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Theme K Poster

TKP01: History of Neuroscience

Location: SDCC Halls B-H

Time: Sunday, November 16, 2025, 8:00 AM - 12:00 PM

Program #/Poster #: TKP01.01SU/SS7

Topic: K.01. History of Neuroscience

Title: The history of lithium therapy in bipolar disorder

Authors: *A. S. DARVESH[1], C. M. DENGLER-CRISH[2], S. DUGAN[3], C. PAXOS[3];
[2]Pharmaceut. Sci., [3]Pharm. Practice, [1]Northeast Ohio Med. Univ. (NEOMED), Rootstown, OH

Abstract: Lithium, an alkali metal, stands unique in psychiatric medicine for its use as a mood stabilizer. Here, we present a chronological history of lithium from its discovery to its application for treating episodes of mania and depression in patients with bipolar disorder. In 1800, the mineral petalite was discovered in a mine on the Swedish island Uto, from which lithium, named after the Greek word for stone ‘lithos’, was isolated in 1817. Subsequently, lithium’s physical and chemical properties have been extensively studied. Its ability to dissolve uric acid crystals, forming highly soluble lithium urate, led to it being investigated for the treatment of kidney stones in 1843. The work of Alfred Garrod and Alexander Haig was instrumental in the development of the uric acid diathesis concept and the use of lithium for the treatment of gout in the mid to late 1800s. Around the time the role of uric acid in mental illness was being investigated, Silas Weir Mitchell proposed the use of lithium bromide as an antidepressant and antiseizure medication in 1870. William Hammond proposed the use of lithium for the treatment of mania in 1871. The Danish physicians, brothers Carl and Frederik Lange, also proposed the use of lithium as an antidepressant in the 1890s. Along with the popularity of mineral waters and the abundance of lithium in natural springs, the use of lithia waters gained acceptance in the late 1800s. However, by the early 1900s, the role of uric acid in mental illness was discredited and the proposed therapeutic uses of lithium were mostly forgotten. The serendipitous rediscovery of the anti-manic property of lithium in 1949 by Australian psychiatrist, John Cade, renewed interest in its application as a psychiatric treatment option. This was further promoted by the work of Danish psychiatrist, Morgens Schou in 1954 who conducted double-blind placebo-controlled clinical trials further demonstrating lithium’s anti-manic effects. Beginning in the late 1930s, lithium chloride was proposed as a salt substitute for hypertension. This became problematic, leading to a toxicity crisis due to uncontrolled dosing of lithium and, in the 1940s, resulted in FDA warnings. In the 1960s, lithium grew popular again due to an increasing number of clinical trials by several researchers such as Ronald Fieve, which provided the evidence for FDA approval in 1970. Since the 1990s, lithium use has declined, and it is currently underutilized-likely due to the availability of mood stabilizing antipsychotics and antiseizure medications.

Disclosures: A.S. Darvesh: None. **C.M. Dengler-Crish:** None. **S. Dugan:** None. **C. Paxos:** None.

Theme K Poster

TKP01: History of Neuroscience

Location: SDCC Halls B-H

Time: Sunday, November 16, 2025, 8:00 AM - 12:00 PM

Program #/Poster #: TKP01.02SU/Web Only

Topic: K.01. History of Neuroscience

Title: Sir Isaac Newton (1643-1727) as a pioneer in visual neuroscience

Authors: *C. Q. WU;
Perception and Cognition Res., Redmond, WA

Abstract: Newton's scientific contributions are mainly in mathematics, physics, and astronomy; but he had been interested in the human brain—particularly, the visual system—throughout his life, from his college student days to nearly the end of his life when he was revising his book "Opticks". Table 1 lists Newton's writings that touch the subject of human visual perception, together with some related references before and after him. In his Trinity notebook, in a section titled "certain philosophical questions", he wrote down many psychological questions related to vision, audition, olfaction, memory, imagination, and consciousness; concerning vision in particular, he recorded observations on such visual phenomena as afterimage, binocular diplopia, binocular rivalry, and eye movements. Newton picked up the term Sensorium from French philosophers Descartes and Gassendi to denote the place of sensation in the perceiver's brain. Newton (1672) published his theory about light and colors, and this publication is mainly on the physical side. On the human color vision side, an important insight from Newton is that Sensorium is where color fusion (i.e., color compounding) happens. This idea first appeared in Newton (1675), a draft read to the Royal Society to further clarify and expand his theory about light and colors; and it was later more clearly laid out in Newton (1704) where he expanded this idea with the observation of successive color fusion—that is, color fusion must engage some visual short-term memory (vSTM); and this vSTM corresponds to positive afterimage. Today, mapping the monocular and binocular characteristics of color sensations (as discussed by McDougall, 1901) to the neuroanatomical organization of the primate visual system, we can conclude that V1-L4 (Layer 4 in primary visual cortex / cortical area V1) is Newton's Sensorium for visual sensations. Newton's Sensorium is essentially the primary part of what has been referred to as the neural correlates of consciousness (NCC) by Crick and Koch (1990)—specifically, the part for color sensations of visual consciousness.

Table 1. Newton's writings concerning visual neuroscience and some related references before and after Newton.

Author (Year)	Reference and mentioned views / results
Charleton, W. (1654)	*Physiologia Epicuro-Gassendo-Charltoniana.* ● Colors are sensations created in the *Principal Sensory* of the perceiver's brain (p. 190). ● As per Descartes, Common Sensorium is for Perception; and External Sensorium is for Visible Image (p. 151).
Boyle, R. (1664)	*Experiments and Considerations Touching Colours.* ● Colors are generated in the *Sensory* [=Charleton's Principal Sensory] (e.g., pp. 11, 21).
Newton, I. (1664)	Trinity College Notebook (Newton MS Add. 3996) – printed in McGuire, J. E., and Tamny, M. (1983). *Certain philosophical questions: Newton's Trinity notebook*. ● Newton listed many questions and observations related to color vision, binocular vision, afterimage, and space constancy (p. 387). ● The *Common Sensorium* is for the soul (p. 383), and the *Sensorium* [=Charleton's Principal Sensory] is for visual sensations (p. 473). Note: The page numbers are in McGuire and Tamny (1983).
Newton, I. (1666)	Laboratory Notebook (Newton MS Add. 3975) – also printed in McGuire and Tamny (1983). ● Newton drew a diagram of the early stages of the human visual system (p. 484). Note: The page number is in McGuire and Tamny (1983).
Newton, I. (1672)	New theory about light and colours. *Philosophical Transactions of the Royal Society, 6*, 3075–3087. ● There are two sorts of colors: primary and compounded (p. 3082). ● The most surprising and wonderful composition is that of Whiteness (p. 3083).
Newton, I. (1675)	Communication to the Royal Society on December 16, 1675. ● Color compounding and color sensations occur in the Sensorium.
Newton, I. (1682)	Letter to William Briggs dated September 12, 1682. ● Newton wrote a lengthy discussion about binocular vision in humans and some other animals.
Newton, I. (1691)	Letter to John Locke dated June 30, 1691. ● "It [i.e., afterimage] seems rather to consist in a disposition of the Sensorium".
Newton, I. (1704)	*Opticks* (1st ed.) ● Positive afterimage is a form of visual short-term memory (vSTM), and the Sensorium is where this vSTM & color compounding occur (p. 104).
Young, T. (1802)	On the theory of light and colours. *Philosophical Transactions of the Royal Society, 92,* 12–48. ● Young presented a "computational complexity" rationale for the limited number of primary colors and suggested three primary colors: red, yellow, and blue (p. 20).
McDougall, W. (1901)	Some new observations in support of Thomas Young's theory of light- and colour-vision (II). *Mind, 10*, 210–245. ● Visual sensation is produced at a neural stage where both color fusion (i.e., color compounding) and binocular fusion occur (p. 218, Fig. 15).
Hubel, D., and Wiesel, T. (1977)	Functional architecture of macaque monkey visual cortex. *Proceedings of the Royal Society B, 198,* 1–59. ● V1-L4 neurons are monocular per retinal input, comprising ocular dominance columns throughout the cortical sheet of this layer (p. 18, Fig. 11).
Crick, F., and Koch, C. (1990)	Towards a neurobiological theory of consciousness. *Seminars in the Neurosciences, 2,* 263–275. ● Crick and Koch started to use the term *neural correlates of consciousness* (p. 265).
Wu, C. (2025)	Some further developments on a neurobiologically-based model for color sensations in humans. *Human Vision and Electronic Imaging, 37*, 207-1–207-9. ● V1-L4 is the neural substrate for color sensations (i.e., the Sensorium for vision), corresponding to the "visual sensation" stage conceived by McDougall (1901). ● V1-L4 consists of three sub-layers for the 3 primary colors: blue, red, and green.

Disclosures: C.Q. Wu: None.

Theme K Poster

TKP01: History of Neuroscience

Location: SDCC Halls B-H

Time: Sunday, November 16, 2025, 8:00 AM - 12:00 PM

Program #/Poster #: TKP01.03SU/SS8

Topic: K.01. History of Neuroscience

Title: A historical review of the developmental and behavioral implications of adolescent traumatic brain injury

Authors: *K. M. MARTINEZ, R. E. HARTMAN;
Psychology, Loma Linda Univ., Loma Linda, CA

Abstract: Abstract: This presentation provides a comprehensive review of research on the developmental and behavioral consequences of traumatic brain injury (TBI) sustained during adolescence, with a focus on long-term implications for risk-taking behavior. The goal is to raise awareness of how adolescent TBI can influence behavioral trajectories into emerging adulthood. First published in 1942, the *Kennard Principle* proposed that younger brains recover from injury more easily and fully than adult brains. Although influential, Kennard's conclusions were later challenged by subsequent evidence revealing that early brain injury, particularly in children and adolescents, can have severe and enduring cognitive and behavioral repercussions. Evidence has consistently linked pediatric head injury to impairments in attention, memory, and learning. By the early 2000s, the focus of TBI had broadened from purely cognitive outcomes to including developmental and behavioral consequences. Middleton (2001) emphasized that damage to the frontal lobe following TBI in children was associated with increased impulsivity and risk-taking behaviors. The research additionally suggested that some of these effects may not fully manifest until the brain reaches maturity. TBI in adolescence is also strongly associated with elevated risk for substance use. One study found that adolescents with a history of TBI were significantly more likely to engage in substance use like binge drinking, smoking daily, misusing prescription drugs, and using illegal substances, compared to peers with no history of TBI (Ilie et al., 2015). Recent findings underscore the unique vulnerability of the adolescent brain due to ongoing neurodevelopment and heightened neuroplasticity. Serpa et al. (2021) highlighted the potential for hidden or delayed consequences following injury during this sensitive period. The ongoing Adolescent Brain Cognitive Development (ABCD) study continues to examine the link between adolescent TBI and increased risk of alcohol misuse. Although the implications of adolescent brain injury have received increasing research attention, further investigation is needed to identify effects (some of which may not manifest until adulthood), effective treatment interventions to mitigate maladaptive behaviors, and prevent long-term adverse outcomes.

Disclosures: K.M. Martinez: None. **R.E. Hartman:** None.

Theme K Poster

TKP01: History of Neuroscience

Location: SDCC Halls B-H

Time: Sunday, November 16, 2025, 8:00 AM - 12:00 PM

Program #/Poster #: TKP01.04SU/Web Only

Topic: K.01. History of Neuroscience

Title: Historical Background of Anticonvulsant Development For Epilepsy Management

Authors: R. F. KIRMANI[1], *B. F. KIRMANI[2];
[1]IL Texas, College Station, TX; [2]Texas A&M Univ. Syst. Hlth. Sci. Ctr., College Station, TX

Abstract: Epilepsy is a chronic disorder characterized by recurrent unprovoked seizures, which are caused by abnormal electrical activity of the brain. Management of epilepsy can be a challenge since the epilepsy population may remain intractable despite using medications, which has led to the development of several anticonvulsants over the last century. The first ever drug used for the treatment of catamenial epilepsy was Potassium Bromide, used in 1857 by Sir Charles Locock. This was followed by phenobarbital in 1912. Two major drugs were seen between the 1960s and mid-1970s, which were carbamazepine and valproate. The major advances in drug development seen in the last 50 years have led to the development of several drugs which were now classified as first, second, and third generation drugs, which have novel mechanism of action but still we require the drugs which can target specific syndromes and mage intractable epilepsy and demonstrate better pharmacokinetic profile than the traditional treatment

Disclosures: R.F. Kirmani: None. **B.F. Kirmani:** None.

Theme K Poster

TKP01: History of Neuroscience

Location: SDCC Halls B-H

Time: Sunday, November 16, 2025, 8:00 AM - 12:00 PM

Program #/Poster #: TKP01.05SU/SS9

Topic: K.01. History of Neuroscience

Support: Swiss National Science Foundation

Title: Eight Years of Neuroscience: Trends in Research Topics, Methods, Careers, and Mobility

Authors: C. BRUGGIMANN[1], M. REVA[2], G. CHINDEMI[3], C. BELLONE[4,6], ***C. LUSCHER**[5,6];
[2]Neufo, [1]Unige, Geneva, Switzerland; [3]Basic Neurosciences, Univ. de Geneve, Geneva, Switzerland; [4]Basic neuroscience, Univ. of Geneva, Geneve, Switzerland; [5]Univ. of Geneva, Geneva, Switzerland; [6]Synapsy Ctr., Geneva, Switzerland

Abstract: Understanding the structure and evolution of scientific communities requires examining both the research they produce and the individuals who contribute to it. In this study, we employed large language models (LLMs) to systematically analyze eight years of abstract data from the SfN Neuroscience conferences (2016 to 2024), enabling the extraction of insights into the evolving landscape of neuroscience research and its contributors. We investigated four core aspects: (1) the evolution of research topics through unsupervised clustering of abstracts and

automated topic labeling, (2) the emergence and decline of research methods, (3) the career progression of researchers inferred from their authorship positions across years, and (4) institutional mobility based on changes in affiliations. Our results highlight the dynamic landscape of neuroscience, uncovering trends in emerging topics, shifting methodological preferences, academic trajectories of researchers, and flows of talent between institutions. Moreover, this work demonstrates the power of language models for large-scale meta-research and provides a template for community analysis across scientific fields.

Disclosures: C. Bruggimann: None. **M. Reva:** None. **G. Chindemi:** None. **C. Bellone:** None. **C. Luscher:** None.

Theme K Poster

TKP01: History of Neuroscience

Location: SDCC Halls B-H

Time: Sunday, November 16, 2025, 8:00 AM - 12:00 PM

Program #/Poster #: TKP01.06SU/SS10

Topic: K.01. History of Neuroscience

Title: William James's theory of emotion as a pioneer work of affective neuroscience: Criticism of the theory of emotion from Wundt and James' response in 1894

Authors: *T. SATO;
Psychology, Edogawa Univ., Nagareyama, Japan

Abstract: William James's theory of emotions is commonly referred to as the "James-Lange theory" in conjunction with Danish physician, Carl Lange's theory. The author reviewed books and papers written by William James while analyzing his theory of emotions. In an 1894 *Psychological Review* article, James detailed the content of the emotion theory he and Lange developed separately, as well as criticisms from researchers such as Wundt, Irons, and Worcester, and his responses. The current study examines William James' view of Wundt's emotion theory based on an article he published in the *Psychological Review* in 1894, and discusses Wundt's criticism of the James-Lange theory in detail. In the article, James, among several other researchers, first addresses Wundt's criticism of the James-Lange theory. According to James, in Wundt's theory of emotions, emotions have the power to change ideas, and then ideas give rise to secondary emotions and physical changes. Conversely, he states, "Wundt in any case would seem to be certain both that it [an Affect] is the essential part of the emotion, and that currents from the periphery cannot be its organic correlate." Furthermore, he criticized Wundt as follows, "I should say, granting its existence, that it falls short of the emotion proper, since it involves no commotion, and that such currents are its cause." James thought the rest of the criticism from Wundt was not a criticism of James, but of the problems in Lange's work. James apparently believed that Wundt's criticism had little impact on his own theories. On the other hand, with regard to Wundt's criticisms of Lange's doctrine, in explaining the mechanism by which emotions arise, Lange places too much emphasis only on vasomotor reactions, and even emotions such as joy and anger have completely different positive and

negative emotional properties. In response to this criticism, James offered the following opinion on Lange's doctrine: "To which I reply both that Lange has laid far too great stress on the vaso-motor factor in his explanations, and that he has been materially wrong about congestion of the face being the essential feature in anger, for in the height of that passion almost every one grows pale—a fact which the expression 'white with rage' commemorates," In conclusion, James responded to Wundt's criticism by stating that the physical changes caused by emotional expression, or peripheral nerve signals, are the cause of emotion, along with the problem of the definition of emotion, and that he did not defend Lange's theory but rather took a harsh critical attitude toward the criticism of the circulatory system, thus criticizing Lange's theory.

Disclosures: T. Sato: None.

Theme K Poster

TKP01: History of Neuroscience

Location: SDCC Halls B-H

Time: Sunday, November 16, 2025, 8:00 AM - 12:00 PM

Program #/Poster #: TKP01.07SU/SS11

Topic: K.01. History of Neuroscience

Title: Tone probe measurement of the conscious intention to move compels abandonment of Libet's 1983 conclusion that the brain decides before you consciously decide.

Authors: *E. J. NEAFSEY;
Mol. Pharmacol. and Neurosci., Loyola Univ. Chicago Stritch Sch. of Med., Western Springs, IL

Abstract: Is conscious intention a genuine cause of human action or a mere impotent epiphenomenon "accompanying" the brain's neuronal activity but incapable of making anything actually happen? Libet's influential paper (Brain 106:623-664, 1983) concluded "that cerebral initiation even of a spontaneous voluntary act ... can and usually does begin unconsciously" has had a huge effect on debate about the efficacy of conscious intention. However, in recent years Libet's conclusion has been challenged, as described in a recent review (Neafsey EJ, Conscious Intention and Human Action: Review of the Rise and Fall of the Readiness Potential and Libet's Clock, Consciousness and Cognition 94: 103171, 2021). The labs of Schurger and Schmidt and others challenged Libet's use of the Readiness Potential (RP) to measure the brain's activity related to movement, showing the RP may be an artifact of averaging spontaneous changes in the EEG that are not actually related to the movement. And Libet's "dot clock" method to measure the "W" time of conscious will or intention to move has also been challenged by two separate labs (Matsuhashi and Hallett, Eur Jour Neurosci 28, 2344-2351, 2008) and Verbaarschot et al., Neuropsychologia 133:107156, 2019). Both labs used "tone probes" to measure intention in the period before movement, instructing the subjects to "veto" the next movement if, when the brief tone probe occurs, they are conscious of an intention to move. If, on the other hand, they are not aware of any intention to move, subjects are to ignore the tone. This method found intention beginning on average about 2 sec before the movement, rather than the 0.3 sec reported when subjects used Libet's clock. And when the time course of intention before movement as measured

by tone probes is compared to the time course of human neuronal firing rate increases and decreases before movement (a "gold standard" of brain activity changes) during the Libet task as reported by Fried et al. (Neuron 69:548-562, 2011), there is no difference between the onset times. Both intention and neuronal activity related to movement begin about 2 sec before movement. Thus Libet's conclusion that "the brain decides before you decide" based on "dot clock" timing of a "single instant" of conscious intention should be replaced by "you and your brain decide together" based on a gradually developing intentional process that begins much earlier and that coincides with (or even precedes) the early neuronal activity changes. And so Fodor's “good old commonsense belief/desire psychology” that “my wanting is causally responsible for my reaching” is supported.

Disclosures: E.J. Neafsey: None.

Theme K Poster

TKP01: History of Neuroscience

Location: SDCC Halls B-H

Time: Sunday, November 16, 2025, 8:00 AM - 12:00 PM

Program #/Poster #: TKP01.08SU/SS12

Topic: K.01. History of Neuroscience

Title: The cerebral renin-angiotensin system - the history from an endocrine to the addition of a specific brain system

Authors: *O. B. PAULSON;
Rigshospitalet & Univ. of Copenhagen, Copenhagen, Denmark

Abstract: The discover of the renin-angiotensin system (RAS). The discovery of renin in the kidney in 1898 and the subsequent discovery of angiotensin about 3 decades later are main achievements, and have had a key role in investigation of hypertension.[1] Renin converts in the blood angiotensinogen to angiotensin, thereby increasing blood pressure. **The cerebral RAS - Biochemical aspects.** The RAS has later, from the 1960’ies been observed in most organs, often with effect in addition to vascular control[2]. In the brain the presence of renin and of angiotensin has been known for more than 5 decades.[2] Angiotensinogen converting enzyme is also produced in the brain and angiotensin receptors are present. Regional differences are observed in the cerebral RAS system.[3] The cerebral RAS has further been demonstrated in the brain of Drosophila flys without blood circulation.[4] **The cerebral RAS - Physiological aspects.** Already more than 60 years ago specific central angiotensin actions were shown in dogs using cross-circulation.[5] Four decades ago, studies demonstrated that blocking the RAS resets the limits of cerebral blood flow (CBF) autoregulation (the blood pressure interval where blood flow is rather constant, independent of pressure) towards lower blood pressure levels; quite appropriate as blood pressure is reduced.[6] Interestingly, as described later, this effect on CBF regulation is mediated through a cerebral RAS independent of the renal/systemic system. Thus, following nephrectomy in rats kept alive with peritoneal dialysis, blockade of the RAS has no longer an effect on arterial blood pressure whereas the effect on CBF autoregulation is fully preserved.[7]

The cerebral RAS - Clinical aspects. In the new millennium studies have revealed a role of the cerebral RAS in brain diseases, and among these both in patients with and mouse models of Alzheimer's disease (AD). Different subtypes of angiotensin receptors play a role for the symptoms.[8] Further antihypertensive medications targeting the RAS seems to delay AD onset and progression.[9] Also in Drosophila fly expressing AD-related transgenes, blocking the RAS shows benificial effects.[4] **References.** 1. Basso N, Terragno NA. Hypertension. 2001;38:1246-9. 2. Paul M et al. Physiol Rev. 2006;86:747-803. 3. McKinley MJ et al. Int J Biochem Cell Biol. 2003;35:901-18. 4. Lee S-H et al. eNeuro. 2020;7(6):ENEURO.0235-20.2020. 5. Bickerton RK, Buckley JP. Exp Biol Med. 1961;106:834-6. 6. Strömberg C et al. J Cereb blood flow Metab 1993;13:298-303. 7. Pedersen TF et al. Am J Physiol Heart Circ Physiol. 2003;285:H1097-H1104. 8. Wright JW, Harding JW. J Alzheimer's Dis. 2019:469-80. 9. Royea J, Hamel E. GeroScience. 2020;42:1237-56.

Disclosures: O.B. Paulson: None.

Theme K Poster

TKP01: History of Neuroscience

Location: SDCC Halls B-H

Time: Sunday, November 16, 2025, 8:00 AM - 12:00 PM

Program #/Poster #: TKP01.09SU/TT1

Topic: K.01. History of Neuroscience

Title: Food for thought: the origin and evolution of dietary interventions for epilepsy management

Authors: *B. REES;
Perelman Sch. of Med., Univ. of Pennsylvania, Philadelphia, PA

Abstract: The use of dietary therapies to treat epilepsy spans from antiquity to modern clinical practice, with the ketogenic diet emerging as an effective, evidence-based method to treat refractory epilepsy. Tracing the evolution of dietary interventions in epilepsy illustrates how empirical observation, cultural beliefs, and scientific inquiry can converge to create medical innovation from unconventional origins. Over 2,000 years ago, some of the earliest references to dietary interventions for treating epilepsy appeared in notable texts, such as those by Hippocrates and biblical stories that discussed fasting as a treatment for epilepsy. The first modern report on this topic was published in 1911 by two French physicians at a psychiatric hospital in Paris, where they administered an intermittent fasting regimen to patients with epilepsy, showing beneficial effects. Around the same time, fitness guru Bernarr Macfadden began promoting fasting as a way to enhance health, particularly for conditions like epilepsy. He found support from Dr. Hugh Conklin, an osteopathic practitioner who claimed success with fasting for epilepsy, which helped legitimize the practice among osteopathic physicians. Despite its scientific flaws, Conklin's results garnered attention, leading to the first large trial of fasting as an epilepsy treatment in 1921. That same year, Dr. Russell Wilder, an endocrinologist at the Mayo Clinic, proposed a diet that could simulate a fasting state, which he called the "ketogenic diet."

He theorized that this new diet could provide similar clinical benefits to fasting while being more sustainable in the long term. His hypothesis was validated by further studies, which demonstrated the advantages of the ketogenic diet, revolutionizing the treatment approach for epilepsy in the 1920s and 1930s. However, the advent of antiepileptic drugs shifted clinical focus toward pharmacologic management, leading to a decline in the use of the ketogenic diet for epilepsy through the late 20th century. Media coverage in the late 1990s of a boy who became seizure-free after the ketogenic diet catalyzed renewed public and scientific interest in using the ketogenic diet to treat epilepsy. Today, the ketogenic diet and its derivatives are a mainstay in the treatment of refractory epilepsy, reflecting a convergence of historical insight, empirical observation, and scientific validation.

Disclosures: B. Rees: None.

Theme K Poster

TKP01: History of Neuroscience

Location: SDCC Halls B-H

Time: Sunday, November 16, 2025, 8:00 AM - 12:00 PM

Program #/Poster #: TKP01.10SU/TT2

Topic: K.01. History of Neuroscience

Title: Anti-inflammatory therapeutic strategies for treating spinal cord injury

Authors: *D. A. GARCIA PRADA[1], R. G. FESSLER[2], B. T. DAVID[3];
[1]Neurosurg., Rush Univ., Chicago, IL; [3]Neurolog. Surgery, [2]Rush Univ. Med. Ctr., Chicago, IL

Abstract: Spinal cord injury (SCI) is a devastating condition that affects over 15 million people globally, with approximately 18,000 new cases occurring yearly in the United States. Those injured at a younger age face significantly higher lifetime costs due to decades of ongoing healthcare needs, rehabilitation, and loss of productivity. SCI is characterized by a primary mechanical injury followed by a secondary injury cascade involving inflammation, oxidative stress, and apoptosis. Existing clinical approaches focus primarily on managing symptoms and preventing further injury rather than repairing the damaged tissue. Shortly after injury, there is an acute infiltration of neutrophils and macrophages, accompanied by activation of resident microglia, leading to the release of pro-inflammatory cytokines.
This review explores emerging strategies focused on immune modulation to mitigate secondary degeneration and promote repair in SCI. Animal studies demonstrated that active immunization with CNS antigens or blockade of acute pro-inflammatory signals via cytokines like IL-10 could significantly improve outcomes. Pharmacologic inhibitors such as TNF-α antagonists and riluzole have shown neuroprotective effects, though clinical translation remains under investigation. Mesenchymal stem cells (MSCs), including bone marrow-, adipose-, and umbilical cord-derived types, have demonstrated strong immunomodulatory and regenerative properties. Nanoparticles and hydrogels offer promising platforms for delivering anti-inflammatory agents or cells directly to the injury site. Some of these biomaterials can penetrate the blood-spinal cord barrier, modulate local immune responses, reduce oxidative stress, and enhance tissue

regeneration. Multifunctional nanoparticles combined with MSCs, or loaded with agents like resveratrol, as well as hydrogels delivering cytokines such as IL-10 or IL-4, further exemplify synergistic strategies. While many interventions show efficacy in animal models, robust clinical validation remains limited. Future research should prioritize combinatorial therapies, controlled delivery systems, and a better understanding of immune dynamics during acute and chronic SCI phases. This review underscores the importance of ongoing investigation into targeted immune modulation as a cornerstone of effective spinal cord injury treatment.

Disclosures: D.A. Garcia Prada: None. **R.G. Fessler:** None. **B.T. David:** None.

Theme K Poster

TKP01: History of Neuroscience

Location: SDCC Halls B-H

Time: Sunday, November 16, 2025, 8:00 AM - 12:00 PM

Program #/Poster #: TKP01.11SU/TT3

Topic: K.01. History of Neuroscience

Support: Daniel & Ada Rice Foundation

Title: Spinal cord injury-induced central neuropathic pain: mechanism and treatments

Authors: *B. T. DAVID, B. L. AVONTS, S. PRIETO, N. J. WROBEL, R. G. FESSLER; Neurosurg., Rush Univ. Med. Ctr., Chicago, IL

Abstract: Central neuropathic pain (CNP) describes pain resultant of damage to the central somatosensory nervous system. Following traumatic spinal cord injury (SCI) in humans, it is common for CNP to develop at or below the level of the spinal cord lesion. If SCI-induced CNP is to develop, it typically does so within the first year after injury and generally does not subside once it manifests. CNP is regarded as a major contributor to reduced quality of life for affected individuals and, therefore, warrants attention from SCI researchers. This poster provides an overview of the current body of knowledge surrounding CNP in the context of SCI, highlighting underlying mechanisms and both current and emerging treatment strategies. Damage to the intricate sensory networks within the dorsal horn following SCI contributes to the development of CNP by inducing an “excitation-inhibition imbalance”, such that the local neural network becomes more likely to react to a given stimulus. Factors contributing to the development of dorsal horn hyperexcitability include aberrant axonal sprouting and dendritic remodeling, increased voltage-gated sodium channel expression by sensory afferents, chronic spinal cord inflammation, and persistent activation of local glial populations. And indeed, the effects of injury also extend to other regions, as abnormal spontaneous and or evoked neural activity are known to develop in the nearby dorsal root ganglia (DRGs) and in brain regions including the thalamus and the primary somatosensory cortex. Despite the breadth of existing knowledge regarding the mechanisms of SCI-induced CNP, much remains unknown, leading to poor clinical trial outcomes. Current pharmacological treatments reduce pain intensity in a subset of patients but often elicit troubling side effects. Additionally, non-pharmacological treatments have not

been fully investigated and see limited use due to low accessibility. However, novel therapeutic targets may offer promise, as ongoing research continues to explore the mechanisms of SCI-induced CNP.

Disclosures: B.T. David: None. **B.L. Avonts:** None. **S. Prieto:** None. **N.J. Wrobel:** None. **R.G. Fessler:** None.

Theme K Poster

TKP01: History of Neuroscience

Location: SDCC Halls B-H

Time: Sunday, November 16, 2025, 8:00 AM - 12:00 PM

Program #/Poster #: TKP01.12SU/TT4

Topic: K.01. History of Neuroscience

Title: Alzheimer's Disease: history of animal models for therapeutic discovery

Authors: *S. R. STERLACE[1], E. GIUNTI[2], J. RICHARDSON[3];
[1]Taconic Biosci., Rensselear, NY; [2]Pharmacology, Physiol. and Biophysics, [3]Pharmacol, Taconic Biosci., Rensselaer, NY

Abstract: Alzheimer's disease (AD) is a complex neurodegenerative disorder marked by progressive cognitive decline, amyloid-β (Aβ) plaque accumulation, and neurofibrillary tangles (NFTs). Animal models have been instrumental in advancing our understanding of AD pathology and in developing potential therapies. First-generation AD models, such as Tg2576 and TgCRND8 mice, overexpressed mutant human APP, leading to robust Aβ plaque deposition. While valuable for studying amyloidosis and testing anti-Aβ compounds, these models lacked NFTs, neuronal loss, and reflected familial AD (FAD), which accounts for <5% of cases. High transgene overexpression also introduced non-physiological phenotypes, limiting their translational relevance. Second-generation models improved upon these limitations by incorporating multiple FAD mutations, such as ARTE10 (APP/PS1) or 3xTg-AD mice, which presented both amyloid and tau pathology. These models provided a more comprehensive view of AD and enabled studies on amyloid-tau interactions. However, they still relied on overexpression and failed to fully replicate human tauopathy, sporadic AD mechanisms, or consistent neuronal degeneration. Third-generation models emphasize physiological expression through knock-in strategies (e.g., CRISPR/Cas9) and inclusion of human risk alleles such as APOE4 and TREM2, better capturing sporadic AD pathology. These models show more accurate disease progression, including neuroinflammation, synaptic dysfunction, and neuronal loss. Although more complex and time-intensive to develop, they hold greater translational value and better predict therapeutic efficacy. For future directions, we look to bridge the gap between genetic risk and amyloid pathology. We developed a novel model by crossing APOE3/4 knock-in mice with ARTE10, an amyloid model. The resulting APOE3/4 x ARTE10 mice provide a powerful tool to study the interplay between APOE genotype and Aβ pathology and serve as a platform for preclinical testing of APOE-modulated therapies. We also recognize the increasing development of human monoclonal antibody therapeutics for AD and other neurodegenerative

diseases. This presents a unique opportunity to further refine AD models by integrating platform such as hTRFC and hCD9hc models, which enable blood-brain barrier (BBB) transcytosis. Integrating BBB-penetrant systems into advanced AD models may enhance in vivo evaluation of biologics and accelerate the development of disease-modifying therapies.

Disclosures: S.R. Sterlace: A. Employment/Salary (full or part-time): Taconic Biosciences. **E. Giunti:** A. Employment/Salary (full or part-time): Taconic Biosciences. **J. Richardson:** A. Employment/Salary (full or part-time): Taconic Biosciences.

Theme K Poster

TKP01: History of Neuroscience

Location: SDCC Halls B-H

Time: Sunday, November 16, 2025, 8:00 AM - 12:00 PM

Program #/Poster #: TKP01.13SU/TT5

Topic: K.01. History of Neuroscience

Title: The Evolution of Neuropsychiatric Healthcare in the Caribbean: A Historical Overview of Cultural Integration and Clinical Practice

Authors: *N. YELTON[1], S. ZEQUEIRA[2];
[1]Univ. Iberoamericana (UNIBE), Santo Domingo, Dominican Republic; [2]Univ. of Florida, Gainesville, FL

Abstract: The Caribbean is typically described using cultural and geographic classifications, divided into the Greater Antilles (Jamaica, Cuba, Haiti, Dominican Republic) and the Lesser Antilles (Trinidad and other smaller islands). This review focuses on the Spanish-speaking Caribbean islands: the Dominican Republic, Cuba, and Puerto Rico. These Spanish-speaking Caribbean regions, encompassing a population of more than 20 million inhabitants, represent a substantial demographic with distinct health and cultural needs that require special consideration. As of 2019, 1 in every 8 people worldwide (970 million) were living with a mental disorder, with anxiety and depressive disorders being the most common. The Caribbean has seen increasing reports of growing mental health conditions, particularly concerning among adolescents, where prevalence ranges from 20% to 30%. This is especially troubling given the substantial treatment gap, where a disproportionate number of individuals requiring psychiatric care remain underserved or untreated. According to the Pan American Health Organization, nearly 78% of Caribbean adults are not receiving adequate treatment for mental health conditions compared to 47% of North Americans. This treatment divide stems from a combination of cultural, economic, social, and political factors that uniquely challenge neuropsychiatric care delivery in the region. Mental health conditions remain culturally and socially stigmatized, associated with shame that can exacerbate existing illnesses. Despite gaining independence from foreign governance, Caribbean nations continue grappling with the compounding effects of historical trauma, environmental vulnerabilities, and economic limitations. The lasting legacy of colonialism, frequent natural disasters such as hurricanes and earthquakes, and insufficient financial resources have created substantial obstacles in the development of adequate mental health treatment

infrastructure and specialized care services. Understanding this unique historical context is crucial for implementing effective strategies and therapies, as interventions developed elsewhere may not be culturally appropriate or effective in these populations. This review aims to establish a comprehensive foundation for future research by examining the complex interplay of historical, cultural, and systemic factors contributing to mental health disparities in the Spanish-speaking Caribbean, ultimately informing the development of culturally responsive interventions and evidence-based strategies to address the region's substantial treatment gaps.

Disclosures: N. Yelton: None. **S. Zequeira:** None.

Theme K Poster

TKP01: History of Neuroscience

Location: SDCC Halls B-H

Time: Sunday, November 16, 2025, 8:00 AM - 12:00 PM

Program #/Poster #: TKP01.14SU/Web Only

Topic: K.01. History of Neuroscience

Title: Histology 2.0: Current and Irreplaceable

Authors: *A. VAZQUEZ-ALVAREZ[1], G. FERNÁNDEZ SAAVEDRA[2], E. PULIDO-CAMARILLO[3], A. PEREZ-TORRES[3];
[1]Univ. Nacional Autonoma de Mexico, Mexico D.F., Mexico; [2]Farmacologia, [3]Biología Celular y Tisular, Univ. Nacional Autónoma de México, México, Mexico

Abstract: The legacy of Dr. Santiago Ramón y Cajal was recognized when he received the Nobel Prize in 1906, but at that time, the impact it would have on the future of the life sciences was not yet fully understood. Undoubtedly, Cajal's cognitive abilities allowed him to perfect the technique and obtain results that, when interpreted inductively and deductively, led him to propose his "Neuronal Theory," which contrasted with the reticular theory accepted at the time. A Darwinian influence can be seen in Cajal, as can be seen in his work Histologie du système nerveux de l'homme et des vertébrés, considered the foundation of modern neuroscience. Cajal's histological technique was based on silver nitrate impregnation, and his observations led him to postulate that the nervous system is composed of individual neurons with dynamic polarity, communicating with each other through specialized junctions. This radically differs from the reticular theory, which considered the nervous system as a network of continuous flow. The relevance of his discoveries remains in the following aspects: understanding the structure of the brain, that is, the neuron and its connections. His writings in the book "Studies on the Degeneration and Regeneration of the Nervous System" laid the foundation for understanding why some lesions do not regenerate, leading to the exploration of alternative therapies. In the digital age, various tools are emerging from molecular biology, omics sciences, and artificial intelligence, and what we can see is that none of these replace histological techniques; instead, they complement and enhance them. What we see published are studies using impeccable histological techniques for a specific brain region, serving as the starting point for applying molecular tools, as in neuropathology, as a standard tool for accurate diagnosis and prognosis.

Finally, we can see that histology and its techniques are irreplaceable and remain relevant in the field of neuroscience. "Observing without thinking is as dangerous as thinking without observing": SRC.

Disclosures: A. Vazquez-Alvarez: None. **G. Fernández Saavedra:** None. **E. Pulido-Camarillo:** None. **A. Perez-Torres:** None.

Theme K Poster

TKP01: History of Neuroscience

Location: SDCC Halls B-H

Time: Sunday, November 16, 2025, 8:00 AM - 12:00 PM

Program #/Poster #: TKP01.15SU/TT6

Topic: K.01. History of Neuroscience

Title: Loewi demonstration of chemical neurotransmission: a translation and pedagogical commentary

Authors: *A. C. BASU[1], F. A. HAASS[2];
[1]Col. of the Holy Cross, Worcester, MA; [2]Unaffiliated, Berlin, Germany

Abstract: In 1921, German-born pharmacologist Otto Loewi published a monograph describing his demonstration of chemical neurotransmission from the vagus nerve to the heart using vagus nerve-attached and detached preparations of amphibian hearts. This article is widely cited as the decisive demonstration of chemical neurotransmission at a time when electrical neurotransmission was the presumed mode of communication between nerves and their target organs. A new English translation of the original text reveals intriguing details of the landmark study beyond the typical textbook account. Loewi described the inotropic effects of vagus nerve stimulation on the heart as more consistent than the chronotropic effects that are emphasized in contemporary accounts. He reported using grass frogs, pond frogs, and toads in these experiments, and made an allusion to the time of year as a potential variable related to reproducibility of the effect of vagus nerve stimulation on cardiac pulse size and frequency. In his discussion, he enumerated three possibilities as to the formation of the signaling substance over time and two possibilities as to the dependence of its action on the activity of the heart tissue. Thus, a reading of the 1921 article can inspire discussion of fundamental issues in the conduct of neuroscience including the notion of reproducibility, the significance of model organism choice, and the application of the scientific method to the iterative refinement of a hypothesis. Discussions on these themes serve common learning goals for neuroscience seminar-style courses.

Disclosures: A.C. Basu: None. **F.A. Haass:** None.

Theme K Poster

TKP01: History of Neuroscience

Location: SDCC Halls B-H

Time: Sunday, November 16, 2025, 8:00 AM - 12:00 PM

Program #/Poster #: TKP01.16SU/Web Only

Topic: K.02. Teaching of Neuroscience

Title: Arf GTPases at the Crossroads of Vesicle Trafficking and Neuronal Differentiation

Authors: *S. N. EWELL;
Univ. of Mississippi, University, MS

Abstract: The ADP ribosylation (Arf) family of small GTPases are well-established regulators of vesicular trafficking and cytoskeletal organization (Nie & Hirsch, 2003). Arfs cycle between GTP and GDP bound states, facilitated by GTP exchange factors (GEFs) and GTPase activating proteins (GAPs), respectively (Randazzo & Hirsch, 2004; Klein & Franco, 2006; Nie & Hirsch, 2003). Arf1 and Arf6 are the most widely studied. Arf1 regulates Golgi and post-Golgi trafficking (Cukierman et al., 1995; Moss & Vaughan, 1995) while Arf6 functions in endosomal trafficking, vesicle exocytosis, and receptor trafficking (Randazzo & Hirsch, 2004). While Arf1 and Arf6 are widely expressed throughout the brain and implicated in neurodevelopmental disorders (Ishida et al., 2023; Brisevac et al., 2021). They are also linked to synaptic plasticity, dendritic differentiation, spine morphogenesis, and the formation of GABAergic synapses (Kim et al., 2020; Wang et al., 2017; Kim et al., 2015; Choi et al., 2006). However, the precise mechanisms by which Arfs regulate these processes remain poorly understood. For example, the Arf6 GAP ADAP1, has been demonstrated to regulate dendritic branching and spine formation (Moore et al., 2007), yet the spatial and functional relationship between ADAP1 and Arf6 in neurons remains undefined. Characterizing such interactions could reveal how Arfs orchestrate trafficking during neuronal development.This literature driven review synthesizes current knowledge of Arf GTPase activity, regulation by GEFs and GAPs, and interactions with trafficking machinery in neurons. We explore how these proteins contribute to dendritic differentiation, synapse formation and compartment specific trafficking. By outlining these knowledge gaps and proposing a conceptual framework for future investigation, this poster aims to recenters Arf GTPases as critical, yet underappreciated regulators of vesicular trafficking and neuronal structure. we present a conceptual synthesis and a working model of Arf GTPase function in neurons. This synthesis also previews a comprehensive review article in preparation, which seeks to guide neuroscience researchers toward deeper engagement with Arf-mediated trafficking pathways.

Disclosures: S.N. Ewell: None.

Theme K Poster

TKP02: Teaching of Neuroscience: K-12 Teaching and Outreach

Location: SDCC Halls B-H

Time: Sunday, November 16, 2025, 8:00 AM - 12:00 PM

Program #/Poster #: TKP02.01SU/TT7

Topic: K.02. Teaching of Neuroscience

Support: This research was funded by the SECIHTI by Project # 1840 / 6936 for DH-B. PBP-G, GYV-C and JJC-C received the scholarship No. 912883, 747917, and 1317215, respectively, from SECIHTI for postgraduate studies.

Title: Linking art and histology: Experiences and challenges

Authors: *P. B. PENSADO GUEVARA[1], D. NADELLA[2], A. A. BARRIENTOS BONILLA[3], G. VARELA CASTILLO[4], J. CORTÉS CORTINA[5], L. ZAVALA-FLORES[6], M. J. ROVIROSA[7], D. HERNANDEZ-BALTAZAR[8];
[1]Inst. de Neuroetología, Univ. Veracruzana, xalapa, Mexico; [2]Intl. collaboration, India, India; [4]Lab. de Neurofarmarcología, [3]Univ. Veracruzana, Xalapa, Mexico; [5]Inst. de Neuroetología, Xalapa, Mexico; [6]Ctr. de Investigación Biomédica del Noreste, IMSS, Monterrey, Nuevo león, Mexico; [7]Inst. Neurothology UV, Xalapa, Mexico; [8]Inst. de Neuroetologia, CONACYT-Instituto de Neuroetologia., Mexico, Mexico

Abstract: The main goal of clinical diagnosis is to establish the histopathological features that are based on color, appearance and cytomorphology. However, this is a great challenge for non-experts and to solve this problem, we propose and include the strategy of drawing and painting exercises as part of scientists or medical personal training. In the present poster, we analyze the advantages and limitations of this strategy. In this contribution, we use a set of useful art-based resources to teach neurosciences in an easy, attractive and enthusiastic way for undergraduate and postgraduate students, even for non-experts in the field.

