromodulation research. Working with brainSTIM colleagues pushes me to think more broadly and to look for shared mechanisms across disorders, which I think is essential for advancing the field.”

FACULTY WELCOME



We are thrilled to welcome Dr. Bijan Pesaran to the brainSTIM Center as a new member of our community. Dr. Pesaran is an internationally recognized leader in systems neuroscience and neural engineering, renowned for his work on understanding largescale brain circuits and designing innovative brain-based therapies. His research program explores how distributed neuronal populations coordinate during cognition and behavior, and his lab develops cutting edge technologies to map, monitor, and modulate neural activity—core foundations for advancing translational neuromodulation. Dr. Pesaran’s recent work at Penn includes novel approaches to neuromodulation such as supracortical microstimulation, individualized deep brain stimulation targeting strategies, and multimodal modeling of neural population dynamics. We are excited to have him join the Center and look forward to the expertise, innovation, and collaborative energy he brings to the neuromodulation community at Penn.

We are delighted to welcome Dr. Jeremy Charles, faculty in the Department of Physical Medicine and Rehabilitation at Penn and Director of the Brain Injury Service, as the newest member of the brainSTIM Center. Dr. Charles brings deep expertise in brain injury care and rehabilitation, along with a growing interest in integrating neuromodulation into patient treatment pathways. His perspective and commitment to advancing innovative, patient-centered approaches will make him a valued addition to our community.



MEDIA & AWARDS

Dr. Hamilton BRAINFRIENDS Media Appearance

Dr. Roy Hamilton joined host Angie Cauthorn for an episode of Brain Friends to discuss the relationship between aphasia and dementia. He explained how aphasia, often caused by stroke, differs from dementia's broader cognitive decline, while highlighting cases where the two overlap in conditions like primary progressive aphasia.

Dr. Hamilton also broke down the causes of stroke, emphasizing the urgency of recognizing symptoms early, and shared his research on using non-invasive brain stimulation to improve language recovery and preserve communication abilities in patients with aphasia.

[Link here!](#)



University Scholars Summer Research Program

We are pleased to acknowledge Dr. Kelly Sloane and her undergraduate student Forrest Lin ('27) for their selection to provide a summer reflection about his research experience at the Laboratory for Cognition and Neural Stimulation (LCNS). Forrest, a Bioengineering major supported by the University Scholars program, spent the summer investigating small vessel disease (SVD) using transcranial magnetic stimulation (TMS) under Dr. Sloane's mentorship. His thoughtful reflection offers valuable insights into both the technical aspects of neuroscience research and the personal growth that comes from immersive undergraduate research experiences. We applaud Dr. Sloane for her dedication to mentorship and to Forrest for sharing his journey with our community.



2025 Louis Duhring Outstanding Clinical Specialist Award

Dr. Mario Cristancho has been awarded the Duhring Award, recognizing a clinical specialist physician who integrates biomedical science, emerging clinical research, and thoughtful insight to deliver leading-edge care to patients and colleagues. Recipients of this award demonstrate innovative application of clinical knowledge and an exceptional dedication to patient care that reflects Penn Medicine's highest standards of professionalism and excellence.

A national respected leader in interventional psychiatry, Dr. Cristancho was recognized for advancing the treatment of complex, treatment-resistant mood disorders through his expertise in psychopharmacology and state of the art neuromodulation techniques. As the founding director of Penn's Interventional Psychiatry Program and Chief of Interventional Psychiatry, he has developed a collaborative, system-wide model that expands access to innovative therapies while fostering education, mentorship, and scholarly growth among trainees and peers.



Dr. Casey Halpern, Professor of Neurosurgery, has been named a recipient of the NIH Directors Pioneer Award.



Mariella De Biasi, PhD, Daniel Wolf, MD, PhD, Mario Cristancho, MD, Yvette Sheline, MD and Roy Hamilton, MD, MS.

National Institutes of Health Directors Award for High-Risk, High-Reward Research

Dr. Casey Halpern, Professor of Neurosurgery, has been named a recipient of the NIH Directors Pioneer Award.

This award advances his long-standing mission to develop innovative technologies to treat complex brain disorders, including major depression, obsessive-compulsive disorder (OCD), and substance use disorder (SUD). These conditions are associated with dysfunction in deep brain regions that remain inaccessible to many current treatment options.

Building on more than a decade of research in surgical brain stimulation, Dr. Halpern is now expanding his lab's work to focus on less invasive and non-invasive approaches, including focused ultrasound. His team is investigating ultrasound's capacity to precisely target deep brain circuits implicated in disorders such as OCD and SUD, with the goal of achieving therapeutic benefit while minimizing irreversible effects on brain tissue.

Michael J. Fox Foundation Award

Dr. Cajigas has received a \$2 million grant from the Michael J. Fox Foundation to lead a multicenter clinical trial targeting levodopa-resistant freezing of gait in Parkinson’s disease—a disabling symptom that significantly increases fall risk and loss of independence.

The study, conducted at the University of Pennsylvania (lead site), the University of Miami, and UCSF, will enroll 18 participants over two years beginning in March 2026. The trial will evaluate the safety and potential benefits of directional, sensing-enabled deep brain stimulation of the cuneiform nucleus, combining advanced neuromodulation with objective gait analysis to improve treatment and understanding of freezing of gait.



USA Today, The Excerpt Podcast Appearance

Dr. Iahn Cajigas appeared on Sunday’s, July 6th, episode of The Excerpt podcast to discuss the promise of brain-computer interfaces, as well as the ethical and societal questions surrounding technologies that connect the human brain with machines.



Aphasia: Classical Observations, Novel Insights, and Emerging Treatments

Dr. Roy Hamilton delivered the keynote address at the American Academy of Neurology Annual Meeting, on April 8th, 2025, where he highlighted major advances and emerging directions in neurology. Drawing on his expertise in neurorehabilitation and brain stimulation research, he emphasized the importance of translating scientific innovation into meaningful improvements in patient care, setting an inspiring and forward-looking tone for the conference.



3rd International Concurrent TMS-fMRI Workshop

The 3rd International Concurrent TMS-fMRI Workshop took place from September 15-17 in Cancun, Mexico. It brought together leading researchers to advance the integration of transcranial magnetic stimulation and functional MRI as a tool for probing and modulating brain circuits. Co-organized by **Dr. Desmond Oathes**, the workshop convened international experts to discuss mechanisms, methodology, technical innovations, and clinical applications of concurrent TMS-fMRI. Dr. Oathes played a central role in shaping the scientific program and fostering interdisciplinary collaboration, helping create a forum that strengthened global partnerships and accelerated progress in this rapidly evolving area of neuromodulation research.



National Academy of Engineering Grainger Frontier of Engineering Symposium

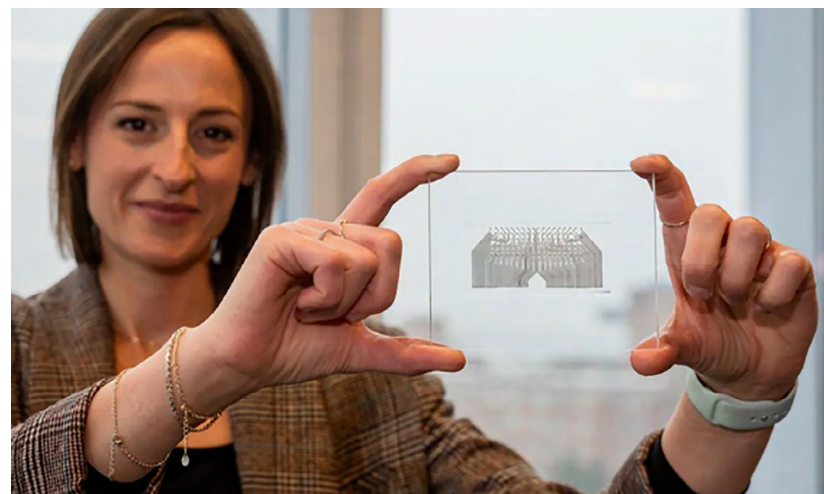
The 2025 U.S. Frontiers of Engineering Symposium, hosted by the National Academy of Engineering at the University of Pennsylvania from September 14-17 convened 74 outstanding early-career engineers to exchange cutting-edge research and spark cross-disciplinary collaboration. Among the invited participants, **Dr. Flavia Vitale**, Professor of Associate Professor of Neurology, Bioengineering and Physical Medicine and Rehabilitation, contributed to discussions at the intersection of neural engineering and bioelectronics, highlighting innovative, minimally invasive technologies for monitoring and treating neurological disorders. Her collaboration with fellow leaders in AI, robotics, and advanced materials reinforced the symposium's mission to accelerate transformative engineering solutions through interdisciplinary partnership.



NAE Staff, credit Felice Macera

Inside the British bet on a 'live implant' cure for Parkinson's

A recent *The Times* feature on a British-led effort to develop a living implant cure for Parkinson's disease highlights a pioneering biohybrid approach that combines lab-grown neurons with advanced bioelectronics. **Dr. Flavia Vitale** plays a critical role in this effort, designing a miniature LED device that sits beneath the skull and uses light to activate engineered neural implants, enabling controlled dopamine release. Her contribution bridges biology and technology, advancing a next-generation strategy that could move beyond traditional drug therapies and deep brain stimulation toward more precise, long-lasting treatments for neurological disorders.