Disclosures: P.B. Pensado guevara: None. **D. Nadella:** None. **A.A. Barrientos Bonilla:** None. **G. Varela Castillo:** None. **J. Cortés Cortina:** None. **L. Zavala-Flores:** None. **M.J. Rovirosa:** None. **D. Hernandez-Baltazar:** None.

Theme K Poster

TKP02: Teaching of Neuroscience: K-12 Teaching and Outreach

Location: SDCC Halls B-H

Time: Sunday, November 16, 2025, 8:00 AM - 12:00 PM

Program #/Poster #: TKP02.02SU/Web Only

Topic: K.02. Teaching of Neuroscience

Title: Affirming the Mind: The Effectiveness of Educational Outreach in Enhancing Student Understanding of Positive Affirmations

Authors: *L. HASHMI[1], L. ANAND[1], B. A. PUDER[2];
[1]Master of Sci. in Med. Hlth. Sci., Touro Univ. California, Vallejo, CA; [2]Foundational Biomed. Sci. Dept., Touro Univ., Vallejo, CA

Abstract: Evident gaps in high school education, particularly in underserved communities, highlight the necessity of innovative outreach strategies that may improve student cognitive and emotional growth. This study investigates the effectiveness of a Brain Awareness educational outreach station designed to teach high school students about the effects of positive affirmations. Seventy-nine participants from four California West Contra Costa County health academy high schools participated in the "Get to Know Your Brain!" brain awareness event. Participants were given a ten-question pretest (TUC IRB M-1022) followed by an interactive lesson, post-test, and program survey. Comparison of student participants' pre-test scores to their post-test scores following the intervention of an interactive lesson evaluated the efficacy of utilizing the learning station to improve student knowledge, understanding, and engagement. The results demonstrated that the interactive station pertaining to positive affirmations and cognition led to a statistically significant increase in students' post-test scores, $p = 0.0083$. The survey results also supported the hypothesis that an interactive learning station improves students' knowledge retention and enjoyment, with average Likert ratings of 3.7 - 4.59 on a 5-point Likert scale. This outreach approach holds promising potential to improve students' understanding and application of learned material using a hands-on station and will continue to be evaluated in future research cohorts in the upcoming years of the program.

Disclosures: L. Hashmi: None. **L. Anand:** None. **B.A. Puder:** None.

Theme K Poster

TKP02: Teaching of Neuroscience: K-12 Teaching and Outreach

Location: SDCC Halls B-H

Time: Sunday, November 16, 2025, 8:00 AM - 12:00 PM

Program #/Poster #: TKP02.03SU/TT8

Topic: K.02. Teaching of Neuroscience

Title: Duke University Neuroscience Experience (DUNE) engages local high schoolers in summer research

Authors: *A. M. BRIGANDE[1], K. ABDELAAL[1], O. TRAUBERT[2], K. CHESNOV[5], D. SUBRAMANIAN[6], M. ARINEL[1], M. E. CRONIN[1], T. J. ALSTON[2], T. SCOTTON[3], C. BAUER[4], M. A. SOMMER[2], L. E. WHITE[3];
[1]Neurobio., [2]Biomed. Engin., [3]Duke Inst. for Brain Sci., [4]Duke Univ., Durham, NC; [5]Stanford Univ., Stanford, CA; [6]Lab. of Sensorimotor Res. (NEI), NIH, Vienna, VA

Abstract: Duke University Neuroscience Experience (DUNE) is an eight-week, full-time, paid summer internship program that immerses Durham high school students in hands-on research and professional development activities. Rising juniors and seniors are matched with Duke neuroscience laboratories and mentors based on their research interests. They then undertake independent projects spanning experimental design, data acquisition, and quantitative analysis. Weekly didactic modules cover molecular, cellular, and systems neuroscience, neuroanatomy, experimental techniques, and animal model systems. Complementary workshops address college admissions and financial aid, science communication, and career pathways in academia,

industry, and medicine. The program culminates in a symposium where students present scientific posters to faculty, peers, family, and community members.
DUNE is sponsored by the Duke Institute for Brain Sciences and run by a graduate student-led team that volunteers year-round to prepare for the program and coordinate it over the summer. Duke neuroscientists at all career stages and from multiple departments participate in both program organization and student mentorship. Since the inaugural cohort in summer 2021, 24 DUNE alumni have completed the program, and 100% have graduated from high school compared to 85% district-wide and 87% statewide graduation rates. 94% of surveyed alumni attend or plan on attending college. Of those in college, 88% major in STEM and 53% major in neuroscience or related fields. Mentor engagement has grown markedly, with labs making research projects available to 5 students in 2021 and 18 students in 2025. Student applications have also grown substantially, from approximately 36 submissions in 2021 to over 180 in 2024. In 2025, even after limiting eligibility to Durham students, we received 100 applications for 8 spots, our largest cohort yet.
Overall, DUNE exemplifies a replicable model for neuroscience education at the high school level. Its sustained alumni success, growing mentor base, and robust applicant pool underscore the value of immersive, financially accessible internships in supporting all backgrounds in STEM and strengthening societal engagement with neuroscience.

Disclosures: A.M. Brigande: None. **K. Abdelaal:** None. **O. Traubert:** None. **K. Chesnov:** None. **D. Subramanian:** None. **M. Arinel:** None. **M.E. Cronin:** None. **T.J. Alston:** None. **T. Scotton:** None. **C. Bauer:** None. **M.A. Sommer:** None. **L.E. White:** None.

Theme K Poster

TKP02: Teaching of Neuroscience: K-12 Teaching and Outreach

Location: SDCC Halls B-H

Time: Sunday, November 16, 2025, 8:00 AM - 12:00 PM

Program #/Poster #: TKP02.04SU/TT9

Topic: K.02. Teaching of Neuroscience

Support: Wolverine Pathways

Title: Neurons Can Fly: An integrative neuroscience research program using Drosophila melanogaster to engage underrepresented high school students in STEM education

Authors: *S. GREENE[1], D. CAI[2], Y. LI[3];
[1]Cell and Developmental Biol., Univ. of Michigan, Ann Arbor, Ann Arbor, MI; [2]Cell and Developmental Biol., Michigan Neurosci. Institute, Univ. of Michigan, Ann Arbor, MI; [3]Cell and Developmental Biol., Univ. of Michigan, Ann Arbor, MI

Abstract: Engaging underrepresented students in STEM research at critical educational junctures requires innovative approaches. We developed Neurons Can Fly, a comprehensive neuroscience outreach program for underrepresented high school students from under-resourced communities in the Detroit metropolitan area. The program uses Drosophila melanogaster as an

accessible model organism to introduce neuroscience through a three-module structure. First, students join Jump Start Classes, an 8-week virtual preparatory course covering neuroscience fundamentals via scientific literature, recorded lectures, and discussions, with regular mentorship from lab leaders. Next, participants attend a week-long immersive summer camp at the University of Michigan, where they receive hands-on training in fly handling, genotyping, behavioral experiments, brain dissection, fluorescence microscopy, and AI-aided data analysis—while also experiencing campus life. Finally, qualified students may join our Advanced Research Program, offering one-to-one mentorship and ongoing research opportunities, with in-person and virtual options. Since its 2023 launch with just 15 students, the program has evolved significantly, now offering unlimited Jump Start enrollment and expanding the summer camp to host 48 students in 2025. Among those continuing in the advanced research program, two have already earned co-authorship on lab publications, demonstrating the program's success in fostering authentic scientific contributions from high school students. Our metrics show the development of a scalable, sustainable program integrating online learning, hands-on training, and remote behavioral neuroscience experiments. By engaging students early in their academic journey, Neurons Can Fly is positioned to impact hundreds of future scientists, advancing equity and inclusion in the Drosophila research community and broader STEM fields. This model offers a framework for other institutions aiming to create outreach programs that inspire the next generation of underrepresented scientists.

Disclosures: S. Greene: None. **D. Cai:** None. **Y. Li:** None.

Theme K Poster

TKP02: Teaching of Neuroscience: K-12 Teaching and Outreach

Location: SDCC Halls B-H

Time: Sunday, November 16, 2025, 8:00 AM - 12:00 PM

Program #/Poster #: TKP02.05SU/TT10

Topic: K.02. Teaching of Neuroscience

Support: Dana Foundation

Title: Discussing connections between neuroscience and societal issues promotes STEM identity in high school students

Authors: V. CALLAIS[1], S. WEBBER[2], K. MATHIAS[2], J. VUKOV[2], M. ROCHLIN[2], D. MORGAN[3], ***E. WAKEFIELD**[2];
[1]Duke Univ., Durham, NC; [2]Loyola Univ. Chicago, Chicago, IL; [3]Univ. of Michigan, Ann Arbor, MI

Abstract: Traditional approaches to teaching neuroscience promote reductionist thinking (Ruisoto & Juanes, 2019). Research suggests this alienates students considering neuroscience careers, especially those who have been historically minoritized in neuroscience and other STEM fields (i.e., women and people of color; Webb et al., 2022). Given these findings, we developed and evaluated an after-school program that introduces students to connections between neuroscience and societal and ethical issues, predicting this program would strengthen students' STEM identity - their desire to pursue STEM careers and confidence in their STEM skills. During 1-hour workshops, students are introduced to neuroscience principles and discoveries and then discuss neuroethical dilemmas relevant to those principles (e.g., use of study drugs; brain/computer interfaces). We implemented the workshops at two urban, neighborhood schools where over 84% of the students identify as a racial minority. Across two cohorts of students, 22 completed pre- and post-surveys assessing their STEM identity, attitudes towards science and math courses, and neuroethical understanding. Fourteen students also completed semi-structured interviews exploring what they hoped to gain from the workshops (pre), and their experience in the workshops (post). Analyses of the pre- and post-surveys revealed a statistically significant increase ($p < .05$) in the degree to which participants felt like STEM professionals and students also experienced an increase in their neuroethical understanding and awareness ($p<.001$). However, change in neuroethics knowledge did not predict change in the STEM identity measure ($p>.1$). To understand what aspects of the workshop might support STEM identity development, we undertook a qualitative analysis of interview data. First and second cycle coding were completed using deductive/inductive provisional coding (Saldaña, 2016). Based on this qualitative analysis, dialogue and experiential learning emerged as two pathways for supporting student interest and STEM identity. Within the program, dialogue supported students' understanding of neuroethical topics in a broader, societal context and was a pathway to being STEM 'knowers.' Experiential activities, which were mostly discussed in the context of

students' high school courses, allow them to be STEM 'doers'. Whereas resource constraints can limit ability to do experiential activities, having discussions is an avenue open to everyone. Connecting neuroscience concepts to real world societal issues may open the door to an important route towards building STEM identity.

Disclosures: V. Callais: None. **S. Webber:** None. **K. Mathias:** None. **J. Vukov:** None. **M. Rochlin:** None. **D. Morgan:** None. **E. Wakefield:** None.

Theme K Poster

TKP02: Teaching of Neuroscience: K-12 Teaching and Outreach

Location: SDCC Halls B-H

Time: Sunday, November 16, 2025, 8:00 AM - 12:00 PM

Program #/Poster #: TKP02.06SU/TT11

Topic: K.02. Teaching of Neuroscience

Title: Effectiveness of Integrating Digital Tools in Neuroanatomy Education: Comparison of Digital Tools with Traditional Teaching Models

Authors: *E. LORRAIN, J. KREMER, Y. WANG;
Anat., MSB Med. Sch. Berlin, Berlin, Germany

Abstract: Due to structural and functional complexity understanding neuroanatomy is challenging. One of the most demanding aspects of teaching is conveying 3D understanding concerning topographical relations of anatomical structures in the skull and brain. In this study, we aim to evaluate the effectiveness of digital tools and modern teaching strategies in neuroanatomy training. 92 medical students in Germany were offered digital teaching over a period of one semester in addition to classical teaching on plastinates. Using digitally prepared presets on a digital dissection table complex structures such as the pterygopalatine fossa and the Circle of Willis were visualized in a targeted manner. These structures were selected to study extracerebral and intracerebral anatomy. Participants completed a pretest to assess their baseline level of knowledge. A five-point Likert scale motivational questionnaire was also conducted prior to teaching. To evaluate their achievement all participants underwent the tests again after training. Our questionnaire evaluated the perfomance as followed: 1= high performance/very likely, 5=low performance/very unlikely. Prior to the tutorial sessions student engagement with the dissection table for self-directed study was rated at a mean of 4.5. In the pretest the average knowledge scores were 42% for questions about the pterygopalatine fossa and 61% for the Circle of Willis. After participating in the tutorials, both the acceptance of digital tools and learning outcomes have improved: The willingness to use digital tools increased markedly (mean score: 1.8) and knowledge scores rose to 79% for the pterygopalatine fossa and 84% for the Circle of Willis. Students who received teaching using the digital dissection table outperformed those taught with plastinate models. The use of digital tools in anatomy education was positively evaluated with motivational ratings averaging 2.2. Using a digital scalpel on a virtual body donor, dissection steps can be peformed repeatedly at will and anatomical structures can be individually designed. The brain of body donors can be vizualized along with selectively

displayed sourrounding regions, such as osseus, vascular and neural components, including structures of the CNS. Our tutorials with the digital dissection table demonstrate that medical students have improved their topographical understanding of complex regions within the skull and brain. Our findings suggest that digitally designed models of carefully selected neuroanatomical structures can offer a benefit in neuroanatomy education, particularly in fostering a better understanding of the brain's 3 dimensional relationships.

Disclosures: E. Lorrain: None. **J. Kremer:** None. **Y. Wang:** None.

Theme K Poster

TKP02: Teaching of Neuroscience: K-12 Teaching and Outreach

Location: SDCC Halls B-H

Time: Sunday, November 16, 2025, 8:00 AM - 12:00 PM

Program #/Poster #: TKP02.07SU/TT12

Topic: K.02. Teaching of Neuroscience

Title: Creating a Model of All-Year-Round Brain Awareness:Integration of Curriculum and Student Organizations to Highlight Public Education, Volunteerism, and K-6 Outreach

Authors: *L. CASARES[1], A. OSTER[1], M. ALATORRE MARTINEZ[1], G. OZTURK[1], H. N. CARLSON[2], D. MOORE[3], S. K. DEBBURMAN[4];
[2]Neuroscience, Psychology, [3]Neurosci., [1]Lake Forest Col., Lake Forest, IL; [4]Biol., Lake Forest Col., lake Forest, IL

Abstract: The Neuroscience Program at Lake Forest College was founded in 2009, and after 15 years, our status changed from an interdisciplinary program into a major self-standing department. Since inception, the program has evolved shaped by two student-led organizations: Synapse (focused on interdisciplinary outreach and founded first in 2009) and the Lake Forest College chapter of Nu Rho Psi (the National Honors Society in Neuroscience, chartered in 2011). As undergraduate neuroscience programs grow and mature nationwide, a common challenge is how multiple neuroscience student organizations can co-exist and thrive to provide co-curricular support. At Lake Forest, student-driven academic outreach by these two organizations has resulted in a vibrant student-scholar service-oriented academic culture for over 400 neuroscience majors. From the start, they have collaborated to raise brain awareness in our larger community, both in formal and informal ways. The academic program and two organizations anchor a broad and diversified portfolio of interdisciplinary programming that routinely reaches an audience of over 1500. Our collective goals are to: 1) focus on students' career and professional interest development, 2) raise public awareness of urgent issues in neuroscience, and 3) give back to the community. Since 2003, our most formal and concentrated outreach effort is the annual Brain Awareness Week (BAW) held each November. The 2024 BAW headlined multiple keynote lectures on neuroaesthetics, Montessori education and cognitive development, common mechanisms underlying neurodegeneration, and an annual symposium that featured the neuroscience scholarship of over 60+ undergraduate researchers, faculty, and alumni. Beyond BAW, we hosted a year-long seminar series featuring several nationally noted

speakers that educated the public about drug addiction and model systems, the benefits of serotonin and marijuana, and how brain circuits control our actions. Since 2006, we have led a K-6 outreach throughout both semesters, teaching neuroscience basics to over fifty third-grade children each year, including one cohort always from a low-income school district; this program has now impacted over 500 children. In this presentation, we will share specific in- and out-of-classroom strategies that have strengthened both learning and teaching through curriculum-based and student-led initiatives. Overall, our organizations have advanced the mission of the Neuroscience Program and college community, but not without challenges in navigating the natural ebb and flow of student leadership, especially in programs drawing from a smaller student pool.

Disclosures: L. Casares: None. **A. Oster:** None. **M. Alatorre Martinez:** None. **G. Ozturk:** None. **H.N. Carlson:** None. **D. Moore:** None. **S.K. Debburman:** None.

Theme K Poster

TKP02: Teaching of Neuroscience: K-12 Teaching and Outreach

Location: SDCC Halls B-H

Time: Sunday, November 16, 2025, 8:00 AM - 12:00 PM

Program #/Poster #: TKP02.08SU/TT13

Topic: K.02. Teaching of Neuroscience

Title: Developing a laboratory workshop for STEM educators

Authors: *B. E. COTE[1], G. SCHAMBER[1], N. RADDATZ[1], S. CHOI[2], B. MAUNZE[1]; [1]Biomed. Sci., Marquette Univ., Milwaukee, WI; [2]Dept Biomed. Sci., Marquette Univ. Dept. of Biol. Sci., Milwaukee, WI

Abstract: Advanced curricula for high school students offers an invaluable opportunity for students to gain practical lab skills and advanced knowledge about the field of biological research. Such programs including Advanced Placement (AP) courses, and Project Lead the Way (PLTW) have been shown to improve multiple measures of college-readiness, and college success rates. However, rapid technological advances in research presents a challenge for educators who must constantly adapt their curricula to provide the most enriching experience for their students. Without sufficient support, educators often lack the practical knowledge and training to effectively provide the most recent technical education for their students.
To help address this challenge, we developed a week-long workshop for STEM educators to provide hands-on lab training and updated knowledge of biomedical research, directly from working neuroscientists. This workshop is being developed for testing in Summer 2025, with the goal of developing into an annual offering. The workshop is structured around the completion of three commercially available lab kits that are often part of high school cellular and molecular biology curricula and present challenges for successful completion. We chose three kits that allowed us to address the most common challenges and techniques including ELISA, PCR and bacterial transformation (Edvotek). While performing these experiments, teachers are given hands-on training and tips to improve on the techniques described by each kit. This includes

cost-effective alternatives for replacing supplies and alternative methods for completing experiments. A short lecture portion is paired with each kit to supplement their current knowledge of the basic biological principles demonstrated, and real-world examples of how scientists use these techniques in current biomedical research. In addition to performing each experiment, workshop days also include basic training for common lab equipment, hazardous waste and lab safety, and properly maintaining a sterile environment. After this initial pilot, teacher feedback will be collected and used to improve the content, organization, and delivery of the workshop in future years.

Disclosures: B.E. Cote: None. **G. Schamber:** None. **N. Raddatz:** None. **S. Choi:** None. **B. Maunze:** None.

Theme K Poster

TKP02: Teaching of Neuroscience: K-12 Teaching and Outreach

Location: SDCC Halls B-H

Time: Sunday, November 16, 2025, 8:00 AM - 12:00 PM

Program #/Poster #: TKP02.09SU/TT14

Topic: K.02. Teaching of Neuroscience

Support: IOS-1853719
P50-HD068157

Title: Not Just for the Kids: How Educational Outreach Improves Protective Factors in Participating Teachers

Authors: *M. HALE[1], J. KOUASSI[2], J. SHUDA[2], G. J. BASHAW[1];
[1]Neurosci., [2]Univ. of Pennsylvania, Philadelphia, PA

Abstract: Science education outreach aims to foster connection between scientists and the community while exposing students to the practice of research science. In the case of two science outreach programs at the University of Pennsylvania, Project BioEYEs and DrosoPHILA, this includes outreach educators and volunteers bringing resources directly into Philadelphia public schools. During visits, these programs conduct multi-day modules with K-12 students that reinforce core content within the curriculum, introduce genetics and/or neuroscience concepts, and engage the students directly as scientists through hands-on experiments. Previous studies have concluded that the students who participate in these programs displayed improved content knowledge and improvement in elements of scientific identity, but little is known about how these programs impact the teachers whose classrooms we enter. Here, we describe preliminary trends in teacher response from a twelve-question, Likert-scale survey of participating Philadelphia teachers (n=14). Interestingly, participating in BioEYEs and/or DrosoPHILA improved educator satisfaction (86%), perspective on community partnerships (86%), opinion of STEM researchers (71%), and connection to the university (64%). We also found that 86% of responding teachers display increased interest in research. Lastly, in response to queries about student engagement with science we found that 81% of teachers reported improvement during

the modules, and 73% of teachers reported improved engagement since participating in the modules (n=10). This data provides support for the positive impact of outreach education outside of those previously reported for students. In the face of a nation-wide teacher shortage and an alarming rate of teacher attrition, this information may inform how we can leverage science outreach programs to improve outcomes for both students and teachers.

Disclosures: M. Hale: None. **J. Kouassi:** None. **J. Shuda:** None. **G.J. Bashaw:** None.

Theme K Poster

TKP02: Teaching of Neuroscience: K-12 Teaching and Outreach

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Time: Sunday, November 16, 2025, 8:00 AM - 12:00 PM

Program #/Poster #: TKP02.10SU/TT15

Topic: K.02. Teaching of Neuroscience

Support: UNAM-PAPIME: PE304525
UNAM-PAPIT: IN218924

Title: Project-based learning and digital resources to enhance neuroeducation in open university systems

Authors: *M. VERDEJO MANZANO[1], M. ARIAS-GARCÍA[2], A. AYALA NÚÑEZ[2], D. ROSALES[2], M. GONZALEZ[2], M. PADILLA[2], N. BRAVO[2], N. ALCANTARA[2], R. GOMEZ[2], L. RAMOS-LANGUREN[3];
[1]UNAM, Ciudad de Mexico, Mexico; [2]UNAM, Mexico City, Mexico; [3]Facultad de Psicología, Edificio C, 103, Univ. Nacional Autónoma de México, Mexico, Mexico

Abstract: This study aimed to innovate the educational approach of the Open University and Distance Education Division (DSUAP) at the Faculty of Psychology, UNAM, through the implementation of Project-Based Learning (PBL) methodology. A diagnostic analysis conducted over the past two years revealed key challenges in the "Biological Bases of Behavior" course, including high dropout and failure rates, limited student self-regulation, and the insufficient use of assessment practices centered on meaningful learning.To address these issues, we designed, developed, and implemented a series of interactive digital learning resources to support PBL in the context of neuroeducation. These resources engaged students in solving real-world problems aligned with the course curriculum, and encouraged the development of critical thinking, autonomy, and academic motivation.The intervention strengthened teaching strategies by enabling educators to deliver more dynamic, student-centered instruction. Moreover, it promoted the development of transversal competencies among first-semester psychology students. Preliminary observations suggested a positive impact on student engagement and academic performance. This experience provided relevant insights into the integration of active methodologies and digital tools in neuroscience education within open university systems.

Disclosures: M. Verdejo Manzano: A. Employment/Salary (full or part-time): UNAM. **M. Arias-García:** A. Employment/Salary (full or part-time): National Autonomous University of

Mexico (UNAM). **A. Ayala Núñez:** A. Employment/Salary (full or part-time): National Autonomous University of Mexico (UNAM). **D. Rosales:** None. **M. Gonzalez:** None. **M. Padilla:** None. **N. Bravo:** None. **N. Alcantara:** None. **R. Gomez:** A. Employment/Salary (full or part-time): UNAM. **L. Ramos-Languren:** A. Employment/Salary (full or part-time): UNAM.

Theme K Poster

TKP02: Teaching of Neuroscience: K-12 Teaching and Outreach

Location: SDCC Halls B-H

Time: Sunday, November 16, 2025, 8:00 AM - 12:00 PM

Program #/Poster #: TKP02.11SU/TT16

Topic: K.02. Teaching of Neuroscience

Support: Dana Foundation

Title: Influences of Research Experience and Near-Peer Mentoring Training on Students' Intent to Pursue STEM

Authors: *K. MATHIAS[1], S. WEBBER[1], V. CALLAIS[2], M. ROCHLIN[1], D. MORGAN[3], E. WAKEFIELD[1];
[1]Loyola Univ. Chicago, Chicago, IL; [2]Duke Univ., Durham, NC; [3]Univ. of Michigan, Ann Arbor, MI

Abstract: Near-peer mentoring, in which students receive training and mentor younger students, has been used to augment undergraduate research experience (URE) summer programs and has been beneficial for long term persistence in STEM (Anderson et al., 2019). Although some retrospective work exists, understanding how students view engaging in lab work and receiving research mentoring versus being trained to mentor and engaging in mentoring themselves in relation to their desire to persist in STEM is understudied. Here, we seek to further understand what students gain from each component of these impactful programs. We do this in the context of a summer program designed for students entering their final year of high school.
We consider data from two cohorts of high school students from public schools in a large city. Data from 16 students (ages 16-17, 11 female) were collected (Summer 2024) and we will collect data from 15 students this summer. In both cohorts, students participate in a 6-week summer program (1) conducting research in university labs and (2) preparing activities to introduce middle school students to topics connecting neuroscience and societal issues - in the fall, they act as facilitators during a field trip for middle schoolers. To assess the impact of program components on participants' interest in pursuing a STEM career (i.e. confidence in acquired skills, interpersonal connections within their lab, near-peer mentoring preparation), a survey and structured interview were completed after the summer program.
Based on 2024 cohort data, 14 of 16 students rated their interest in pursuing a neuroscience career as more likely after the program (n=11) or had expressed extreme interest in a STEM career before the program (n=3). For all students, conducting research was rated as important for their decision to pursue a STEM career (M= 1.69, SD= 1.08; 1=very important; 5=not at all important), and this was echoed in written responses (e.g., "...After experiencing how fun

research can be, my desire has increased.") However, when considering activity preparation for middle schoolers, those who showed an increased interest in pursuing a STEM career rated this component as significantly more meaningful (M=2.2, SD=0.53) than those who showed stable interest across the program (M=4.2, SD=0.9; p<.01): Students showing increased interest were able to draw connections between mentoring younger students and seeing themselves as STEM leaders (e.g., "...I wanted to be a teacher when I was younger but didn't really realize what it meant until now"), which may indicate the importance of this component for persistence in STEM. Additional insights may emerge with the full sample.

Disclosures: K. Mathias: None. **S. Webber:** None. **V. Callais:** None. **M. Rochlin:** None. **D. Morgan:** None. **E. Wakefield:** None.

Theme K Poster

TKP02: Teaching of Neuroscience: K-12 Teaching and Outreach

Location: SDCC Halls B-H

Time: Sunday, November 16, 2025, 8:00 AM - 12:00 PM

Program #/Poster #: TKP02.12SU/TT17

Topic: K.02. Teaching of Neuroscience

Title: The USA Brain Bee: A national neuroscience competition cultivating the next generation of scientists

Authors: *M. O. YASSA[1], N. R. MYSLINSKI[2];
[1]Univ. of California, Irvine, Irvine, CA; [2]Neural and Pain Sciences, 8th floor, Univ. of Maryland Dent. Sch., Baltimore, MD

Abstract: Founded in 1998 by Dr. Norbert Myslinski, the USA Brain Bee is a neuroscience competition for teens ages 13-19 in the United States and serves as the national chapter of the International Brain Bee, a global initiative spanning 50 countries. The program is designed to stimulate interest in neuroscience and related careers through regional chapter competitions. In 2025, the USA Brain Bee national championship welcomed 48 regional winners from 26 states to compete at Rutgers Robert Wood Johnson Medical School in New Jersey. The event was hosted by the Central New Jersey Brain Bee Chapter, organized by Dr. Michael Matise. The competition included several components that evaluated student knowledge of neuroscience facts, anatomy, imaging, clinical diagnosis, and the scientific method. The top 12-scoring students from the written and practicum exams advanced to participate in a live elimination round judged by neuroscientists. Beyond the competition itself, students engaged in keynote lectures and networked with graduate students during a research poster session. The event culminated in the selection of a national champion, Claire Zhou of the Atlanta Brain Bee, who will represent the United States at the International Brain Bee World Championship. The USA Brain Bee is directed by Dr. Manuella Oliveira Yassa. The 2026 USA national competition will be hosted at UC Irvine.

Disclosures: M.O. Yassa: None. **N.R. Myslinski:** None.

Theme K Poster

TKP02: Teaching of Neuroscience: K-12 Teaching and Outreach

Location: SDCC Halls B-H

Time: Sunday, November 16, 2025, 8:00 AM - 12:00 PM

Program #/Poster #: TKP02.13SU/TT18

Topic: K.02. Teaching of Neuroscience

Title: Using a logic model to design, implement, and evaluate K-12 outreach and education programs: a case study of the Irvine Brain Bee

Authors: *W. NING[1,2], M. A. COBURN[2], R. E. HOKENSON[2,3,4], J. M. LORITSCH[1,2], A. B. MOREHOUSE[2,5], E. M. PURVIS CONWAY[2], M. O. YASSA[2];
[1]Dept. of Neurobio. and Behavior, [2]Ctr. for the Neurobio. of Learning and Memory, [3]Dept. of Anat. and Neurobio., [4]Dept. of Pediatrics, [5]Dept. of Cognitive Sci., Univ. of California, Irvine, Irvine, CA

Abstract: The Brain Bee is a neuroscience competition for high school students with the goal to inspire and motivate students to pursue careers in basic and clinical neuroscience. Each year, high school students first compete in regional Brain Bees, then the winners advance to compete in the USA National Brain Bee, and ultimately the International Brain Bee. The initial stage of this competition, the regional Brain Bee, serves as a critical entry point and presents an excellent opportunity for institutions to engage local high school students in neuroscience. Beyond the competition, regional Brain Bees offer a unique opportunity to teach students neuroscience through hands-on activities and lab tours, introduce them to higher education and build connections with faculty and students, expose them to careers in neuroscience, and stimulate a passion for learning and neuroscience. As STEM outreach initiatives continue to expand, there is an increasing need for structured frameworks to design and assess effective outreach programs. Logic models are tools that can be used to plan, implement, and evaluate outreach and education programs. Using the Irvine Brain Bee as a case study, we propose a logic model for a regional Brain Bee. Here, we outline the inputs, activities, outputs, and outcomes (short, medium, and long-term) that can guide the development, implementation, and evaluation of a successful outreach program. To assess the impact of the Irvine Brain Bee on student knowledge, attitudes, and practice, we conducted a post-event survey evaluation on student participants from 2019-2025. High school students reported perceived increases in knowledge, attitudes, and practice toward science after participating in the Irvine Brain Bee. Thematic coding of qualitative data from students revealed key areas of impact, including increased interest and passion for neuroscience, greater educational and career insights, and enhanced personal growth and confidence. Our findings highlight the value of logic models in guiding neuroscience outreach and provide a framework for institutions to establish or improve regional Brain Bees and other K-12 neuroscience outreach programs.

Disclosures: W. Ning: None. **M.A. Coburn:** None. **R.E. Hokenson:** None. **J.M. Loritsch:** None. **A.B. Morehouse:** None. **E.M. Purvis Conway:** None. **M.O. Yassa:** None.

Theme K Poster

TKP02: Teaching of Neuroscience: K-12 Teaching and Outreach

Location: SDCC Halls B-H

Time: Sunday, November 16, 2025, 8:00 AM - 12:00 PM

Program #/Poster #: TKP02.14SU/UU1

Topic: K.02. Teaching of Neuroscience

Support: Honors Research Stipend - Christohper Newport Univ.

Title: Building Young Brains: Neuroscience Education for K-12 Students in Newport News, VA Through Children's Illustration.

Authors: A. BALDWIN[1], K. KINSLOW[2], G. M. FERNANDEZ[3], ***A. J. VELKEY, II**[1]; [1]Neurosci. Program, Christopher Newport Univ., Newport News, VA; [2]Neurosci. Program, Christopher Newport Univ., Hampton, VA; [3]Christopher Newport Univ., Newport News, VA.

Abstract: As early as preschool, children are often asked the question, "what do you want to be when you grow up?". How this question is answered is often shaped by a child's education and surroundings (e.g.. what careers their caregivers have, or what they have learned in school), indicating that childrens' ideas about their potential futures are largely based upon in-class experiences, hands-on activities, and interactions with adults and peers. Unfortunately, students are often not exposed to the field of neuroscience, even in the most basic sense, until grades 5-8 in the United States when they first begin learning about basic structures and functions of the nervous system in their life-science courses. This potential dearth of earlier education regarding neuroscience could dampen interest among younger students. To address this concern, the current project aims to increase neuroscience education across K-12 grade levels within Newport News Public Schools through the use of illustration and storytelling. Three illustrated books were constructed based on the grade level of students (K-5th, 6-8th, and 9-12th). The books increased in content detail and complexity across the three age groups— beginning with basic brain anatomy and simpler descriptions of action potentials for younger students, progressing to comparative neuroanatomy across species for middle schoolers, and culminating in high school materials that illustrated how addiction alters brain chemistry. On the first visit to classrooms, a pre-survey is administered to students (questions altered to allow for optimal understanding for each age range) then physical copies are aloud by experimenters and distributed for classroom use (6 schools in the local Tidewater Region, reaching a total of 18 classrooms). Two weeks after the initial classroom visit, experimenters return to each class and administer a post-survey assessing how students' attitudes and understanding of neuroscience have shifted over time. Statistical results are pending, but it is expected that students' attitudes toward neuroscience will improve after receiving the educational material. This project emphasizes the importance of early education in neuroscience, exposing the next generation to the field in order to initiate long-lasting interest in neuroscience.

Disclosures: A. Baldwin: None. **K. Kinslow:** None. **A.J. Velkey:** None.

Theme K Poster

TKP02: Teaching of Neuroscience: K-12 Teaching and Outreach

Location: SDCC Halls B-H

Time: Sunday, November 16, 2025, 8:00 AM - 12:00 PM

Program #/Poster #: TKP02.15SU/UU2

Topic: K.02. Teaching of Neuroscience

Title: Teachers can rest: middle schoolers teaching elementary school children neuroscience

Authors: S. YAKOVENKO[1], E. MAYS[1], A. KOROL[2], S. BAHDASARIANTS[3], E. HERRICK[4], T. STUMP[5], ***V. GRITSENKO**[4];
[1]Suncrest Middle Sch., Morgantown, WV; [2]Neurosci., [3]Human Performance, [4]West Virginia Univ., Morgantown, WV; [5]West Virgnia Univ., Morgantown, WV

Abstract: The West Virginia Chapter of the Society for Neuroscience organized an interactive outreach program to spark curiosity about the brain in local elementary school students. Led by three enthusiastic middle schoolers from Suncrest Middle School and St. Francis Central Catholic School, the initiative brought neuroscience into Suncrest Elementary classrooms with the support of graduate students and faculty from West Virginia University.In two visits, the team delivered age-tailored, hands-on educational sessions.
For 2nd graders, the focus was on comparative brain anatomy, featuring a playful “make-your-own-brain” activity using playdough. Four classes of approximately 25 students each explored how brains differ across species, promoting early excitement about science.
The 5th-grade curriculum involved six interactive learning stations:
Neuron Construction - Pipe cleaners helped students learn neuron anatomy.
Brain on Wheels (Backyard Brains) - Introduced coding and sensory processing.
EMG Claw (Backyard Brains) - Demonstrated myoelectric control with real-time feedback.
Muscle Anatomy Models - Offered a tactile lesson in biomechanics.
Muscle Flower Display - Showed how neural signals control movement.
Robotic Prosthetic Leg (Össur) - Highlighted human-machine integration.
Each of three 5th-grade classes rotated through the stations for 30-minute immersive sessions, gaining a deeper appreciation for how the brain and body work together.The program sparked genuine interest in neuroscience careers among elementary students and gave the middle school presenters valuable teaching experience. Inspired by the overwhelmingly positive response, the middle schoolers expressed a strong desire to expand the program and involve more peers in future outreach efforts.

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Theme K Poster

TKP02: Teaching of Neuroscience: K-12 Teaching and Outreach

Location: SDCC Halls B-H

Time: Sunday, November 16, 2025, 8:00 AM - 12:00 PM

Program #/Poster #: TKP02.16SU/UU3

Topic: K.02. Teaching of Neuroscience

Title: The brain for every ear: How to make an accessible neuroscience podcast

Authors: *M. I. BURRITT ST. ANGELO;
Neurosurg., Loyola Univ. Med. Ctr., Chicago, IL

Abstract: Quickly after the introduction of podcasts as a medium of popular culture, the scientific community began bringing educational resources to non-experts through various free and diverse listening platforms. The COVID-19 pandemic expedited this boom in casual scientific communication as individuals and corporations, regardless of expertise, gained incredible access to virtual production abilities. Core topics and novel advancements in neuroscience could now be shared to anyone with a listening device. Despite the accessibility in creating educational neuroscience materials, a gap remains between the publishing scholar and their potential audience. Though some neuroscience podcasts may target communities with previous exposure to similar science, typical listeners are often digesting presented concepts for the first time. Successful neuroscience podcasters who consider this reach their potential audience by making their media accessible. This study analyzes current neuroscience-focused educational media to determine factors that make neuroscientific communication via podcast accessible to wider audiences. A search across the PubMed database identified previous literature on accessible neuroscientific communication and determined overlapping characteristics. Data was collected through a thorough review of neuroscience-based podcasts on popular media streaming platforms, and information regarding podcast theme, structure, teaching methods, vernacular, speaker voice, and length, as well as data involving podcast following, listener count, and audience reviews were also documented. The findings from this study reveal that there are certain characteristics of neuroscientific podcasts that make them easier for a casual listener to engage with. For example, podcasts scripted with less low-frequency words and those with a distinctly outlined structure had improved audience engagement. This preliminary data suggests that employing familiar language and structure when presenting neuroscience makes the new, complex topics accessible to listeners without unnecessary hurdles of novelty. As we continue analyzing the traits of successful neuroscience podcasts, one thing remains clear: simple differences between podcasts created drastic shifts in the accessibility of scientific communication. By making neuroscience accessible through resources such as podcasts, the scientific community has potential to bring vital information regarding brain health to people independent of their previous scientific engagement, and potential to inspire future generations of neuroscientists.

Disclosures: M.I. Burritt St. Angelo: None.

Theme K Poster

TKP02: Teaching of Neuroscience: K-12 Teaching and Outreach

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Topic: K.02. Teaching of Neuroscience

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ICTI-PICIR22-075-C
SECTEI/167/2024
CIC-UMSNH 18096
CIC-UMSNH 18099

Title: Virtual Reality affects objective performance and subjective perceptions in High School student´s

Authors: L. F. ORTEGA-VARELA[1], L. M. VAZQUEZ RANGEL, Sr.[2], A. RODRIGUEZ MEDINA[2], M. Y. GAUTHEREAU-TORRES[3], E. GONZÁLEZ[2], M. FERREIRA RODRIGUEZ[2], *C. J. GUTIERREZ-GARCIA[4];
[1]Facultad de Salud Publica y Enfermeria, [2]Facultad de Salud Pública y Enfermeria, [3]Facultad de Ciencias Medicas y Biologicas Dr Ignacio Chavez, Univ. Michoacana de San Nicolas de Hidalgo, Morelia, Mexico; [4]Ing. Quimica y Bioquimica, TecNM/Campus Morelia, Morelia, Mexico

Abstract: Attention and concentration are essential cognitive skills for learning, especially in educational contexts with multiple stimuli. Virtual Reality (VR) is a technology that is achieving a greater presence in educational centers in the last decade. However, VR has not been explored in depth at the High school Education stage. This study was aimed to analyze whether the use of technological media, specifically virtual reality (VR) glasses, influences high school students' attention and concentration, compared to traditional methods such as printed images. The research was conducted during Brain Week (March 12-14) at the Universidad Michoacana de San Nicolás de Hidalgo, with the participation of more than 1,632 high school and college students. A random sample of 230 students was selected (90% confidence level, 5% error), ranging in age from 15 to 52 years (mean 18.3 years), of whom 58.3% were men and 41.7% were women. Participants completed an activity with two scenarios: one on paper and another projected through VR headsets. In both cases, they had to identify a specific object, recording the time it took them to locate it, to compare attention and concentration according to the medium used.After the activity, a brief survey was administered with three questions: Which medium was more difficult? Which was more enjoyable? In which did they feel more focused? Data such as age, sex, and grade level were also collected. Preliminary results showed a significant mean difference ($t=3.652$, $p=0.0041$), indicating that, on average, students took longer to identify objects using VR, which may be due to the difficulty of the medium or a learning curve. This is consistent with studies such as Cho et al. (2004), where the VR groups improved after training. Likewise, significant differences in perception were identified between the two media ($X2=4.311$, $p=0.0379$). The X2 and McNemar tests ($p=0.0005$) indicate that the responses were not random, but rather showed a clear preference or perception of greater concentration for one of the media. Many students reported feeling more focused and motivated using VR, although others found the traditional method more comfortable. These findings invite further exploration

of the role of immersive technology in learning. In conclusion, the use of VR affects both objective performance and subjective perceptions. Future research is recommended to analyze whether the balance between efficiency and experience justifies its educational implementation.

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Theme K Poster

TKP02: Teaching of Neuroscience: K-12 Teaching and Outreach

Location: SDCC Halls B-H

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Topic: K.02. Teaching of Neuroscience

Support: NSF Grant 2143805

Title: Promoting Neuroscience Engagement in San Diego South Bay Communities: Elementary and High School Outreach

Authors: *K. D. ANDRADE[1], S. MADONIA[2], S. RIES-CORNOU[2];
[1]SDSU/UCSD,Joint Doctoral Program in Language and Communicative Disorders, San Diego, CA; [2]Sch. of Speech, Language, and Hearing Sci., San Diego State Univ., San Diego, CA

Abstract: The gender gap between females and males in STEM representation begins early. By junior high, half as many girls compared to boys plan to pursue a career in engineering or science (Legewie and DiPrete, 2012). Early educational outreach is crucial to empower students, and specifically woman, to pursue STEM pathways and higher education. Prior research found participation during a university-run STEM program during high school was effective at increasing self-reported STEM career aspirations (Kitchen et al., 2019). The current study examines whether our neuroscience and language outreach program is effective at fostering students' curiosity about cognitive neuroscience and supporting STEM career aspirations among young women. The program was implemented in two elementary schools and two high schools in South Bay, San Diego reaching a total of 133 high school students (66 female; mean age =14.6 yo., SD = .48) and 181 elementary school students (88 female; mean age = 8.77 yo., SD = 0.49). Students completed a questionnaire before and after participation. Preliminary qualitative and quantitative data analysis was conducted using responses from one high school (n=68, 34 females, mean age =14.7 yo., SD = .46) and one elementary school site (n=23; 9 females; mean age = 8.6yo., SD = 0.49). A qualitative analysis of the students' responses reveals an overall interest in brain function and general curiosity toward brain science and language. A quantitative analysis showed differences in engagement between male and female high school students. In elementary school, girls gave significantly higher ratings than boys on several measures: the importance of studying language ($F(1,130)=6.24$, $p=.014$), the importance of studying the brain ($F(1,128)=4.45$, $p=.037$), the perceived difficulty of studying the brain ($F(1,130)=11.43$, $p<.001$),

and their interest in learning more about becoming neuroscientists ($F(1,130)=4.77$, $p=.031$). In high school, girls gave significantly higher ratings than boys on the importance of studying language ($F(1,40)=6.40$, $p=.015$). Overall, these results suggest that neuroscience outreach activities can play an important role in increasing interest and motivation to pursue STEM pathways, especially in young woman in elementary and high schools. These outreach activities may be one way to promote future increased female representation in neuroscience and other STEM fields.

Disclosures: K.D. Andrade: None. **S. Madonia:** None. **S. Ries-cornou:** None.

Theme K Poster

TKP02: Teaching of Neuroscience: K-12 Teaching and Outreach

Location: SDCC Halls B-H

Time: Sunday, November 16, 2025, 8:00 AM - 12:00 PM

Program #/Poster #: TKP02.19SU/UU6

Topic: K.02. Teaching of Neuroscience

Support: 2215124

Title: Integrating The Kern National Network for Flourishing in Medicine into Neuroscience Outreach for High School Students and Teaching the Neuroscience of Stress through the Lens of Flourishing

Authors: *B. KURTOGLU, S. PFISTER, J. R. MANTSCH;
Med. Col. of Wisconsin, Milwaukee, WI

Abstract: As part of a graduate professional development course “Skill Enhancement through Experiential Development (SEED)”, Pharmacology and Toxicology graduate students at the Medical College of Wisconsin engaged in experiential learning projects designed to enhance professional skills. The course incorporates portfolio development through experiential learning. Faculty-guided independent work focused on trainee-identified professional goals, communication skills, and reflections on professional identity development. Specifically for this project, graduate students partnered with a faculty mentor to create an individualized development plan focused on teaching. Biweekly learning community meetings provided opportunities for students share experiences, reflect and build professional portfolios while fostering interpersonal, communication and lifelong learning skills. Within the SEED teaching track, a graduate student created a neuroscience outreach activity for high school students, integrating the Kern National Network (KNN) Framework for Flourishing, an initiative promoting character, meaning, relationships, well-being and practical wisdom in healthcare. Traditional outreach often emphasizes textbook neuroscience, overlooking a chance to connect neuroscience concepts with personal well-being and human experiences. For this pilot project, the graduate student developed and delivered a 45-minute interactive session on the neuroscience of stress, focusing on the prefrontal cortex’s role in cognitive flexibility, motivation, and decision-making. The session combined foundational neuroscience with reflective discussions on

stress, resilience, meaning and relationships. The graduate student educator shared personal experiences with stress and encouraged the high school students to reflect on their own strategies for managing stress and promoting flourishing. Reflections and feedback highlighted increased engagement and relevance when neuroscience content was connected to personal experiences. The graduate student reported notable growth in their own teaching confidence, their ability to lead open, human-centered discussions, and increased awareness of integrating well-being frameworks into science education. This pilot suggests mutual benefits for learners and educators, supporting future incorporation of flourishing frameworks into outreach and experiential neuroscience education. Future initiatives will expand to additional schools and integrate formal feedback surveys.

Disclosures: B. Kurtoglu: None. **S. Pfister:** None. **J.R. Mantsch:** E. Ownership Interest (stock, stock options, royalty, receipt of intellectual property rights/patent holder, excluding diversified mutual funds); Promentis Pharmaceuticals.

Theme K Poster

TKP02: Teaching of Neuroscience: K-12 Teaching and Outreach

Location: SDCC Halls B-H

Time: Sunday, November 16, 2025, 8:00 AM - 12:00 PM

Program #/Poster #: TKP02.20SU/Web Only

Topic: K.02. Teaching of Neuroscience

Title: Integrating the body and brain through b-learning: Connecting theory and practice through lectures on psychology and cell biology and practical exercises (supine trunk adjustment exercises)

Authors: *Y. ATOMI[1], Y. HIGASHI[2], T. ATOMI[3], A. ATOMI[1,2], M. SHIMIZU[1], E. FUJITA[4], T. WATANABE[2];
[1]Teikyo University, Advanced Comprehensive Res. Organization, Tokyo, Japan; [2]Tokyo Univ. Agric. Technol., Tokyo, Japan; [3]Kyorin Univ., Tokyo, Japan; [4]Teikyo University, Fac. of Med. Technol., Tokyo, Japan

Abstract: Although science such as brain and life sciences has advanced to better understand human existence, it has yet to offer sufficient countermeasures to emerging social challenges, including a super-aging population, rising psychiatric and lifestyle-related diseases, and a reality-detached IT society. Our previous studies proposed the hypothesis of *dual dynamic instability*—a concept linking cellular and bodily systems unique to upright, bipedal multicellular organisms. We have reported pilot experiments using a novel trunk exercise performed in a supine position for 1-5 minutes daily, involving tactile stimulation through self-touch and activation of abdominal muscles. One week of practice led to significant improvements in trunk-related motor performance such as sit-ups and standing posture.This study reports the introduction of the trunk exercise into an educational program titled *Body-Mind Integrative Science* at the Open University of Japan, targeting 40 adult students (aged 35-80) interested in psychology. The two-day program (90 minutes × 8 sessions), conducted by specialists in cell biology and positive

psychology, included narrative lectures with dynamic cell imagery. The exercise was taught in a seated position, integrated into the lecture format.Two weeks after attendance, student reports revealed enhanced awareness of themselves as emergent beings composed of cells, capable of embodied collaboration through physical action and verbalization. Understanding procedural memory and bodily logic allowed participants to internalize and express mind-body integration. These results align with Courtine et al. (2012), who emphasized volition in gait learning after spinal cord injury in rats.Five key educational "rewards" emerged:
(1) self-convincing reasons,
(2) task/time simplicity,
(3) effect awareness,
(4) customized exercise and self-monitoring, and
(5) verbalized, embodied understanding.This approach promotes bird's-eye self-awareness through integration of body, brain, and cellular life science.

Disclosures: Y. Atomi: None. **Y. Higashi:** None. **T. Atomi:** None. **A. Atomi:** None. **M. Shimizu:** None. **E. Fujita:** None. **T. Watanabe:** None.

Theme K Poster

TKP02: Teaching of Neuroscience: K-12 Teaching and Outreach

Location: SDCC Halls B-H

Time: Sunday, November 16, 2025, 8:00 AM - 12:00 PM

Program #/Poster #: TKP02.21SU/UU7

Topic: K.02. Teaching of Neuroscience

Title: Simulating ADHD Learner Behaviors with Large Language Models: A Tool for Teacher Training and Neurodiversity-Informed Instruction

Authors: *M. GAJENDRAN[1,2];
[1]Univ. of Missouri, Kansas City, Kansas City, MO; [2]Vision Res. Center, Dept. of Ophthalmology, Univ. of Missouri-Kansas City Sch. of Med., Kansas City, MO

Abstract: Background: Attention-Deficit/Hyperactivity Disorder (ADHD) presents unique challenges in educational settings, including inattention, impulsivity, and working memory deficits. Traditional teacher training often lacks experiential components that convey the nuanced classroom manifestations of ADHD. Advancements in Large Language Models (LLMs) offer opportunities to simulate diverse learner behaviors, potentially enhancing educators' preparedness to support neurodiverse students.
Objective: To develop and assess an LLM-based simulation that emulates ADHD student behaviors, aiming to provide educators with an interactive tool for practicing and refining inclusive teaching strategies.
Methods: Prompt engineering techniques were employed to configure an LLM to simulate a student exhibiting ADHD-related behaviors, including distractibility, impulsivity, and inconsistent task engagement. Educators interacted with the simulated student through structured teaching scenarios, applying various instructional strategies. The simulation's responses were

designed based on established ADHD behavioral patterns documented in educational and psychological literature.
Results: The LLM-generated simulations authentically represented ADHD student behaviors, particularly in demonstrating attention lapses and impulsive responses. Engagement with the simulation allowed educators to explore the effectiveness of various instructional strategies, such as task chunking, use of visual aids, and providing immediate feedback, in managing simulated ADHD-related classroom situations.
Conclusion: LLM-based simulations, crafted through prompt engineering, can serve as effective, low-cost tools for teacher training, offering experiential learning opportunities that traditional methods may lack. By interacting with simulated ADHD behaviors, educators can develop and refine inclusive teaching practices, ultimately supporting better educational outcomes for neurodiverse learners.
Implications for Practice: Integrating LLM simulations into teacher education programs can enhance understanding of ADHD and other neurodiverse conditions, promoting empathy and effective instructional strategies. Future research should explore the scalability of such simulations and their impact on classroom practices.

Disclosures: M. Gajendran: None.

Theme K Poster

TKP02: Teaching of Neuroscience: K-12 Teaching and Outreach

Location: SDCC Halls B-H

Time: Sunday, November 16, 2025, 8:00 AM - 12:00 PM

Program #/Poster #: TKP02.22SU/UU8

Topic: K.02. Teaching of Neuroscience

Title: Brian in Action: An Interactive 3D Neuron Model for Neuroscience Education

Authors: M. F. VELOZ CASTILLO[1], *G. HERRERA-LÓPEZ[2];
[1]Biol. and Envrn. Sci. & Engin. Div., King Abdullah Univ. of Sci. and Technol., Thuwal, Saudi Arabia; [2]KAUST, Thuwal, Saudi Arabia

Abstract: Understanding neuronal communication is fundamental in neuroscience education, yet synaptic transmission remains a complex and abstract topic, particularly to young audiences. To bridge this gap, we developed “Brain in Action”, an interactive educational tool that combines 3D-printed neuron models, custom electronic circuitry, and a mobile app interface to visually and physically simulate excitatory and inhibitory synaptic signaling in an engaging hands-on manner. The whole system features three 3D-printed neurons with LED-integrated circuits that respond to user inputs via an Android app. Users can start by exploring the structure of a neuron (dendrites, soma, axon) and read in the app the functions of each part and how they contribute to synaptic transmission. A second part of the app allows users to toggle between the different types of synaptic activity. Excitatory signals are visualized as propagating light pulses along the three neurons, whereas inhibitory inputs block the transmission, reinforcing key functional differences between synapse types. The app complements this experience with concise and scientifically

accurate explanations. We used these tools in public outreach events and evaluated their impact through user surveys assessing usability, engagement, and learning outcomes. Preliminary results indicate high user satisfaction and increased confidence in understanding neural communication. Qualitative feedback also emphasized the effectiveness of interactive visual explanations for audiences with diverse educational backgrounds. This tool provides an innovative, scalable approach to teaching neurophysiology, particularly in scientific outreach events or classrooms. By integrating neuroscience, engineering, and science communication, "Brain in Action" demonstrates how multisensory tools can transform complex concepts into accessible, immersive learning experiences, fostering curiosity in learners of all ages.

Disclosures: M.F. Veloz Castillo: None. **G. Herrera-López:** None.

Theme K Poster

TKP03: Teaching of Neuroscience: College I

Location: SDCC Halls B-H

Time: Saturday, November 15, 2025, 1:00 PM - 5:00 PM

Program #/Poster #: TKP03.01SA/UU9

Topic: K.02. Teaching of Neuroscience

Support: NSF CAREER 2235079
College of Science, University of Arizona
CURE Institute, University of Arizona

Title: Neuroscience Vertically Integrated Projects Benefit STEM Student Self-Efficacy and Science Identity

Authors: A. D. CIMETTA[1], R. S. FRIESEN[1], S. M. DAVIS[3], ***M. R. BHATTACHARYA**[2]; [1]Educational Psychology, [2]Univ. of Arizona, Tucson, AZ; [3]Biol., Hollins Univ., Roanoke, VA

Abstract: Vertically Integrated Projects (VIPs) are successful models for embedding long term research participation into curricula. They offer team-based research projects spanning multiple semesters that can reach more students than traditional one-on-one mentorship models and can provide deeper research immersion than single semester course-based undergraduate research experiences (CUREs). VIPs have been extensively deployed and assessed within engineering curricula, but whether this model can work for laboratory-based projects in neuroscience, and broadly in biological sciences, is unknown. Challenges to launching such experiences in biological sciences include laboratory space, supply costs, and curricular constraints. Furthermore, most biological sciences CUREs are a single semester, prohibiting longer-term assessment of student growth. We designed a Neuroscience VIP in which students investigate the causality of genetic variants linked to Amyotrophic Lateral Sclerosis (ALS) using *Drosophila* genetics, bioinformatics, and behavioral analysis. Students could enroll for up to three consecutive semesters. Our unique course structure permits multiple levels of participation including becoming a peer mentor and leader. Through pre- and post-semester surveys, we found strong gains in self-efficacy, science identity, and networking over multiple semesters of

participation. Qualitative responses show improved understanding of the research process, more interest in their neuroscience curriculum overall, and strong effects on peer interactions and leadership skills. Finally, of 95 students enrolled over 6 semesters, 98% remained in science or graduated with a science degree. Future iterations of the course are incorporating pose estimation (SLEAP) and Python-based analysis to identify early behavioral differences in ALS models. Our study shows that VIP courses in neuroscience are effective ways of promoting student gains and retention in STEM. We propose using this model to enhance undergraduate neuroscience curricula.

Disclosures: A.D. Cimetta: None. **R.S. Friesen:** None. **S.M. Davis:** None. **M.R. Bhattacharya:** None.

Theme K Poster

TKP03: Teaching of Neuroscience: College I

Location: SDCC Halls B-H

Time: Saturday, November 15, 2025, 1:00 PM - 5:00 PM

Program #/Poster #: TKP03.02SA/UU10

Topic: K.02. Teaching of Neuroscience

Title: A summer internship is like a short-film: How to design one that is effective for interns, their mentors, research groups, and society

Authors: *M. B. GOODMAN;
Stanford Univ., Stanford, CA

Abstract: Short-term internships, particularly those offered during summer months at academic institutions, federal research laboratories, and private companies, provide significant benefits for all participants involved. I will present a framework for designing impactful short-term internships that yield four primary advantages. First, student interns gain invaluable hands-on experience, enhancing their confidence in scientific capabilities and clarifying their educational and career aspirations. Second, bench mentors—typically advanced graduate students or postdoctoral researchers—develop essential skills in training and mentoring while benefiting from the fresh perspectives of inquisitive novices. Third, principal investigators (PIs *aka* lab heads or group leaders) can explore new research avenues and support the professional growth of their bench mentors. A fourth, societal benefit is the intern's enriched understanding of the research process, fostering their development as informed learners and engaged citizens.
The framework emphasizes the importance of a focused and specific project, akin to a compelling short film, which allows interns to master a narrow question within a limited timeframe. Effective collaboration between the bench mentor and PI is crucial for refining project scope and ensuring that the intern's work complements ongoing research. Clear communication and empowerment of the intern are essential for fostering independence and confidence, while the entire research group plays a supportive role, enhancing the intern's learning experience through informal and formal interactions. This multimodal approach may be especially powerful in neuroscience, given the interdisciplinary nature of research in the field.

By implementing these guidelines, research groups can create a dynamic and enriching environment for interns, ultimately attracting more individuals to STEM careers, demystifying the research process for future generations, and ensuring an infusion of creativity to help solve the most difficult problems in neuroscience. This structured approach not only benefits the interns but also cultivates a collaborative and innovative research culture that can lead to new discoveries and advancements in science.

Disclosures: M.B. Goodman: None.

Theme K Poster

TKP03: Teaching of Neuroscience: College I

Location: SDCC Halls B-H

Time: Saturday, November 15, 2025, 1:00 PM - 5:00 PM

Program #/Poster #: TKP03.03SA/UU11

Topic: K.02. Teaching of Neuroscience

Title: Introducing cross-disciplinary perspectives in social decision-making through game-based learning in Survivor

Authors: *T. CHAN-DEVAERE[1], B. MULHOLLAND[2];
[1]Psychology, [2]Mathematics, Univ. of Notre Dame, Notre Dame, IN

Abstract: A key challenge in undergraduate neuroscience education is in relating concepts to the lived experience of students, particularly when complex ideas (such as social decision-making) are distilled in research for experimental control. This poster introduces an interdisciplinary course that merges mathematical game theory with social cognitive neuroscience, through the lens of the reality TV show *Survivor* and an immersive classroom environment inspired by the show. Course content includes discussions of payoff matrices and Nash equilibria alongside theory of mind and empathy, all of which are engaged throughout the semester in in-class games and reflective writing assignments. We will share insights on interdisciplinary course design, student feedback regarding engagement in game-based pedagogy, and suggestions for those interested in incorporating game-based experiential learning into their classrooms.

Disclosures: T. Chan-Devaere: None. **B. Mulholland:** None.

Theme K Poster

TKP03: Teaching of Neuroscience: College I

Location: SDCC Halls B-H

Time: Saturday, November 15, 2025, 1:00 PM - 5:00 PM

Program #/Poster #: TKP03.04SA/UU12

Topic: K.02. Teaching of Neuroscience

Title: Are there specific predictors of students success in introductory neuroscience courses?

Authors: *G. W. PERRY;
Florida Atlantic Univ., Boca Raton, FL

Abstract: Student success in an introductory neuroscience course in our program at FAU is variable and consistently shows a bimodal distribution with a sizable number of students failing the course (>20% DFW rates). The bimodal distribution is seen consistently over prior years and among different instructors. To determine whether there are specific characteristics of the group that fails, and whether there are potential predictors of a student success in the course that can be used to better advise students who enroll in the course, student success in the course was analyzed anonymously with respect to GPA, major and prior coursework. An initial analysis consisted of >800 students in 10 separate sections of an introductory neuroscience course required by the psychology and neuroscience & behavior programs at FAU. The analysis reveals that success in the course is predictable by GPA but independent of prior coursework or the students' major. Female students pass with higher grades than male students. Additional analysis of how well students correctly answer specific examination questions (student learning outcomes - SLO) about various subject aspects of the course, for example neuroanatomy, neurophysiology, and neurochemistry, also revealed no differences among students pursuing different majors. Surprisingly, the greatest number of students gave correct answers to those questions assessing their knowledge of membrane and action potentials (greater SLO). Furthermore, a limited comparison of online sections with in-person sections revealed no differences in student performance. In conclusion, GPA remains the best predictor of success in the introductory neuroscience course whereas prior course work and major did not predict success or failure.

Disclosures: G.W. Perry: None.

Theme K Poster

TKP03: Teaching of Neuroscience: College I

Location: SDCC Halls B-H

Time: Saturday, November 15, 2025, 1:00 PM - 5:00 PM

Program #/Poster #: TKP03.05SA/Web Only

Topic: K.02. Teaching of Neuroscience

Title: Stem activities for students and teachers: membrane potential, simulations, and invertebrate behaviors

Authors: *Y. KIM[1], J. KIM[2], E. WOMACK[3], R. L. COOPER[3];
[1]Western Kentucky Univ., Gatton Acad. of Mathematics & Sci., Richmond, KY; [2]Western Kentucky Univ., The Gatton Acad. of Mathematics & Sci., Richmond, KY; [3]Biol., Univ. of Kentucky, Lexington, KY

Abstract: We have developed novel educational material with practical applications for students in general physiology, specialty neuroscience courses, and online individual self-instruction. Two main themes will be presented as a 25- or 50-minute presentation or as a 50-minute

workshop. The first theme is on the resting membrane potential and action potential with computational simulations. We will present approaches when considering factors in determining resting membrane potential to electrical events (i.e., graded to an action potential) with parameters not normally considered in textbooks. The varied types of channels that account for leak channels and factors that influence them, as well as the diverse types of voltage-gated channels that produce variations in the shapes of electrical events within single neurons. The module is presented along with step-by-step instructions and presentations of computational simulations with freeware (i.e., Python). The second theme is on environmental influences on the behaviors of larval insects (i.e., fruit flies), which is presented with low cost, common supplies, and ease of performing in a classroom with multiple stations. The presentation of varied environments of an electric field or thermal zones within 15 minutes results in observable behaviors that are quantifiable. During the session, we aim to break down the complexities regarding the two presented themes/concepts into practical, simple steps for students and educators to use with both computational simulations and hands-on activities. This module readily covers concepts of biology, chemistry, physics, and engineering design; allows participants to modify conditions to test their postulations and ideas; and redesign and test again. Both themes cover real-world concepts and applications that participants can relate to in their daily lives.

Disclosures: Y. Kim: None. **J. Kim:** None. **E. Womack:** None. **R.L. Cooper:** None.

Theme K Poster

TKP03: Teaching of Neuroscience: College I

Location: SDCC Halls B-H

Time: Saturday, November 15, 2025, 1:00 PM - 5:00 PM

Program #/Poster #: TKP03.06SA/Web Only

Topic: K.02. Teaching of Neuroscience

Support: Emerging Pedagogies Seed Grant, Duke University, Office of the Vice Provost for Learning Innovation and Digital Education

Title: Enhancing Student Self-Efficacy and Science Identity Through Neuroscience Laboratory-Based Learning

Authors: A. HOFFMANN[1], C. BALIN[2], ***T. NEWPHER**[2], M. NG[3];
[2]Psychology and Neurosci., [3]Psychology & Neurosci., [1]Duke Univ., Durham, NC

Abstract: Undergraduate research experiences are associated with many positive outcomes, including improved self-efficacy, greater academic achievement, and increased interest in pursuing a graduate degree. With the goal of promoting student self-efficacy and interest in neuroscience research, the Duke Neuroscience Teaching Lab developed several hands-on learning experiences for students in an introductory neuroscience course. These in-class activities were designed to introduce students to the tools and techniques commonly used in neuroscience research. Here, we present data from students enrolled in a neuroscience gateway course across

four different sections taught during Fall 2024 and Spring 2025. Nearly every student enrolled completed the four lab activities offered throughout the semester, as well as pre and post surveys on a validated instrument designed to measure student perception of self-efficacy, science identity and learning gains. Self-reports on the post survey showed a significant increase in self-efficacy and science identity relative to the pre survey. Importantly, these findings suggest that these active learning experiences may improve student confidence and interest in neuroscience research. We hope that the findings from our study can help guide and inform the development of teaching labs and active learning experiences at other colleges and universities.

Disclosures: A. Hoffmann: None. **C. Balin:** None. **T. Newpher:** None. **M. Ng:** None.

Theme K Poster

TKP03: Teaching of Neuroscience: College I

Location: SDCC Halls B-H

Time: Saturday, November 15, 2025, 1:00 PM - 5:00 PM

Program #/Poster #: TKP03.07SA/UU13

Topic: K.02. Teaching of Neuroscience

Title: Perceived visualization clarity predicts performance on memory-based multiple-choice assessment

Authors: *Z. XING[1,3], L. FAN[1], A. C. NICHOLAS[2];
[1]Dept. of Psychological Sci., [2]Neurobio. & Behavior, Univ. of California, Irvine, Irvine, CA;
[3]Dept. of Psychology, Vanderbilt Univ., Nashville, TN

Abstract: Multiple-choice assessments are commonly used to evaluate learning, yet little is known about how students recall information during exams. Mental imagery prompts are thought to enhance science learning outcomes, even in the absence of external visuals (Leopold & Mayer, 2015). Prior studies show that strong mental imagery supports the formation of scientific spatial representations and improves learning outcomes, while learner-generated visual imagery can enhance learning by supporting conceptual integration and explanation quality (Leopold & Leutner, 2013; Zhang & Linn, 2011). Building on previous research in the same instructional context that examined visual-spatial ability and visual learning activities using BioRender (Ha et al., 2024), our study shifted focus to internal visualization processes during test-taking, specifically vividness of mental imagery and perceived clarity during recall. In an undergraduate general education neuroscience course for non-majors (N = 330), we investigated how students' exam performance related to learning style preferences (VARK), vividness of visual imagery, and perceived clarity of visualizations during recall. The Vividness of Visual Imagery Questionnaire (VVIQ) was used to quantify individuals' ability to form vivid and detailed mental images. Our results revealed a strong relationship between VVIQ scores and perceived visualization clarity ($p < .001$). Students who rated visualizations as clearer during recall performed significantly better ($p < .001$), suggesting enhanced recall and test performance linked to clearer visualization. Notably, students scoring lowest on visualization clarity also achieved high exam scores, suggesting alternative cognitive strategies may have contributed to effective

recall. Self-identified visual learners scored higher on VVIQ ($p < .001$), reported greater clarity ($p < .005$), and performed better on the midterm ($p < .05$), indicating an edge in academic performance backed by stronger mental imagery.

Disclosures: Z. Xing: None. **L. Fan:** None. **A.C. Nicholas:** None.

Theme K Poster

TKP03: Teaching of Neuroscience: College I

Location: SDCC Halls B-H

Time: Saturday, November 15, 2025, 1:00 PM - 5:00 PM

Program #/Poster #: TKP03.08SA/UU14

Topic: K.02. Teaching of Neuroscience

Title: Teaching concepts of neuroscience relevant aspects of development through the study of endocrine disruption by bisphenols: a comparison of impacts on educational goals in different courses

Authors: *G. M. LANGE[1,2], R. M. LANGE[3];
[2]Dept. of Biol., [3]Dept. of Nursing, [1]Saginaw Valley State Univ., University Center, MI

Abstract: Concepts of both human and other organismal neurodevelopment are important for various biology-focused disciplines. However, students with majors ancillary to "pure" biology majors (allied health majors, for instance) sometimes experience challenges in recognizing how traditional concepts of neurodevelopment relate to their career goals and aspirations in the health sciences. This work examines a method for teaching key neuroscience and developmental biology concepts related to human and other organism health and wellness by using research findings of endocrine disruption on neurodevelopment by bisphenols. Bisphenols are chemical agents commonly found in our environment associated with plastic manufacturing. In daily life, most of us are exposed to bisphenols through food and beverage packaging, handling of thermal printer papers, and through contact with other plastic-based products in our home and work environments. Students in different courses, an undergraduate course in a pre-health related major, an undergraduate courses in a biology major, an undergraduate course in nursing, and a graduate course in nursing were provided materials and instruction on early, embryological neurodevelopment and how bisphenol exposure can differentially shape morphology and physiology. We present findings examining the effectiveness of these teaching methods on student learning of key concepts in human and other organismal neurodevelopment and we assess how examining the literature of exposures to breakdown products of plastics can enhance a global perspective.

Disclosures: G.M. Lange: None. **R.M. Lange:** None.

Theme K Poster

TKP03: Teaching of Neuroscience: College I

Location: SDCC Halls B-H

Time: Saturday, November 15, 2025, 1:00 PM - 5:00 PM

Program #/Poster #: TKP03.09SA/UU15

Topic: K.02. Teaching of Neuroscience

Title: Asking "Why" Questions modulates long-term memory via curiosity and prediction error: effects of pedagogical framing on neuroanatomical knowledge retention

Authors: *C. R. DEPINHO[1], C. TOBING[2], A. ALEXANDRESCU[1];
[1]Barnard College, Columbia Univ., New York, NY; [2]Teachers College, Columbia Univ., New York, NY

Abstract: Understanding how curiosity influences the acquisition and retention of scientific knowledge is essential for developing pedagogical strategies that enhance student engagement and learning. Curiosity, a form of intrinsic motivation, engages dopaminergic reward circuity and facilitates hippocampus-dependent memory encoding, particularly under conditions of high prediction error. Prior neuroimaging studies demonstrate that epistemic curiosity enhances memory through increased functional connectivity between reward-related regions and the hippocampus, while behavioral studies indicate that incorrect predictions that elicit surprise responses correlate with improved learning outcomes. To investigate whether curiosity-enhancing pedagogical prompts improve memory retention for scientific knowledge, we conducted a within-subjects experiment during the neuroanatomy unit of an undergraduate neuroscience lab course. Through the administration of a pre-unit survey and the delivery of a within-unit study guide, we manipulated curiosity by prompting students to generate predictions in response to “Why” questions - designed to elicit higher curiosity by connecting concepts to either evolutionary or clinical relevance - or to “What” questions that focused solely on definitions and descriptions. Results demonstrate that asking “Why” questions, particularly those with clinical framing, significantly enhanced long-term memory recall on a comprehensive practical and written exam compared to asking “What” questions. Additionally, asking “Why” questions correlated with higher levels of curiosity, surprise, and prediction errors, and with lower levels of confidence. These findings suggest that instructional prompts that engage motivational and metacognitive processes can deepen cognitive encoding and improve neuroscientific learning outcomes in undergraduate students, especially when grounded in clinically-relevant contexts.

Disclosures: C.R. DePinho: None. **C. Tobing:** None. **A. Alexandrescu:** A. Employment/Salary (full or part-time): Barnard College, Columbia University.

Theme K Poster

TKP03: Teaching of Neuroscience: College I

Location: SDCC Halls B-H

Time: Saturday, November 15, 2025, 1:00 PM - 5:00 PM

Program #/Poster #: TKP03.10SA/UU16

Topic: K.02. Teaching of Neuroscience

Support: School of Molecular and Cellular Biology, University of Illinois at Urbana-Champaign
Provost's Faculty Retreat Grant 2024, University of Illinois at Urbana-Champaign

Title: Developing virtual reality and video gaming tools for effective learning of neuroanatomy

Authors: *J. TOMA[1,5], S. HASHIM[1,5], Q. FENG[6,5], T. SMITH[2,5], N. MAGSINO[3,5], C. LIU[4,5]; [1]Univ. of Illinois, Urbana, IL; [2]Univ. of Illinois, CHAMPAIGN, IL; [3]Univ. of Illinois, Morton Grove, IL; [4]Univ. of Illinois, Sunnyvale, CA; [5]Univ. of Illinois at Urbana-Champaign, Urbana, IL; [6]Chem., Univ. of Illinois Urbana-Champaign Neurosci. Grad. Program, Champaign, IL

Abstract: Neuroanatomy can be a difficult subject for students to master, largely due to the complexity of the nervous system and the unique challenges associated with approaching the often-inaccessible structural intricacies of the brain and spinal cord. Traditional methods of teaching neuroanatomy involve lectures, viewing photomicrographs of internal structures, handling models and specimens, and performing dissections of the brain and spinal cord. While these instructional methods have merit, they fail to completely capture the complex spatial organization of the nervous system for students. Orientation to the relative location of key structures is essential for students to achieve a working understanding of the layout and interconnectedness of the nervous system. Currently, we are developing two tools to aid in efforts to overcome traditional learning challenges and improve student understanding of the relative localization of key structures and their connections. One tool is a virtual reality (VR) learning aid that establishes a more immersive experience than current classroom or laboratory experiences, placing students directly inside the nervous system. Here, learners interact with the brain, spinal cord, and associated nerves in ways that are otherwise impossible. Students freely move through simulated neural pathways, or tracts, to observe the structural components of the nervous system. An early prototype of this VR learning aid has been implemented in a senior undergraduate neuroanatomy lab course; preliminary results from a focus group of these students has indicated a generally positive view of the potential of the VR learning aid, especially if a more detailed and accurate set of nervous system models continues to be developed. The second tool is a neuroanatomy-based video game developed in collaboration with the student-led game design studio (The Stu/dio) at University of Illinois Urbana-Champaign, where players explore and interact with components of key neural pathways. Gamified elements that aim to promote student confidence with neuroanatomy are included, where students interact with the nervous system and solve problems related to neuropathological conditions. Screenshots of the tools will be presented as well as demonstration of usage and gameplay where possible. Augmentation of the neuroanatomy learning experience, rather than replacement of traditional methods, is the primary aim of both tools, as multiple learning modalities maximize learning potential. With further development of these tools, we seek to enhance measurable improvement in student achievement of learning objectives in undergraduate neuroanatomy courses.

Disclosures: J. Toma: None. **S. Hashim:** None. **Q. Feng:** None. **T. Smith:** None. **N. Magsino:** None. **C. Liu:** None.

Theme K Poster

TKP03: Teaching of Neuroscience: College I

Location: SDCC Halls B-H

Time: Saturday, November 15, 2025, 1:00 PM - 5:00 PM

Program #/Poster #: TKP03.11SA/UU17

Topic: K.02. Teaching of Neuroscience

Support: Utah Tech CIRHSE Grant

Title: Stress less: a pilot study on an interdisciplinary stress management course for undergraduates

Authors: *S. BELL[1], K.-W. YU[2], M. HASAN[2], T. VICKERS[3];
[1]Psychology, [2]Utah Tech. Univ., St. George, UT; [3]Montana State Univ. - Northern, Havre, MT

Abstract: Stress can have detrimental effects on academic performance. Various interventions targeted at enhancing students' stress management practices, including stress management courses, have been employed across a variety of student groups. The purpose of this pilot study was to collect preliminary data on the effectiveness of a novel, interdisciplinary stress management course combining neuroscience education, music, and an intervention shown to enhance self-efficacy. Participants (n = 4) completed one-hour sessions once per week for three weeks. The first session consisted of an interactive lecture on the neural and hormonal underpinnings of the stress response, the impact of perceived control over stressors, and neuroscientific evidence of structural neuroplasticity resulting from various stress management techniques. The second session consisted of a brief lecture on the cognitive and emotional benefits of music, followed by an interactive component including rhythmic tapping and creating personalized playlists. The third and final session was rooted in Bandura's self-efficacy theory; students were guided through the creation of a personal coat of arms and a digital journaling activity. Concepts of neuroplasticity and the neural basis of value-based decision-making were also incorporated in this third session. Measures of depression, anxiety, and self-efficacy were collected at the beginning and the end of the three-week course. These same variables were measured on a control group (n = 15), which did not participate in the course but instead received a one-page flyer on stress management strategies. No significant differences were found when the results were analyzed in a multivariate linear model. The difference that most closely approached significance, measured using a post-hoc one-tailed matched pairs t-test, was the increase in self-efficacy following the completion of the course, $t(3) = 2.017$, $p = .137$. Although no significant differences were observed (as expected due to low statistical power), the course was well received by students, and we concluded that it could form a viable foundation for future iterations. Potential future research directions include further inquiry into the potential impacts of neuroscience education on self-efficacy, potentially probing the NeuroEd model proposed by Golnaz Tabibnia (2024), and disentangling the specific effects of each component of the course.

Disclosures: S. Bell: None. **K. Yu:** None. **M. Hasan:** None. **T. Vickers:** None.

Theme K Poster

TKP03: Teaching of Neuroscience: College I

Location: SDCC Halls B-H

Time: Saturday, November 15, 2025, 1:00 PM - 5:00 PM

Program #/Poster #: TKP03.12SA/UU18

Topic: K.02. Teaching of Neuroscience

Title: The crawfly collective: a source of diy equipment for neurophysiology education

Authors: *B. R. JOHNSON[1], J. RYAN[2], D. L. DEITCHER[3];
[1]Neurobio. and Behavior, Cornell Univ., Ithaca, NY; [2]Biol., Hobart & William Smith Colleges, Geneva, NY; [3]Neurobio. and Behavior, Cornell Univesity, Ithaca, NY

Abstract: Financially strapped Neuroscience faculty are often unable to run even simple neurophysiology exercises in student laboratories. We have addressed this with our own inexpensive and open-source DIY products: suction electrodes, extracellular amplifiers, stimulus isolation units, micromanipulators, and a low cost, student-built fluorescence microscope for calcium imaging. Here we highlight recent advances in DIY neurophysiology lab equipment including upgrades to our fluorescence microscope, new light sources for optogenetic exercises and fluorescence imaging, a new precision micromanipulator, a function generator, new 3D printed extra- and intracellular electrode holders, a low-cost extracellular amplifier, LED light sources for dissection microscopes and preparation dishes, and new software for student imaging analysis and neurophysiology data acquisition and analysis. CrawFly Collective DIY information at: https://github.com/CrawFly/DIY-Neuroscience.

Disclosures: B.R. Johnson: A. Employment/Salary (full or part-time): Cornell University. **J. Ryan:** None. **D.L. Deitcher:** A. Employment/Salary (full or part-time): Cornell University.

Theme K Poster

TKP03: Teaching of Neuroscience: College I

Location: SDCC Halls B-H

Time: Saturday, November 15, 2025, 1:00 PM - 5:00 PM

Program #/Poster #: TKP03.13SA/UU19

Topic: K.02. Teaching of Neuroscience

Title: Pathways to Neuroscience: Undergraduate Training and Career Outcomes in Latin America

Authors: *S. QUIÑONEZ[1], G. MEDINA RUIZ[2], D. HERNÁNDEZ ESPINOSA[3];
[1]Sci. Communication, NeuroLatam, Huancayo, Peru; [2]Dept. of Otolaryngology, Univ. of Pittsburgh, PITTSBURGH, PA; [3]Neurobio., Univ. of Pittsburgh, Pittsburgh, PA

Abstract: Undergraduate neuroscience education in Latin America has seen a growing interest over the last decade, yet it remains fragmented and inconsistently structured across the region. This study provides a descriptive analysis of current training models and their perceived impact on students' academic development and career aspirations. We conducted a cross-sectional survey targeting neuroscience students and recent graduates from various Latin American countries, complemented by interviews with program coordinators and faculty members involved in undergraduate training.Findings reveal that neuroscience is typically introduced through elective courses or specializations embedded within broader disciplines such as medicine, psychology, or biology, with only a few institutions offering standalone neuroscience programs at the undergraduate level. Access to hands-on research experience and formal mentorship varies widely depending on institutional resources, geographic location, and program structure. While many students report high enthusiasm for neuroscience and a strong desire to pursue graduate studies, they also face barriers such as limited funding opportunities, lack of institutional guidance, and insufficient exposure to international scientific networks.Programs that include structured research involvement, mentorship, and collaborations with regional or global partners tend to be more effective in fostering student engagement and career continuity in neuroscience. This study highlights the importance of enhancing regional coordination, resource sharing, and curriculum development to establish stronger and more inclusive pathways for early neuroscience training in Latin America. Our findings offer key insights for academic leaders and policymakers aiming to expand and standardize neuroscience education across diverse educational and socioeconomic contexts in the region.

Disclosures: S. Quiñonez: None. **G. Medina Ruiz:** None. **D. Hernández Espinosa:** None.

Theme K Poster

TKP03: Teaching of Neuroscience: College I

Location: SDCC Halls B-H

Time: Saturday, November 15, 2025, 1:00 PM - 5:00 PM

Program #/Poster #: TKP03.14SA/UU20

Topic: K.02. Teaching of Neuroscience

Title: Implementing a course-based Alzheimer's APP proteolysis research experience for undergraduate neuroscience curricula

Authors: *A. B. OSTER[1], T. VIQUEZ BOLAÑOS[2], D. MOORE[1];
[1]Neurosci., [2]Neurosci. and Biochem., Lake Forest Col., Lake Forest, IL

Abstract: Course-based undergraduate research experiences (CURE) provide benefits to students by integrating fundamental laboratory techniques with course content. We investigated if implementation of a CURE model showcasing the amyloid hypothesis of Alzheimer's disease (AD) could increase student knowledge of proteolysis and be adapted for broader use at undergraduate institutions. In Spring 2025 at Lake Forest College, a CURE was implemented in NEUR301: Neuron to Brain, an upper-level, semester-long core neuroscience course. CHO 695 cells (gift of Dr. Virginia Lee) stably transfected with the 695 amino acid variant of human

amyloid precursor protein (APP) were treated with PMA for two hours to stimulate alpha secretase proteolysis. Conditioned media was harvested and cell lysates collected. BCA protein assay was used to measure total protein in lysate samples and served to normalize for secreted amyloid beta (Aβ) levels measured via a human Aβ ELISA. Normalized class data were pooled and analyzed with student's t-test (two-tailed, heteroscedastic). PMA treatment lowered Aβ secretion by over 50% for the entire class (twelve pairs of students), indicating a shift in baseline APP proteolysis. Learning outcomes were assessed by surveys given pre- and post-CURE. Survey results indicated significant increases in student learning, including increases in (1) confidence in utilizing cell-based models of Alzheimer's, (2) experience with cell- and molecular-based laboratory techniques, (3) interest in neurodegenerative diseases, and (4) confidence in critical thinking and writing skills. Because accessibility to CHO695 cells is limited, there may be challenges to the widespread adoption of this CURE model. We sought to determine whether commercially available CHO Pro5 cells would be a suitable substitute. Using UniProt and FASTA, we retrieved the amino acid sequences of APP isoforms (the 770, 751, 695 amino acid variants) for human and Chinese hamster APP. Sequence alignment via BLAST and Clustal Omega was conducted to assess differences in the Aβ region of APP at the epitopes targeted by the human Aβ ELISA antibodies. Sequence alignments indicated no significant differences in the APP isoforms, and significant conservation of the Aβ region of the APP isoforms, suggesting the use of the CHO Pro5 cell line could serve as a more accessible alternative for broader implementation of this CURE model at undergraduate institutions.

Disclosures: A.B. Oster: None. **T. Viquez Bolaños:** None. **D. Moore:** None.

Theme K Poster

TKP03: Teaching of Neuroscience: College I

Location: SDCC Halls B-H

Time: Saturday, November 15, 2025, 1:00 PM - 5:00 PM

Program #/Poster #: TKP03.15SA/UU21

Topic: K.02. Teaching of Neuroscience

Support: NW Noggin

Title: Art & STEM Integration by the Interdisciplinary Neuroscience Association, Portland State University

Authors: *K. SMITH[1], C. AUSTIN[1], C. FITZPATRICK[1], B. CONN[2], E. ZEPADA-DANIEL[1], L. TANGREDI[3], N. MCWILLIAMS[1], A. VYAS[1], X. BROWN[1], K. KIM[1], S. PATEL[1], A. JEUDY[1], R. CALLOS[1], S. MUTSCHLER-ALDINE[1], G. GUARIN[1], L. SCHULBACH[1], D. JANG[4];
[2]Neurosci., [1]Portland State Univ., Portland, OR; [3]Portland State Univ., Clackamas, OR; [4]Student Activities & Leadership Programs, Portland State Univ., Portland, OR

Abstract: The Interdisciplinary Neuroscience Association (INA) at Portland State University (PSU) is a student organization dedicated to providing accessible neuroscience education for all.

We welcome individuals from all disciplines across PSU and are committed to supporting students in and beyond their academic careers. The INA was instrumental in installing the Neuroscience Minor at PSU and is currently working to develop a Neuroscience Major. Integrating art into our neuroscience programming is a vital part of this process, allowing students to engage with the learning material through a variety of modalities. For many students, engaging with scientific concepts through tactile, creative methods lowers psychological barriers often associated with STEM courses. For example, creating artistic models of neurons is an accessible, tactile method that the INA utilizes to foster a deeper understanding of neuroanatomical structures. Using hands-on approaches to learning, the INA extends our neuroscience educational efforts beyond PSU and into the community by hosting events such as NogginFest and the Brain Fair with local nonprofit NW Noggin that feature research presentations at all levels, in collaboration with local artists and musicians. The INA works with NW Noggin to involve INA members in outreach, teaching neuroscience concepts to students at underfunded schools. Art-integrated neuroscience education supports equitable, inclusive, and informed learning by recognizing cognitive diversity and informing our pedagogy with an understanding of how the brain learns, develops, and stores information. The INA has also worked with the government at the local and federal level, advocating for vulnerable populations by informing state senators and a congressional STEAM caucus about neuroscience research.

Disclosures: K. Smith: None. **C. Austin:** None. **C. Fitzpatrick:** None. **B. Conn:** None. **E. Zepada-Daniel:** None. **L. Tangredi:** None. **N. McWilliams:** None. **A. Vyas:** None. **X. Brown:** None. **K. Kim:** None. **S. Patel:** None. **A. Jeudy:** None. **R. Callos:** None. **S. Mutschler-Aldine:** None. **G. Guarin:** None. **L. Schulbach:** None. **D. Jang:** None.