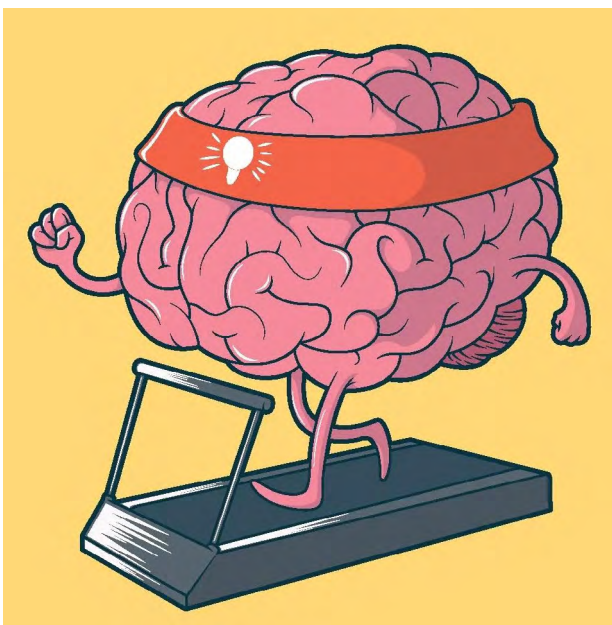


Professor Flavia Vitale has helped to develop the electronic circuits, designed to communicate with living cells in the brain Taken from the *UK Times*.

UK Advanced Research and Invention Agency Grant

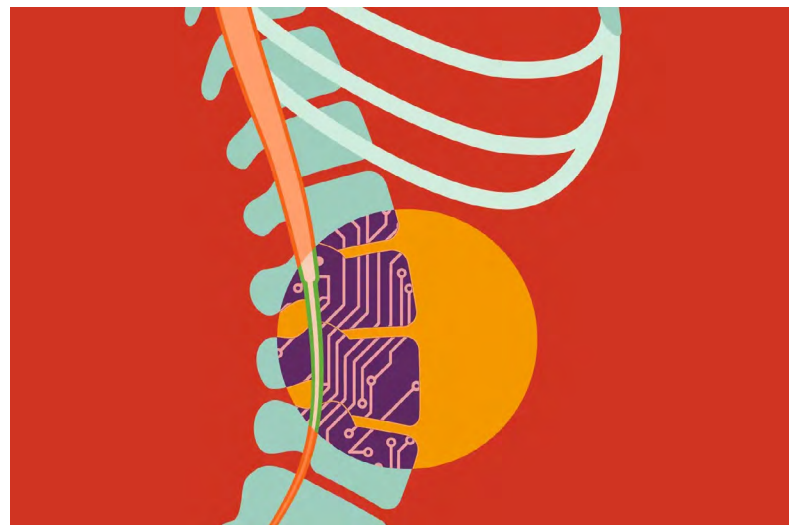
Dr. Flavia Vitale, in collaboration with Dr. Kacy Cullen, was awarded the UK Advanced Research and Invention Agency (ARIA): Tissue Engineered Living Electrodes for Synaptic-Based Precision Neuromodulation Grant.

Dr. Vitale is featured in a *New Scientist* article highlighting next-generation bioelectronic implants designed to repair damaged nerves and restore brain function. She is featured for developing soft, flexible neural interfaces that integrate more seamlessly with living tissue, advancing more durable and biocompatible technologies for treating neurological disorders.



Mapping the Mind Feature

A Penn CURF feature highlights Sneha Chandrashekar ('27), a neuroscience major whose summer research—mentored by Nicholas Balderston, PhD, —focused on improving transcranial magnetic stimulation (TMS) as a potential treatment for post-traumatic stress disorder (PTSD) by identifying optimal brain targets. With guidance from Dr. Balderston, Sneha built a whole-brain connectivity model linking TMS electric field effects to PTSD symptom severity and presented her findings as a poster at the 2025 Society for Neuroscience conference in San Diego. Her work exemplifies how undergraduate researchers, under expert mentorship, can contribute to computational and translational neuroscience research aimed at enhancing non-invasive brain stimulation therapies.