Theme K Poster

TKP03: Teaching of Neuroscience: College I

Location: SDCC Halls B-H

Time: Saturday, November 15, 2025, 1:00 PM - 5:00 PM

Program #/Poster #: TKP03.16SA/UU22

Topic: K.02. Teaching of Neuroscience

Support: Dana Foundation Neuroscience and Society Initiative Grant

Title: This is your brain on ethics: a measure for the acquisition of neuroethics awareness

Authors: *K. REMPALA[1], E. WAKEFIELD[2], D. MORGAN[5], K. MATHIAS[3], S. WEBBER[4], M. ROCHLIN[4], J. VUKOV[1];
[1]Philosophy, [2]Psychology, [3]Developmental Psychology, [4]Biol., Loyola Univ. Chicago, Chicago, IL; [5]Sch. of Educ., Univ. of Michigan, Ann Arbor, MI

Abstract: Neuroethics is an emerging field of social and ethical inquiry, composed of the ethics of neuroscience - the ethics of the design, execution, and impact of work in neuroscience - and the neuroscience of ethics - the use of neuroscience to investigate questions in ethical theory (Roskies 2002). As the field solidifies its self-understanding, it is crucial to develop tools for

measuring the acquisition of this knowledge and the awareness of neuroethics as a field of study. Based on piloting and a focus group of 3 neuroethicists, a 16-item scale was developed to assess 4 constructs deemed central to neuroethics awareness: Confidence in recognizing neuroethical issues, Awareness of neuroethics as an area of study and reflection, an Appreciation of Dialogue as crucial to neuroethical reflection, and a basic grasp of the Content foundational to neuroethics as an area of study. In initial work to test and validate this measure, we considered two different contexts in which neuroethics was taught: (1) A college-level Neuroethics course and (2) an afterschool workshop series designed to strengthen high school students' understanding of how neuroscience interfaces with societal and ethical issues. Participants were recruited from both contexts and completed the measure prior to and after completing the course/program. A control group was recruited from an upper-level neuroscience course that did not focus on neuroethics. Analyses were conducted with the sample who completed the measure at both timepoints (Neuroethics: n=10, Workshops: n=8, Control: n=13) along with the Defining Issues Test (DIT-2) which measures moral development (Bebeau 2002). Regression analyses show significantly more growth across the timepoints on the Confidence and Content constructs for participants in either group exposed to neuroethics compared to the control group ($p<.05$), but no movement for any groups across timepoints for the Awareness and Dialogue constructs. Additional analyses reveal that although college students in the Neuroethics course scored higher on the Confidence and Content construct items than high school students in the afterschool program, the amount of growth on these items was not statistically different, suggesting that two very different contexts led to similar degrees of change. Continued analysis will consider effects at the item-level, the relation between scores on the measure and the DIT-2, and short answer questions completed by the high school participants explaining why they selected a particular answer. This will provide further insight into how the measure is capturing neuroethics awareness.

Disclosures: K. Rempala: None. **E. Wakefield:** None. **D. Morgan:** None. **K. Mathias:** None. **S. Webber:** None. **M. Rochlin:** None. **J. Vukov:** None.

Theme K Poster

TKP03: Teaching of Neuroscience: College I

Location: SDCC Halls B-H

Time: Saturday, November 15, 2025, 1:00 PM - 5:00 PM

Program #/Poster #: TKP03.17SA/VV1

Topic: K.02. Teaching of Neuroscience

Title: Faculty for Undergraduate Neuroscience: who we are, what we do, and where we are

Authors: *J. K. ROSE;
Western Washington Univ. Behavioral Neurosci. Program, Bellingham, WA

Abstract: FUN (Faculty for Undergraduate Neuroscience) is a global organization dedicated to advancing neuroscience research and education at the undergraduate level. Since our founding in 1992, our mission has been to expand undergraduate involvement in neuroscience research, share educational innovations, celebrate excellence in teaching, and establish both national and

regional networks that support undergraduate neuroscience education, research, and faculty development. To this end, FUN has facilitated numerous initiatives, including the Journal for Undergraduate Neuroscience Education (JUNE), an equipment loan program, travel awards for undergraduates, poster sessions, summer workshops, mentoring networks, and social events. These activities are often conducted in collaboration with partners in the neuroscience industry and other organizations. Our community is diverse and inclusive, comprising individual faculty and pre-faculty from a range of institutions—private liberal arts colleges, community colleges, primarily undergraduate institutions, and research universities, as well as institutional members from neuroscience programs and departments. We invite faculty, pre-faculty, and professionals who are passionate about nurturing the next generation of neuroscientists to explore and join our organization.

Disclosures: J.K. Rose: None.

Theme K Poster

TKP03: Teaching of Neuroscience: College I

Location: SDCC Halls B-H

Time: Saturday, November 15, 2025, 1:00 PM - 5:00 PM

Program #/Poster #: TKP03.18SA/VV2

Topic: K.02. Teaching of Neuroscience

Support: NSF Grant 2126723

Title: Enhancing Neuroanatomy Education with Virtual Reality

Authors: *A. HOVHANNISYAN[1], W. WU[2];
[1]Biol., [2]Dept. of Construction Mgmt., California State Univ. of Fresno, Fresno, CA

Abstract: Extended reality (XR) technologies, including virtual, augmented, and mixed reality, are increasingly used in higher education to support spatial understanding, engagement, and retention. In neuroanatomy and physiology courses, where students often struggle with 3D visualization and tracking complex neural pathways, XR has shown promising results. Studies demonstrate that XR can improve cognitive engagement, complement cadaver-based labs, and enhance learning outcomes comparable to or exceeding traditional methods (Moro et al., 2021; Bolek et al., 2022; Zeedzen-Scheffers et al., 2024). However, successful integration requires balancing technical, cost, and content-design challenges. At Fresno State, BIOL 144L was redesigned to integrate VR using SyGlass to address learning difficulties with brain structure identification and neuroanatomical pathway mapping. In Weeks 1-2, students were introduced to VR hardware and software through hands-on workshops and pre-evaluation surveys. Weeks 3-7 involved immersive brain anatomy and somatosensory system labs using VR and physical specimens, followed by Lab Exam 1. In Weeks 8-14, students developed brief lectures on gross anatomy of assigned pathways and conducted clinical case studies using open-source MRI datasets in SyGlass. The course concluded with post-evaluation surveys and Exam 2. Early outcomes suggest improved engagement and comprehension in students, with VR supporting

visualization and spatial reasoning in ways traditional methods alone could not.

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Theme K Poster

TKP03: Teaching of Neuroscience: College I

Location: SDCC Halls B-H

Time: Saturday, November 15, 2025, 1:00 PM - 5:00 PM

Program #/Poster #: TKP03.19SA/VV3

Topic: K.02. Teaching of Neuroscience

Support: NSF REU SITE #2243919

Title: Communication skill development using tools from applied improvisation

Authors: *R. K. DUNCAN[1], K. GIFFIN[2], K. L. FURMAN[3], B. A. SULAMAN[4];
[1]Univ. of Mchigan, Ann Arbor, MI; [2]Univ. of Michigan Neurosci. Grad. Program, Ann Arbor, MI; [3]Neurosci. Grad. Program, [4]Univ. of Michigan, Ann Arbor, MI

Abstract: Effective science communication is essential for fostering collaboration, building public trust, and inspiring the next generation of scientists. Approaches to teaching science communication often include the use of storytelling techniques to increase engagement in scientific presentations and publications but are also increasingly focusing on development of interpersonal skills. In our NSF- and NIH-supported summer undergraduate research programs, we extended these frameworks by incorporating applied improvisational theater (improv) techniques. Recognizing that scientific activities often require flexibility and spontaneity-such as impromptu hallway conversations, collaborative brainstorming sessions, post-seminar questions,

or interactions with stakeholders that have limited scientific backgrounds-our improv curriculum aimed to cultivate confidence, agility, approachability, and empathy in diverse communication contexts. From 2019-2024, about 100 undergraduates participated in a weekly improv summer course, led by a team of improv theater professionals with experience applying improv concepts in science settings. Each session began with group warm up exercises to develop focus and agility followed by two to three games, often humorous, centered on a common theme. After each game, participants debriefed by discussing how the learned skill applied to their academic life in lab, class or beyond. The majority of the interns reported good-to-great gains in Confidence in Public Speaking, Reading an Audience, Working Collaboratively, Effective Communication, and Listening Skills. Participants also reported that the course increased their self-awareness and ability to embrace mistakes and stay present. While most participants found the course helpful in developing communication skills, others felt the greater utility was in social skill development and in the creation of safe, vulnerable spaces to de-stress and build peer relationships. Overall, an applied improv curriculum is a useful pedagogical approach to build communication skills and provide a structured social space for summer undergraduate research programs.

Disclosures: R.K. Duncan: None. **K. Giffin:** None. **K.L. Furman:** None. **B.A. Sulaman:** None.

Theme K Poster

TKP03: Teaching of Neuroscience: College I

Location: SDCC Halls B-H

Time: Saturday, November 15, 2025, 1:00 PM - 5:00 PM

Program #/Poster #: TKP03.20SA/VV4

Topic: K.02. Teaching of Neuroscience

Support: NIH Grant UM1MH130981

Title: Neurons Beyond the Textbook: Undergraduate curricular resources leveraging open data from the Allen Institute

Authors: *C. T. WEICHSELBAUM[1], I. REDFORD[1], R. DALLEY[2], S. A. SORENSEN[1], K. CASIMO[1];
[1]Allen Inst., Seattle, WA; [2]Allen Inst. for Brain Sci., Seattle, WA

Abstract: While the typical textbook diagram of a neuron is ubiquitous in introductory neuroscience courses, students are less likely to be exposed to the structure and function of real neurons through interactive exploration of authentic data. Here we present a collection of resources entitled "Neurons Beyond the Textbook," which enable undergraduate educators to incorporate open data from the Allen Institute into their teaching of neuron morphology and neuronal cell types. These curricular materials include slide decks, worksheets, and instructor guides that scaffold exploration of two Allen Institute datasets. Students investigate three-dimensional reconstructions of mouse cortical neurons, comparing them across cortical layers,

inhibitory vs. excitatory neurons, and transcriptomically-defined cell types. An additional "behind the scenes" video tour of Allen Institute laboratories gives students a deeper understanding of the patch-seq technique used to collect the data, while also providing a window into scientific careers. All these resources are intended to be modular and adaptable, and they require only a device with an internet connection and standard web browser. Pilot data from Seattle-area undergraduate neuroscience students suggests that learners find the "Neurons Beyond the Textbook" lessons engaging and informative. Students expressed excitement about working with authentic open data and recognized the potential to leverage the featured datasets for future research of their own. Student drawings of neurons became more complex and realistic after participating in the lesson activities. In addition, draft materials were shared with over 60 educators at a workshop in Fall 2024 and received a positive response, with a majority of survey respondents expressing interest in using the materials. Educators highlighted the value of incorporating current research in the field into their courses and appreciated the opportunity for interactive student exploration of authentic data, especially in contexts where firsthand data collection may be inaccessible. By providing freely available curricular resources that leverage existing open datasets at the Allen Institute, "Neurons Beyond the Textbook" supports undergraduate educators in giving their students a deeper appreciation of neuronal complexity and diversity as well as opportunities to meaningfully engage with authentic neuroscience data.

Disclosures: C.T. Weichselbaum: None. **I. Redford:** None. **R. Dalley:** None. **S.A. Sorensen:** None. **K. Casimo:** None.

Theme K Poster

TKP03: Teaching of Neuroscience: College I

Location: SDCC Halls B-H

Time: Saturday, November 15, 2025, 1:00 PM - 5:00 PM

Program #/Poster #: TKP03.21SA/VV5

Topic: K.02. Teaching of Neuroscience

Title: Use of 3D printed receptor-ligand models to teach neuropharmacology.

Authors: *M. MURALI;
Hlth. Sci., Chapman Univ., Orange, CA

Abstract: Use of 3D printed receptor-ligand models to teach neuropharmacology Manjari Murali, Ph.D. Department of Health Sciences, Chapman University, Orange, CA 92866. Understanding receptor-ligand interactions and signal transduction pathways can be challenging for undergraduate students. Three-dimensional models of receptor complexes that students can manipulate enhances their ability to visualize these interactions. Therefore, I incorporated a 3D Printing Project into my upper division Principles of Pharmacology course, which is a required course for our students majoring in Health Sciences with an Allied Healthcare area of study. Learning objectives for this course included: to understand foundational concepts in the interdisciplinary field of pharmacology; to apply the principles of pharmacology to evaluate how drugs act on the autonomic and central nervous systems, and pain pathways; to critically analyze

why certain classes of drugs work well against certain diseases, what their therapeutic and adverse effect profiles are, how they are metabolized, and what other drugs they might interact with; to research and develop a drug report detailing therapeutic and side effect profiles of a drug; and to print and present a 3D model of a receptor and its ligand or antagonist to visualize drug-receptor interactions in three dimensions. The following six models were developed: Intracellular receptor; G Protein-coupled receptor; Enzyme-linked receptor; Channel-linked receptor; Competitive antagonist; and Non-competitive antagonist. Prior to assigning the project in class, stl files of the six models were designed using MSC Apex CAE software. Next, these files were formatted on Dremel Print Cloud to generate g3drem files which were compatible with the Dremel 3D printers. All models were printed in plastic in a pilot run to determine appropriate scaling, and to ensure proper fit of ligands and antagonists into binding sites on receptors. In class, students were randomized into small groups of 2-3 and asked to pick a model using a raffle system. Each group of students printed their models using the g3drem files provided. Next, they researched a specific example within their receptor-ligand or receptor-antagonist category. Third, they designed a poster describing their 3D printing process and results, and the specific example they chose. Finally, each group presented their poster and demonstrated the functionality of their model to the rest of the class. In their course evaluations, students consistently give this project an exceptional rating and consider it the highlight of the course.

Disclosures: M. Murali: None.

Theme K Poster

TKP04: Teaching of Neuroscience: College II

Location: SDCC Halls B-H

Time: Saturday, November 15, 2025, 1:00 PM - 5:00 PM

Program #/Poster #: TKP04.01SA/VV6

Topic: K.02. Teaching of Neuroscience

Title: Using the online social communication platform Discord to organize active classrooms

Authors: *M.-D. LE[1], A. C. NICHOLAS[2];
[2]Neurobio. & Behavior, [1]Univ. of California, Irvine, Irvine, CA

Abstract: Discord, a social communication application originally created for gamers, has found popularity with young adults under 24 that benefit from organized online communication. Our study explores the effectiveness of Discord as a primary communication source as well as an organization tool in a year-long undergraduate pre-health course course. Amid the growing popularity of Discord usage by college students for course-related conversation, we implemented our own free Discord server to facilitate accessible discourse between students, learning assistants (LAs), teaching assistants (TAs), and the instructor. Discord offers various security features, including two-factor authentication (2FA), time and usage limits on invite links to servers, and content moderation tools, though the ultimate security of a server often relies on the administrators' implementation and enforcement of these features. Discord’s versatile featureset enabled the organization of a streamlined live active learning environment supported by digital

communication. Out of 106 primarily third-year students surveyed, 96.2% had already used Discord prior to enrolling into the course, with many adopting it during their early years at university. 61% of students preferred Discord over traditional communication methods (in-person, email, etc.), noting a greater sense of comfort and inclusion when interacting with peers, LAs, TAs, and the instructor. The platform's open forum approach and informal nature allowed for quick and casual discussion and peer-to-peer support, reducing inefficient communication while promoting inclusivity through a classwide "group chat." The employment of Discord for our upper division pre-health course found not only a benefit in organization, enhanced comfort and communication for course-related content, but also in providing a space for extracurricular discussion and community-building.

Disclosures: M. Le: None. **A.C. Nicholas:** None.

Theme K Poster

TKP04: Teaching of Neuroscience: College II

Location: SDCC Halls B-H

Time: Saturday, November 15, 2025, 1:00 PM - 5:00 PM

Program #/Poster #: TKP04.02SA/Web Only

Topic: K.02. Teaching of Neuroscience

Support: USTiCR American Heart Association Funding (MD)

Title: Using authentic curriculum undergraduate research experience (acure) in teaching neurophysiological concepts and skills

Authors: *M. DUNN[1], C. RACHFORD[1], J. KIM[3], Y. KIM[4], E. WOMACK[1], J. SCHWAMBURGER[1], E. ELLIOTT[1], A. TAUL[1], E. RICHARD[1], S. BIERBOWER[5], R. L. COOPER[2];
[2]Dept Biol, [1]Univ. of Kentucky, Lexington, KY; [3]Model Lab. Sch., Richmond, KY; [4]Gatton Acad., Richmond, KY; [5]The U.S. Military Acad. at West Point, West Point, NY

Abstract: When developing and teaching neurophysiology exercises for undergraduate laboratory experiences, it is challenging to design a course that allows students to make novel discoveries while still covering the basic skills necessary for introductory courses. Commonly, neurophysiology laboratory exercises are performed using traditional, "cookie cutter" lab protocols with a known outcome, which develop skills in dissection, recording, and data analysis but are less motivating than making novel discoveries and contributing to the scientific literature. Developing a thematic approach covering multiple skills and experimental preparations, on the other hand, is engaging for students while more cohesively teaching basic neurophysiology concepts. Herein, an approach is presented that investigates the use of suction electrodes to address: proprioceptive nerve electrical activity and mechanosensory transduction in sensory endings; intracellular recording in neurons to observe membrane potential and action potential shape; model preparations to investigate sensory-CNS-motor neuron circuitry; and neuromuscular junction synaptic transmission, quantal characteristics, and temperature- or

modulator-sensitivity. Also addressed is the use of whole animal behaviors in investigating the optogenetic and systemic effects of neuromodulators. These basic concepts are developed using novel experimental questions, such as the effects of overexposure to essential metals or supplemental diet contaminants. This approach uses the CURE for addressing authentic experimentation (ACURE).

Disclosures: M. Dunn: None. **C. Rachford:** None. **J. Kim:** None. **Y. Kim:** None. **E. Womack:** None. **J. Schwamburger:** None. **E. Elliott:** None. **A. Taul:** None. **E. Richard:** None. **S. Bierbower:** None. **R.L. Cooper:** None.

Theme K Poster

TKP04: Teaching of Neuroscience: College II

Location: SDCC Halls B-H

Time: Saturday, November 15, 2025, 1:00 PM - 5:00 PM

Program #/Poster #: TKP04.03SA/VV7

Topic: K.02. Teaching of Neuroscience

Title: Nu Rho Psi - The National Honor Society in Neuroscience

Authors: B. RICE[1], L. M. ALLEN[2], T. M. FISCHER[3], A. O'HARE[4], A. FRICKS-GLEASON[5], T. ELLIS-VAUGHN[6], G. R. TANNER[7], I. VILINSKY[8], D. A. MITRANO[9], A. G. GIBSON[10], ***R. CALIN-JAGEMAN**[11], M. T. KERCHNER[12];
[1]Slippery Rock Univ., Slippery Rock, PA; [2]Psychology Dept, Florida Intl. Univ., Miami, FL; [3]Psychology, Wayne State Univ., Detroit, MI; [4]Weber State Univ., Ogden, UT; [5]Creighton Univ., Omaha, NE; [6]Nu Rho Psi, Newport News, VA; [7]Physiol. and Neurobio., Univ. of Connecticut, Storrs Mansfield, CT; [8]Biol. Sci., Univ. of Cincinnati, Cincinnati, OH; [9]Mol. Biol. & Chem., Christopher Newport Univ., Newport News, VA; [10]Neurosci., Univ. of Michigan, Ann Arbor, MI; [11]Dominican Univ., River Forest, IL; [12]Washington Col., Chestertown, MD

Abstract: Nu Rho Psi, The National Honor Society in Neuroscience, is a non-profit, grass-roots organization comprised of neuroscientists at all stages of their careers. With more than 13,500 members, representing 120 chapters in 36 States and the nation's capital, Nu Rho Psi is a dynamic organization that aims to support the professional growth of its members. Most members are invited to join Nu Rho Psi during their undergraduate training, but qualified graduate students, faculty, and alumni are also welcome to join. Membership in Nu Rho Psi is granted exclusively through local Nu Rho Psi chapters. Nu Rho Psi has become a vibrant contributor to the neuroscience community through: (1) encouragement of professional interest and excellence in neuroscience, (2) recognition of outstanding scholarship, (3) advancement of the discipline of neuroscience, (4) encouragement of intellectual and social interaction between students, faculty, and professionals, (5) promotion of career development in neuroscience and related fields, (6) increased public awareness of neuroscience and its benefits for society, and (7) encouragement of service to the community. Nu Rho Psi goes beyond providing recognition of excellence in neuroscience scholarship and research. We offer our members a variety of grants and awards including competitive research grants to facilitate senior theses or other scholarly

projects. Our chapters may apply for Nu Rho Psi Chapter Activity Grants to promote their educational and community outreach initiatives, including those that address our annual theme. The 2025-26 theme is NeuroPolitics. Members are also eligible for Nu Rho Psi travel grants to present their original research at the annual Society for Neuroscience meeting. Schools wishing to foster a chapter of Nu Rho Psi may contact the National Office located at Dominican Univesity (exec@nurhopsi.org). Information regarding the charter application process may be found on our web page: https://nurhopsi.org.

Disclosures: B. Rice: None. **L.M. Allen:** None. **T.M. Fischer:** None. **A. O'Hare:** None. **A. Fricks-Gleason:** None. **T. Ellis-Vaughn:** None. **G.R. Tanner:** None. **I. Vilinsky:** None. **D.A. Mitrano:** None. **A.G. Gibson:** None. **R. Calin-Jageman:** None. **M.T. Kerchner:** None.

Theme K Poster

TKP04: Teaching of Neuroscience: College II

Location: SDCC Halls B-H

Time: Saturday, November 15, 2025, 1:00 PM - 5:00 PM

Program #/Poster #: TKP04.04SA/VV8

Topic: K.02. Teaching of Neuroscience

Title: Evaluation of Remote vs In-Person Research Experiences

Authors: *R. HANLEY[1], W. J. HORTON[2];
[2]Biobehavioral Hlth., [1]Pennsylvania State Univ., University Park, PA

Abstract: One of the most impactful aspects of an undergraduate degree in STEM fields is the opportunity for lab experience, with mentor-mentee relationships and experiential learning (Walkington, 2015; Anderson et al, 2019). Unfortunately, these opportunities are almost nonexistent online (Thomas & Hadley, 2024). With the increase in remote learning, a viable option for virtual research experience is necessary. However, the effectiveness of virtual research in achieving educational outcomes remains an area of active debate. Previous literature has determined five domains where students benefit from undergraduate research; 1) technical skills, 2) intellectual engagement, 3) scientific literacy, 4) student satisfaction, and 5) career readiness (Seymour et al.2004). Through preliminary analyses, we identified a sixth domain of social engagement.
Using a mixed model including both quantitative self-reported surveys and qualitative interview data, we assessed these six domains in two populations. The first was a group of students engaged in research in online laboratories, and the second was a control group of students engaged in the typical in-person undergraduate research experience. We report on the differences in subjective student learning outcomes, engagement, and satisfaction in remote and in-person lab settings. Statistical analysis is used for the survey data to identify significant differences and trends. Thematic analysis is used for the qualitative data to uncover patterns and themes in student experiences offering a rich perspective. Results of this study may help establish the value of online research opportunities and future virtual remote research best practices and outline the domains where in-person and virtual settings excel.

Disclosures: R. Hanley: None. **W.J. Horton:** None.

Theme K Poster

TKP04: Teaching of Neuroscience: College II

Location: SDCC Halls B-H

Time: Saturday, November 15, 2025, 1:00 PM - 5:00 PM

Program #/Poster #: TKP04.05SA/Web Only

Topic: K.02. Teaching of Neuroscience

Support: Catedra.Elias.Sourasky

Title: Promoting Mental Health in Medical Students: A Qualitative Analysis of a Reflective Tutorial Intervention

Authors: *D. P. GUÍZAR, A. ROBLES, J. GARDUÑO, R. SAMPIERI;
Univ. Nacional Autónoma De México, Ciudad de México, Mexico

Abstract: Background: Medical students are exposed to high academic stress and psychosocial demands that significantly impact their mental health and well-being. The development of structured interventions that promote healthy academic environments may help mitigate these risks. Objective: To explore the experiences of students and teachers participating in a reflective tutorial intervention aimed at fostering self-care, resilience, and peer bonding among second-year medical students at the National Autonomous University of Mexico (UNAM). Methods: A phenomenological qualitative study was conducted through semi-structured focus groups. The intervention consisted of two 3-hour guided reflective sessions, spaced eight weeks apart, implemented in 108 physiology laboratory groups. Each session included selected video stimuli and structured discussion prompts related to resilience, mentorship, and career motivation. Focus groups were conducted with 14 teachers and 12 students. Interviews were transcribed and analyzed using axial coding and thematic analysis. Results: Participants reported high perceived relevance of the themes, emotional resonance during group dialogues, and appreciation for the opportunity to share personal experiences. Students emphasized the value of professor-student empathy and the need for continuity and psychological follow-up. Teachers highlighted the emotional impact of guiding such sessions and called for further training in mental health facilitation. Structural limitations included insufficient time and occasional discomfort due to peer judgment. Conclusion: Reflective tutorial interventions offer a feasible strategy to support mental health and emotional literacy in medical students. The creation of emotionally safe academic spaces fosters empathy, peer support, and early awareness of mental health needs. Further institutional efforts are needed to implement sustained and supervised models for psychosocial support in medical education.

Disclosures: D.P. Guízar: None. **A. Robles:** None. **J. Garduño:** None. **R. Sampieri:** None.

Theme K Poster

TKP04: Teaching of Neuroscience: College II

Location: SDCC Halls B-H

Time: Saturday, November 15, 2025, 1:00 PM - 5:00 PM

Program #/Poster #: TKP04.06SA/VV9

Topic: K.02. Teaching of Neuroscience

Title: What concepts do neurobiology students say they find the most difficult?

Authors: *J. H. BELANGER, M. WITHERS;
Binghamton Univ., Vestal, NY

Abstract: The population for this study was students who took Neurobiology at a mid-Atlantic research university between 2008 and 2014. The majority of the students were seniors majoring in biology. Anecdotally, the majority of these students would have self-identified as “pre-med”. As a normal part of the class, students were asked a week before each exam (3/semester) about the concept that they still found the most difficult. Their responses were grouped (where appropriate), and then the instructor tried to answer the questions/address the concept and sent the compiled responses back to the class. This accomplished two things: 1. It showed the students that in most cases many of their classmates were struggling with the same concepts that they were; and 2. It gave the instructor insight into where the students were struggling the most. In the first third of the course, the most common difficulties were with membrane and action potentials, and interpreting graphs. In the second third, the most common difficulties were with reversal potentials, facilitation, and interpreting graphs. In last part of the course, the only topic that was notably prominent was retinal organization.

Disclosures: J.H. Belanger: None. **M. Withers:** None.

Theme K Poster

TKP04: Teaching of Neuroscience: College II

Location: SDCC Halls B-H

Time: Saturday, November 15, 2025, 1:00 PM - 5:00 PM

Program #/Poster #: TKP04.07SA/VV10

Topic: K.02. Teaching of Neuroscience

Support: Bard Psychology Program

Title: Behavioral responses and morphological changes in zebrafish (Danio rerio) larvae exposed to microcystin-lr at different temperatures as a model for senior project work in neuroscience

Authors: M. GJONBALAJ, *F. M. SCALZO;
Bard Col., Annandale-on-Hudson, NY

Abstract: Bard College requires that each student complete a year-long Senior Project that is designed to integrate several aspects of a student's academic journey. Ideally, projects in the Psychology Program reflect the importance, breadth and depth of the scientific discipline and highlight the relevance of work to the broader community. In this project, multiple approaches were used to explore the impact of environmental change on neural, behavioral, and structural development using the zebrafish (Danio rerio) as an animal model. Algal blooms pose significant health risks to humans and a variety aquatic species. Such freshwater blooms are exacerbated by rising water temperatures. Microcystin-LR (MCLR) is a freshwater toxin produced by algae and has been show to adversely affect growth and functional development in zebrafish larvae. The present exploration study investigated the interaction of MCLR toxicity with water temperature to determine if variations in water temperature moderated the adverse effects of MCLR on motor behavior and structural development. Larvae were exposed to 0, 50 or 100 micrograms/L at 28 degrees C or 30 degrees C from 24-96 hrs post-fertilization. Distanced moved, velocity and other movement parameters were measured using Ethovison in a series of 5 min light/dark periods of illumination. In addition, structural analyses were conducted to determine if potential alterations in motor behavior were related to gross structural malformations. The results have implications for understanding how environmental factors can modulate the neurotoxicity of naturally occurring toxins on motor systems and structural development.

Disclosures: M. Gjonbalaj: None. **F.M. Scalzo:** None.

Theme K Poster

TKP04: Teaching of Neuroscience: College II

Location: SDCC Halls B-H

Time: Saturday, November 15, 2025, 1:00 PM - 5:00 PM

Program #/Poster #: TKP04.08SA/VV11

Topic: K.02. Teaching of Neuroscience

Title: A low-cost optogenetics system for teaching neural circuit function in Drosophila

Authors: A. HEIDGERKEN-GREENE[1], ***E. D. HOOPFER**[2];
[1]Physics and Astronomy, [2]Neurosci., Carleton Col., Northfield, MN

Abstract: Optogenetics and automated behavior tracking are powerful tools for studying the neural basis of behavior, but the cost of specialized hardware often limits their use in teaching. To address this, we developed an inexpensive, modular system for optogenetic manipulation in *Drosophila melanogaster* that supports automated behavioral analysis. The open-source hardware and software enable precise control of light stimulation and synchronized video recording using easily sourced components. We implemented this system in a lab activity where undergraduate students investigated the neural basis of social behaviors such as aggression and courtship. Students examined the behavioral effects of activating P1 neurons, key regulators of male courtship and aggression, using the red-shifted opsin CsChrimson. By varying the level of activation, students identified the activity threshold required for P1 neurons to elicit courtship or aggression in male flies. The resulting video data were compatible with automated tracking tools,

enabling students to quantify and compare behavioral responses as a class. This activity helps students develop an understanding of optogenetics, the link between neural activity and behavior, and the principles of experimental design and quantitative analysis. The system's affordability and ease of use make it a valuable tool for expanding hands-on neuroscience education and broadening access to optogenetic methods for studying neural circuit function in fruit flies.

Disclosures: A. Heidgerken-Greene: None. **E.D. Hoopfer:** None.

Theme K Poster

TKP04: Teaching of Neuroscience: College II

Location: SDCC Halls B-H

Time: Saturday, November 15, 2025, 1:00 PM - 5:00 PM

Program #/Poster #: TKP04.09SA/VV12

Topic: K.02. Teaching of Neuroscience

Title: A framework for bridging university students and incarcerated individuals through neuroscience

Authors: *T. ARZUA[1], R. SEN[1], D. GREEN[1], G. DOWNEY[1], B. J. MARLIN[2];
[1]Columbia Univ., New York, NY; [2]Columbia Univ. Zuckerman Inst., New York, NY

Abstract: The U.S. has the highest incarceration rate in the world, with almost 2 million people incarcerated as of 2024. While representing only 10% of that population, the number of incarcerated women has been increasing at a notable rate. Incarcerated women face unique challenges, especially considering how incarceration affects motherhood and family structure. Therefore, supporting incarcerated women is of great importance. Recent studies have shown that receiving education while in prison reduces disciplinary incidents and recidivism rates, as well as increases employment opportunities after release. With that in mind, and in partnership with the non-profit Hudson Link for Higher Education in Prison, we developed a curriculum for a course on The Parental Brain that was taught in parallel to Columbia University undergraduates and students at the women's Taconic Correctional Facility.Focusing on the science of how the brain controls caretaking behaviors, students were first introduced to basic neurobiology, then to current literature in the field. Their final project was a collaborative effort in which the students at Taconic developed an original research proposal on a topic of their choice that was then reviewed and built upon in the form of accessible science communication by the students at Columbia. The topics included, for example, the effects of poverty on brain development, proposed treatments for postpartum depression, and the role of testosterone in fatherhood. Formal and informal course evaluations from the students in both locations highlighted the positive impact of the collaborative project, with students at Taconic underscoring the difference between this style of teaching compared to other lecture-based courses, and Columbia students emphasizing the novelty of interacting with a different population of students. This novel style of neuroscience teaching, incorporating the inputs of students and incarcerated individuals, and encouraging collaboration across the two locations, can present a more effective and engaging framework compared to traditional teaching styles. We hope to continue and consolidate this

format to create a robust method that can be extended to different research areas, all to the benefit of students - both in universities and in educational programs in prisons.

Disclosures: T. Arzua: None. **R. Sen:** None. **D. Green:** None. **G. Downey:** None. **B.J. Marlin:** None.

Theme K Poster

TKP04: Teaching of Neuroscience: College II

Location: SDCC Halls B-H

Time: Saturday, November 15, 2025, 1:00 PM - 5:00 PM

Program #/Poster #: TKP04.10SA/VV13

Topic: K.02. Teaching of Neuroscience

Title: The Creative Brain: A framework for integrating neuroscience and the arts

Authors: *G. N. WILSON;
West Virginia Univ., Morgantown, WV

Abstract: The emerging field of neurohumanities offers a rich framework for exploring the intersection of neuroscience and the arts, emphasizing the unique relationship between brain science and human creativity. We are exploring this intersection in a new course at West Virginia University, Neuroscience and the Arts, open to both graduate and upper level undergraduate students at our institution. This new course was designed to integrate empirical neuroscience with artistic disciplines—including visual art, music, literature, dance, and storytelling—to deepen students' understanding of perception, cognition, emotion, sensorimotor processing, and neurological disorders and trauma. As a consequence of discussing art and aesthetics - humanity topics not included in a typical science coursework - we are also able to challenge students to think more broadly about social, cultural, and even scientific identity. Through a combination of lecture, hands-on creative activities and workshops, open discussion, and deep analysis of the literature, students learn about the neural mechanisms that underlie artistic expression and aesthetic experience. Students analyze both scientific and artistic texts, engage with neuroscientific data, and apply findings to real-world examples in creative arts therapies such as dance, music, and art therapy to understand how the creative brain can be harnessed to improve clinical outcomes and overall quality of life. The overarching goal of our course approach and structure, outlined here, is to enhance scientific literacy, cultural awareness, and creative confidence, while also providing new avenues for exploring topics such as neurodiversity, trauma, and aesthetic experience. This model demonstrates how integrating neuroscience and the arts can foster inclusive, interdisciplinary learning and cultivate a more holistic understanding of the human mind.

Disclosures: G.N. Wilson: None.

Theme K Poster

TKP04: Teaching of Neuroscience: College II

Location: SDCC Halls B-H

Time: Saturday, November 15, 2025, 1:00 PM - 5:00 PM

Program #/Poster #: TKP04.11SA/VV14

Topic: K.02. Teaching of Neuroscience

Support: UNAM-PAPIME PE206924
UNAM-PAPIIT IA204224

Title: Immersive and interactive neuroanatomy: Development and assessment of VR and web-based learning tools

Authors: *D. CUREÑO[1], A. DE LEÓN CUEVAS[4], P. OCAMPO LUNA[2], M. FAIR[3], M. L. GARCIA-GOMAR[5], J. R. GUERRERO-MORALES[6], M. GARCIA-GOMAR[7];
[1]Escuela Nacional de Estudios Superiores Unidad Juriquilla, Univ. Nacional Autónoma de México, Queretaro, Mexico; [2]Escuela Nacional de Estudios Superiores Unidad Juriquilla, Univ. Nacional Autónoma de México, Naucalpan, Mexico; [3]Univ. Nacional Autónoma de México, Querétaro, Mexico; [4]Lab. Nacional de Visualización Científica Avanzada, Queretaro, Mexico; [5]PSYCHOLOGY, FACULTAD DE CIENCIAS DE LA SALUD UABC, Tijuana, Mexico; [6]Univ. Nacional Autonoma de Mexico, Queretaro, Mexico; [7]Neurobiología Conductual y Cognitiva, Univ. Nacional Autonoma de Mexico, Mexico, Mexico

Abstract: Neuroanatomy is a core discipline in Neuroscience undergraduate programs as well as in other health sciences fields, yet its instruction is hindered by the inherent complexity and interconnectivity of the central nervous system and limited access to practical and language-appropriate resources. Traditionally, neuroanatomy teaching relies on cadaveric dissection, however multiple factors have driven the exploration of new teaching strategies. In this context, e-learning and technologies such as virtual reality (VR) have proven to be reliable and valuable tools in health education. We developed, implemented, and evaluated two complementary digital tools—an immersive VR environment (CAVE system) and an interactive web platform—designed to enhance neuroanatomy education through three-dimensional visualization of structural Magnetic Resonance Imaging (MRI) data. Both tools integrate anatomically accurate 3D models of human and rhesus macaque brains, including segmented gray-matter regions and white-matter tracts. A postprocessing pipeline—comprising of 3D gaussian smoothing, mathematical-morphology operations, contour-based mesh generation, mesh smoothing and polygon reduction, alongside visual and spatial validation—ensured fidelity and performance. Evaluation took place in a fourth semester “Introduction to Neurological Rehabilitation” course (n = 22). Quantitative assessment compared midterm exam scores across three consecutive cohorts (2022-2024), revealing a statistically significant improvement in the 2024 cohort utilizing the VR tool (Kruskal-Wallis, $p = 0.04$). Qualitative evaluation employed previously validated scales to measure perceived usefulness, ease of use, enjoyment, cognitive engagement, and simulator discomfort; the students and seven participating faculty members rated the tools positively on all dimensions. Pilot testing with physiotherapy students confirmed their transferability across allied health curricula. Results indicate that immersive and interactive 3D visualization platforms for neuroanatomy education are perceived as effective, motivating, and accessible, with minimal adverse effect, and can foster self-directed learning and intrinsic

motivation. These findings align with current literature on e-learning and VR applications in health education and demonstrate the immediate impact and broad potential of these tools to enrich neuroanatomy instruction and support learning across multiple health-science disciplines.

Disclosures: D. Cureño: None. **A. De León Cuevas:** None. **P. Ocampo Luna:** None. **M. Fair:** None. **M.L. Garcia-gomar:** None. **J.R. Guerrero-Morales:** None. **M. Garcia-Gomar:** None.

Theme K Poster

TKP04: Teaching of Neuroscience: College II

Location: SDCC Halls B-H

Time: Saturday, November 15, 2025, 1:00 PM - 5:00 PM

Program #/Poster #: TKP04.12SA/VV15

Topic: K.02. Teaching of Neuroscience

Title: Teaching connectomics with Codex (Connectome Data Explorer): A lab module examining sensory-neuroendocrine pathways in the Drosophila brain

Authors: *T. H. MCKIM[1], M. ZANDAWALA[2];
[1]Biol., Univ. of Nevada, Reno, NV; [2]Biochem. and Mol. Biol., Univ. of Nevada, Reno, Reno, NV

Abstract: The volume of neuroscience data and tools to analyze it are rapidly expanding. Public datasets within the community offer valuable opportunities for students to replicate published findings, investigate novel research questions, and develop data visualization skills. To expose students to real-world data, we developed a lesson to teach connectomics and principles of taste processing based on our published work using the Flywire Dataset in *Drosophila*. We implemented this lesson in an upper-division neuroscience lab course and utilized the web-based Connectome Data Explorer (Codex). The session began with a presentation outlining the research context and key findings from our paper. Students then worked together in pairs to complete modified Flywire Academy modules tailored to neurons and brain regions of interest. Using example search code and guided prompts, students queried the dataset to explore features such as connection types, synapse counts, anatomy, and neurotransmitters. Each group was assigned a set of neuroendocrine cells identified in the original study. They developed and tested a hypothesis by replicating analyses and visualizing connectivity patterns from a paper figure. Students investigated both direct and indirect pathways linking gustatory input neurons to neuroendocrine cells, gaining insight into how sensory signals influence physiology and behavior. To synthesize their experience, students submitted a lab report. This assignment reinforced their understanding of connectomic data and improved their ability to communicate scientific findings effectively. To evaluate the lesson's objectives, students completed pre- and post-session surveys assessing their background, interest, and learning outcomes. Before the session, most students were excited, yet felt intimidated, to explore the dataset. Following the session, all students reported learning something new. They appreciated the interactive visualizations, guided questions, and the ability to explore the dataset at their own pace. Challenges included difficulty with complex search queries and using tablets instead of laptops.

Overall, students described the experience as fun and educational, with half of the students expressing interest in further working with the dataset. Building on this success, we are adapting the lesson for a neuroscience data science course to include a code notebook to analyze the dataset. This lesson plan offers a framework for integrating open-access datasets into neuroscience curricula with the goals to build data literacy, foster scientific curiosity, and reinforce the connection between coursework and real-world neuroscience.

Disclosures: T.H. McKim: None. **M. Zandawala:** None.

Theme K Poster

TKP04: Teaching of Neuroscience: College II

Location: SDCC Halls B-H

Time: Saturday, November 15, 2025, 1:00 PM - 5:00 PM

Program #/Poster #: TKP04.13SA/VV16

Topic: K.02. Teaching of Neuroscience

Title: Expert-novice differences when visualizing information flow, exchange and storage concepts in neuroscience contexts

Authors: D. M. GALLEGOS[1], K. W. COOPER[2], *A. CHEN[3];
[1]Neurobio. and Behavior, [2]Neurobio. & Behavior, [3]Univ. of California, Irvine, Irvine, CA

Abstract: Core concepts serve as frameworks for teaching and learning in neuroscience higher education. Concepts surrounding information flow, exchange and storage in nervous systems are applicable to all subdisciplines of neuroscience, and a nervous system's ability to encode, store, and retrieve information can be studied at multiple levels of granularity. However, our understanding of how to effectively teach this complex concept remains limited. Mapping student learning progression within this conceptual domain can serve as an effective tool in evidence-based teaching. Our study examined differences between advanced and novice student understanding of Information Flow, Exchange and Storage (IFES) concepts in the neuroscience contexts. Undergraduate students enrolled in an introductory neuroscience course and graduate students training in neuroscience were surveyed on their ability to describe how information is relayed and stored in nervous systems. Responses were initially analyzed using a deductive coding approach using the Conceptual Elements (CE) Framework. Further inductive coding which used a grounded theory approach revealed student preconceptions of the IFES core concepts. We also analyzed differences in student ability to list diverse forms of communication modalities. Cohen's Kappa was used to determine reliability between the raters, where scores were determined for responses. Interrater reliability between coders utilized the Jaccard similarity index when student responses were allowed to be dual coded. Introductory student responses referenced general electrical signaling, impulses or messages that are relayed between neurons through the nervous system, but did not recognize the diversity of communication modalities or the filtering and modification that occurs during information processing. While experts identified information storage possible in connection strength, novices only noted that information is stored in different ways and different areas in the body. While the biology CE

Framework emphasizes the interplay between genetic and epigenetic information, the framework does not adequately capture the core concept when it is applied to neuroscience. These findings on expert-novice differences can assist educators in designing teaching strategies to develop students' conceptual understanding of how nervous systems process information.

Disclosures: D.M. Gallegos: None. **K.W. Cooper:** None. **A. Chen:** None.

Theme K Poster

TKP04: Teaching of Neuroscience: College II

Location: SDCC Halls B-H

Time: Saturday, November 15, 2025, 1:00 PM - 5:00 PM

Program #/Poster #: TKP04.14SA/VV17

Topic: K.02. Teaching of Neuroscience

Title: An open-source hands-on module for teaching basics of AI in undergraduate neuroscience courses

Authors: *N. AGRAWAL[1], S. DIETZ[2];
[1]Cornell Univ. Neurobio. and Behavior, Ithaca, NY; [2]Neurobio. and Behavior, Cornell Univ., Ithaca, NY

Abstract: We present an open-source hands-on module for teaching the basics of artificial intelligence (AI) in undergraduate neuroscience courses and preparing students for its responsible and ethical use. With AI all around us, teaching undergraduate neuroscience students its basic principles and responsible usage has become a crucial task. Introductory neuroscience courses offer a unique opportunity to explore AI's fundamental principles and its societal impact through a neuroscientific lens. Neural networks, central to many AI systems, make decisions by processing data through numerous interconnected computational units. The Perceptron is a foundational example of such a unit. Thus, understanding the Perceptron is key to understanding the basics of how AI works. Our module enables students to build and test their own Perceptrons using a provided Jupyter notebook without coding prerequisites. The module starts with students defining "Artificial Intelligence" versus "human intelligence". A video introduces the idea of decision-making as a core AI function exemplified by Large Learning Models like ChatGPT. The video then demonstrates how a Perceptron-like algorithm can solve a simple real-life decision (e.g., "deciding whether to attend an event"). It explains Perceptron structure, learning through backpropagation, weight adjustment and activation functions. Following this, students engage in a hands-on activity using a provided Jupyter notebook to build their own Perceptrons. They select parameters and train their Perceptron to classify flower species, iteratively adjusting parameters to observe performance impacts. To reinforce learning, students use their trained Perceptron to predict the species of an actual flower. The module concludes with discussions on AI ethics, training biases, and responsible AI utilization. We implemented this module in an undergraduate course at Cornell entitled BIONB2210 - Introduction to Neuroscience in spring and summer 2024. To measure student learning, we administered a set of qualitative and quantitative questions before and after teaching the module. The questions ranged from technical

knowledge of AI architecture and training to a broader understanding of AI's role in society. Post-module, students' understanding of Perceptrons and decision making in AI models increased significantly. Students also reported a statistically significant increase in their confidence to use AI models ethically. This module is an effective open-source resource to teach the fundamental principles of AI through hands-on learning.

Disclosures: N. Agrawal: None. **S. Dietz:** None.

Theme K Poster

TKP04: Teaching of Neuroscience: College II

Location: SDCC Halls B-H

Time: Saturday, November 15, 2025, 1:00 PM - 5:00 PM

Program #/Poster #: TKP04.15SA/VV18

Topic: K.02. Teaching of Neuroscience

Support: grant 2023/01003-5 FAPESP
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Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (CAPES)
grant 302605/2021-5 CNPq

Title: Enhancing neuroanatomy education through simulation and near-peer mentorship: a case study from a brazilian medical school

Authors: *W. C. COELHO-SILVA[1,2,3], N. C. COIMBRA[3,2];
[2]Neurol., [3]Pharmacol., [1]Univ. of São Paulo, Ribeirão Preto Medical School, Brazil

Abstract: Background: Teaching neuroanatomy to first-year medical students is often considered challenging due to the subject's complexity, which can provoke significant anxiety and, in some cases, depression. At the Ribeirão Preto Medical School of the University of São Paulo (FMRP-USP), neuroanatomy has historically been associated with high levels of student stress, despite consistently strong performance in both theoretical and practical assessments. In response, we evaluated the impact of near-peer teaching and active learning strategies on student engagement and academic outcomes, under the guidance of an FMRP-USP full professor and postgraduate teaching assistants. **Method**s: The course combined synchronous lectures and asynchronous virtual modules (video lectures and interactive exercises available through the University of São Paulo e-Classes portal) with in-person laboratory sessions. Five postgraduate teaching assistants (TAs) supported 100 students, divided into two groups of 50 to enhance interaction. Practical sessions focused on identifying human neuroanatomical structures using specimens and illustrated flashcards. Each lab bench featured guided activities where students identified structures and inferred their functions through active discussion and prior materials. Before the final practical assessment at the FMRP-USP Interdisciplinary Laboratory, a mock exam was introduced to simulate the format and difficulty of the actual test. The final exam included 20 stations featuring labeled neuroanatomical specimens requiring identification and, in some cases, functional explanation. **Results**: Following the introduction of the mock exam and

interactive teaching model, 83% of students reported that the practical exam closely matched the course content. Eighteen percent specifically credited the mock exam for improved performance. Few students expressed difficulty, which was mostly attributed to pre-exam anxiety. Informal faculty feedback noted significantly improved grades compared to previous semesters. The approach helped reduce fear and stigma surrounding neuroanatomy. **Conclusion**: Integrating postgraduate mentors and simulation-based strategies can transform how complex subjects like neuroanatomy are taught. By promoting active engagement and reducing anxiety, such interventions support deeper learning, especially crucial in fields like psychiatry, neurology, and neurosurgery. Passionate postgraduate students play a key role in modernizing and humanizing neuroscience education, ultimately shaping the next generation of clinicians treating neuropsychiatric disorders.

Disclosures: W.C. Coelho-Silva: None. **N.C. Coimbra:** None.

Theme K Poster

TKP04: Teaching of Neuroscience: College II

Location: SDCC Halls B-H

Time: Saturday, November 15, 2025, 1:00 PM - 5:00 PM

Program #/Poster #: TKP04.16SA/VV19

Topic: K.02. Teaching of Neuroscience

Title: Feeling feedback more deeply: A review of the promises and potential pitfalls of generative AI feedback for highly sensitive students' growth mindset development in science writing

Authors: *A. SAHOURIA;
Ctr. for Applied Linguistics, Washington, DC

Abstract: With the continued integration of generative AI products in STEM education, it is important to examine their effects within different student populations. One understudied student group is highly sensitive people (HSPs), who are characterized by differences in processing sensory information, often exhibited as heightened environmental sensitivity and emotional reactivity. HSPs may experience unique academic challenges because of these traits, especially in the evaluation of freshly-developing science writing skills. Historically, written feedback from instructors in academic environments has been demonstrated to elicit negative emotions in students upon reception, and HSPs with lowered excitation thresholds may have heightened emotional reactions to this feedback. Such experiences may impede growth mindset development, and consequently, science writing skills development. Feedback requested and generated from AI, however, has been shown in some cases to engender positive emotions and reduce anxiety in general student populations. With this promising premise, this literature review attempts to answer how and to what extent receiving AI-generated compared to human feedback influences growth mindsets in HSPs during the science writing process. The interactions of HSP traits with feedback modality for science writing and growth mindset development were investigated in a transdisciplinary framework, using peer-reviewed literature collected via

Google Scholar and the Harvard On-Line Library Information System (HOLLIS). The sum of the literature supports the idea that HSPs experience the evaluative feedback process more intensely, as evidenced by HSPs' heightened resting state activity in the precuneus, insula, and mPFC, and these structures' simultaneous involvement in emotionally valent situational processing and perceiving criticism. Unexpectedly, generative AI feedback was not found to be unanimously positive for HSPs - though it is suggested to model growth mindset language via habituated cognition, it lacks the vital emotional support provided by a human instructor. Additionally, HSPs' characteristic depth of processing and heightened emotionality were largely negatively portrayed in the literature, though sources from learning science fields suggest these traits, portrayed as risk factors, can be protective factors when cultivated positively. Gaps in the literature invite continued development of HSP identification tools and a more robust understanding of unique support needs of HSPs in STEM education.

Disclosures: A. Sahouria: None.

Theme K Poster

TKP04: Teaching of Neuroscience: College II

Location: SDCC Halls B-H

Time: Saturday, November 15, 2025, 1:00 PM - 5:00 PM

Program #/Poster #: TKP04.17SA/VV20

Topic: K.02. Teaching of Neuroscience

Title: Freeing upper-level undergraduates to enjoy the intellectual challenge of a rigorous neuroscience course: "Understanding Techniques in Neuroscience"

Authors: *G. S. VIDAL;
Biol., James Madison Univ., Harrisonburg, VA

Abstract: "Understanding Techniques in Neuroscience" is a 20-student 400-level undergraduate course aimed at giving students a deeper understanding of what techniques are currently used in the field and how to use them. The course relies heavily on primary literature, class discussions, and interactive lectures. In 2025, the course was fully redesigned the course because it was difficult to incorporate new techniques and literature to the syllabus each year, and because many of the course activities could now be bypassed by students utilizing generative AI. The course now: (1) addresses the rise of generative AI, (2) integrates the latest primary literature into the course without significant burden on the instructor, (3) requires little neuroscience background knowledge for students to benefit fully, (4) reduces grading burden on the instructor, (5) keeps the instructor acquainted with new developments in the field, and (6) challenges students to take full responsibility for their learning (rather than completing tasks to achieve a high grade). In sum, the new design frees the instructor and students to focus on the joy of learning new neuroscience together by understanding the techniques in the field, while maintaining a high standard for intellectual rigor. Learning outcomes were highly positive (as measured qualitatively and quantitatively before, during, and after the course) and the course was highly enjoyed by students and instructor alike.

Disclosures: G.S. Vidal: None.

Theme K Poster

TKP04: Teaching of Neuroscience: College II

Location: SDCC Halls B-H

Time: Saturday, November 15, 2025, 1:00 PM - 5:00 PM

Program #/Poster #: TKP04.18SA/VV21

Topic: K.02. Teaching of Neuroscience

Title: Impact of Variable Exam Weighting on Student Performance and Attitudes

Authors: D. LEWIS[1], T. C. SPRAGUE[1], ***S. L. SCUDDER**[2];
[1]Psychological and Brain Sci., [2]UC Santa Barbara, Santa Barbara, CA

Abstract: Increased interest in psychology and neuroscience has led to ballooning enrollments in introductory undergraduate courses within these disciplines. High-enrollment introductory STEM courses like these often utilize high-stakes, timed exams as the primary means of assessing student learning. Undergraduate students often struggle with anxiety surrounding high-stakes exams and data suggests that students from minoritized backgrounds are negatively impacted by this style of assessment relative to their peers. Despite the evidence supporting the use alternative forms of assessment, instructors often work with limited resources and are required to assess hundreds of students with no ability to administer and grade more frequent assessments. It can therefore be helpful to structure courses in a way that supports student growth and minimizes test-related anxiety while not adding to instructor or TA workload. I will be presenting data from an ongoing research project that evaluates the impact of various course elements and policies on student performance and attitudes in large, required STEM courses with no sections and minimal TA support. Specifically, I will present data collected from high-enrollment (350 students) Biopsychology and Cognitive Psychology offerings at UC Santa Barbara, focusing on the impact of a variable exam weighting policy. With this policy, three exams are administered throughout the course and the scores are differentially weighted in the final grade calculation based on each student's performance on the exam; for example, a student's best exam can be weighted at 30% of the final grade while the worst may be weighted at 15%. We have observed that this approach provides a small boost to the overall grade average, but that this may preferentially support students with effectors of opportunity, such as first-generation status. I will also report on survey data gathered about this course practice, highlighting how students perceive the grading policy and view their own effort and performance.

Disclosures: D. Lewis: None. **T.C. Sprague:** None. **S.L. Scudder:** None.

Theme K Poster

TKP04: Teaching of Neuroscience: College II

Location: SDCC Halls B-H

Time: Saturday, November 15, 2025, 1:00 PM - 5:00 PM

Program #/Poster #: TKP04.19SA/VV22

Topic: K.02. Teaching of Neuroscience

Title: Keeping Minds Open: Practicing Productive Disagreement

Authors: *S. WOOD;
Psychology, Univ. of Toronto, Toronto, ON, Canada

Abstract: Today, it can seem like we have a hard time listening to, much less seriously considering, those with opposing viewpoints. Confirmation bias leads us down our own, individual paths of internet searches and news sites. AI algorithms feed us more of the same type of information we have already consumed, leading to further conviction in our own viewpoints. Can we encourage our students to practice seriously considering multiple sides of complex, unresolved topics? Using a seminar on the neuroscientific and environmental bases of addiction as a model, this poster will describe classroom activities and an assignment designed to challenge students to find evidence from a single source both in support of as well as against their thesis. In-class tips for productive disagreement during discussion will also be addressed. To better align with the kinds of debates that happen informally, outside of class and beyond college, a documentary was used as the source of information for the written assignment. In this way, students practiced considering how a single, highly vetted and accurate (to the best of our understanding today) source of evidence could be used to support a variety of arguments. More concretely, before our students re-tweet a story or news source, they can practice thinking about how that story could be interpreted and used in various ways. In-class discussions have a wide set of considerations that will be posed. These considerations include how to encourage unpopular viewpoints, as well as the perennial struggles of ensuring engagement by all students, including those who are English language learners. By engaging in class activities like these, it is hoped our students are better equipped to learn from disagreements outside of the classroom.

Disclosures: S. Wood: None.

Theme K Poster

TKP04: Teaching of Neuroscience: College II

Location: SDCC Halls B-H

Time: Saturday, November 15, 2025, 1:00 PM - 5:00 PM

Program #/Poster #: TKP04.20SA/WW1

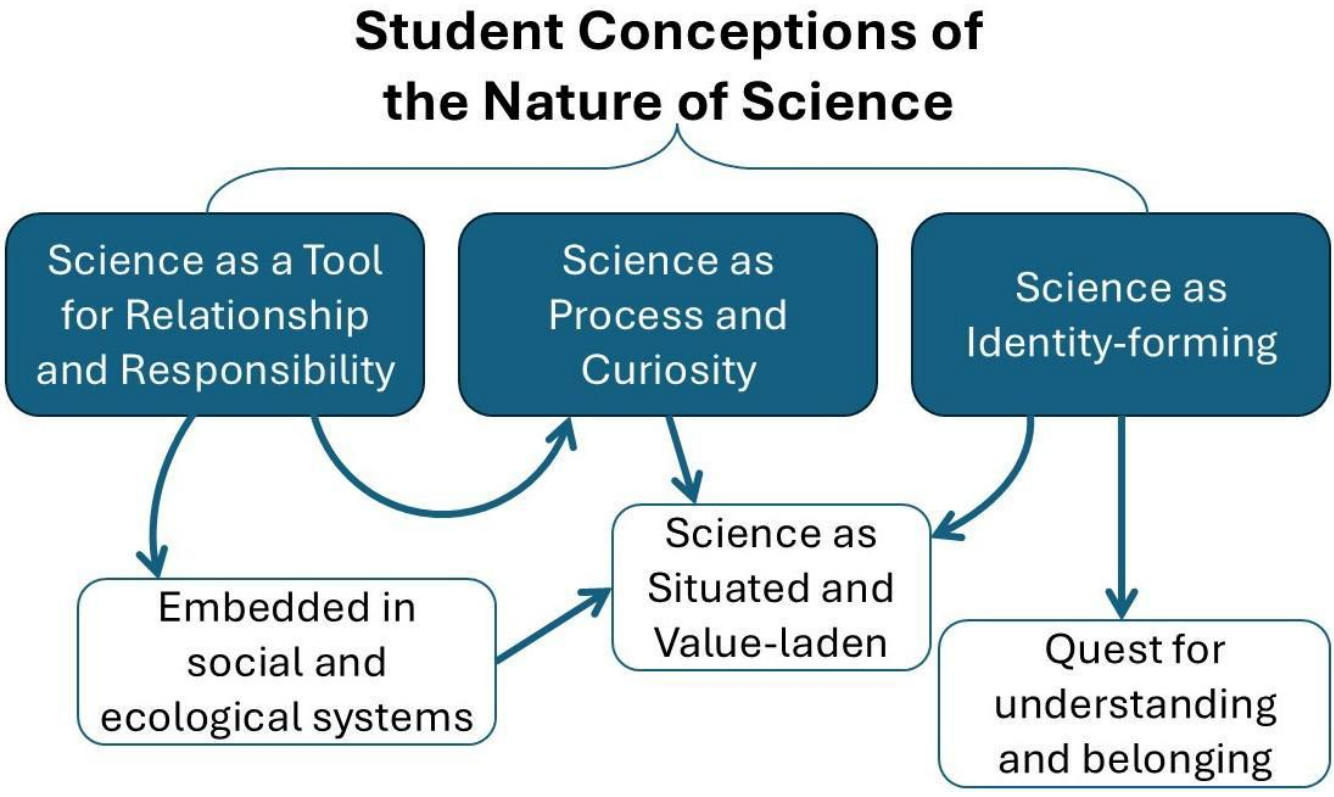
Topic: K.02. Teaching of Neuroscience

Support: NIH P20GM103451

Title: From story to proposal: exploring how personal narratives shape conceptions of science

Authors: *D. DONLEY;
New Mexico Highlands Univ., Las Vegas, NM

Abstract: Science education often draws a hard line between personal expression and scientific writing. This pilot study investigates how narrative storytelling shapes students' conceptions of the nature of science and influences their development of research proposals. In an upper-level/graduate Research Methods in Life Sciences course, students crafted personal science stories followed by GRFP-styled research proposals. Students told their stories aloud and fielded questions. We conducted qualitative thematic analysis across the stories and questions asked then coded each for views of the nature of science. Students' stories revealed a nuanced, human-centered understanding of science grounded in lived experience and community connection. Student stories and questions revealed a conception of science that is relational, identity-forming, curiosity-driven, value-laden, and iterative. While these themes shaped the selection and context of student research topics, they were often muted in the final proposals, where formal tone, genre conventions, and impersonal structure diminished expressions of identity and motivation. We next compared the student proposals to publicly available examples of NSF-GRFP proposals to examine differences in voice, epistemological framing, and narrative integration. Exemplar GRFP proposals favored technical clarity, hypothesis-driven framing, and standardized structure, while student proposals were rooted in narrative storytelling and more often reflected a more pluralistic and value-aware conception of science. These findings suggest that while narrative work fosters deeper engagement with scientific inquiry, students may internalize a narrow view of legitimate scientific discourse when asked to construct a recognizable scientific product. These data demonstrate 1) the power of narrative storytelling, 2) potential for highly structured science products to exclude the human element of science, and 3) a framework for coaching students to embrace a human-centered understanding of science and insert it into their work.



Disclosures: D. Donley: None.

Theme K Poster

TKP04: Teaching of Neuroscience: College II

Location: SDCC Halls B-H

Time: Saturday, November 15, 2025, 1:00 PM - 5:00 PM

Program #/Poster #: TKP04.21SA/WW2

Topic: K.02. Teaching of Neuroscience

Title: Grey Matters Journal: A nonprofit advancing neuroscience education through accessible scientific literature, diversity-oriented outreach, & inclusive community events

Authors: *A. SCIOCCHETTI[1], E. B.-Y. SHIU[2], M. LI[3], E. MCPEEK[4], R. YIN[5], V. BAGLAEV[1], A. ZHANG[4], I. HALPERIN[1], A. TRIVEDI[4], L. NGUYENPHUOC[4], S. D'SOUZA[4], L. TRAVIS[4], T. KALE[1], E. D'CESSARE[6], K. DENG[4], N. CHIEN[7], A. TAN[8], E. IVANOVA[9];
[1]Univ. of Washington, Seattle, Seattle, WA; [2]Univ. of Washington, Seattle, Sammamish, WA; [3]Univ. of Washington, Kirkland, WA; [5]Neurobio. & Biophysics, [6]Neurolog. Surgery, [4]Univ. of Washington, Seattle, WA; [7]Univ. of Washington, Port Orchard, WA; [8]Univ. of Washington, Bellevue, WA; [9]Univ. of Washington, Calabasas, CA

Abstract: Effective public communication of neuroscience is hindered by the use of scientific jargon to explain neuroscience concepts. This gap is further exacerbated by a lack of diversity among field leaders and socioeconomic barriers such as the cost of accessing accurate scientific literature. Grey Matters Journal at the University of Washington is an undergraduate neuroscience non-profit organization dedicated to addressing these obstacles by providing free and high-quality neuroscience education for all. To serve this mission, we establish initiatives to mentor and inspire the next generation of neuroscience learners and educators within the Seattle area and beyond. Each quarter, Grey Matters Journal guides students through writing, editing, illustrating, and designing a free-to-access journal that comprehensively and accurately communicates complex neuroscience topics. To broaden access to this content, we produce it in various media formats. Furthermore, we host events across the Seattle area, where our undergraduate and physician volunteers provide over 9,750 PreK-12th grade students the opportunity to engage in hands-on sheep brain dissections, interact with neurotechnology, and ask questions about higher education. To engage the general public, we host An Evening with Neuroscience, a free annual, livestreamed event. At this event, over 500 participants connect with interdisciplinary faculty, observe a human brain dissection, celebrate neuroscience art and technology, and engage with neuroscience research through a student-led symposium. As our organization grows, we commit ourselves to educational equity by broadening our efforts culturally and geographically. Over the last year, we have begun translating our journal articles into 6 languages to ensure our content is accessible to non-English readers. Our outreach efforts focus on providing neuroscience demonstrations to under-resourced school districts and underrepresented student groups in Washington state. To engage high school students further with foundational neuroscience topics, we are developing a tailored curriculum with the assistance of local institutions. In addition, we are developing a seminar series where experts from diverse backgrounds present on their contributions to the field and help inspire further

engagement with the neuroscience community. To encourage accessible neuroscience education throughout the nation, our leadership team facilitates chapter formation and helps support our 14 existing chapters at various academic institutions. These improvements are essential for furthering our mission of making neuroscience accessible for all.

Disclosures: A. Sciocchetti: None. **E.B. Shiu:** None. **M. Li:** None. **E. McPeek:** None. **R. Yin:** None. **V. Baglaev:** None. **A. Zhang:** None. **I. Halperin:** None. **A. Trivedi:** None. **L. Nguyenphuoc:** None. **S. D'Souza:** None. **L. Travis:** None. **T. Kale:** None. **E. D'cessare:** None. **K. Deng:** None. **N. Chien:** None. **A. Tan:** None. **E. Ivanova:** None.

Theme K Poster

TKP04: Teaching of Neuroscience: College II

Location: SDCC Halls B-H

Time: Saturday, November 15, 2025, 1:00 PM - 5:00 PM

Program #/Poster #: TKP04.22SA/WW3

Topic: K.02. Teaching of Neuroscience

Support: Foote Fund, Cornell University

Title: Using interdisciplinary techniques to teach critical reading skills in undergraduate neuroscience courses

Authors: *S. DIETZ;
Cornell Univ., Ithaca, NY

Abstract: As we assess the challenge of generative artificial intelligence (GAI) in the modern neuroscience teaching landscape we often focus on the deterioration of writing skills. However, critical reading skills are as much in decline, and students frequently turn to GAI tools to summarize papers and fail to develop the ability to critically evaluate primary scientific literature. Interdisciplinary courses offer new opportunities for addressing these issues. A hybrid science/humanities elective for students coming from both neuroscience and humanities degree pathways is presented as a case study. Close reading teaching techniques, developed in humanities fields, are existing resources available to apply to enriching neuroscience education. Incorporating humanities teaching techniques into a neuroscience curriculum can enhance the quality of education by helping students not only develop these critical reading skills, but also appreciate the depth of meaning derived from reading the original text rather than GAI-generated summary. Teaching reading skills traditionally requires intensive one-on-one interaction with faculty, a time investment that is prohibitive in many courses. We discuss here techniques for employing in-class activities, structured reading and writing assignments, and peer interaction to provide efficient training in extracting the key points from a paper without GAI assistance. We provide specific passages from scholars including Thomas Kuhn and Emily Martin, and examples of how they can be used in conjunction with neuroscience primary literature. We describe how we quantify development of critical reading skills via interviews with former students. In addition, a humanities-informed approach based on understanding cultural context

can render material in an introductory science course vivid and engaging, meeting student demand for courses that connect with community issues. Through interdisciplinary courses students can encounter multiple methods of knowledge production and learn to interrogate how meaning is made.

Disclosures: S. Dietz: None.

Theme K Poster

TKP04: Teaching of Neuroscience: College II

Location: SDCC Halls B-H

Time: Saturday, November 15, 2025, 1:00 PM - 5:00 PM

Program #/Poster #: TKP04.23SA/WW4

Topic: K.02. Teaching of Neuroscience

Title: Perspectives on an undergraduate neuroscience major 16 years post-implementation

Authors: *S. I. SOLLARS;
Univ. of Nebraska at Omaha, Omaha, NE

Abstract: The undergraduate Neuroscience Major at the University of Nebraska at Omaha was established in 2009 and has continually evolved to meet the dynamic needs of students pursuing neuroscience-related careers. At first, the curriculum predominantly drew from Psychology and Biology, offering just two dedicated neuroscience courses: NEUR 1500 (Introduction to Neuroscience) and NEUR 4200 (Advanced Neuroscience Laboratory). We originally designed the major so that its requirements closely overlapped with the Pre-Medicine curriculum. While we gradually developed numerous additional NEUR-designated courses, the overall structure of the curriculum remained largely unchanged until two years ago. The current curriculum integrates multidisciplinary Pathways in Philosophy, Medical Humanities, Computing, and Criminal Justice. These Pathways expose students to complementary fields, broadening their perspectives and career opportunities. We also retained the previous version of the major under a Pre-Health and Traditional Pathway that provides excellent training for health-related careers and graduate school preparation. Moreover, Fast Track Programs were introduced, enabling students to apply up to nine graduate-level credits toward both their undergraduate neuroscience major and a graduate program in one of three disciplines. These strategic curricular enhancements have improved student recruitment and retention, highlighting the value of interdisciplinary training in undergraduate neuroscience education.

Disclosures: S.I. Sollars: None.

Theme K Poster

TKP04: Teaching of Neuroscience: College II

Location: SDCC Halls B-H

Time: Saturday, November 15, 2025, 1:00 PM - 5:00 PM

Program #/Poster #: TKP04.24SA/WW5

Topic: K.02. Teaching of Neuroscience

Support: NSF RCN-UBE Grant 2217333

Title: Connectomes for Neuroscience Education and Learning:Teaching Fundamental Neuroscience Principles Using Connectomics Datasets

Authors: *A. C. BELLEMER[1], **D. SITARAMAN**[2], K. J. COLODNER[3];
[1]Dept. of Biol., Appalachian State Univ., Boone, NC; [2]Psychology, California State Univ. East Bay, Hayward, CA; [3]Neurosci., Mount Holyoke Col., South Hadley, MA

Abstract: Authentic research experiences are broadly understood as a valuable supplement to classroom-based undergraduate education, but these opportunities may be limited at many institutions by laboratory infrastructure, instructor training, and budget constraints. The burgeoning neuroscience subfield of connectomics, which seeks to systematically reconstruct and analyze the neuroanatomy and connectivity of entire nervous systems or brain regions, provides a promising opportunity to incorporate authentic research into undergraduate coursework. To this end, we have created the Connectomes for Undergraduate Neuroscience Education and Learning (CUNEL) project, which seeks to build a network of neuroscience researchers and instructors who will incorporate connectomics datasets, analytical tools, and concepts into their teaching. Under the auspices of this project, we have created a series of lab modules that focus on the Female Adult Fly Brain (FAFB) dataset, a complete reconstruction of the Drosophila brain as a set of serial transmission electron microscopy sections. In addition to the complete adult fly brain connectome we are also developing modules using the mouse visual cortex data sets available through MICrONs. These modules focus on fundamental neuroscience concepts including neuroanatomy, neural ultrastructure, and synaptic connectivity and have been implemented at several institutions ranging from private small liberal arts colleges to public R1 institutions. Our assessment of these modules, and the courses that incorporate them, suggest that they promote student learning of neuroscience concepts while engaging them with cutting-edge neuroscience research.

Disclosures: A.C. Bellemer: None. **D. Sitaraman:** None. **K.J. Colodner:** None.

Theme K Poster

TKP04: Teaching of Neuroscience: College II

Location: SDCC Halls B-H

Time: Saturday, November 15, 2025, 1:00 PM - 5:00 PM

Program #/Poster #: TKP04.25SA/WW6

Topic: K.02. Teaching of Neuroscience

Support: Research Incentive Funds (AMK)
HHMI PERSIST Brain Mapping & Connectomics Lab
NIH Grant GM127251 (AMK PI)

UTEP College of Science (SB)
Imaging Core of the IBN Core Facility

Title: Integrating advanced imaging core facility technologies for volume-based imaging into an undergraduate neuroanatomy lab course

Authors: *A. M. KHAN, S. BALIVADA;
Biol. Sci., Univ. of Texas at El Paso, El Paso, TX

Abstract: Advanced imaging technologies such as tissue clearing, light sheet microscopy, and 3-D rendering enable the exploration of brain structure across multiple spatial scales and dimensions. Our established freshman-level laboratory course, Brain Mapping & Connectomics, has traditionally emphasized classical atlas-based 2-D histological mapping using stained tissue sections and manual annotation techniques. To complement this classical pedagogy and to expand the technical scope of the curriculum, we are developing a new instructional module that integrates state-of-the-art imaging platforms and tissue processing methods available through UTEP's Imaging & Behavioral Neuroscience (IBN) facility. In addition to providing details about the instructional module, we also present the logistical framework needed to create an effective workflow within the core facility for the students to work closely in groups and become familiar with the technologies. Along the way, the students will gain an understanding of how sample preparation, tissue clearing, imaging, volume rendering, and annotation/visualization of datasets will take place. Equipment in the core to be used will include light sheet fluorescence microscopes from Miltenyi and LifeCanvas, and a micro-CT imager from Bruker. Workstations featuring Imaris licenses will be furnished to students for their image analysis. By incorporating these platforms through the advanced imaging core facility (IBN facility), the course provides students with practical experience in advanced imaging technologies and tissue processing workflows that are increasingly used in contemporary neuroscience research.

Disclosures: A.M. Khan: None. **S. Balivada:** None.

Theme K Poster

TKP04: Teaching of Neuroscience: College II

Location: SDCC Halls B-H

Time: Saturday, November 15, 2025, 1:00 PM - 5:00 PM

Program #/Poster #: TKP04.26SA/WW7

Topic: K.02. Teaching of Neuroscience

Title: Empowering emerging neuroscientists: a model for undergraduate-driven research in psychophysiology

Authors: *E. E. LEAVER;
Psychology, Salisbury Univ., Salisbury, MD

Abstract: At Salisbury University, a primarily undergraduate institution, we have developed a research model that empowers psychology students to lead inquiry in cognitive and affective

neuroscience through mentored, hands-on projects. This Undergraduate-Driven Research (UDR) framework cultivates critical thinking, technical skills, and academic resilience by integrating scaffolded training, peer mentorship, and inclusive lab practices. Undergraduate researchers engage deeply with diverse topics—including psychomusicology, cognitive-emotional responses to pandemic media, sports-related neurocognitive health, mindfulness interventions, and psychophysiological assessments of false memory and interpersonal communication. These projects are supported by structured skill development and personalized research paths, enabling students to align investigations with their interests and identities. This model not only enhances research productivity and retention, but also fosters a sense of belonging and ownership among students. Despite institutional constraints such as limited resources and faculty teaching loads, our approach demonstrates that undergraduate-focused environments can be fertile grounds for meaningful neuroscience research. We propose this framework as a replicable model for cultivating the next generation of neuroscientists through equity-focused mentorship and authentic scientific engagement.

Disclosures: E.E. Leaver: None.

Theme K Poster

TKP04: Teaching of Neuroscience: College II

Location: SDCC Halls B-H

Time: Saturday, November 15, 2025, 1:00 PM - 5:00 PM

Program #/Poster #: TKP04.27SA/WW8

Topic: K.02. Teaching of Neuroscience

Support: Mount Allison University Biology Department

Title: Enhancing learning and collaboration with a classroom magazine project

Authors: *K. M. CROSBY, C. LAUREIJS;
Biol., Mount Allison Univ., Sackville, NB, Canada

Abstract: Small university classrooms present exciting opportunities for students to engage in intimate and collaborative projects that build connections and enhance learning. In a fourth year undergraduate neurophysiology course, students created a magazine as their capstone project, which was then submitted by the class. Each part of the magazine, including advertisements, articles, and illustrations, was the result of diverse collaborations between students, community members, and myself. Students interviewed health professionals including neurosurgeons, asked patients about their lived experiences, and explored the literature on neuroscience topics relating to the course content. They then reviewed each other's work and edited the magazine together. The resulting magazine was professionally printed and distributed across campus and the community. Overall, this project enhanced student learning of neuroscience, while building connections between students and community members.

Disclosures: K.M. Crosby: None. **C. Laureijs:** None.

Theme K Poster

TKP05: Teaching of Neuroscience: Graduate, Professional, and Other Educational Resources

Location: SDCC Halls B-H

Time: Sunday, November 16, 2025, 8:00 AM - 12:00 PM

Program #/Poster #: TKP05.01SU/WW9

Topic: K.02. Teaching of Neuroscience

Support: FJNU Research Start-Up Funds

Title: From cognitive diversity to psychological security: Cultivating inclusivity by aligning affective concerns and cognitive styles

Authors: *B. YIN;
Sch. of Psychology, Fujian Normal Univ., Fuzhou, China

Abstract: True inclusion demands recognizing and accommodating individuals' diverse cognitive styles and underlying affective concerns, each stemming from unique developmental trajectories and corresponding neural activation patterns. In my teaching and research practice, I have consistently emphasized that cognitive diversity—the variation in how individuals perceive, interpret, and respond to their environments—is not merely a challenge but a valuable resource. Drawing on extensive experience guiding psychology and neuroscience students through experimental psychology, behavioral neuroscience, and affective computing coursework, I illustrate how understanding individual differences in emotional responses, cognitive processing styles, and motivational needs significantly enhances psychological security within learning environments. By integrating theoretical frameworks (e.g., Large Affect Model, tri-reference-point theory) and empirical data from laboratory studies and classroom-based assessments, I demonstrate effective methods for teaching students to recognize, respect, and strategically accommodate these differences. I provide examples of instructional activities that have successfully heightened students' appreciation for cognitive and affective diversity, supported by systematic feedback and evaluative data indicating measurable improvements in psychological security and group cohesion. Ultimately, this integrative approach prepares students to apply principles of genuine inclusivity beyond academia, contributing meaningfully to psychological well-being and social advancement.

Disclosures: B. Yin: None.

Theme K Poster

TKP05: Teaching of Neuroscience: Graduate, Professional, and Other Educational Resources

Location: SDCC Halls B-H

Time: Sunday, November 16, 2025, 8:00 AM - 12:00 PM

Program #/Poster #: TKP05.02SU/WW10

Topic: K.02. Teaching of Neuroscience

Support: Gillotti Graduate Fellowship
University Center for International Studies, University of Pittsburgh
University College London
Carnegie Mellon University Neuroscience Institute
HHMI Janelia Research Campus
Allen Institute
Sainsbury Wellcome Centre

Title: Trend-camina: advancing computational neuroscience and machine learning in africa through open science

Authors: *G. ANSAH[1], S. SOLDADO-MAGRANER[2], J. SOLDADO-MAGRANER[3], G. MICHEL[4], E. MARQUEZ LEGORRETA[4], T. GEORGE[5], A. KOUMOUNDOUROU[6];
[1]Univ. of Pittsburgh, Pittsburgh, PA; [2]Neurobio., Univ. of California Los Angeles, Los Angeles, CA; [3]Electrical and Computer Engin., Carnegie Mellon Univ., Pittsburgh, PA; [4]Janelia Res. Campus, Ashburn, VA; [5]Sainsbury Wellcome Centre, Univ. Col. London, London, United Kingdom; [6]VIB-KU Leuven Ctr. for Brain & Dis. Res., Leuven, Belgium

Abstract: Computational neuroscience is a promising interdisciplinary field for understanding brain function and neurological disorders, and developing advanced machine learning and artificial intelligence algorithms. Its cost-effectiveness permits researchers in scientifically underserved regions like Africa, to contribute to global neuroscience research and address continent-specific issues. TReND-CaMinA (Training in Research and Neuroscience for Development in Africa - Computational neuroscience and Machine learning in Africa) aims to enhance scientific capacity in Africa, a region with immense growth potential, by training students in computational neuroscience and machine learning.
Our primary approach comprises a 2.5 week in-person summer course, held annually in a different African country to promote regional hubs of faculty and students with aligned research interests and strong intercontinental connections. Each year, 20 students from diverse academic and professional backgrounds participate in an introductory-level course that emphasizes intuitive explanations and hands-on exercises in Python, neurobiology, systems neuroscience, dynamical systems, neural data analysis methods, and machine learning. Students apply their learning to complete guided research projects using real open source neural datasets provided by The Allen Institute, Seattle, USA. Our instructors are global neuroscience and machine learning experts, with support from local science communities - teaching assistants and plenary speakers often come from host country institutions. Reflecting our commitment to open science, our program is designed as a blueprint for others to replicate with all our teaching resources and code being made freely available to the public.
To date, we've received over 2000 applications and are on course to train over 60 students across Africa. Our alumni are well prepared for advanced training initiatives in computational neuroscience and machine learning. Several have received scholarships to top graduate programs, conferences (Cosyne) and neuroscience training schools (Imbizo, Neuromatch Academy).
TReND-CaMinA aims to support the growth of a sustainable community of computational

neuroscience and machine learning researchers in Africa. Beyond the course, we maintain an active alumni network where we provide career guidance and information about training and funding opportunities that equip our alumni in their scientific journeys. Furthermore, our alumni actively share their knowledge and inspire others in their home institutions, catalyzing the growth of machine learning and computational neuroscience in Africa.

Disclosures: G. Ansah: None. **S. Soldado-Magraner:** None. **J. Soldado-Magraner:** None. **G. Michel:** None. **E. Marquez Legorreta:** None. **T. George:** None. **A. Koumoundourou:** None.

Theme K Poster

TKP05: Teaching of Neuroscience: Graduate, Professional, and Other Educational Resources

Location: SDCC Halls B-H

Time: Sunday, November 16, 2025, 8:00 AM - 12:00 PM

Program #/Poster #: TKP05.03SU/WW11

Topic: K.02. Teaching of Neuroscience

Support: Society for Science STEM Action Grant #10301
Lifting Underrepresented Voices (LUV) Grant 17365-2024-8

Title: From Research to Readership: How Knowing Neurons is Making Neuroscience Accessible Worldwide

Authors: *T. E. WALTERS[1], A. PERIS-YAGUE[2], A. KHAN[3], L. RADER[4], J. FROULA[5], A. ADAMSON[6], F. JAYAPRAKASH[7];
[1]Neurol., The Univ. of Alabama at Birmingham, Birmingham, AL; [2]Univ. Autónoma de Madrid, Madrid, Spain; [3]Baruch Col., New York City, NY; [4]Univ. of Colorado Boulder Dept. of Psychology and Neurosci., Boulder, CO; [5]Univ. of Minnesota, Saint Paul, MN; [6]Univ. of Alabama at Birmingham, Birmingham, AL; [7]Imperial Col. London, London, United Kingdom

Abstract: Scientific literature can be difficult to understand, especially for those without formal training. In an era where media consumption is constant and skepticism toward science is rising, it is more important than ever to share accurate and engaging scientific information with the public. Knowing Neurons (KN) was founded to bridge the gap between complex neuroscience and everyday audiences, translating research into accessible formats such as articles, infographics, comics, and short videos. This past year, KN expanded its efforts by launching a *Science Policy Paper Competition*, encouraging participants to write on critical policy issues for publication on our website and social media. A complementary science policy writing workshop, led by experienced policy writers, equipped participants with tools to craft persuasive, well-structured arguments. Throughout the past year, KN has expanded their global reach to more than 167 countries, with 42% of users being based in the United States. KN has also seen over 50,000 new users engage with our article content, 86% of whom returned monthly, demonstrating a strong and sustained interest in neuroscience content. These users initiated 62,000 new sessions, with 60% (37,000 sessions) driven by organic searches, indicating

intentional and direct interest in our content. User engagement remained high, with 65% of sessions involving interactions with multiple articles or webpages. Across the year, our content was viewed nearly 100,000 times, with our article *"How TikTok Hijacks Your Brain"* being the most accessed piece. These metrics underscore a growing global demand for approachable neuroscience content and highlight the vital role of platforms like KN in promoting scientific literacy and curiosity. As the landscape of science communication continues to evolve, expanding digital outreach remains essential to building a well-informed, science-literate society.

Disclosures: T.E. Walters: None. **A. Peris-Yague:** None. **A. Khan:** None. **L. Rader:** None. **J. Froula:** None. **A. Adamson:** None. **F. Jayaprakash:** None.

Theme K Poster

TKP05: Teaching of Neuroscience: Graduate, Professional, and Other Educational Resources

Location: SDCC Halls B-H

Time: Sunday, November 16, 2025, 8:00 AM - 12:00 PM

Program #/Poster #: TKP05.04SU/WW12

Topic: K.02. Teaching of Neuroscience

Title: Outcomes for Trainees Supported by Individual and Institutional Training Grants from the National Institute on Drug Abuse

Authors: L. N. FRIEND[1], A. L. HOLMES[3], Y. LIN[4], E. FALCON[5], I. ELLENWOOD[2], ***W. M. COMPTON**[6];
[1]NIDA, NIH, Natl. Inst. On Drug Abuse, North Bethesda, MD; [2]NIH, Natl. Inst. On Drug Abuse, Port Hueneme, CA; [3]NIH, Natl. Inst. on Drug Abuse (NIDA), North Bethesda, MD; [4]NIH, Bethesda, MD; [5]NIDA/NIH, Natl. Inst. on Drug Abuse, Silver Spring, MD; [6]NIH/National Inst. On Drug Abuse, Washington, DC

Abstract: The National Institute on Drug Abuse (NIDA) offers a strategic set of funding mechanisms and programs to support the development of research scientists through multiple stages of their careers. These awards are designed to ensure that qualified scientists can meet the country's need for substance use and addiction research. Our goal is to examine whether the different types of training grants have similar or dissimilar outcomes.
BACKGROUND: NIDA supports both institutional (Ruth L. Kirschstein National Research Service Award (NRSA) Institutional Research Training Grant T32) and individual predoctoral NRSA grants for MD/Ph.D. students, graduate students, and postdoctoral fellows (F30, F31, and F32, respectively).
METHODS: One possible measure for success of these programs is measuring rates of subsequent NIH grant applications and awards. NIDA Fellowship and T32 awardees between 2010 and 2020 were used in this analysis.
RESULTS: Upon examining grant applications from predoctoral awardees, we found that 65% (n=251) of F31 awardees subsequently applied to one or more NIH grants, and 39.3% (n=173) subsequently received NIH funding. T32 predoctoral appointees demonstrated lower rates of

applications (53.5%, n=528) and awards (31.2%, n=308). We observed a similar trend among postdoctoral fellows. 64% (130) of F32 awardees later applied to NIH, and 49.3% (n=100) were later funded; while 60.6% (n=657) of T32 postdoctoral appointees later applied to NIH, and 40.8% (n=443) were awarded.
CONCLUSION: These results suggest that recipients of individual fellowships in early career stages are more likely to apply and receive successive NIH grants. Based on this data, NIDA has been emphasizing and promoting individual fellowships as part of an overall expansion of research training. Finally, mentoring and training in grantsmanship is essential at early career stages and pivotal for the success of the next generation of substance use and addiction researchers.

Disclosures: L.N. Friend: None. **A.L. Holmes:** None. **Y. Lin:** None. **E. Falcon:** None. **I. Ellenwood:** None. **W.M. Compton:** None.

Theme K Poster

TKP05: Teaching of Neuroscience: Graduate, Professional, and Other Educational Resources

Location: SDCC Halls B-H

Time: Sunday, November 16, 2025, 8:00 AM - 12:00 PM

Program #/Poster #: TKP05.05SU/WW13

Topic: K.02. Teaching of Neuroscience

Support: NIMH T32 MH119049
Canadian Institute for Advanced Research (Fellowship in Brain, Mind, & Consciousness)
Air Force Office of Scientific Research (FA9550-20-1-0106)

Title: Philosophical tools for evaluating computational models of cognition

Authors: *A. KHOUDARY[1], A. BORNSTEIN[2], M. A. PETERS[2];
[2]Cognitive Sci., [1]Univ. of California, Irvine, Irvine, CA

Abstract: Computational modeling is becoming increasingly common in the brain and cognitive sciences. This trend has been accelerated both by software packages that enable fast and flexible model fitting (e.g., Shinn et al., 2020) and by targeted efforts to automate the process of model specification using machine learning (e.g., Rmus et al., 2025). However, this increased accessibility of formal modeling techniques has not been accompanied by a concomitant increase in education about how exactly these methods contribute to scientific understanding (Press et al., 2022). To address this gap, we present a survey of contemporary philosophy of modeling research coupled with targeted guidance for practicing neuroscientists. Our toolkit addresses fundamental questions concerning the nature of formal models, how they relate to empirical targets, and the different kinds of understanding different types of models enable. In particular, we emphasize the central roles of idealization and reasoning goals in model-based scientific inference in order to help scientists better determine what types of idealized models are most

useful for particular reasoning goals. We demonstrate the utility of this resource by applying it to both long-standing and emerging formal models in neuroscience: drift diffusion models (DDMs) of decision making and large language models (LLMs) of human reasoning. Our case study of the DDM focuses on a long-standing debate about decision thresholds that has led to two standard forms of the model, one with fixed thresholds and another where thresholds collapse over time. We demonstrate how the two forms are the result of different commitments to optimality as an explanatory constraint among different subgroups of researchers who use the model, and use this insight to offer a principled heuristic for when to use one form of the model instead of another. Our case study of LLMs focuses on the question of what these models' "human-like" behavior means for their possibility to advance understanding of the human mind and brain. We show how our toolkit gives scientists a richer set of conceptual tools for thinking about how to repurpose complex models developed for commercial use into explanatory scientific theories. Specifically, we highlight the necessity of considering how the idealizations required for the apparent success of LLMs align with the types of idealizations neuroscientists are comfortable with making about their target system. Altogether, our work contributes a novel philosophical perspective to basic scientific and meta-scientific education on computational models that is tailored to practicing scientists at varying levels of experience.