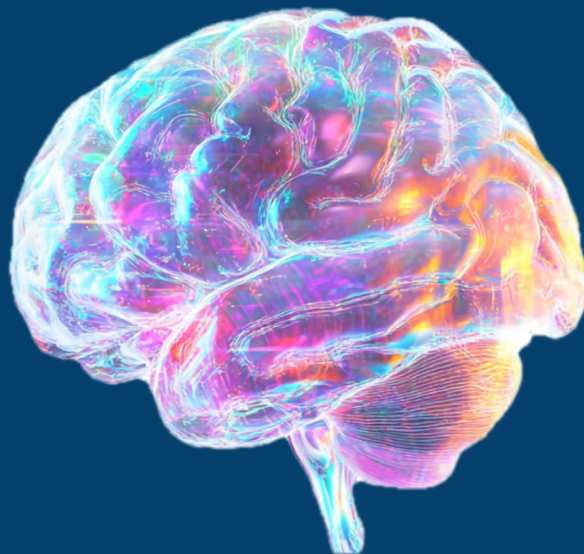


Neuroscience in the News: Dr. Roy Hamilton on Brain Health and Resilience

Across several recent media appearances, Dr. Roy Hamilton discussed practical, research-based perspectives on brain health and aging. In interviews with *Living to 100 Club*, *Men's Journal*, and *Forbes*, he spoke about lifestyle factors linked to cognitive resilience, including physical activity, stress management, and habits that may reduce dementia risk. These pieces focused on translating neuroscience research into accessible guidance for the public. He was also featured in a video interview by the American Academy of Neurology, where he reflected on his career path, academic neurology, and mentorship—offering insight into his work in neurorehabilitation and brain stimulation.



2025



05

HIGHLIGHTED PUBLICATIONS

Dr. Roy Hamilton

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Dr. Nick Balderston

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Dr. Michael Beauchamp

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Dr. Ian Cajigas

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Dr. Branch Coslett

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LOOKING TO 2026 & BEYOND

As we move into 2026, the brainSTIM Center is entering an exciting phase of growth—one marked by new initiatives, strengthened clinical partnerships, and an expanding community of scientists and trainees committed to advancing neuromodulation.

A major priority for the coming year is the expansion of our educational programs, including the launch of a continuing medical education (CME) course on cutting-edge clinical applications of neuromodulation. This new offering will unite faculty and learners from Neurology, Psychiatry, and Neurosurgery, bringing together the full landscape of noninvasive and invasive stimulation approaches within a single, integrated curriculum. By creating a shared educational foundation across specialties, we aim to equip clinicians with the knowledge and skills needed to provide thoughtful, mechanism-guided neuromodulation care.

In parallel, we will continue expanding our trainee-focused programs here at Penn, building on the momentum highlighted in this year's review. Our goal is to create more avenues for hands-on learning, interdisciplinary collaboration, and engagement with our network of eminent experts, preparing early-career scientists and clinicians to shape the future of neuromodulation research.

As always, our research enterprise also continues to accelerate. Ongoing work across neurological and psychiatric conditions—supported by federal funding, industry partnerships, and philanthropic contributions including the Hart Fund—reinforces our commitment to translating scientific discovery into meaningful therapeutic advances.

Looking ahead, we are energized by the creativity and dedication of our growing community. With new programs taking shape, expanded outreach on the horizon, and a deep foundation of scientific excellence, 2026 promises to be a year of continued progress for the brainSTIM Center.

We look forward to building this future together.

GIVING OPPORTUNITIES

We all have a stake in preserving and optimizing our brains' remarkable abilities. Thanks to your generous support, brainSTIM makes great progress toward groundbreaking discoveries in neuroscience. These discoveries allow us to develop new treatments for a wide range of neurologic and psychiatric disorders, and to find new ways to revitalize the performance of the human brain throughout the lifespan.

Every day, our globally renowned experts and scientific pioneers make breakthrough discoveries involving neuromodulation into novel treatments for brain disorders. Scientists and clinicians at brainSTIM focus on understanding the complex organization of the brain and harnessing its ability to reorganize in the setting of disease. Armed with this knowledge, we aim to stimulate the brain to undo the symptoms of the most common, debilitating disorders, including depression, anxiety, stroke, and dementia. With faculty whose work spans the fields of neurology, psychiatry, neurosurgery, neurorehabilitation, biomedical engineering, psychology, cognitive neuroscience, and animal research, brainSTIM is a cross-cutting network ideally situated to foster research collaboration across Penn and other institutions around the globe.

Your support will make a positive impact, both in the field of neuroscience and in the lives of patients and their families. Donor support for the brainSTIM Center supports our core efforts in three ways. First, philanthropy is critical to recruiting and retaining the most qualified clinical and translational scientists at the brainSTIM Center. Second, generous giving also supports promising research projects, including seed funding for highly innovative, early-stage research. Finally, philanthropic giving allows the brainSTIM Center to nurture the next generation of translational scientists (PhDs and MDs), who will advance scientific discoveries and develop advanced treatments for brain disorders using neuromodulation. Donors like you help us make discoveries that will reverse the burden of degenerative disorders, and with your support today, we can keep that momentum going.

Your philanthropic dollars make a world of difference in neuromodulation, and we are extremely grateful for your partnership. For additional information, or to donate to the Center, please visit the [brainSTIM Giving Page](#), or the 'Donate' section of the brainSTIM website.

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