Disclosures: A. khoudary: None. **A. Bornstein:** None. **M.A. Peters:** None.

Theme K Poster

TKP05: Teaching of Neuroscience: Graduate, Professional, and Other Educational Resources

Location: SDCC Halls B-H

Time: Sunday, November 16, 2025, 8:00 AM - 12:00 PM

Program #/Poster #: TKP05.06SU/WW14

Topic: K.02. Teaching of Neuroscience

Title: Targeting Cognitive Bottlenecks in a Six-Week Neuroscience Block: Data-Driven Strategies to Strengthen Clinical Integration

Authors: *L. E. ÁLVAREZ-PALAZUELOS[1,2], M. CABRERA SALAIZA[3], C. RAMIREZ RIVERA[4], R. ROBLES LAGUNA[3], J. MOLINARY MARTINEZ[4], L. P. RUIZ GÓMEZ[6], K. AHMAD[5];
[1]Neurosci. and Res., Univ. De Guadalajara, Guadalajara, Mexico; [2]Neurosci. and Res., Univ. Autonoma de Guadalajara, Guadalajara, Mexico; [3]Neurosci., [4]Neurosci. and Res., Univ. Autónoma de Guadalajara, Guadalajara, Mexico; [5]Neurosci. and Res., Univ. Autónoma de Guadalajara, Zapopan, Mexico; [6]Neurosci. and Res., Univ. de Guadalajara, Guadalajara, Mexico

Abstract: Background The six-week neuroscience block at Universidad Autónoma de Guadalajara (UAG) enrolls U.S. and Puerto Rican medical students preparing for USMLE®/NBME® exams. Faculty intuition about weak spots is often misleading; objective analytics were needed to guide curricular refinement. **Objective** Pinpoint persistently low-scoring content areas across three cohorts and assess whether newly introduced hands-on

strategies are closing these gaps. **Methods** De-identified ExamSoft™ records were extracted for Spring 2024 (2024-1), Fall 2024 (2024-2) and Spring 2025 (2025-1). All 612 students completed identical 100-item USMLE-style Midterm and Final exams tagged with 42 categorical subscores. Records were merged by hashed e-mail; paired-sample *t* tests ($\alpha = 0.05$) compared Midterm vs Final globally and by category. Data were anonymized at source; institutional policy waived further ethics review. **Results** Final means exceeded Midterm by 9-12 percentage points in every cohort ($p < 0.001$); ≥ 77 % of students improved, with the largest gains among mid-range performers. Three thematic clusters never met the 70 % proficiency benchmark:***Advanced neuro-therapeutics*** (infection & oncology pharmacology: 56 %, 58 %, 60 %) ***Neuro-imaging*** **interpretation** (60 %, 65 %, 68 % ***Neuro-immunology & developmental neuropathology*** (62 %, 63 %, 61 %).In contrast, foundational topics—synaptic physiology, basic neuroanatomy, spinal reflexes—remained strong (≥ 85 %).In 2024-2 we launched four active-learning tools: therapeutic escape rooms, mid-course mock exams, stroke-spotting OSCEs, and sub-5-minute brain-stem micro-videos. Pharmacology scores rose 4 points, yet imaging and immune-developmental themes stayed below target, indicating slide-based reviews alone are insufficient. **Conclusions & Next Steps** Blinded analytics reveal that decision-dense skills—drug selection, image reading, immune/developmental mechanisms—are the true bottlenecks, not core neurobiology. To address the remaining gaps we will add an **interactive DICOM lab** (students annotate real CT/MRI series) and a **virtual tumor board** (peer diagnosis from anonymized CSF, genetics, imaging). Pre-/post-category scores and 12-week retention will test whether these data-driven, clinically anchored interventions lift the last hard-to-learn topics above the 70 % threshold, in line with UAG School of Medicine's commitment to evidence-based education.

Disclosures: L.E. Álvarez-Palazuelos: None. **M. Cabrera Salaiza:** None. **C. Ramirez Rivera:** None. **R. Robles Laguna:** None. **J. Molinary Martinez:** None. **L.P. Ruiz Gómez:** None. **K. Ahmad:** None.

Theme K Poster

TKP05: Teaching of Neuroscience: Graduate, Professional, and Other Educational Resources

Location: SDCC Halls B-H

Time: Sunday, November 16, 2025, 8:00 AM - 12:00 PM

Program #/Poster #: TKP05.07SU/WW15

Topic: K.02. Teaching of Neuroscience

Support: MOST 111-2410-H-A49 -049 -MY3

Title: Move the body, work the mind, connect with people: Sixteen weeks of social dance training enhanced healthy elderly's physical fitness, social interaction, and altered task-based EEG complexity and functional connectivity

Authors: I. LOW[1], Y. HUANG[2], K.-C. CHU[3], Y.-S. CHEN[4], ***L.-F. CHEN**[3];
[1]Imaging Ctr. for Humanity and Social Neurosci. (Preparatory Office), [2]Sch. of Med., [3]Inst. of

Brain Sci., Natl. Yang Ming Chiao Tung Univ., Taipei, Taiwan; [4]Dept. of Computer Sci., Natl. Yang Ming Chiao Tung Univ., Hsinchu, Taiwan

Abstract: Dance, particularly social dance, is a key non-pharmacological intervention for aging. Research shows that dance interventions can enhance physical, cognitive, and mental well-being, supported by self-reports, behavioral tests, and resting-state brain scans. However, understanding the effects of dance intervention on neural processing during cognitive tasks needs exploration through task-based neuroimaging experiments. This study designed a 16-week structured social dance training program for healthy elderly participants. We assessed multimodal changes pre- and post-training, including mood, cognitive function, physical fitness, social dance movements, as well as behavioral performance and task-based EEG activities during a dance-related memory retrieval experiment. In the experiment, static photos and muted video clips of key dance moves from learned dances served as memory retrieval cues, with participants indicating recognition via button responses. Sensor-level EEG data (32 electrodes) during the memory retrieval phase were analyzed, focusing on nonlinear dynamics (multiscale sample entropy, MSE) and oscillatory functional connectivity (coherence). Differences between post- and pre-training assessments were analyzed using related-sample Wilcoxon signed-rank tests (two-tailed). Twelve elderly individuals completed the study (11 females and 1 male; median age [IQR] = 67 [63-71]), showing improvements in physical fitness, movement sequence memory, and eye contact during social dance. As anticipated, dance recognition was poorer and slower with photo cues than with video cues. Photo cues led to an overall increase in local neural dynamics (MSE) in the right sensorimotor and superior frontal regions, but a widespread decrease in coherence post-training, indicating enhanced local, internal processing and functional segregation related to motor imagery and top-down memory retrieval occurred. In contrast, video cues displayed minor changes in MSE, but a widespread increase in coherence post-training in the delta, theta, and gamma bands, reflecting improved communication across distributed networks and functional integration linked to action observation and bottom-up memory retrieval. Our findings suggest that social dance training reshapes the neural processing underlying sensorimotor, memory, and social functions, affecting local segregation and distributed integration depending on the cognitive demands of memory retrieval cues. This study highlights the value of combining task-based EEG experiments with multifaceted analyses to assess the effects of dance intervention on aging.

Disclosures: I. Low: None. **Y. Huang:** None. **K. Chu:** None. **Y. Chen:** None. **L. Chen:** None.

Theme K Poster

TKP05: Teaching of Neuroscience: Graduate, Professional, and Other Educational Resources

Location: SDCC Halls B-H

Time: Sunday, November 16, 2025, 8:00 AM - 12:00 PM

Program #/Poster #: TKP05.08SU/WW16

Topic: K.02. Teaching of Neuroscience

Title: Pan-American group of studies in epilepsy:A multinational mentorship series to promote neuroscience education and research collaboration

Authors: *K. L. CRUZ-HAM[1], G. W. HUBBARD[1], L. F. PACHECO[2], J. AUZMENDI[3,4], A. E. MUSTO[1];
[1]Dept. of Biomed. and Translational Sci., Macon and Joan Brock Virginia Hlth. Sciences, Eastern Virginia Med. Sch. at Old Dominion Univ., Norfolk, VA; [2]Facultad de Ciencias de la Salud, Ctr. de Investigaciones Biomedicas, Univ. Andina del Cusco, Cusco, Peru; [3]Facultad de Farmacia y Bioquímica, Inst. de Fisiopatología y Bioquímica Clínica - Univ. de Buenos Aires, Buenos Aires, Argentina; [4]Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET), Buenos Aires, Argentina

Abstract: The Pan-American Group of Studies in Epilepsy is a multinational mentorship series launched in 2025 by neuroscientists from the USA, Argentina, and Peru to address the economic, linguistic, structural, and institutional disparities that limit neuroscience capacity across the Americas. Monthly virtual seminars were created to provide a bilingual, supportive platform for early-career researchers, including undergraduate, medical, and PhD students, as well as postdoctoral fellows, to present in-progress epilepsy research. Presentations rotated across research laboratories in Argentina, Peru, and the United States, and were delivered by mentees and followed by faculty-led discussions focusing on scientific significance and methodology. Senior neuroscientist mentors from diverse educational backgrounds provided interdisciplinary guidance. To date, five sessions have been held, covering topics such as drug-resistant epilepsy, the GABA excitatory/inhibitory shift, high-frequency oscillations, novel transgenic models, and dendritic spine pathology. Approximately 20-30 participants attended each session, representing diverse backgrounds from countries such as Argentina, Brazil, Canada, Colombia, Mexico, Peru, and the United States. Students described the seminars as intellectually stimulating and motivating, and reported increased confidence in communication, interest in neuroscience research, and progress toward abstracts, posters, and potential publications. This scalable, low-cost, and inclusive mentorship framework promotes scholarly development and international collaboration and represents a replicable model for neuroscience capacity-building across underserved regions.

Disclosures: K.L. Cruz-Ham: None. **G.W. Hubbard:** None. **L.F. Pacheco:** None. **J. Auzmendi:** None. **A.E. Musto:** None.

Theme K Poster

TKP05: Teaching of Neuroscience: Graduate, Professional, and Other Educational Resources

Location: SDCC Halls B-H

Time: Sunday, November 16, 2025, 8:00 AM - 12:00 PM

Program #/Poster #: TKP05.09SU/XX1

Topic: K.02. Teaching of Neuroscience

Title: Brainmuseum.org: updating the National Museum of Health and Medicine's digitized microscopy collection for educational and research purposes

Authors: *C. STIMPSON[1,2], J. A. MORRIS[3], D. L. DICKSTEIN[1,2], C. SHERWOOD[4], B. DUGGER[5], P. R. HOF[6], D. PERL[2];
[1]Henry Jackson Fndn., Bethesda, MD; [2]Uniformed Services Univ., Bethesda, MD; [3]Mass Neuroanatomy, West Newbury, MA; [4]George Washington Univ., Washington, DC; [5]Univ. of California Davis, Davis, CA; [6]Icahn Sch. of Med. at Mount Sinai, New York, NY

Abstract: The National Museum of Health and Medicine has amassed a collection of 16 neuroanatomical repositories over the last 170 years, including the Yakovlev-Haleem Collection and the Welker Comparative Collection. These include an array of diseases/disorders (e.g. Alzheimer disease, traumatic brain injury, lobotomy) and developmental specimens from fetal to 100 years of age. The comparative collection includes diverse species, including non-human primates, dolphins, and bovids, among many others. The current 25-year-old website, Brainmuseum.org, contains only a fraction of this collection as low-resolution flatbed scans. Our goal is to modernize the website by scanning at cellular resolution, approximately 10-20 times greater magnification than what is currently available. This will achieve the following aims: 1) Increase open access to the material for scientific use across the globe, 2) Expand the collection's use in teaching various aspects of human and comparative neuroanatomy to all educational levels, through guided modules enhancing learning from elementary through post-graduate educational levels, 3) Create a virtual legacy of the collections, therefore limiting potential damage to the unique and irreplaceable collections due to physical handling of the slides and fading inherent with repeated physical microscopy, 4) Provide a format in which components of the digitized slides can be analyzed and quantified using innovative image analysis programs, 5) Benchmark high resolution digital image acquisition for research and educational project development, which will increase specialized requests for high resolution image acquisition and/or visits to the physical collections to deepen understanding and inquiry of initial material, as well as increase demand for additional specimens to be scanned. To date, researchers have had to physically travel to the Museum to view the collection materials. The online accessibility of this collection will provide significant enhancements providing additional educational and research opportunities. An updated Brainmuseum.org will provide access and opportunities that are not currently available through the restricted physical collection or the existing website, which will benefit people of all backgrounds and experience levels. Disclaimer: The information, content, and/or conclusions in this report do not necessarily represent the official position or policy of, nor should any official endorsement be inferred on the part of, Uniformed Services University, the Department of Defense, the United States Government, or the Henry M. Jackson Foundation for the Advancement of Military Medicine, Inc.

Disclosures: C. Stimpson: None. **J.A. Morris:** None. **D.L. Dickstein:** None. **C. Sherwood:** None. **B. Dugger:** None. **P.R. Hof:** None. **D. Perl:** None.

Theme K Poster

TKP05: Teaching of Neuroscience: Graduate, Professional, and Other Educational Resources

Location: SDCC Halls B-H

Time: Sunday, November 16, 2025, 8:00 AM - 12:00 PM

Program #/Poster #: TKP05.10SU/XX2

Topic: K.02. Teaching of Neuroscience

Title: Application of a custom GPT evaluator (NeuroCitation GPT) to benchmark citation quality for case-based medical education.

Authors: *M. W. MCENERY;
Neurol., Case Western Reserve Univ., Cleveland, OH

Abstract: Background: Employing large language models (LLMs) to generate citations appropriate to medical education presents both opportunities and risks for clinical education and decision support. Benchmarking citation accuracy and quality is essential for safe deployment. **Objective:** To create a custom GPT comprised of benchmarking rubrics and other functionalities (NeuroCitation) for the purpose of evaluating the citations generated by various OpenAI GPT models. The clinical case prompts were scored using a novel Unified GPT Citation Evaluation Rubric and a validated Reference Hallucination Score (RHS) rubric (Zhu et al., JMIR Med Inform. 2024;12:e54345), measuring citation reproducibility, quality, and verifiability. **Methods:** Six GPT models were prompted with clinical vignettes used in case-based learning. Two content areas were represented: Lambert-Eaton Myasthenic Syndrome (LEMS) and aseptic meningitis. Each GPT generated 10 citations per topic. All citations were uploaded into the NeuroCitation GPT, which applied both rubrics (Unified and RHS) to score each citation. Grading reproducibility, model-to-model performance, rubric utility, and citation-level statistics were analyzed using ANOVA, Tukey HSD, and targeted t-tests. **Results:** NeuroCitation GPT scoring reproducibility across two independent grading sessions was excellent ($r > 0.96$), with minimal impact on model ranking or statistical conclusions, despite the inherently non-deterministic nature of LLMs. Omnibus ANOVAs detected significant GPT model differences (Unified: $F(5,114) = 2.84$, $p = 0.0188$; RHS: $F(5,114) = 2.48$, $p = 0.0358$). No individual GPT-to-GPT contrasts survived Tukey correction, but targeted tests revealed that Case Builder, AI Neurology, and Scholar GPT significantly outperformed GPT 4.0 with medium-large effect sizes. The Unified rubric demonstrated superior discriminatory power compared to RHS. Notably, Case Builder, a custom-configured GPT, achieved the highest Unified rubric scores, suggesting that tailored LLMs may offer quality advantages over general-purpose models. **Conclusions:** NeuroCitation GPT has the properties of an instrument for evaluating AI-generated citations in medical education. This study demonstrates how GPTs can be responsibly integrated into medical learning environments when paired with structured validation tools. While NeuroCitation GPT identifies hallucinated or fabricated citations, there remains an ongoing need to monitor for unintended propagation of AI-generated misinformation.

Disclosures: M.W. McEnery: None.

Theme K Poster

TKP05: Teaching of Neuroscience: Graduate, Professional, and Other Educational Resources

Location: SDCC Halls B-H

Time: Sunday, November 16, 2025, 8:00 AM - 12:00 PM

Program #/Poster #: TKP05.11SU/Web Only

Topic: K.02. Teaching of Neuroscience

Support: NIH K99MH132880 (PI S. Balters)
NIH R25NS124528 (PIs M.S. Buckwalter and M.B. Goodman)

Title: For Every Early-Career Scientist Who Has Ever Felt Alone at the Keyboard: Relational, Supportive, and Iterative Grant Writing Training

Authors: *S. BALTERS[1], M. B. GOODMAN[2], C. BOTHAM[3];
[1]Dept. of Psychiatry and Behavioral Sciences, Sch. of Medicine, Stanford Univ., Palo Alto, CA; [2]Mol. and Cell. Physiol., Stanford Univ., Stanford, CA; [3]Dept. of Pediatrics, and Grant Writing Academy, Sch. of Medicine, Stanford Univ., Stanford, CA

Abstract: Grant writing is a critical performance metric in academia and a major source of psychological burden for early-career researchers. Preparing complex proposals such as K-Series Awards from the U.S. National Institutes of Health (NIH) requires a bold scientific vision, a coherent career narrative, and technical precision—often before postdoctoral researchers feel confident in their direction or place in academia. Traditional grant-writing programs provide structural guidance but often overlook the emotional, cognitive, and narrative challenges involved in early-stage idea development. As a result, many early-career scientists struggle with low self-efficacy and a diminished sense of belonging during grant writing.To address these barriers, we developed the K-Series Empowerment Workshop, a three-day immersive program for postdoctoral researchers preparing NIH K Award applications. The workshop integrates three components across each day: authentic peer connection, iterative narrative design, and technical grant writing training. Participants explore their scientific identity, shape proposal storylines, and receive targeted instruction on key K Award sections. Based on evidence that identity-based affinity groups support psychological safety, self-efficacy, and belonging, the initial implementation focused on women-only cohorts. From 2021-2024, 32 participants (29 postdocs, 1 instructor, 2 graduate students) completed the workshop across four cohorts. Most workshop participants were conducting neuroscience research, and our workshop evaluation plan was reviewed and approved by the Stanford University Institutional Review Board (IRB #78692).Pre-post surveys of the 2024 cohort (n = 10) revealed significant increases in academic belonging (p = 0.01, 33.3% increase) and confidence in submitting a K Award ($p < 0.01$, 70.0% increase). Across all cohorts, post-workshop surveys revealed increases in the sense of belonging in academia and self-efficacy in submitting their K Award application. Participants rated the workshop as very meaningful for personal and professional development (median: 10.0 on a 0-10-point scale) and gave the workshop a Net Promoter Score of 100.The K-Series Empowerment Workshop demonstrates a framework for enhancing sense of belonging and self-efficacy in early-stage grant development. Moving forward, the program will continue supporting postdoctoral researchers (already expanded to all-gender cohorts in 2025) and expand to other career stages. Future efforts will also assess long-term academic and career outcomes to evaluate the broader impact and scalability of this innovative approach.

Disclosures: S. Balters: None. **M.B. Goodman:** None. **C. Botham:** None.

Theme K Poster

TKP05: Teaching of Neuroscience: Graduate, Professional, and Other Educational Resources

Location: SDCC Halls B-H

Time: Sunday, November 16, 2025, 8:00 AM - 12:00 PM

Program #/Poster #: TKP05.12SU/XX3

Topic: K.02. Teaching of Neuroscience

Support: Research Incentive Funds (AMK)

Title: Practical experience piloting a brain atlas project in a graduate-level software engineering practicum: Description of a sustainable software development framework and student experiences acquiring domain-specific neuroscientific knowledge

Authors: *I. ACEDO AGUILAR[1,2], S. I. SALAMAH[1], A. M. KHAN[2];
[1]Computer Sci., [2]Biol. Sci., The Univ. of Texas at El Paso, El Paso, TX

Abstract: Software engineering efforts to create reliable and scalable resources in the neuroscience knowledge domain, such as digital brain atlases, have historically depended on large, resource-laden consortia or industrial teams. A growing concern in this field is the urgent need for robust software practices to build, develop, and maintain digital atlases while also democratizing their construction in a scalable and sustainable manner. We have piloted, within a graduate-level software engineering practicum, a project to develop open-access software that delivers a digital atlas of the rat brain for the scientific community, with plans to sustain the effort through stable inclusion of academic neuroanatomists as the practicum's "client" in future iterations of the course. In the process, graduate students in software engineering develop basic scientific literacy in domain-specific neuroscience concepts. Two student teams were led through a series of weekly introductions to neuroanatomical concepts within a semester-long workflow based on agile management principles and consisting of stepwise, timeboxed development goals to construct various modules of a functional digital atlas environment. At the end of this effort, two working atlas prototypes were successfully created. We describe the basic features of this software with an eye on their pedagogical utility in conveying fundamental neuroscience concepts. We also describe the students' experiences navigating concepts unfamiliar to them as they tried to master skills in working within a team to build and test their software. We envision this experience will help those who wish to implement similar courses in their own graduate-level software engineering programs.

Disclosures: I. Acedo Aguilar: None. **S.I. Salamah:** None. **A.M. Khan:** None.

Theme K Poster

TKP06: Outreach Activities

Location: SDCC Halls B-H

Time: Sunday, November 16, 2025, 8:00 AM - 12:00 PM

Program #/Poster #: TKP06.01SU/XX4

Topic: K.03. Public Awareness of Neuroscience

Title: Association for Scientists of Color

Authors: *S. KU[1], A. CUARENTA[2], M. STRICKLIN[3], J. NYAKOA[3];
[1]Assn. for Scientists of Color, Atlanta, GA; [2]Dept. of Psychology, Univ. of Michigan, Ann Arbor, MI; [3]Georgia State Univ., Atlanta, GA

Abstract: The Association for Scientists of Color is an organization focused on empowering early career scientists who exist on the margins. Scientists of color continue to face systemic barriers in academia, industry, and research institutions. The Association for Scientists of Color (ASoC) exists to provide a community of solidarity, professional development, and advocacy to address these gaps in access. We champion the success of scientists at the margins by fostering inclusive spaces, amplifying voices, and breaking down barriers to access in STEM. Here we present programming we've conducted in our first year. Our primary aim in this pilot year was to provide education, outreach, and professional support to our members. Education: ASoC is committed to educating the broader community on the history of scientists of color, as history is often told from the perspective of those with power. To combat this erasure, we assembled two educational sessions this year. The first discussed queer in history in Atlanta (where we are based), featuring the invent of the cakewalk, intersections of queerness and ethnicity, and a riot of a gay bar which has become a popular local theater. For black history month (BHM), we discussed the founder of the first BHM, the importance of storytelling, and assembled narratives of notable black scientists of the last century. We told the stories of 15 black scientists and their contributions to the scientific field, then prompted our attendees to think about how they want their stories to be told and who will tell them. Outreach: To encourage member base building, we did three outreach events this year. We had a kick-off event explaining our mission and purpose on campus to new members. For BHM, we hosted a film screening of *Hidden Figures*, which is based on Katherine Johnson, the primary computer at NASA responsible for the first moon landing. To address burnout, we put on a Relax and Recharge event where members made vision boards of their semester goals and could commune about shared stressors or pressures. Professional support: Many scientists of color can feel isolated or alone, which can be exacerbated by limited access to like-minded scientists. ASoC seeks to provide a network of mentees, peers, mentors, and professionals to support our members and empower them towards excellence. To this end, we hosted a mini-lecture series this past semester, featuring guest speakers from across the country and from a variety of scientific industries. Additionally, we hosted a poster session to give scientists of color the opportunity to feature their work in a formal setting and network across departments to find mentors.

Disclosures: S. Ku: None. **A. Cuarenta:** None. **M. Stricklin:** None. **J. Nyakoa:** None.

Theme K Poster

TKP06: Outreach Activities

Location: SDCC Halls B-H

Time: Sunday, November 16, 2025, 8:00 AM - 12:00 PM

Program #/Poster #: TKP06.02SU/XX5

Topic: K.03. Public Awareness of Neuroscience

Title: Building Bridges in Neuroscience: From Los Angeles to Madrid, an International Collaboration for Outreach and Education of Neurosciencein Spanish

Authors: *A. PERIS-YAGUE[1], B. MARTÍN-GASCÓN[2], R. BARTOLOME[3], G. ROJAS-BOWE[4], C. SUHR[4], R. ROMERO[5];
[1]Duke Univ., Durham, NC; [2]Univ. Complutense de Madrid, Madrid, Spain; [3]Univ. Autónoma de Madrid, Madrid, Spain; [4]UCLA, Los Angeles, CA; [5]Undergraduate Interdepartmental Program for Neurosci., Univ. of California Los Angeles, Los Angeles, CA

Abstract: Bringing neuroscientific resources to the general public has been the focus of many outreach initiatives across academic institutions and organizations. However, while many initiatives have been launched, most resources generated remain mostly available in English. Our previous work has provided a framework for the creation and translation of neuroscience content in Spanish, with an international undergraduate community-engaged learning program. Our program has established a partnership between the University of California, Los Angeles (UCLA), Universidad Autónoma de Madrid and Universidad Complutense de Madrid in collaboration with the non-profit neuroscience outreach organization Knowing Neurons. Undergraduate students in a community engaged course at UCLA create and translate neuroscience content from the Knowing Neurons platform from English into Spanish. These translations are checked by undergraduate and graduate students enrolled in linguistics courses in Madrid and discussed in bi-weekly feedback sessions. Furthermore, students at UCLA create a lesson plan inspired by one of the translated articles, and implement it at a local bilingual high school in the Los Angeles area under the supervision of neuroscience graduate students and faculty. After participation in the undergraduate courses, students (n=73), both at UCLA and Madrid found the field of Neuroscience easier to understand ($p<0.0005$) and felt more confident in their English-Spanish translation skills in STEM ($p<0.0005$). Students additionally felt more confident in giving and receiving feedback ($p=0.02$), and had an improved perception of their Spanish language skills ($p<0.05$). Importantly, high school students show lingering positive effects 1-2 weeks after participating in a single one-hour activity delineated in the lesson plan. Specifically, pre- and post-questionnaires (n=69) completed by bilingual high school students revealed that they learned distinct facts about neuroscience ($p<0.0005$) as well as scientific vocabulary in Spanish ($p<0.0005$), and that the field of neuroscience was easier to understand ($p<0.005$). Lastly, after attending the activity, students felt that they knew where to find resources about neuroscience in Spanish ($p<0.0005$) and that they had resources for science communication in Spanish ($p=0.03$). Here we provide quantitative evidence that our program positively impacts both the university students that create the content as well as the high school students that interact with it. These findings not only confirm that our program is pedagogically effective, but also provide impetus to consider similar initiatives in other languages.

Disclosures: A. Peris-Yague: None. **B. Martín-Gascón:** None. **R. Bartolome:** None. **G. Rojas-Bowe:** None. **C. Suhr:** None. **R. Romero:** None.

Theme K Poster

TKP06: Outreach Activities

Location: SDCC Halls B-H

Time: Sunday, November 16, 2025, 8:00 AM - 12:00 PM

Program #/Poster #: TKP06.03SU/XX6

Topic: K.03. Public Awareness of Neuroscience

Title: Neurolatam a neuroscientist networking

Authors: *L. HERNÁNDEZ;
Fisiología celular, UNAM, mexico city, Mexico

Abstract: Title NeuroLATAM a neuroscientist Networking Keywords Neuroscience, Latin America, Networking **Authors** Hernández-Espinosa LC[1], Medina-Ruiz GI[2], Hernández-Espinosa DR[2] 1 Instituto de Fisiología Celular, Universidad Nacional Autonoma de México, Ciudad de México, México. [2v]School of Medicine University of Pittsburgh, Pittsburgh, Pennsylvania, USA. **Disclosures** Hernández-Espinosa LC: None, Medina-Ruiz GI: None, Hernández-Espinosa DR: None Theme: Theme J: History, Education, and Society. Subtheme: J.03.a. Outreach activities Abstract Global efforts to promote equity, diversity, and inclusion in neuroscience have increased in recent years; however, significant disparities persist, particularly in Latin America. Limited access to research infrastructure, funding, and collaborative networks continues to challenge scientific advancement in the region. In response, we created NeuroLATAM (www.neurolatam.net), a free, online platform designed to connect Latin American neuroscientists worldwide and promote academic visibility, outreach, and collaboration. Launched in 2022, NeuroLATAM leverages both a website and social media channels to disseminate scientific content and share opportunities, including calls for collaboration, training, and job openings. The platform offers two modes of participation: (1) Ambassadors—neuroscience professionals who help grow the network and access global outreach tools; and (2) Community Members—participants who engage in discussions, knowledge sharing, and visibility initiatives. Members may also request lay summaries of their published work to increase accessibility and impact. Since its inception, NeuroLATAM has rapidly expanded its reach and membership. To date, we have established collaborations with four institutions: the Mexican Society of Biochemistry, the SfN Chapter in Peru, the SfN Chapter in Mexico, and the International Society for Zinc Biology. We have participated as invited speakers at key events, including the Society for Neuroscience (SfN) 2023 and 2024 annual meetings and the V Neurobiology Meeting of the Mexican Society for Biochemistry. Additionally, NeuroLATAM has supported the publication and promotion of early-career researchers' work through community-driven dissemination strategies. Our model demonstrates how digital platforms can effectively support underrepresented scientific communities by facilitating connection, enhancing visibility, and promoting equitable participation in global neuroscience. Ongoing development aims to broaden our impact and reduce barriers for Latin American researchers worldwide.

Disclosures: L. Hernández: None.

Theme K Poster

TKP06: Outreach Activities

Location: SDCC Halls B-H

Time: Sunday, November 16, 2025, 8:00 AM - 12:00 PM

Program #/Poster #: TKP06.04SU/XX7

Topic: K.03. Public Awareness of Neuroscience

Title: Fostering neuroscience engagement through multi-level education outreach and mentoring

Authors: *R. AMANIPOUR, M. BARZIK, E. MONZACK;
NIH, NIDCD, Bethesda, MD

Abstract: Engaging future scientists and raising public awareness of neuroscience can be strengthened through structured, accessible outreach and mentorship. In 2024-2025, we implemented three complementary activities targeting learners at different stages and regions, aiming to increase exposure to neuroscience and translational research.
University-level outreach was conducted with faculty from the University of Hawai‘i, where a virtual session introduced NIH intramural training opportunities—including summer internships and postbaccalaureate programs—and addressed logistical concerns like housing for visiting students. NIDCD training leaders participated to facilitate connections and raise awareness of national resources.
At the K-12 level, a hands-on outreach event at Flora M. Singer Elementary School (Silver Spring, MD) featured interactive stations using tuning forks, hair cell models, and simulated eardrums to explain auditory science concepts in an age-appropriate way. Participating scientists joined in their personal capacity. Feedback from students and teachers highlighted strong engagement and curiosity about hearing science.
The third initiative, through the **IEEE Engineering in Medicine and Biology Society (EMBS) Student Mentoring Program**, paired mentors with undergraduate electrical engineering students. The paired mentee in this case, from Lima, Peru, completed a biomedical project involving data collection and analysis, gaining exposure to interdisciplinary neuroscience applications.
These initiatives shared a unifying goal: to make neuroscience approachable and relevant through interactive and accessible formats. Collaborating with partners across educational stages—from elementary to undergraduate—this program aimed to build early interest in neuroscience and encourage exploration of scientific topics.
Although each activity was tailored to its audience, common outcomes were observed. During the University of Hawai‘i session, faculty expressed interest in hosting similar NIH-focused events. At the elementary school event, several students returned to demonstration tables to re-engage with the models. In the IEEE mentorship program, the mentee completed her senior project and expressed interest in graduate work in neural engineering.
Together, these efforts represent scalable models for cross-cultural outreach and science communication, emphasizing early exposure, practical engagement, and mentorship as key levers for fostering interest in neuroscience and related career paths.

Disclosures: R. Amanipour: None. **M. Barzik:** None. **E. Monzack:** None.

Theme K Poster

TKP06: Outreach Activities

Location: SDCC Halls B-H

Time: Sunday, November 16, 2025, 8:00 AM - 12:00 PM

Program #/Poster #: TKP06.05SU/XX8

Topic: K.03. Public Awareness of Neuroscience

Support: Universidad Continental

Title: Bringing neuroscience to society by democratizing education and engagement

Authors: *L. E. BAQUEDANO SANTANA[1], M. UTRILLA[2], R. E. LOVATON[3];
[1]Univ. Continental, Huancayo, Peru; [2]CHAPTER PERU, Lima, Peru; [3]Clinica San Pablo, Lima, Peru

Abstract: Chapter Perú, the Peruvian chapter of the Society for Neuroscience, has developed an inclusive and decentralized outreach model to bring neuroscience closer to diverse communities across the country. Over the past year, our strategy has focused on democratizing education and fostering community engagement through hybrid events, digital platforms, and direct actions in traditionally underserved regions. We organized two national congresses (the IV International Congress of Neuroscience-Lima and the II Congress of Neuroscience and Neuropsychology "Nuna Yachay Wanka"-Huancayo) which gathered over 900 participants in sessions addressing brain health, neuroethics, intercultural dialogue, and gender equity. Our virtual seminars and collaborative events, such as the Women in Neuroscience Symposium, the Neuroscience and Engineering Workshop, and the mindfulness initiative for cancer patients, expanded the reach of neuroscience into the technological, educational, healthcare, and social equity sectors. We reached more than 4,000 people through digital content (including videos, infographics, and interviews) shared via platforms such as Facebook and Instagram. We trained young science communicators, launched a volunteer mentorship network, and built alliances with academic institutions and nonprofit organizations to co-develop neuroscience education programs. These actions are rooted in cultural relevance, accessibility, and participatory leadership. This scalable model demonstrates how a volunteer-led and regionally adapted strategy can democratize neuroscience education and empower communities to engage meaningfully with brain science.

Disclosures: L.E. Baquedano Santana: None. **M. Utrilla:** None. **R.E. Lovaton:** None.

Theme K Poster

TKP06: Outreach Activities

Location: SDCC Halls B-H

Time: Sunday, November 16, 2025, 8:00 AM - 12:00 PM

Program #/Poster #: TKP06.06SU/XX9

Topic: K.03. Public Awareness of Neuroscience

Title: Synapsing with Gaza through neuroscience, stories and art

Authors: *W. S. GRIESAR[1,3], J. LEAKE[2,3], A. ABOU DAHESH[4];
[1]Interdisciplinary Neurosci., Northwest Noggin & PSU, Astoria, OR; [2]Interdisciplinary Neurosci., Northwest Noggin & PSU, Portland, OR; [3]Interdisciplinary Neurosci., Portland State Univ., Portland, OR; [4]Neurosci., Univ. of Texas at Dallas, Dallas, TX

Abstract: Nonprofitnwnoggin.org organizes collaboration aroundinterdisciplinary neuroscience, going places to explore brains, hearstories, make art and see where research discoveries can contribute. There areextraordinary people everywhere, many facing unthinkablechallenges and yet enthused and energized by learning, teaching, making andexperiencing art, exploring brains and connecting with people across theworld. In 2025, Noggin collaborated with Neurochem Lab, a volunteer projectthat provides free neuroscience programs for K-12 students at the BritishInternational School (BIS) in Gaza through Zoom. Together we introduced ourfound object brain cell project, where students, many joining from cellphonesin Gaza, crafted beautiful neurons from materials available to them, includinglocal plants, food items and cardboard relief boxes. We spent three morningswith more than 25 curious young people from the elementary and middleschool levels at BIS, who are either in Gaza or are refugees in Egypt, andwhose school buildings were destroyed. Several classmates were killed, andtheir many, many questions were compelling, including how do I stop racingthoughts before bed, and why does music help with trauma. We made three visitsin 2025, the first to meet the students and present an introduction to thebrain, and the second to discuss the found object brain cell project. For thethird visit, we simulated a roundtable where each student introducedthemselves, and talked about their own brain cell (the material used and theirinspiration). After the roundtable, our volunteers, who are graduate andundergraduate students in neuroscience, discussed the relevant brain research,and everyone enjoyed the neurons and the opportunity to make and present theirart. From BIS Gaza: “This incredible collaboration brought together scientists,students, and educators across continents to explore the fascinating world ofthe brain. It was a celebration of curiosity, connection, and the boundlesspotential of science education, even in the face of adversity.” Sharingstories, experiences and creativity is a powerful way to build community duringa time of conflict.

Disclosures: W.S. Griesar: None. **J. Leake:** None. **A. Abou Dahesh:** None.

Theme K Poster

TKP06: Outreach Activities

Location: SDCC Halls B-H

Time: Sunday, November 16, 2025, 8:00 AM - 12:00 PM

Program #/Poster #: TKP06.07SU/XX10

Topic: K.03. Public Awareness of Neuroscience

Support: Brain Research Institute (BRI), UCLA
International Brain Research Organization (IBRO)/Dana Foundation
UCLA Student Organizations, Leadership and Engagement (SOLE))

Title: Impact of Brain Awareness Week on Neuroscience Knowledge and Engagement Among K-12 Students from Low-Opportunity Schools in Los Angeles Neighborhoods

Authors: *P. SIGAR[1], V. SARAVANAPANDIAN[2];
[1]Univ. of California Los Angeles, Los Angeles, CA; [2]Neurosci., UCLA, Santa Clara, CA

Abstract: As neuroscience rapidly transforms our understanding of human health and behavior, it is essential to ignite curiosity and foster access among underserved youth. Brain Awareness Week (BAW) at UCLA delivers immersive, hands-on neuroscience experiences—ranging from interactive presentations to real lab tours—to underrepresented K-12 students. In March 2025, BAW welcomed around 250 learners from Title I schools in the Los Angeles Unified School District (LAUSD), aiming not only to spark a passion for science but also to strengthen college aspirations and foundational neuroscience knowledge. This study evaluated how BAW 2025 influenced students' interest in STEM careers, enthusiasm for higher education, and grasp of core brain science concepts. Participants completed anonymous, voluntary pre- and post-event surveys assessing neuroscience knowledge (via a multiple-choice composite score), interest and enjoyment (using 7-point Likert-scale items), and open-ended reflections. Incomplete or invalid responses were excluded. Changes in knowledge and interest were analyzed using Wilcoxon signed-rank tests, and thematic analysis of open-ended responses identified common engagement themes. Median interest scores remained high from pre- (4.0) to post-survey (5.0), with a significant increase specifically in enjoyment of brain learning ($p = 0.045$). Although median neuroscience knowledge scores (0 to 10) did not change, overall knowledge improved significantly ($p = 0.027$), indicating a deeper understanding of key concepts. Thematic analysis of more than 100 open-ended reflections revealed strong enthusiasm for tactile, hands-on activities, particularly touching a real brain. Younger students emphasized sensory excitement ("My favorite part was being able to touch organs of our kind"). In comparison, older students described cognitive insights ("Now I understand why we sleep"), suggesting age-related gains in engagement and comprehension throughout the event. Our findings suggest that hands-on neuroscience outreach improves engagement and domain-specific knowledge, aligning with existing research on experiential learning. Significant knowledge gains and enthusiastic student feedback highlight the value of sensory-rich activities in sustaining curiosity. While high baseline interest (median = 4-5) may have limited detectable shifts in broader science attitudes, the increase in enjoyment indicates that even students already interested in STEM benefit from interactive experiences. These results emphasize the importance of inclusive STEM programs in fostering long-term interest and diversifying pathways into science.

Disclosures: P. Sigar: None. **V. Saravanapandian:** None.

Theme K Poster

TKP06: Outreach Activities

Location: SDCC Halls B-H

Time: Sunday, November 16, 2025, 8:00 AM - 12:00 PM

Program #/Poster #: TKP06.08SU/XX11

Topic: K.03. Public Awareness of Neuroscience

Support: Stiles-Nicholson Foundation
The Per and Astrid Heidenreich Family Foundation
Palm Health Foundation
Cox Science Center and Aquarium
Community Foundation of Broward

Title: From classrooms to communities: ASCENDing toward a future of brain science literacy

Authors: *N. L. BAGANZ[1,2], D. A. CINALLI, Jr.[1], A. M. PAZ[1], R. D. BLAKELY[1,2];
[1]Stiles-Nicholson Brain Inst., [2]Col. of Med., Florida Atlantic Univ., Jupiter, FL

Abstract: ASCEND (Advancing STEM-Community Engagement through Neuroscience Discovery) is a comprehensive outreach model that brings brain science directly into classrooms, public spaces, and digital platforms to foster science literacy across the lifespan. The initiative cultivates curiosity, critical thinking, and mental wellness through age-appropriate, in-person and virtual neuroscience experiences. Launched in 2018 and based at the Florida Atlantic University Stiles-Nicholson Brain Institute, ASCEND's tiered programming capitalizes on relatable role models—undergraduate, graduate, and postdoctoral trainees—to provide hands-on and remote Brain-STEM experiences, reaching youth and adult learners who might not otherwise engage with neuroscience. ASCEND has attracted philanthropic support from foundations and individual sponsors. This public-private investment—complemented by institutional support from the university—has enabled acquisition of mobile technologies that extend our reach far beyond the lab. For youth, ASCEND includes *NeuroExplorers* (trainee-led lab tours and classroom lessons), *MobileMinds* (a mobile arm serving Title I and under-resourced schools and community centers), and aligned curricula developed with the School District of Palm Beach County. Strong partnerships with educational networks and philanthropic foundations have expanded ASCEND's regional footprint across Palm Beach, Broward, and Martin counties. On the digital front, our *Brain Bites* podcast, YouTube videos, and social media outreach extend the program's impact well beyond the classroom. Trainee fellowships deepen the commitment of enthusiastic young scientists to ASCEND's mission and foster a lifelong ethic of service. Adult-facing initiatives include *Brainy Days*, a month-long public neuroscience festival, and mental health-focused NeuroArts experiences. A partnership with Palm Health Foundation connects ASCEND to the annual *Train the Brain* campaign, while collaboration with NAMI's local chapter has raised critical funds for mental health services. ASCEND leadership also helped design the *Journey Through the Human Brain* exhibit at the Cox Science Center and leads the immersive *Brain Sparks* program for early learners. Together, ASCEND-sponsored programs have served over 43,000 youth and more than 10,000 adult participants. We outline ASCEND's integrated framework, highlight its impact, and offer a scalable model for neuroscience outreach that helps close STEM opportunity gaps. Cross-generational, locally driven engagement is essential not only for advancing brain awareness—but for building lasting trust in science.

Disclosures: N.L. Baganz: None. **D.A. Cinalli:** None. **A.M. Paz:** None. **R.D. Blakely:** None.

Theme K Poster

TKP06: Outreach Activities

Location: SDCC Halls B-H

Time: Sunday, November 16, 2025, 8:00 AM - 12:00 PM

Program #/Poster #: TKP06.09SU/XX12

Topic: K.03. Public Awareness of Neuroscience

Title: From Experiments to Engagement: Building Neuroscience Outreach Through the CNLM Ambassador Program

Authors: *M. A. COBURN[1], E. M. PURVIS CONWAY[2], S. AQUINO ARGUETA[1], M. R. BAUTISTA[3], A. Y. FLORES[1], R. E. HOKENSON[1], D. I. JAVONILLO[4], N. KAUSHIK[7], J. LORITSCH[7], J. MENDOZA[5], A. MOREHOUSE[1], W. NING[3], L. TANIGUCHI[6], A. S. TU[3], K. I. TSOURMAS[7], M. SANDOVAL[8], M. ZHENG[9], M. O. YASSA[2];
[2]Ctr. for the Neurobio. of Learning and Memory, [3]Neurobio. and Behavior, [4]UCI Inst. for Memory Impairments and Neurolog. Disorders, [5]Anat. and Neurobio., [6]Anat. & Neurobio., [1]Univ. of California, Irvine, Irvine, CA; [7]Univ. of California Irvine, Irvine, CA; [8]Anat. & Neurobio., [9]UC Irvine, Irvine, CA

Abstract: The Center for the Neurobiology of Learning and Memory (CNLM) at the University of California, Irvine (UCI), was established in 1983 as the first research institute in the world dedicated to studying the learning and memory in the brain. Since 1995, the CNLM has welcomed the public into the world of neuroscience through its free public lecture series, founded by Dr. James L. McGaugh. Today, the CNLM continues this legacy of public engagement through a variety of educational and outreach initiatives that are thoughtfully designed, multi-leveled, and outcomes-driven.
Central to these efforts is the CNLM Ambassador Program, founded by Dr. Manuella Oliveira Yassa, Director of Outreach and Education. The program trains and supports neuroscience trainees at all levels—including undergraduate and graduate students, postdoctoral scholars, research staff, and faculty—to become effective science communicators and leaders. The Ambassador Program is organized around a committee structure led by deeply committed graduate students who serve as chairs, each overseeing a key facet of outreach. These include the K-12 Committee, chaired by Jorge Miguel Mendoza, Lara Taniguchi, Alina Tu, and Matt Sandoval; the Adult Outreach Committee, chaired by Kate Inman Tsourmas and Sarvia Aquino; the Communications Committee, chaired by Malia Rae Bautista and Dominic Javonillo; and the Brain Bee Committee, chaired by Rachael Hokenson, Wing (Winny) Ning, Julie Loritsch, and Allison Morehouse. Undergraduate engagement is supported through two undergraduate co-chairs, Michelle Zheng and Nikhita Kaushik. The program is further supported by Dr. Morgan Coburn, Assistant Director of Outreach and Education, and Dr. Erin Purvis Conway, Civic Science Fellow, who provide strategic support, refine curriculum, improve programming, and expand the reach and impact of the Ambassadors' efforts.
In addition to serving the community, the Ambassador Program offers transformative professional development for its participants. Trainees gain experience in pedagogy, leadership, project management, and public engagement, while building community and expanding their networks in neuroscience. Here we present the structure and impact of the Ambassador Program,

including examples of successful events and initiatives—such as on-site outreach visits for over 50 high school students, curriculum development for adult education, science communication projects, and the Orange County Brain Bee. We also highlight tools used to support volunteer coordination, such as TrackItForward, and share lessons learned for building sustainable, student-led outreach programs.

Disclosures: M.A. Coburn: None. **E.M. Purvis Conway:** None. **S. Aquino Argueta:** None. **M.R. Bautista:** None. **A.Y. Flores:** None. **R.E. Hokenson:** None. **D.I. Javonillo:** None. **N. Kaushik:** None. **J. Loritsch:** None. **J. Mendoza:** None. **A. Morehouse:** None. **W. Ning:** None. **L. Taniguchi:** None. **A.S. Tu:** None. **K.I. Tsourmas:** None. **M. Sandoval:** None. **M. Zheng:** None. **M.O. Yassa:** None.

Theme K Poster

TKP06: Outreach Activities

Location: SDCC Halls B-H

Time: Sunday, November 16, 2025, 8:00 AM - 12:00 PM

Program #/Poster #: TKP06.10SU/YY1

Topic: K.03. Public Awareness of Neuroscience

Title: Collaborative outreach network for neuroscience education and community training (CONNECT)

Authors: *E. M. PURVIS CONWAY[1,2], M. A. COBURN[2,1], J. Z. TAGGETT[3], E. HUBBARD[1], M. O. YASSA[2,1];
[2]Ctr. for the Neurobio. of Learning and Memory, [1]Univ. of California, Irvine, Irvine, CA;
[3]Psychology, UCLA, Los Angeles, CA

Abstract: The Center for the Neurobiology of Learning and Memory at the University of California, Irvine launched the CONNECT Initiative (Collaborative Outreach Network for Neuroscience Education and Community Training), a new virtual seminar and workshop series focused on neuroscience outreach and education. The initiative aimed to build a vibrant network that fosters the exchange of ideas, experiences, and expertise in neuroscience outreach through monthly virtual seminars, workshops, and panels. CONNECT's inaugural year, launched in October 2024, featured sessions on a wide range of topics. Beginning with a presentation on the development of neuroscience education tools, subsequent speakers provided insight into securing outreach funding, publication opportunities, program evaluation, the value of cultural wealth in neuroscience outreach, cross-institutional collaboration, and designing STEM outreach programs from concept to publication. A total of 205 diverse participants joined the CONNECT listserv, including university affiliates (faculty, staff, postdoctoral fellows, graduate students, undergraduate students) and non-university affiliates (teachers, high school students, entrepreneurs, community members, and professionals from foundations and nonprofits). Participants represented a global community, with enrollees from locations including the United States, Canada, India, Puerto Rico, Norway, the Philippines, Uruguay, Nepal, Burundi, Germany, and Brazil. Each of the eight seminars in the first year drew between 14 and 40 cross-

institutional zoom attendees. Seminar formats varied and included presentations, question and answer sessions, skill-building activities, and both large and small group discussions. Following the final seminar, we assessed the initiative's impact on participants' knowledge, attitudes, and practices related to neuroscience outreach and education. Respondents overwhelmingly agreed that CONNECT broadened their understanding of the scholarly foundations of neuroscience outreach, improved their ability to design rigorous and evidence-based programs, and enhanced their awareness of opportunities to engage in and publish outreach work. Overall, the CONNECT Initiative is a novel platform that fosters community among neuroscience outreach scholars and showcases scholarly work by experts in the field.

Disclosures: E.M. Purvis Conway: None. **M.A. Coburn:** None. **J.Z. Taggett:** None. **E. Hubbard:** None. **M.O. Yassa:** None.

Theme K Poster

TKP06: Outreach Activities

Location: SDCC Halls B-H

Time: Sunday, November 16, 2025, 8:00 AM - 12:00 PM

Program #/Poster #: TKP06.11SU/YY2

Topic: K.03. Public Awareness of Neuroscience

Support: College of Arts and Sciences, Quinnipiac University
University of Connecticut

Title: Proceedings of the 38th Northeast Undergraduate and Graduate Research Organization for Neuroscience (NEURON) conference held at Quinnipiac University's Frank H. Netter M.D. School of Medicine in North Haven, CT

Authors: *A. J. BETZ[1], G. R. TANNER[3], J. L. HAIGHT[2], A. ECEVITOGLU[5], E. KLINE[4], K. SCHMIDT[6], R. J. DILEONE[7];
[2]Psychiatry, [1]Quinnipiac Univ., Hamden, CT; [3]Physiol. and Neurobio., Univ. of Connecticut, Storrs Mansfield, CT; [4]Mol. and Cell Biol., Univ. of Connecticut, Storrs, CT; [5]Dept. of Psychiatry, McLean Hosp., Belmont, MA; [6]Psychology, Fairfield Univ., Fairfield, CT; [7]Dept. Psychiatry, Yale Univ., New Haven, CT

Abstract: The NEURON Conference continues its longstanding tradition of advancing the professional development and educational enrichment of undergraduate and graduate neuroscientists while offering a dynamic platform for student-led research dissemination. The 38th annual NEURON Conference convened on April 26, 2025, at Quinnipiac University's Frank H. Netter, M.D., School of Medicine. This year's keynote address was delivered by Dr. Ralph DiLeone, Professor of Psychiatry and Neuroscience at Yale University School of Medicine, who presented *"Decoding Exercise Drive: Mouse Wheel Running Behavior and the Modulatory Role of GLP-1 Agonists."* Dr. DiLeone's lecture explored the emerging behavioral neuroscience of GLP-1 receptor agonists—drugs reshaping the pharmaceutical landscape—and highlighted critical unknowns regarding their influence on motivated behaviors beyond appetite

regulation. In addition to the keynote, attendees participated in a range of thematic workshops, including *Careers in Science*, *Intraoperative Neuromonitoring and Surgical Neurophysiology*, *Connectomics in the Classroom*, *AI Tools in Neurobiology*, and a *Faculty Workshop on Mentorship in Neuroscience*. Parallel programming included undergraduate and graduate poster sessions, rapid-fire Data Blitz presentations, and graduate school recruitment activities, fostering interdisciplinary dialogue and professional networking. Excellence in student research was recognized through the Tieman Outstanding Poster Awards and Data Blitz presentation awards. Nu Rho Psi, the national neuroscience honor society, also presented a student poster award. Quinnipiac University continues to serve as the main site for NEURON, hosting online resources including registration, abstract submission, archives of past presentations, and photo galleries (www.quinnipiac.edu/neuron). Looking ahead, the 39th NEURON Conference will be held on Sunday, April 19, 2026, at Quinnipiac University's new academic facility, SITE, featuring a modern, 700-seat auditorium. Supported by regional faculty committed to mentorship and neuroscience education, and co-sponsored by Quinnipiac University (notably the College of Arts and Sciences and the Department of Psychology) and the University of Connecticut, NEURON has evolved into a regional hub for neuroscience collaboration across the Northeast. Stay connected via Instagram @neuronconference.

Disclosures: A.J. Betz: None. **G.R. Tanner:** None. **J.L. Haight:** None. **A. Ecevitoglu:** None. **E. Kline:** None. **K. Schmidt:** None. **R.J. DiLeone:** None.

Theme K Poster

TKP06: Outreach Activities

Location: SDCC Halls B-H

Time: Sunday, November 16, 2025, 8:00 AM - 12:00 PM

Program #/Poster #: TKP06.12SU/Web Only

Topic: K.03. Public Awareness of Neuroscience

Title: Creation of a Brain Freeze interactive station for Brain Awareness outreach education

Authors: *A. EZZAT[1], B. A. PUDER[2];
[1]Touro Univ. California, Vallejo, CA; [2]Foundational Biomed. Sci. Dept., Touro Univ., Vallejo, CA

Abstract: Education outreach is an essential way of enhancing science education in underrepresented populations. This research aimed to assess whether an interactive outreach station on sphenopalatine ganglioneuralgia, or brain freeze, enhanced high school students' understanding of the trigeminal nerve and referred pain pathways. The hands-on station was part of the brain awareness program "Get to Know Your Brain" that involved 137 students from four California West Contra Costa County Health Academies high schools. Participants were administered an 8-question pre-test (TUC IRB M-1022), then a hands-on learning station and activity, and finally an 8-question post-test, survey, and worksheet. The learning gain indicated from pre/post test scores was significant. Statistical significance was confirmed using a paired sample t-test ($t(139) = 25.67$, $p < .00001$). Student response from survey data resulted in average

scores of 4.3 out of a 5-point Likert scale. These findings provide evidence for the hypothesis that interactive, individually engaging educational activities can promote effective learning of neuroscience and can be a model for scaling science outreach in the community.

Disclosures: A. Ezzat: None. **B.A. Puder:** None.

Theme K Poster

TKP06: Outreach Activities

Location: SDCC Halls B-H

Time: Sunday, November 16, 2025, 8:00 AM - 12:00 PM

Program #/Poster #: TKP06.13SU/YY3

Topic: K.03. Public Awareness of Neuroscience

Support: NIH P60-AA011605

Title: All About Neurons: A Classic Brain Awareness Week Activity with a Modern Twist

Authors: *S. P. FACCIDOMO[1,2], D. F. LOVELOCK[3], D. L. ROBINSON[4];
[2]Bowles Ctr. for Alcohol Studies, [1]Univ. of North Carolina - Chapel Hill, Chapel Hill, NC; [3]Bowles Ctr. for Alcohol Studies, UNC Chapel Hill, Chapel Hill, NC; [4]Bowles Ctr. for Alcohol Studies, Univ. of North Carolina Chapel Hill, Chapel Hill, NC

Abstract: ***Background*:** The continued success of our neuroscience outreach activities relies on local partnerships. For Brain Awareness Week we have a long-standing partnership with the NC Museum of Life and Science (NC MLS) where we host events in their museum learning lab for several days in March. ***Goals:*** Our primary goal this year was to develop a new activity focused on neuron anatomy and physiology for Brain Awareness Week to complement our always popular Brain Lab. Our continuing goals are to promote enthusiasm about neuroscience to local students in NC and by doing so, learn and share effective strategies with other scientists on how to disseminate effective science communication to K-12 lay audiences. ***Approach:*** One of our most popular in-person activities is "Touch a Brain" and it has become a signature station for all our outreach events. Our multi species brain specimens are great conversation starters to share scientific knowledge about the brain in an accessible and interactive manner. To complement this station, we focused on exploring communication inside of our brain and nervous system - neurons. We developed 3 mini-stations that used different sensory approaches to share what neurons are and how they communicate with each other. *First,* we took advantage of a pre-existing Squishy Neuron Activity from brainfacts.org and adapted it for our event. *Second,* we developed 3D-printed neurons that were used to demonstrate neuron anatomy and that light up when in proximity to illustrate cell to cell communication. *Third,* for our youngest visitors, we taught neuron anatomy by having them trace or draw neurons on rainbow scratch-off paper. ***Observations:*** We counted 1443 museum visitors who attended our Brain Awareness Week event, with the demographic skewed toward elementary school populations. All neuron activities were fun, interactive and popular among both kids and adults. We found that the Squishy Neuron Activity worked best in small groups. We had participation from 26 BCAS scientists, 8 of whom

were new outreach volunteers. ***Conclusions:*** It was a fun challenge to implement a brand new (to us) activity for Brain Awareness Week. The overall feedback from the activity was positive and we will continue to pursue clever ways to use 3D printing in our activities and lessons. We are grateful for our continued success in making science accessible and fun for all, especially to current and future K-12 generations.

Disclosures: S.P. Faccidomo: None. **D.F. Lovelock:** None. **D.L. Robinson:** None.

Theme K Poster

TKP06: Outreach Activities

Location: SDCC Halls B-H

Time: Sunday, November 16, 2025, 8:00 AM - 12:00 PM

Program #/Poster #: TKP06.14SU/YY4

Topic: K.03. Public Awareness of Neuroscience

Title: Grey Matters Journal at Vassar College: An undergraduate effort to make the world of neuroscience accessible to the public

Authors: *E. BAGADE[1], L. OBERMUELLER[1], A. EARP[1], S. SKLAR[1], E. LANHAM[2], M. MARTINEZ[1], S. BABITSKY[1], E. ANDERSEN[1];
[1]Neurosci. and Behavior Program, Dept. of Psychological Sci., [2]Chem. Dept., Vassar Col., Poughkeepsie, NY

Abstract: In today's political atmosphere, where misinformation is rampant and funding for research is under siege, Grey Matters Journal at Vassar College (GMJvc) aims to deconstruct the barriers between the scientific community and the general public to foster knowledge and curiosity. GMJvc is a chapter of the neuroscience outreach publication Grey Matters, originally founded at the University of Washington in 2013. GMJvc's mission is to provide an accessible and free platform through which Vassar students and the local community can learn about emerging topics in neuroscience. Unlike the founding chapter, GMJvc produces a semesterly publication completely written, edited, and illustrated by Vassar undergraduates. Each semester, GMJvc invites students to submit an article proposal about a neuroscientific topic of their choice. Accepted authors are then paired with an editing team to support the author throughout the writing process. GMJvc has three divisions of editors that each focus on specific aspects of the process. The Scientific Review division helps authors research the science behind their topics and ensures that scientific findings are accurately represented in the writing. General Editing supports authors in crafting an article that flows logically and has a dynamic, active writing style. Finally, Lay Review helps authors elucidate complicated concepts by replacing scientific terms with more accessible language. Additionally, each article is assigned a student artist who creates illustrations and diagrams to visualize the article's guiding concepts. This model ensures the articles are engaging, accurate, and lay accessible, and allows us to mentor students into becoming stronger editors, writers, artists, and scientific communicators. Since our founding, we have engaged with the community through the annual "Grey Matters Art Show" at the Frances Lehman Loeb Art Center on Vassar's campus. This event provides an opportunity for

community members to appreciate art from the journal and learn about GMJvc's mission. Moving forward, while continuing to publish each semester and mentoring our members, GMJvc remains committed to broadening its engagement with the local community and bringing the public one step closer to the world of neuroscience.

Disclosures: E. Bagade: None. **L. Obermueller:** None. **A. Earp:** None. **S. Sklar:** None. **E. Lanham:** None. **M. Martinez:** None. **S. Babitsky:** None. **E. Andersen:** None.

Theme K Poster

TKP06: Outreach Activities

Location: SDCC Halls B-H

Time: Sunday, November 16, 2025, 8:00 AM - 12:00 PM

Program #/Poster #: TKP06.15SU/YY5

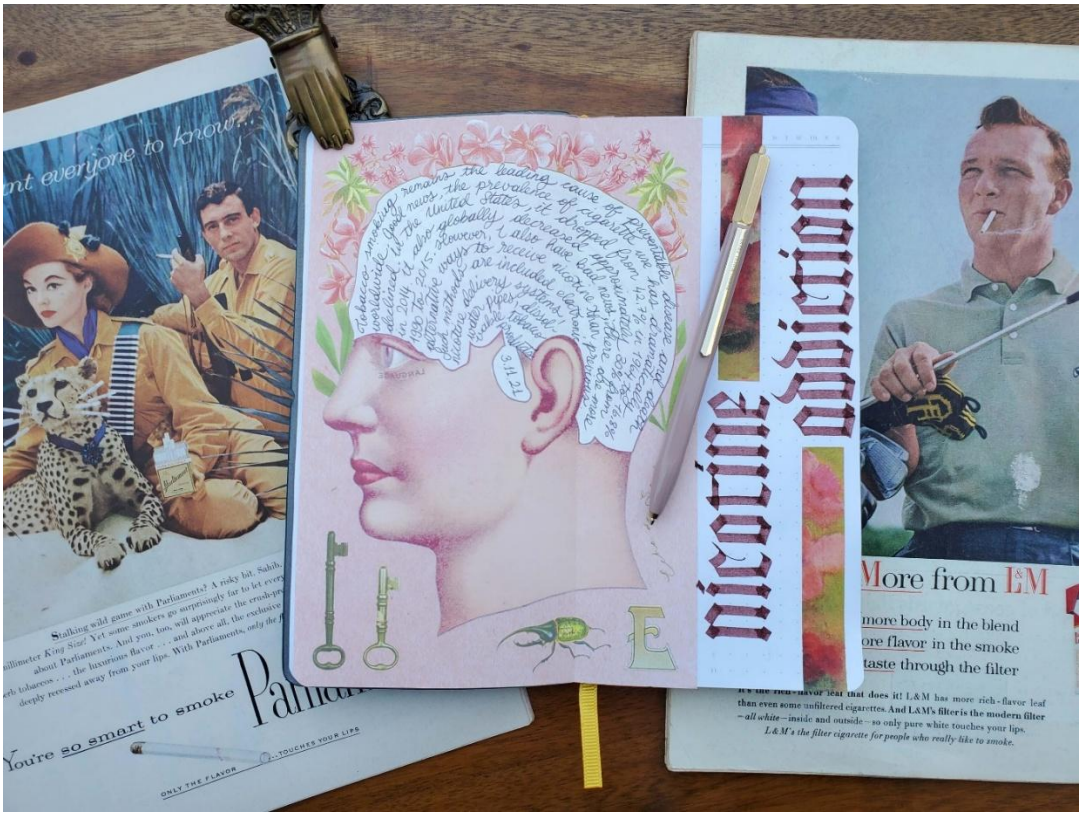
Topic: K.03. Public Awareness of Neuroscience

Support: NIH Grant K01DA056854

Title: Get hooked on neuroscience: Utilizing social media for science communication through visual and textual content

Authors: A. P. BAGDAS[1], *D. BAGDAS[2];
[1]Vassar Col., Poughkeepsie, NY; [2]Yale Univ., New Haven, CT

Abstract: Effective science communication is essential for improving public understanding and trust in neuroscience. Social media platforms offer powerful tools for expanding access to scientific information beyond academic settings. This project introduces *@science.notes*, an Instagram-based science communication initiative that utilizes science themed art journal pages combined with short, essay-style captions to present neuroscience topics in a creative and accessible format. Art journals are a combination of collages, multimedia techniques, and journal writing. Each post highlights a specific scientific concept, history of subjects and scientists, or promotes journaling and art for mental health, often accompanied by discussion of peer-reviewed research articles, making current science relatable to a broad audience. The platform has grown organically through visually engaging content and personal reflections, resonating with users across diverse age groups and backgrounds. Audience engagement metrics, including direct messages and comments, reveal that followers frequently report increased interest in neuroscience, appreciation for the blend of art and science, and motivation to follow scientific literature and careers in research. Individuals without prior exposure to neuroscience have expressed that the account has demystified complex topics and inspired them to learn more. This project shows how interdisciplinary approaches, particularly combining art and storytelling, can enhance public awareness of neuroscience and foster lasting connections between scientists and society. It emphasizes the value of creative, digital strategies in promoting equity and accessibility in science communication.



Disclosures: A.P. Bagdas: None. **D. Bagdas:** Other; Some fountain pens are gifted by pen companies (Esterbrook Pen Company, Yafa Brands, Ferris Wheel Press, Top Drawer) to create art.

Theme K Poster

TKP06: Outreach Activities

Location: SDCC Halls B-H

Time: Sunday, November 16, 2025, 8:00 AM - 12:00 PM

Program #/Poster #: TKP06.16SU/YY6

Topic: K.03. Public Awareness of Neuroscience

Support: IBRO BAW25-9604376190

Title: Interdisciplinary collaborations in music and neuroscience

Authors: M. LEVINE[1], M. VOLOSHIN[2], M. P. TEKIN[3], ***J. PARATO**[4];
[1]Christopher Newport Univ., Norfolk, VA; [2]Mighty Data, Inc., Asheville, NC; [3]S.U.N.Y. Downstate Med. Ctr., BROOKLYN, NY; [4]SUNY Empire, Brooklyn, NY

Abstract: Interdisciplinary collaborations between music and neuroscience offer a chance to provide educational outreach opportunities in both fields. As part of SUNY Empire's Brain Awareness programming, we organized the 2025 show *Music and Neuroscience: An Exploration*

of Sound and the Brain. The event was open to the public and divided into three sets. The first set explored how pre-recorded EEG data could be used as a base for music composition. The separate channels were converted in MatLab to a set of notes using set theory. Then, a composition was built in Logic Pro based on those notes. The cognitive task performed during recording was also taken into account during the composition process. At the end of the set, audience members were allowed to participate in the performance in real time by wearing an EEG headband and hearing their brainwaves translated into music. These performances allowed the audience not only to listen to music, but also to learn about EEGs and music composition. The second set featured a discussion panel with speakers from both fields where they were able to have a dialog on now neuroscience and music are related to each other, with a particular focus on music and health. The third set explored the intersection of psychedelic art, neuroscience, and music. Psychedelic videos were created from neuroscience images and data and then set to music composed and performed by the experimental group British Bridges. *Music and Neuroscience* highlighted how neuroscience is able to inspire music, as well as how music can be used to teach and promote fundamental concepts in neuroscience.

Disclosures: M. Levine: None. **M. Voloshin:** None. **M.P. Tekin:** None. **J. Parato:** None.

Theme K Poster

TKP06: Outreach Activities

Location: SDCC Halls B-H

Time: Sunday, November 16, 2025, 8:00 AM - 12:00 PM

Program #/Poster #: TKP06.17SU/YY7

Topic: K.03. Public Awareness of Neuroscience

Support: NSF Award 1832338
NSF Award 1832345
NMSU Office of the Provost

Title: Forging collaborations between STEM, arts, and humanities to disseminate project outcomes through video platforms

Authors: M. ROMERO[1], S. LAU[1], G. I. MORALES[2], ***E. E. SERRANO**[3];
[1]Creative Media Inst., [2]Communication Studies, [3]Biol., New Mexico State Univ., Las Cruces, NM

Abstract: Dissemination of project outcomes to the nonspecialist public is a requirement for many funded projects and a professional expectation that requires skill and training in mass communication. For example, Society for Neuroscience members participate in public outreach during Brain Awareness Week, and the McClintock Letters Initiative invites scientists to share their research by writing opinion pieces for hometown newspapers. Effective communication requires expertise specific to the use of written, audio, and audiovisual formats. STEM training emphasizes development of highly specialized writing and oral skills for the professional community but often does not provide the training necessary for communicating with those

outside their expertise. Here we present the approach and outcomes devised by collaborating faculty and students with backgrounds in STEM, creative media, and communication studies. This team produced videos for the NSF Hispanic-Serving Institution (HSI) National STEM Resource Hub, a program that served over 5000 faculty and staff across the nation for 5 years by providing grantsmanship and professional training to support STEM student success. The videos were prepared with the goal of sharing experiences of professionals from across the nation who are working at HSIs and other institutions and who attended the capstone conference, "Adelante! Charting the Path Forward for STEM Faculty and Students at HSIs". This event celebrated the achievements of HSIs and HSI STEM educators nationwide, promoted collaborations, and conceptualized the future of the HSI community. Video footage was captured over a 2 day period from the conference sessions and from focused interviews with attendees who discussed challenges they faced at their institutions, how the Hub benefitted them and where gaps remained, and how their personal journeys connected to their contributions to the STEM experiences of their students. Quality video required technical considerations such as camera placement and lighting, routing of audio from in house speakers to camera recording, and use of multiple camera operators to record presenters and audience. Footage was downloaded daily to two separate hard drives. Two editors worked for months with the video footage to produce 50 short (5-7 minute) videos that were posted to an open access YouTube channel after speaker approval. Our team emphasized strong communication throughout the process and planned carefully to match budget and equipment with project goals. The videos feature many neuroscientists and can be used in classrooms to show the career pathways of STEM professionals, and how and why they work on behalf of students.

Disclosures: M. Romero: None. **S. Lau:** None. **G.I. Morales:** None. **E.E. Serrano:** None.

Theme K Poster

TKP06: Outreach Activities

Location: SDCC Halls B-H

Time: Sunday, November 16, 2025, 8:00 AM - 12:00 PM

Program #/Poster #: TKP06.18SU/YY8

Topic: K.03. Public Awareness of Neuroscience

Title: Neuroreview--rating, reviewing, and organizing scientific podcasts

Authors: *S. MCCRACKEN;
Washington Univ. in St. Louis, St. Louis, MO

Abstract: Podcasts have transformed from niche content to a ubiquitous medium, becoming powerful tools for public engagement with science and offering accessible alternatives to traditional academic channels. In an era of short form or clipped information sources, often leading to so-called ‘misinformation’ that has led to a large distrust in science, there is a pressing need for credible, diverse, and intellectually engaging sources of scientific knowledge. Popular scientific podcasts like *The Huberman Lab*, *The Lex Fridman Podcast*, and the *Max Planck Neurotransmissions Podcast* feature long-form conversations with leading scientists, thinkers,

and entrepreneurs, covering topics ranging from neuroscience to technology. These podcasts break the mold of traditional, institution-based scientific communication by fostering interdisciplinary and real-world perspectives on complex topics profoundly relevant to contemporary society. We have developed *NeuroReview*, a podcast curation and organization platform that catalogs and reviews scientific podcasts, making them accessible to a diverse audience. *NeuroReview* serves as a comprehensive database that categorizes podcasts by topic, technical depth, and conversational appeal. We have catalogued and reviewed 800+ podcast episodes (over 1,600 hours, and counting) from the Huberman, Lex Fridman, and MP Neuro podcasts, including ratings of **all** episodes from each podcast. Each review includes tags for relevant topics and a rating (on a scale of 1 to 10) to quantify content appeal and quality based on our subjective experience. By presenting these reviews in a structured, interactive format, we help users identify valuable content and tailor their listening experience with suggestions and qualitative rankings of content. *Data and reviews are catalogued online at: https://neuroreview-e9dd00.gitlab.io/* Looking ahead, we envision *NeuroReview* evolving into a community-based platform where listeners can contribute their own ratings and reviews alongside expert insights. We have incorporated this through a collaboration with ResearchHub, an online peer reviewing platform, where some podcasts have been community peer reviewed by the scientific community, functioning now as validation for our reviews. We believe that curating content from scientific podcasts will foster greater public engagement and serve as a model for similar initiatives aimed at enhancing the accessibility and quality of science communication.

Disclosures: S. McCracken: A. Employment/Salary (full or part-time): Reviewer and Scientific Ambassador at Research Hub.

Theme K Poster

TKP06: Outreach Activities

Location: SDCC Halls B-H

Time: Sunday, November 16, 2025, 8:00 AM - 12:00 PM

Program #/Poster #: TKP06.19SU/YY9

Topic: K.03. Public Awareness of Neuroscience

Support: NIH Grant U24NS133077

Title: Outreach and usage of Allen Institute cell type taxonomy tools

Authors: *R. E. HOSTETLER[1], L. ALFILER[2], E. FIABANE[1], J. NYHUS[1], S. MUFTI[1], M. J. HAWRYLYCZ[1], K. CASIMO[2], J. A. MILLER[1];
[1]Allen Inst. for Brain Sci., Seattle, WA; [2]Allen Inst., Seattle, WA

Abstract: The Allen Institute for Brain Science has created multiple large-scale transcriptomic cell type taxonomies aimed at identifying the “parts list” of the brain in various species, regions, and disease states, with more datasets currently in development. As the number, size, and complexity of these datasets continue to grow, there is an urgent need to share these taxonomies following findable, accessible, interoperable, and reusable (FAIR) principles, and to develop

tools supporting their use. Through the creation of the Brain Knowledge Platform and Allen Institute Taxonomy standards, as well as tools for taxonomy exploration (Allen Brain Cell Atlas and Cell Type Knowledge Explorer) and mapping (MapMyCells), the Allen Institute has taken great strides in advancing these efforts, but work is needed to ensure community usage. In alignment with the principles of Open Science, user login is not required to access or use these datasets and tools; anyone with an internet connection can access them from anywhere. To increase the accessibility and usage of cell type taxonomies and their associated tools, the Scientific and Public Outreach of Cell Type Taxonomies (SPOCTT) program has created opportunities and resources for users through workshops, webinars, user guides, tutorials, presentations, office hours, and more. Through our efforts, we have reached 500+ researchers through in-person workshops, an additional 180+ researchers through in-person and virtual university seminars, and over 10,000 viewers through our webinar series and virtual office hours. In this work we present a comprehensive effort to understand user experience and usage of these tools and datasets. First, user feedback was collected during workshops, webinars, office hours, and other outreach events. User feedback revealed common challenges while using the tools (e.g., unclear cell label acronyms), which led to tool updates by our technology team. Second, a literature review was conducted to assess how users are using these datasets and tools in their own work. This revealed distinct families of use cases, ranging from: experimental design, data annotation, comparison and validation of experiments, training new computational models, generating new insights, and creating new taxonomies. Identifying use cases helps quantify the impact of these taxonomies and provides Allen tool-creators new perspectives on tool features, data, and usability. Overall, our work has increased knowledge and usage of the taxonomies and their associated tools, helped identity challenges in usage and accessibility that led to tool improvements, and identified use case families associated with Allen taxonomies.

Disclosures: R.E. Hostetler: None. **L. Alfiler:** None. **E. Fiabane:** None. **J. Nyhus:** None. **S. Mufti:** None. **M.J. Hawrylycz:** None. **K. Casimo:** None. **J.A. Miller:** None.

Theme K Poster

TKP06: Outreach Activities

Location: SDCC Halls B-H

Time: Sunday, November 16, 2025, 8:00 AM - 12:00 PM

Program #/Poster #: TKP06.20SU/YY10

Topic: K.03. Public Awareness of Neuroscience

Support: U24MH130968

Title: Democratizing BRAIN Initiative Cell Atlas Technologies: A Community Outreach Initiative for FAIR Single-Cell Sequencing

Authors: *R. COX, III[1], **F. KHAJOUEI**[1], E. KIERNAN[2], N. MIRABITO[1], A. AWDEH[1], J. WAY[1];
[1]Broad Inst. of MIT and Harvard, Cambridge, MA; [2]Broad Inst., Cambridge, MA

Abstract: The BRAIN Initiative Cell Census Network (BICAN) has developed transformative single-cell sequencing technologies that are revolutionizing our understanding of brain cell diversity. However, the adoption of these cutting-edge approaches remains limited due to technical barriers and lack of accessible training resources. This presentation describes a comprehensive community outreach initiative designed to democratize access to BICAN's standardized single-cell technologies and analysis pipelines. Our work addresses three critical needs in the neuroscience community: (1) practical training in advanced single-cell technologies including Paired-tag sequencing, Single-nucleus Methylome and Chromatin Contact analysis, and Multiome approaches; (2) hands-on experience with cloud-based uniform analysis pipelines that enable cross-platform data integration; and (3) guidance on contributing individual tools to collaborative brain mapping efforts.The initiative showcases how FAIR (Findable, Accessible, Interoperable, Reusable) data principles are implemented through the Neuroscience Multi-omic Archive, making BRAIN Initiative resources accessible to researchers regardless of their computational expertise. Through standardized workflows and cloud-based analysis tools, we demonstrate how individual laboratories can extend existing brain cell atlases and contribute meaningfully to large-scale collaborative science. This effort particularly emphasizes supporting early-career researchers and underrepresented groups in neuroscience, providing them with the tools and knowledge needed to leverage state-of-the-art single-cell technologies. By lowering technical barriers and promoting inclusive participation, this initiative aims to accelerate scientific discovery while building a more diverse and collaborative neuroscience community. We will demonstrate how to run standardized pipelines and access BICAN data. The presentation will include concrete examples of successful community adoption, lessons learned from implementation, and strategies for scaling similar efforts. Attendees will gain practical knowledge about accessing BICAN resources and contributing to the growing atlas of brain cell types. By engaging the community, we will advance collective understanding of brain function and dysfunction.

Disclosures: R. Cox: None. **F. Khajouei:** None. **E. Kiernan:** None. **N. Mirabito:** None. **A. Awdeh:** None. **J. Way:** None.

Theme K Poster

TKP06: Outreach Activities

Location: SDCC Halls B-H

Time: Sunday, November 16, 2025, 8:00 AM - 12:00 PM

Program #/Poster #: TKP06.21SU/YY11

Topic: K.01. History of Neuroscience

Title: The Society for Philosophy and Neuroscience

Authors: *D. L. BARACK;
Univ. of Pennsylvania, Philadelphia, PA

Abstract: The Society for Philosophy and Neuroscience (SPAN) is a new philosophical and scientific society dedicated to providing a forum for collaborations between philosophers and

neuroscientists. The Society for Philosophy and Neuroscience seeks to foster, build, and maintain strong interdisciplinary relationships in the joint endeavor to understand the mind and brain. We host interdisciplinary conferences, a blogging website for communication of new publications and discussion, satellite events at annual meetings of other societies such as the American Philosophical Association, and host sessions at other conferences like the annual Deep South Philosophy and Neuroscience working group meetings. Planned activities include interdisciplinary workshops, targeted working groups for presentation at our annual conference, and roundtables and panel discussions at various professional events. Future plans include sponsored talks, various research awards, and a professional journal. At Society for Neuroscience 2025, we plan to present a poster describing the society, its professional aims, and the various activities the society is already or plans to engage in.

Disclosures: D.L. Barack: None.

Theme K Poster

TKP06: Outreach Activities

Location: SDCC Halls B-H

Time: Sunday, November 16, 2025, 8:00 AM - 12:00 PM

Program #/Poster #: TKP06.22SU/YY12

Topic: K.03. Public Awareness of Neuroscience

Title: Unlocking insights: an in-depth analysis of NIH Alzheimer's Disease-Related Dementias (ADRD) programs responsive to the National Plan to Address Alzheimer's Disease (NAPA)

Authors: H. R. ASTACIO, A. SHUKLA, R. A. CORRIVEAU, *A. J. MCCARTNEY;
NIH, Natl. Inst. of Neurolog. Disorders & Stroke (NINDS), Rockville, MD

Abstract: National Planto Address Alzheimer's Disease (NAPA) aims to prevent and treat and Alzheimer'sDisease and Alzheimer's Disease-Related Dementias (AD/ADRD). Affectedindividuals who develop dementia experience impaired memory, thinking andsocial abilities such that activities of daily living are compromised,predominantly occurring later in life. Research suggests over 7 million peoplein the US are impacted by AD/ADRD in 2025, this number is expected to rise to13.8 million by 2060. This project, TrackADRD, aims to deliver an accurate,transparent, data-driven, reporting system for assessing National Institutes ofHealth (NIH) responsiveness to ADRD implementation milestones under NAPA. Here,we outline updates on TrackADRD progress, including key scientific discoveries.Recent AD/ADRD advances include brain pathology biomarkers and treatments toreduce brain amyloid-beta pathology. Notably, however, the root cause of mostdementia cases, except for rare, genetically caused dementia, is not known. Forexample, while AD dementia (usually referred to as "AD") is the most commondementia diagnosis, most people with dementia, including AD dementia, will havemultiple brain pathologies involved. Additionally, comorbidities and healthconsiderations (e.g. genetic, environmental, lifestyle) that are risk factorsfor dementia further complicate diagnoses. Recognition of convergence ofmultiple risks in individuals, without strictly knowing root cause(s), hasgiven rise to the term multiple or mixed etiology dementia (MED).

MEDrepresents many dementia cases diagnosed among individuals aged 65+, when mostdementia occurs, stressing the need for understanding dementia syndromes andrelationships to hypothesized causes and risk factors to develop effectiveinterventions. Under NAPA, the NIH delegates the National Institute ofNeurological Disorders and Stroke (NINDS) and the National Institute on Aging(NIA) to lead AD/ADRD research. NINDS focuses on ADRD, including frontotemporaldementia (FTD), Lewy body dementia (LBD), vascular contributions to cognitiveimpairment and dementia (VCID), and MED. To track ADRD scientific investment,NIH ADRD awards over 8 years (2017-2024), $2.18 billion, are mapped to NAPAADRD implementation milestones in this updated version of the NINDS-ledTrackADRD. This project employs text-based analysis of grant titles, abstracts,and specific aims with expert curation, assesses NIH responsiveness to ADRDmilestones, highlights research gaps, facilitates identification of currentresearch activities, and thus helps inform decisions about future ADRDscientific directions that will be most impactful.

Disclosures: H.R. Astacio: None. **A. Shukla:** None. **R.A. Corriveau:** None. **A.J. McCartney:** None.

Theme K Poster

TKP07: Raising Public Awareness of Neuromedicine and Brain Health

Location: SDCC Halls B-H

Time: Sunday, November 16, 2025, 8:00 AM - 12:00 PM

Program #/Poster #: TKP07.01SU/YY13

Topic: K.03. Public Awareness of Neuroscience

Support: SECTEI/167/2024
BAW25-8106460533
cic-umich-18099
ICTI-PICIR22-075-C
CIC-UMSNH 18096

Title: Patient Information Awareness and NSAID Usage Patterns in Mexico: Insights from an Online Survey

Authors: *P. SOTO[1], B. GUTIÉRREZ BARBA[2], M. Y. GAUTHEREAU-TORRES[3], C. CERVANTES-DURÁN[4], C. J. GUTIERREZ-GARCIA[5], L. F. ORTEGA-VARELA[6];
[1]Facultad de Quimicofarmacobiología de la Univ. Michoacana de San Nicolas de Hidalgo, Morelia, Mexico; [2]CIIEMAD, Inst. Politécnico Nacional, Ciudad De México, Mexico; [3]Facultad de Ciencias Medicas y Biologicas Dr Ignacio Chavez, Univ. Michoacana de San Nicolas de Hidalgo, Morelia, Mexico; [4]Escuela Nacional de Estudios Superiores, Unidad Morelia, UNAM, Morelia, Mexico; [5]Ingeniería Química y Bioquímica, TecNM/Campus Morelia, Morelia, Mexico; [6]Facultad de Salud Publica y Enfermeria, Salud Publica. Univ. Michoacana San Nicolas De Hidalgo, Morelia, Mexico

Abstract: Nonsteroidal anti-inflammatory drugs (NSAIDs) are among the most frequently used medications worldwide. NSAIDs reduce sensitivity of nerves in the central and peripheral nervous system by Inhibiting cyclooxygenase (COX) enzymes, specifically COX-1 and COX-2, which are responsible for pain and inflammation. However, inappropriate use and limited patient education can increase the risk of adverse effects, especially in contexts where self-medication is common. In Mexico, over-the-counter availability and poor engagement with patient information leaflets (PILs) may lead to NSAID misuse. This study aimed to evaluate public awareness of NSAIDs, interaction with PILs, and real-world usage patterns among Mexican adults. An anonymous online survey was conducted (n=257; age range: 17-79 years; 63% female; 91% with at least undergraduate education) to assess familiarity with NSAIDs, frequency and method of acquisition, attention to drug information, and self-reported adverse effects. The study was exploratory and descriptive. Data were analyzed using descriptive statistics. Respondents reported high familiarity with paracetamol (96%), ibuprofen (91%), and aspirin (81%), but low recognition of naproxen (0.8%). While most people used NSAIDs infrequently, 6% reported daily usage. Over 60% obtained NSAIDs without a prescription, and nearly 20% purchased them from convenience stores. Only 31% consistently read the PIL, with 81% focusing on the expiration date. Around 70% stated that information on contraindications was unclear or incomplete, despite 90% recognizing its importance. Just 55% found the packaging information to be clear. Thirteen percent experienced occasional adverse effects, including both expected reactions and less typical symptoms such as lethargy, anxiety, and hypotension. The findings highlight a significant gap in public understanding and use of NSAID-related patient information in Mexico. Despite widespread familiarity with these drugs, patient interaction with essential medication information remains limited. Notably, several reported symptoms (such as lethargy and anxiety), may reflect effects on the central nervous system, suggesting that NSAIDs are also used in neurological contexts, such as migraine management and neuroinflammation modulation. These results emphasize the need for improved communication of neurological risks in patient-directed informational materials.

Disclosures: P. Soto: None. **B. Gutiérrez barba:** None. **M.Y. Gauthereau-Torres:** None. **C. Cervantes-Durán:** None. **C.J. Gutierrez-Garcia:** None. **L.F. Ortega-Varela:** None.

Theme K Poster

TKP07: Raising Public Awareness of Neuromedicine and Brain Health

Location: SDCC Halls B-H

Time: Sunday, November 16, 2025, 8:00 AM - 12:00 PM

Program #/Poster #: TKP07.02SU/YY14

Topic: K.03. Public Awareness of Neuroscience

Support: Research Enhancement Funds, PI Musto

Title: International medical students educate their communities on neuropsychiatric conditions

Authors: *L. KAUFFMAN[1], L. MEREBASHVILI[2], D. GODERDZISHVILI[3], M. TVILDIANI[2], E. KLDIASHVILI[2], A. E. MUSTO[4];

[1]Sch. of Med., Macon & Joan Brock Virginia Hlth. Sciences, Eastern Virginia Med. School, at Old Dominion Univer, Norfolk, VA; [3]Fac. Develop., [2]Petre Shotadze Tbilisi Med. Acad., Tbilisi, Georgia; [4]Biomed. & Translational Sci., Macon & Joan Brock Virginia Hlth. Sciences, Eastern Virginia Med. School, at Old Dominion Univ., Norfolk, VA

Abstract: Individuals with mental health disorders are still stigmatized. False judgements are cast around the world, and many biases have been perpetuated by the growth of social media. One study surveyed individuals with schizophrenia from 27 countries, and half reported experiencing discrimination based on their mental health condition. At least 970 million individuals throughout the globe experience a mental health disorder. Despite the prevalence of mental illness, many people around the world remain unaware of the causes, symptoms, and treatments for these diseases. Thus, students and faculty from Virginia Health Sciences Eastern Virginia Medical School in Norfolk, Virginia and from Petre Shotadze Tbilisi Medical Academy in Tbilisi, Georgia collaborated on a social awareness project for mental health and neuroscience topics. One student from the United States and one student from Georgia discussed their countries' respective cultural views of mental illnesses and performed research to create two different posters in both English and Georgian. One poster focused on depression and anxiety and the other focused on post-traumatic stress disorder.The aim of these visual graphics is to provide the public with information about the prevalence of these diseases, the neurobiology causing the diseases, the symptoms, and the available treatments. By distributing these graphics on social media, in blogs, and on websites, the students aim to provide awareness to the public. Helping community members understand that mental illnesses can be influenced by neurotransmitters and hormones, and that they are neurobiological diseases can help to decrease the global stigmatization. These posters have already been posted on the Georgian social media accounts, and the American team is actively working on their own informational post. Thus, this societal knowledge gap is being tackled beyond cultural and geographical barriers. By sharing their own perspectives and societal views, students from the United States and from Georgia worked together to improve public awareness of neuroscience and mental health issues. This project not only stresses the importance of international collaboration to address knowledge gaps for the public, but it also shows how vital it is for medical schools and students to engage their communities. As institutions of medical education, schools must deliver health knowledge not only to their students but also to the public. The next steps for this project include additional collaboration between medical schools to create an international podcast to teach neuroscience topics and continue spreading awareness.

Disclosures: L. Kauffman: None. **L. Merebashvili:** None. **D. Goderdzishvili:** None. **M. Tvildiani:** None. **E. Kldiashvili:** None. **A.E. Musto:** None.

Theme K Poster

TKP07: Raising Public Awareness of Neuromedicine and Brain Health

Location: SDCC Halls B-H

Time: Sunday, November 16, 2025, 8:00 AM - 12:00 PM

Program #/Poster #: TKP07.03SU/YY15

Topic: K.03. Public Awareness of Neuroscience

Support: UCLA Brain Research Institute
UCLA Undergraduate Neuroscience Interdepartmental Program

Title: UCLA Drug Outreach, Promoting Awareness (DOPA): Advancing Substance Use Education Through Undergraduate-Led Outreach

Authors: *M. A. BELNAP[1], A. AU[2], N. BUCIO[2], K. CHATTERJEE[2], A. DANKBERG[2], J. EHRET[2], N. GHANBARI[2], L. GOMEZ[2], N. JILANI[2], S. LIANG[2], A. LUGO[2], O. NOKES[2], H. ROPER[2], A. SATHEESH KUMAR[2], R. SHARMA[2], J. SHENASSA[2], E. YANG[2], G. TABIBNIA[7], C. J. EVANS[3,4,5,6], R. ROMERO[2,6];
[1]Interdepartmental PhD Program in Neurosci., [2]Undergraduate Interdepartmental Program for Neurosci., [3]Dept. of Psychiatry & Biobehavioral Sci., [4]Semel Inst. for Neurosci. and Human Behavior, [5]Hatos Ctr. for Neuropharm., [6]Brain Res. Inst., Univ. of California Los Angeles, Los Angeles, CA; [7]Dept. of Psychological Sci., Univ. of California, Irvine, Irvine, CA

Abstract: The Drug Outreach, Promoting Awareness (DOPA) program is an undergraduate-led outreach program at the University of California, Los Angeles, designed to educate Los Angeles high school students about the neurobiological bases, health consequences, and addictive potential of commonly used drugs. UCLA neuroscience undergraduate students complete intensive coursework on the neuroscience of substance use and then apply that knowledge to create scientifically accurate, interactive lessons for high school students. Through DOPA's near-peer approach, these undergraduates strengthen their scientific communication skills to convey complex concepts about drug use in an accessible and engaging way. The program goes beyond the 'just say no' anti-drug campaign by equipping high school students with the knowledge they need to critically assess the risks of drug use and make more informed decisions. In 2025, approximately 250 high school students participated in the DOPA program across five Los Angeles County schools (four public, one private). Sixteen undergraduate students, divided into four groups, covered the following drug categories: prescription drugs (e.g., painkillers, benzodiazepines, stimulants), legal drugs (e.g., alcohol, tobacco), cannabinoids (including natural and synthetic variants), and party drugs (e.g., ecstasy, cocaine). Key concepts integrated into lesson plans and activities included the neurobiology of reward, dependence and addiction, drug mixing, drug adulteration risks, and harm reduction strategies. Students also created lesson plans with clear learning objectives, allowing other educators to replicate the activities. Additionally, the students helped develop pre- and post-program survey questions to evaluate changes in drug-related knowledge and intentions to use drugs. These surveys were administered one week before and one week after the intervention. Preliminary observations of these findings indicate a shift in knowledge among high school students, including greater recognition of cannabis's addictive potential and increased awareness of alcohol's long-term health consequences. The DOPA program highlights how undergraduate students can lead impactful science outreach initiatives that bridge the gap between neuroscience education and real-world public health challenges.

Disclosures: M.A. Belnap: None. **A. Au:** None. **N. Bucio:** None. **K. Chatterjee:** None. **A. Dankberg:** None. **J. Ehret:** None. **N. Ghanbari:** None. **L. Gomez:** None. **N. Jilani:** None. **S. Liang:** None. **A. Lugo:** None. **O. Nokes:** None. **H. Roper:** None. **A. Satheesh Kumar:** None. **R. Sharma:** None. **J. Shenassa:** None. **E. Yang:** None. **G. Tabibnia:** None. **C.J. Evans:** None. **R. Romero:** None.

Theme K Poster

TKP07: Raising Public Awareness of Neuromedicine and Brain Health

Location: SDCC Halls B-H

Time: Sunday, November 16, 2025, 8:00 AM - 12:00 PM

Program #/Poster #: TKP07.04SU/YY16

Topic: K.03. Public Awareness of Neuroscience

Support: Telus Friendly Future Foundation

Title: Shine a Light on Concussion Education: Evaluating the Impact and Necessity of Youth Neuroeducation Programs

Authors: *E. LANE[1], T. SNOWDEN[2], E. SKAUG[1], B. R. CHRISTIE[3];
[1]Univ. of Victoria, Victoria, BC, Canada; [2]Med. Sci., Univ. of Victoria, SIDNEY, BC, Canada; [3]Div. of Med. Sci., Univ. of Victoria, Victoria, BC, Canada

Abstract: Background The majority of youth visits to the emergency department in Canada between 2011 and 2017 were for sports-related head injuries, with 80% of those injuries being attributed to the brain. Despite this prevalence of brain related injuries in youth, research indicates that 80% of Canadian youth have minimal knowledge on concussions and few know how to acquire more information.
Objectives The objective of this study was to test the effectiveness of an educational presentation on concussions to high school students in the Greater Victoria Area (GVA). Additionally, the study sought to correlate the effectiveness of the presentation with classifications such as gender, concussion history, students' grades, and participation in a contact sport.
Methods The SHINE (Student Head Injury Neuro Education) presentations used the CATT (Concussion Awareness Training Tool) modules and VBIS (Victoria Brain Injury Society) pillars as a guide for which content should be included in the sessions. GVA highschool students were tested on their concussion knowledge prior to and following attendance of the 45-minute SHINE interactive session.
Results Baseline testing revealed that students scored 19.14 (SD: 3.28) out of 26 on the knowledge quiz, with no student achieving a perfect score, indicating a need for concussion education in this population. Following the SHINE session, the mean score rose to 22.1 (SD:2.81). A paired sample t-test found a significant mean difference of $P < 2.2 \times 10^{\wedge} (-16)$ between the pre- and post-education scores, with a mean difference of 3.02 (95% confidence interval: 2.16-3.83). The classifications of grade, gender, concussion history, and participation in contact sports showed no significant differences between groups in the baseline or post-session testing scores, indicating that the SHINE sessions can be utilized for many high school students.
Conclusions There is a lack of knowledge regarding concussions amongst high school students in the GVA. The educational SHINE sessions are effective at addressing this gap by improving teens' knowledge of concussions by 15%. As a result of the program's effectiveness, VBIS seeks to use SHINE to educate all students in the GVA about concussions.
Acknowledgements The authors thank the highschool participants and their teachers, who

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Disclosures: E. Lane: None. **T. Snowden:** None. **E. Skaug:** None. **B.R. Christie:** None.

Theme K Poster

TKP07: Raising Public Awareness of Neuromedicine and Brain Health

Location: SDCC Halls B-H

Time: Sunday, November 16, 2025, 8:00 AM - 12:00 PM

Program #/Poster #: TKP07.05SU/YY17

Topic: K.03. Public Awareness of Neuroscience

Support: Michael Smith Foundation for Health Research: C2-2024-04296

Title: Wolves' Den: connecting brain injury survivors coast to coast

Authors: *T. SNOWDEN[1], O. BRAZILLER[1], M. GALATI[3], B. R. CHRISTIE[2];
[2]Div. of Med. Sci., [1]Univ. of Victoria, Victoria, BC, Canada; [3]Brain Changes Initiative, Toronto, ON, Canada

Abstract: Wolves' Den is a free, virtual, Canada-wide support group for people living with traumatic brain injury (TBI). It's designed to provide survivors with education and community throughout their recovery. Wolves' Den is part of the Brain Changes Initiative, a Canadian non-profit that supports research and education around the six pillars of brain health: aerobic exercise, cognitive training, mindfulness, sleep hygiene, nutrition, and limiting harmful exposures.Each session is co-facilitated by both TBI researchers and survivors to offer a more holistic and grounded approach to recovery. Sessions begin with five minutes of guided mindfulness, followed by a 25-minute educational talk from a guest speaker, and then 30 minutes of open discussion and community connection.To better understand how Wolves' Den meets the needs of TBI survivors, and how it can be improved, we're currently conducting a study with 15 participants (a mix of new and returning members). Each participant will complete three interviews over six months. The study is ongoing and expected to conclude in September 2025.In the first round of interviews, participants shared what they value in a support group. Two key themes emerged: the importance of community connection and the difficulty of finding accessible, trustworthy scientific information about brain injury. The follow-up interviews will explore how Wolves' Den addressed these needs and gather feedback on what could be better.The goal of this project is to provide recommendations to Brain Changes Initiative on how Wolves' Den can be updated to best meet the needs of its members.

Disclosures: T. Snowden: None. **O. Braziller:** None. **M. Galati:** Other; Dr. Galati is the founder of Brain Changes Initiative. **B.R. Christie:** None.

Theme K Poster

TKP07: Raising Public Awareness of Neuromedicine and Brain Health

Location: SDCC Halls B-H

Time: Sunday, November 16, 2025, 8:00 AM - 12:00 PM

Program #/Poster #: TKP07.06SU/YY18

Topic: K.03. Public Awareness of Neuroscience

Title: Advancing Alzheimer's Research Through Community-Based Neurology Trials: A Profound Research Model

Authors: *G. SAHAGIAN[1,2], L. PARAHOVNIK[2], B. MANUEL[2];
[1]The Neurol. Ctr. of Southern California, [2]Profound Res., Nashville, TN

Abstract: Alzheimer's disease (AD) clinical trials are pivotal for developing effective therapies. However, enrollment remains low, particularly among underserved populations. This study evaluates a community-based approach to increase participation in AD clinical trials. Methods: We collaborated with local neurology clinics and community organizations to identify potential participants. Electronic medical records (EMRs) were utilized to pre-screen patients based on diagnostic criteria. Educational outreach, including seminars and support group engagements, was conducted to raise awareness. Neurologists received training and resources to facilitate referrals. Results: In a 12-month evaluation of this model, sites participating in the Profound network experienced a 95% increase in total screened patients and a 39% increase in total randomized patients in overall Alzheimer's trial enrollment compared to traditional methods. The datasets exhibit a near-balanced gender distribution, with approximately 60% female and 40% male participants, aligning with the epidemiology of Alzheimer's and Mild Cognitive Impairment (MCI), where women are more frequently affected, particularly in older age groups. This gender ratio is consistently maintained across different trial phases, indicating deliberate and stable recruitment strategies rather than random variation. Importantly, enrollment of underrepresented minorities rose significantly. Hispanic participants accounted for 11.84%, exceeding national Alzheimer's trial averages, where Hispanic enrollment typically falls below 6%. Participants identifying as Black (6.06%), American Indian, and Asian were also represented. An additional 9.09% of participants were categorized as Other. This reflects intentional efforts to include racially, and ethnically diverse populations often underrepresented in neurodegenerative disease trials. Conclusions: Integrating clinical trials into community neurology practices, supported by EMR screening and targeted education, significantly enhances enrollment and diversity in AD research. This model demonstrates the potential for broader application in neurodegenerative disease studies.

Disclosures: G. Sahagian: A. Employment/Salary (full or part-time): Profound Research, The Neurology Center of Southern California. E. Ownership Interest (stock, stock options, royalty, receipt of intellectual property rights/patent holder, excluding diversified mutual funds); Profound Research. **L. Parahovnik:** A. Employment/Salary (full or part-time): Profound Research. E. Ownership Interest (stock, stock options, royalty, receipt of intellectual property rights/patent holder, excluding diversified mutual funds); Profound Research. **B. Manuel:** A. Employment/Salary (full or part-time): Profound Research.

Theme K Poster

TKP07: Raising Public Awareness of Neuromedicine and Brain Health

Location: SDCC Halls B-H

Time: Sunday, November 16, 2025, 8:00 AM - 12:00 PM

Program #/Poster #: TKP07.07SU/YY19

Topic: K.03. Public Awareness of Neuroscience

Support: DA054449
Grant Me The Wisdom Foundation

Title: Bridging Neuroscience, History, and Society: A Neuro-Social Study of Sexual Trauma within Religious Communities

Authors: K. ARCHER[1], D. POOLER[2], *H. NEDELESCU[1];
[1]Scripps Res. Inst., San Diego, CA; [2]Social Work, Diana R. Garland Sch. of Social Work, Baylor Univ., Woodway, TX

Abstract: This interdisciplinary study explores how historical patterns of sexual trauma (ST)—particularly within religious communities—shape neurobiological and behavioral outcomes, with implications for public health education and social reform. ST, especially in high-control environments, is strongly associated with post-traumatic stress disorder (PTSD) and co-morbid with substance use disorders (SUDs), anxiety, depression, obesity, eating disorders, chronic pain, and inflammation, leading to immune system disturbances. Using a mixed-methods approach, we combine qualitative interviews with survivors, a meta-analysis of publicly reported cases, and upcoming postmortem brain tissue analysis to investigate the interplay between environmental conditioning and neurobiological dysregulation. Preliminary findings from our meta-analysis indicate that within the Eastern Orthodox Christian ethnic group, there are two distinct survivor populations: young boys and adult women. Additionally, interviews with adult female survivors from a wide range of others Christian communities revealed statistically significant impacts of ST-induced PTSD on multiple dimensions of life. Survivors frequently describe psychological entrapment via negative reinforcement, positive reinforcement, and coercive authority control, underscoring the role of social and environmental factors in driving maladaptive allostatic states in this population. Historically, religious institutions have framed trauma through moral or spiritual lenses rather than medical ones, limiting recognition of its full harm. By increasing awareness of neuroscience in the context of ST, this work reframes ST as both a clinical condition and a societal problem embedded in historical power structures. Neuroscience plays a critical role in shaping trauma-informed education, support ethical transformation of enabling systems, and advancing survivor-centered change.

Disclosures: K. Archer: None. **D. Pooler:** None. **H. Nedelescu:** None.

Theme K Poster

TKP07: Raising Public Awareness of Neuromedicine and Brain Health

Location: SDCC Halls B-H

Time: Sunday, November 16, 2025, 8:00 AM - 12:00 PM

Program #/Poster #: TKP07.08SU/YY20

Topic: K.03. Public Awareness of Neuroscience

Support: BAW25-8106460533
ICTI/DA/173/2025
SECTEI/167/2024
ICTI-PICIR22-075-C
CIC-UMSNH 18096
CIC-UMSNH 18099

Title: Brain health-related actions of BAW participants at UMSNH

Authors: *L. F. ORTEGA-VARELA[1], E. GONZÁLEZ[1], M. FERREIRA RODRIGUEZ[1], L. M. VAZQUEZ RANGEL, Sr.[1], M. Y. GAUTHEREAU-TORRES[2], C. J. GUTIERREZ-GARCIA[3], A. RODRIGUEZ MEDINA[1];
[1]Facultad de Salud Pública y Enfermeria, [2]Facultad de Ciencias Medicas y Biologicas Dr Ignacio Chavez, Univ. Michoacana de San Nicolas de Hidalgo, Morelia, Mexico; [3]Ingeniería Química y Bioquímica, TecNM/Campus Morelia, Morelia, Mexico

Abstract: Developing health habits is a key way to keep your brain healthy. From a public health perspective, promoting protective habits from an early age is an essential strategy to improve people´s welfare. In this context, during Brain Awareness Week (BAW) 2025 at the *Universidad Michoacana de San Nicolás de Hidalgo (UMSNH)*, with support from the International Brain Research Organization (IBRO), we organized recreational and outreach activities at three university high schools. The purpose of this work was to describe brain health-related actions reported by BAW participants and explore perceptions about their knowledge of brain care. As part of a quantitative and descriptive study, a structured survey was applied randomly to 35% of 1632 participants (n= 577), based on the "8 Brain Health Tips for a Healthier You" by Mayo Clinic, achieving a confidence level of 95%. The sample included mainly students and professors aged 15 to 60 years (mean age: 17.7), mostly women (60.5%), followed by men (27%) and non-binary individuals (12.4%). The main findings were aligned with Mayo Clinic's recommendations: 77.6% reported actively taking care of their brain. However, 27.2% said they were not sure whether they cared for it or not, revealing opportunities to improve brain health education. Additionally, 79.9% reported engaging in physical activity; 86.7% sleep between 6 and 8 hours, although only 48.4% turn off their phones before sleeping. Moreover, 95.7% consider important consuming a healthy diet, particularly vegetables, fruits, cereals, chicken, and fish. Regarding leisure, 74.4% are following the recommendation to engage in fun and healthy activities with friends, while 25.3% prefers staying at home. In contrast, only 12.1% go to the doctor regularly, more than 40% report low adherence to treatment and 14.6% indicates habitual consumption of non-prescribed medications or drugs of abuse. In conclusion, promoting brain health through recreational activities is essential to strengthen healthy habits from an early age. Participation in initiatives like Brain Awareness Week not only increases knowledge, but also encourages preventive behaviors that positively impact individual and collective well-being.

Disclosures: L.F. Ortega-Varela: None. **E. González:** None. **M. Ferreira Rodriguez:** None. **L.M. Vazquez Rangel:** None. **M.Y. Gauthereau-Torres:** None. **C.J. Gutierrez-Garcia:** None. **A. Rodriguez Medina:** None.

Theme K Poster

TKP07: Raising Public Awareness of Neuromedicine and Brain Health

Location: SDCC Halls B-H

Time: Sunday, November 16, 2025, 8:00 AM - 12:00 PM

Program #/Poster #: TKP07.09SU/YY21

Topic: K.03. Public Awareness of Neuroscience

Support: DOD/USAMRAA Grant HT9425-24-1-0301

Title: Service to Science: Public Impact of Integrating Military Veterans into Neuroscience Research

Authors: *N. EAPEN[1], S. PRAJAPATI[1,3], B. HUBBARD[1,4,2];
[1]Spinal Cord and Brain Injury Res. Ctr., [2]Dept. of Physiol., Univ. of Kentucky Col. of Med., Lexington, KY; [3]Dept. of Biomed. Engin., Univ. of Kentucky Pigman Col. of Engin., Lexington, KY; [4]Lexington VA Healthcare Syst., Lexington, KY

Abstract: Military Veterans face disproportionately high rates of neurological conditions, including traumatic brain injury (TBI), post-traumatic stress disorder (PTSD), and post-traumatic epilepsy (PTE). Despite this, their involvement in neuroscience is often limited to participation as research subjects rather than as collaborators. This abstract highlights a public engagement initiative aimed at integrating Veterans into neuroscience research environments as scientists, educators, and ambassadors. Veterans bring a mission-focused mindset, lived experience, and strong communication skills—assets particularly valuable in military-relevant neurotrauma research. Their inclusion not only improves the relevance and quality of research but also promotes public trust in biomedical science, particularly within military and Veteran communities. We present a case study from a Department of Defense-funded lab where a single Veteran undergraduate, a former indirect fire infantryman, joined the lab and played a central role in developing a preclinical model on seizure susceptibility following blast exposure. He contributed to research methods, behavioral testing, scoring protocols, and data analysis. Through peer-to-peer outreach via the University of Kentucky Veterans Resource Center, he recruited another Veteran into the lab, illustrating how even one individual can drive scientific and cultural change. Veteran Resource Centers serve as vital bridges for connecting Veterans to academic research opportunities—not just as study participants, but as research team members. This case underscores how Veteran involvement can enhance scientific productivity and broaden public engagement with neuroscience. We argue that integrating Veterans into neuroscience is not merely an equity initiative but a powerful strategy for public engagement. In an era of growing disconnect between researchers and the public, Veterans offer a unique capacity to bridge that gap. To scale this model, we recommend that funding agencies such as VA, DOD, and NIH support dedicated outreach, mentorship, and research programs for Veterans at multiple

academic levels. Future grant mechanisms should incorporate Community-Based Participatory Research (CBPR) frameworks to ensure meaningful and sustained inclusion. With such investment, Veterans can become translational leaders in neuroscience, shaping research that aligns with and reflects their lived experience.

Disclosures: N. Eapen: None. **S. prajapati:** None. **B. Hubbard:** None.

Theme K Poster

TKP07: Raising Public Awareness of Neuromedicine and Brain Health

Location: SDCC Halls B-H

Time: Sunday, November 16, 2025, 8:00 AM - 12:00 PM

Program #/Poster #: TKP07.10SU/YY22

Topic: K.03. Public Awareness of Neuroscience

Title: Neuroscientific Relevance of South African Hunter-Gatherer Languages

Authors: *F. B. WOOD;
Neurol., Emeritus Professor, Wake Forest Med. Sch., Winston Salem, NC

Abstract: Hunter-gatherers, mostly from the Kalahari Desert in southern Africa, illustrate thought in two different ways: (1) abstractions rendered as “stories that float from afar” and that can contain “stories within stories within stories”; and (2) abstractions that are diminished when vocabulary often merges adjectives into nouns or verbs to produce single words that describe specific individual objects or actions taken from real life experience. To many, these findings have implicated a more primitive form language, as compared, e.g., to Indo-European languages. However, to date the only neuroscientific implications have arisen from studies and reviews by David Lewis-Williams, of the University of the Witwatersrand in Johannesburg, South Africa. He has interpreted the South African rock art descriptions as conveying hallucinatory insights into the animal world and its feelings. Similarly, though not neuroscientifically, William Ury—from the Program on Negotiation at Harvard Law school, shows how the hunter-gatherer community impressively invokes multiple processes for prevention and reconciliation of disputes, as though the community itself is either an abstraction or some other kind of “force.” Accordingly, it would be highly neuroscientifically relevant to image the brain activity associated with these activities. One obvious possible hypothesis would be that so-called “higher level” brain areas of multisensory integration, i.e. temporo-parietal areas, would activate as much to the hunter gatherer words that combine verb or noun with adjective as they would activate to the fewer truly abstract words. An interesting alternative would be that the hunter-gatherer speech itself, with use of whatever words, would activate portions of the now-classic default mode network along with the medial frontal pole—thereby to signify that the abstraction is to self-related thought or experience. In any case, the results would help to discredit the not-yet-gone notion that hunter-gatherer language represents an earlier, more primitive, form of human language. Thereby, society would get a singular disconfirmation of racism that would be otherwise unavailable.

Disclosures: F.B. Wood: None.

Theme K Poster

TKP07: Raising Public Awareness of Neuromedicine and Brain Health

Location: SDCC Halls B-H

Time: Sunday, November 16, 2025, 8:00 AM - 12:00 PM

Program #/Poster #: TKP07.11SU/Web Only

Topic: K.03. Public Awareness of Neuroscience

Title: Intersection of brain metabolism, bipolar disorder, and meditation: A review on how and to what extent brain metabolism changes in adults with and without bipolar disorder who practice meditation

Authors: *G. K. SANDHU;
Harvard Extension Sch., Cambridge, MA

Abstract: This study investigates how and to what extent brain metabolism changes in adults with and without bipolar disorder (BD) who practice meditation. Brain metabolism, essential for energy homeostasis and cognitive and emotional functions, is dysregulated in BD, a condition marked by extreme mood swings from manic high-energy states to depressive low-energy episodes. Despite the brain's disproportionately high energy demands relative to its size, the effects of meditation, a non-pharmacological intervention, on brain metabolism in adults with and without BD remain underexplored, highlighting the need for research to address metabolic dysfunction in BD. This study conducts a transdisciplinary literature review within a Mind, Brain, Health, and Education (MBHE) framework, analyzing peer-reviewed articles from 2020-2025 sourced from Google Scholar, PubMed, and Harvard On-Line Library Information System (HOLLIS). Studies using neuroimaging techniques, including phosphorus magnetic resonance spectroscopy (31P-MRS) and positron emission tomography (PET), were examined to assess meditation's effects on glucose uptake, adenosine triphosphate (ATP)/phosphocreatine (PCr) levels, and mitochondrial function. Meditation enhances metabolic efficiency in healthy brains by reducing glucose metabolism and increasing ATP/PCr levels. In BD, it may mitigate hyperglycolysis during mania and energy deficits in depression, promoting emotional regulation. Unexpectedly, meditation significantly influences glutamate and dopamine dysregulation. Additionally, insulin signaling impairments were linked to mood instability, suggesting dietary interventions could complement meditation. Limitations, including small sample sizes, lack of longitudinal data, and absence of specific biomarkers for BD and healthy brains, limit generalizability. Future research should focus on specific BD phases and meditation types and explore neurotransmitter modulation. Adopting a MBHE approach could develop personalized interventions incorporating meditation, thereby enhancing clinical outcomes for BD management.

Disclosures: G.K. Sandhu: None.

Theme K Poster

TKP08: Ethical and Policy Issues in Neuroscience

Location: SDCC Halls B-H

Time: Saturday, November 15, 2025, 1:00 PM - 5:00 PM

Program #/Poster #: TKP08.01SA/ZZ1

Topic: K.04. Ethical and Policy Issues in Neuroscience

Title: Privacy and Stigma Surrounding Brain-Computer Interfaces in Marginalized Communities in Canada: A Mixed-Methods Analysis of Website Communication and Public Trust

Authors: *J. ABDELHAMEED, A.-F. ABDULAI;
Univ. of British Columbia, Vancouver, BC, Canada

Abstract: As brain-computer interfaces (BCIs) become increasingly integrated into medicine, industry, and entertainment, their potential to enhance autonomy for individuals with disabilities and transform human-computer interaction is clear. However, for marginalized communities, the ethical, privacy-related, and stigmatizing implications of such technologies remain underexplored. This study investigates how BCI-related websites frame these issues and how such framing influences public trust and perceptions among underserved communities in Canada.We employed a mixed-methods approach combining quantitative website evaluation with qualitative interviews. First, a structured checklist was used to analyze BCI company websites, focusing on clarity, accessibility, and attention to neuro-specific concerns: clinical vs. commercial framing, vulnerability narratives (e.g., misuse of neurodata), and informed consent clarity. Then, we conducted semi-structured interviews with individuals from marginalized communities to assess their understanding, trust, and perceived stigma regarding BCI technologies.Contrary to expectations, stigma around BCIs, especially those involving direct brain integration, did not appear to be reinforced by website content. Many participants felt these technologies could be beneficial for their communities, especially when sites emphasized clinical utility. However, commercial framing (e.g., productivity or consumer optimization) reduced participant trust. While privacy emerged as a central concern, participants noted that websites typically addressed only superficial data concerns (e.g., cookies or user accounts) and failed to meaningfully discuss risks related to neurodata, leading to increased skepticism.These findings suggest that BCI companies have a crucial opportunity and responsibility to build trust by transparently addressing privacy and ethical implications, especially in communities historically excluded from technological discourse. Promoting equity in BCI adoption requires inclusive, culturally aware communication that centers the concerns of marginalized users. Improvement recommendations were put forward for companies to optimize their website communication.

Disclosures: J. Abdelhameed: None. **A. Abdulai:** None.

Theme K Poster

TKP08: Ethical and Policy Issues in Neuroscience

Location: SDCC Halls B-H

Time: Saturday, November 15, 2025, 1:00 PM - 5:00 PM

Program #/Poster #: TKP08.02SA/ZZ2

Topic: K.04. Ethical and Policy Issues in Neuroscience

Support: NIH Grant RF1MH123698

Title: Conducting research with highly portable MRI in community settings: Navigating ethical, legal & societal issues

Authors: *F. X. SHEN[1], S. M. WOLF[2], F. LAWRENZ[3];
[1]Univ. of Minnesota; Harvard Med. School; MGH, Minneapolis, MN; [2]Law Sch. & Med. Sch., [3]Univ. of Minnesota, Minneapolis, MN

Abstract: PURPOSE:
Neuroimaging research has traditionally required participants to travel to hospital imaging sites, enabling oversight by trained technologists within institutions with established incidental findings policies. The emergence of highly portable and accessible MRI technology (pMRI) will disrupt this traditional paradigm and allow brain imaging in new locations outside of neuroscience labs. This breakthrough promises to broaden access and improve the representativeness of neuroscience databases, but also raises ethical, legal, and societal issues (ELSI) including safety, image interpretation, and management of incidental findings.
METHODS:
The NIH BRAIN Initiative has funded a project integrating empirical and normative research to generate consensus recommendations for pMRI research (NIH RF1MH123698). A multi-disciplinary working group (WG) used a modified Delphi method and mixed methods to develop the first ELSI recommendations for ethical conduct of pMRI research in community settings. The WG had expertise in neuroscience, neuroimaging, radiology, ethics, community engagement, law, neurology, and artificial intelligence.
RESULTS:
Our group identified 15 core ELSI challenges associated with pMRI research and recommended solutions. [1] We then distilled those recommendations into a Portable MRI Research ELSI Checklist that offers practical operational guidance for researchers contemplating using this technology. [2] We address: (1) competence for pMRI research, (2) preparing researchers to address the ethical and legal issues; (3) IRB oversight; (4) governance for research outside of IRB purview; (5) community engagement to avoid extractive research; (6) minimizing the therapeutic misconception; (7) safe scanner deployment; (8) protecting participant privacy; (9) ethical use of AI in pMRI; (10) communicating pMRI results; (11) quality control; (12) confidentiality and security of data; (13) data management and sharing; (14) managing incidental findings; and (15) facilitating participant access to their data.
CONCLUSIONS:
The Checklist addresses best practices to utilize before, during, and after pMRI scanning in the community. We emphasize the importance of deep community engagement throughout the research process to ensure ethical deployment of pMRI research in field settings. Neuroscientists should take a lead role in proactively addressing the ethical and legal issues associated with the advent of highly portable MRI for brain research.
REFERENCES:
[1] Shen, et al. J. Law & Biosci (2024). DOI: 10.1093/jlb/lsae008.
[2] Shen, et al. J Law Med Ethics (2025). DOI: 10.1017/jme.2024.162.

Disclosures: F.X. Shen: None. **S.M. Wolf:** None. **F. Lawrenz:** None.

Theme K Poster

TKP08: Ethical and Policy Issues in Neuroscience

Location: SDCC Halls B-H

Time: Saturday, November 15, 2025, 1:00 PM - 5:00 PM

Program #/Poster #: TKP08.03SA/ZZ3

Topic: K.04. Ethical and Policy Issues in Neuroscience

Support: Beckman Insitute for Advanced Science and Technology Undergraduate Fellowship (University of Illinois Urbana-Champaign)
Psychology Advanced Honors Fellowship (University of Illinois Urbana-Champaign)
Beckman Insitute for Advanced Science and Technology Graduate Fellowship (University of Illinois Urbana-Champaign)

Title: Neuroimaging's blindspot: underrepresented populations

Authors: *S. ADEYIGA[1,2], M. FINNEGAN[2,1,3,4], W. HELLER[2,1,3,4,5];
[2]Psychology, [3]Neurosci., [4]Beckman Inst. for Advanced Sci. and Technol., [1]Univ. of Illinois at Urbana-Champaign, Champaign, IL; [5]Carle Illinois Col. of Med., Univ. of Illinois at Urbana-Champaign, Urbana, IL

Abstract: While neuroimaging studies often lack demographic diversity, the impact on predictive models for internalizing psychopathology remains unstudied - a critical knowledge gap given the potential for clinical translation. Neuroimaging studies predicting internalizing psychopathology were reviewed to assess the degree of demographic representativeness across studies. We found pervasive under-reporting of participant characteristics precluding quantification of the impact of cohort homogeneity on model out-of-sample performance. Fifteen hundred research papers/publications from PubMed and ProQuest research databases published between 1990 and 2025 were evaluated, with 37 studies meeting inclusion criteria. Only 3 (8.1%) reported summary statistics for race/ethnicity or socioeconomic status (SES), despite the well-established relationships of these variables to differences in the presentation of internalizing distress. While most studies documented basic demographics like age and gender, education levels were underreported. Notably, geographic representation for collected data skewed heavily toward Asian nations (particularly Chinese samples), comprising 40.5% of included studies. Participant age distributions clustered narrowly between 35 and 50 years across most cohorts, potentially limiting generalizability to younger and older populations. The methodological quality of studies was assessed using the Prediction Risk of Bias Tool (PROBAST). This revealed that 81% of neuroimaging studies show significant bias risks, mostly from the underreporting of sample characteristics and poor cross-validation in external participant groups, raising concerns about real-world use. Underreporting demographics prevents assessment of the influence of representation in model performance, highlighting the need for transparent recruitment reporting. We identify three critical gaps: (1) inconsistent reporting of participant

characteristics, (2) unexamined validity of predictive models across demographic groups, and (3) structural barriers to inclusive recruitment. To address these, we propose institutional mandates for demographic transparency, incentives for representative sampling, and research guidelines for evaluating model performance across subpopulations, as essential steps toward clinically generalizable tools.

Disclosures: S. Adeyiga: None. **M. Finnegan:** None. **W. Heller:** None.

Theme K Poster

TKP08: Ethical and Policy Issues in Neuroscience

Location: SDCC Halls B-H

Time: Saturday, November 15, 2025, 1:00 PM - 5:00 PM

Program #/Poster #: TKP08.04SA/ZZ4

Topic: K.04. Ethical and Policy Issues in Neuroscience

Title: The greening of neuroscience: Expanding the notions of environmental and ecological neuroscience

Authors: *E. L. OHAYON;
The Green Neurosci. Lab., La Jolla, CA

Abstract: There has been a growing recognition that the natural environment plays an important role in brain development and health. Central aspects of the notion go back to simplistic nature vs nurture debates but more advanced inquires have moved to question the very conception of that duality. On yet another front, the ecological neuroscience movement has moved forward from purely academic questions focusing on individuals and molecular mechanism to a broader perspective raising attention to the impact of real world environmental changes on the brain and health. A main focus of this movement has been concerns over climate change. Although these have been important developments in moving beyond reductionist science to an embodied science where the brain is engaged with the world, the approaches still fall short on several fronts. In this presentation we identify several shortcomings and address how neuroscience as a field can move forward not only conceptually but also with the aim of improving individual, community and ecological health. Shortcomings include the continued medicalization of individuals including psychiatric categorization and stigmatization. On the societal front, some of the most important work has been in incorporating social dimensions as in the case of redlining and the identification of other biases. These approaches help elucidate the connections between the environment, access to green spaces and the impact on vulnerable populations. On the ecological front, it is increasingly recognized that it is incompatible to both study non-human animal cognition and consciousness as "models" for the human brain while simultaneously denying the existence of sentience and the ethical implications. Similarly, neuroscience must come to terms and take responsibility for the outcomes of its practices including in the pharmaceutical industry, neuro-privacy threats, militarization and artificial intelligence applications. We describe global efforts to bring together concerned scientists that aim to establish new paths to ecological and green neuroscience. These efforts include new multi-scale

and dynamical methods, novel tools, and a shift in fundamental goals. It is a deep recognition that the objects of neuroscience study are conscious beings that are part of nature and that the very practice of research can impact the outcome on the individual, community and global ecological scales.

Disclosures: E.L. Ohayon: None.

Theme K Poster

TKP08: Ethical and Policy Issues in Neuroscience

Location: SDCC Halls B-H

Time: Saturday, November 15, 2025, 1:00 PM - 5:00 PM

Program #/Poster #: TKP08.05SA/ZZ5

Topic: K.03. Public Awareness of Neuroscience

Title: Impact of Paraquat-containing Herbicides on Brain Function: From Science to Public Policy

Authors: *E. LEEM[1], C. WU[2];
[1]ucsd, La Jolla, CA; [2]Neurosciences MC0624, Univ. Of California San Diego Neurosciences Grad. Program, La Jolla, CA

Abstract: The widespread use of herbicides has revolutionized agriculture that is largely responsible for solving our world's famine. Many trade or brand name herbicides, such as Gramoxone, Firestorm, Helmquat, and Parazone contain Paraquat (PQ: paraquat dichloride) as an active ingredient. These non-selective contact herbicides are primarily employed for controlling a broad spectrum of annual grasses and broad-leaved weeds, as well as for desiccation (drying) of crops like cotton before harvest. These rapid action PQ-containing herbicides are extremely effectiveness against glyphosate-resistant weeds. They are a valuable tool in modern agriculture for significantly increasing the world's agricultural output. PQ acts by inhibiting photosynthesis in targeted weeds. By accepting electrons from Photosystem I in green plants and transferring them to oxygen, paraquat promotes reactive oxygen species (ROS) that cause rapid cell death and necrosis of green plant tissue. Because of its ability to produce ROS, PQ is extremely toxic to humans and animals. Though ingestion of PQ even at a small amount can be fatal, causing severe damage to the mouth, stomach, intestines, lungs, kidneys, and liver, agricultural workers and those living near treated fields are also at increased risk of exposure to PQ via skin contact or inhalation. Due to the health risks, since 2007 PQ has been banned in the European Union and in other countries including China, India, Thailand, Brazil, Chile, Malaysia, Peru, and Taiwan. However, it remains widely used in the United States and in many developing countries. Recent studies have suggested that exposure to paraquat may have significant neurological effects. For instance, PQ is likely associated with numerous neurodegenerative diseases such as Parkinson's disease. To enhance our understanding of the impact of PQ on brain function, I hypothesized that PQ activates phagocytic pathways to promote the release of toxic molecules/complexes via exocytosis into the media, possibly harming neighboring neurons in AD. I tested in BV2 cells and showed that even low doses of PQ activated microglia and induced

autophagic/lysosomal dysfunction. I conclude that chronic paraquat exposure could lead to neurodegeneration. Together with existing literature, my research calls for further investigations and I concur with international campaigns calling for a global ban of the use of PQ-containing herbicides.

Disclosures: E. Leem: None. **C. Wu:** None.

Theme K Poster

TKP08: Ethical and Policy Issues in Neuroscience

Location: SDCC Halls B-H

Time: Saturday, November 15, 2025, 1:00 PM - 5:00 PM

Program #/Poster #: TKP08.06SA/ZZ6

Topic: K.04. Ethical and Policy Issues in Neuroscience

Support: Dana Foundation NextGen Grant

Title: New strategies for promoting equitable, ethical, and responsible deployment of neurotechnology in society

Authors: *C. W. MCFARLAND, Jr.[1], G. LÁZARO-MUÑOZ[2], F. X. SHEN[3], T. WILLIAMSON[4];
[1]Neurotech Justice Accelerator at MGB, Somerville, MA; [2]Harvard Med. Sch., Boston, MA; [3]Law School, MGH Psychiatry, Univ. of Minnesota; Harvard Med. School; MGH, Minneapolis, MN; [4]Massachusetts Gen. Hosp., Boston, MA

Abstract: **BACKGROUND / PROBLEM:** Multiple efforts are underway to ensure that the transformative potential of neurotechnology serves all members of society—equitably, ethically, and responsibly. In this poster we report on a new suite of tools for advancing neurotech justice, developed by an interdisciplinary team at the Neurotech Justice Accelerator at Mass General Brigham (NJAM), a Dana Center for Neuroscience & Society. NJAM is co-developing strategies for improving: access to neurotech (e.g. to neuromodulation and technologies to identify covert consciousness); equity and fairness in research participation (e.g. allocation of risk, post-trial access, incidental findings); and application of neurotech evidence in social contexts (e.g. in courtrooms).
METHODS: We are integrating disciplines and integrating communities in order to develop actionable insights that can be leveraged by change agents including decision-makers in neurotech, government, law, medicine, and science; community leaders; policy advocates; and emerging student leaders. Methods include: the first campus neuroscience and society needs assessment survey (identifying current practices in gaps in areas like community engagement and neuroethics); community engagement & values workshops; breakout sessions at Neurotech Justice Summit (June 2025); Voices in Neurotech speaker series; engagement sessions with system-involved youth; and bidirectional outreach with industry partners.
RESULTS: In collaboration with trainees and colleagues across multiple disciplines, we have now established a structured full-time Fellowship program for post-doc trainees; undergraduate

summer research training program; virtual training opportunities for the broader neuroscience and society community; and judicial and attorney training in neuroscience. We've placed particular emphasis on creating pilot evaluation metrics for both actualized value (e.g. # of students receiving NJAM training), and future value (e.g. catalytic insights and new tools that will be leveraged in the future).
CONCLUSION: Our collaborative work at NJAM leads us to conclude that if we want to accelerate neurotechnology's potential benefits to society, then we need to activate insights, because the more we can learn, the more we can change and ideas don't transform the world—people acting on them do. This poster will provide novel findings on how trainees can gain the experience they need to bring about that transformation.

Disclosures: C.W. McFarland: None. **G. Lázaro-Muñoz:** None. **F.X. Shen:** None. **T. Williamson:** None.

Theme K Poster

TKP08: Ethical and Policy Issues in Neuroscience

Location: SDCC Halls B-H

Time: Saturday, November 15, 2025, 1:00 PM - 5:00 PM

Program #/Poster #: TKP08.07SA/ZZ7

Topic: K.04. Ethical and Policy Issues in Neuroscience

Support: IBRO Global Engagement Initiative
PEDECIBA

Title: Science Diplomacy, Neuroscience, Technology and Society Network: fostering Neurodiplomacy and Neuroscience Advice

Authors: C. ALARCÓN LÓPEZ[1], Z. DUENAS[2], A. SCHMIED[3], *M. E. CASTELLO[4]; [1]Ctr. de Estudios Superiores del Noroeste, Tijuana, Mexico; [2]Univ. Nacional de Colombia, Bogota DC, Colombia; [3]Nanyang Technological University, Natl. Inst. of Educ., Singapore, Singapore; [4]Inst. de Investigaciones Biológicas Clemente Estable - Sci. Diplomacy, Neuroscience, Technol. and Society Network, Montevideo, Uruguay

Abstract: The DICIENTS Network (Diplomacia Científica, Neurociencias, Tecnología y Sociedad) is a multidisciplinary, collaborative, and evidence-based community of practice established to strengthen science diplomacy at the intersection of neuroscience and emerging technologies in Latin America and the Caribbean (LAC). It aims to address persistent inequalities and promote well-being and sustainable development. The **main objective** is to foster all dimensions of SD to improve mental and brain health, achieve the right to science, and advance continuous learning for inner development goals (Inner Development Goals, 2025) and SDGs in LAC. Also to **i**ntegrate neuroscience and technology into public policy to address societal challenges in the Global South through open science, education, and ethical innovation.
Strategic Axes and Key Actions:

- **South-South cooperation:** Build capacity in neuroscience and neurotechnologies; promote technology-sharing across LAC.

- **Scientific literacy:** Organize workshops, hybrid talks, hackathons, and art-science events using open-access tools and low-cost technologies.

- **Policy integration:** Develop evidence-based briefs and toolkits; establish a network of science attachés in LAC.

- **Inclusive engagement:** Foster intersectional communication strategies; include Indigenous knowledge systems.

- **Ethics and human rights:** Mainstream neuroethics and neurorights in education and policy; host hackathons and symposia on neurotechnology.

- **Capacity-building in science diplomacy:** Train professionals at the neuroscience-policy interface; organize exchange programs and postgraduate courses.

By closing knowledge gaps and building regional and global partnerships, DICIENTS positions LAC as a key contributor to global neuroscience through science diplomacy.

Disclosures: C. Alarcón López: None. **Z. Duenas:** None. **A. Schmied:** None. **M.E. Castello:** None.

Theme K Poster

TKP08: Ethical and Policy Issues in Neuroscience

Location: SDCC Halls B-H

Time: Saturday, November 15, 2025, 1:00 PM - 5:00 PM

Program #/Poster #: TKP08.08SA/ZZ8

Topic: K.04. Ethical and Policy Issues in Neuroscience

Support: Dana Foundation

Title: Expanding and sustaining resources for neuroscience and society career development

Authors: *F. MCINTEE[1], F. X. SHEN[2];
[1]Consortium on Law and Values in Health, Envrn. and the Life Sci., Univ. of Minnesota Law Sch., Minneapolis, MN; [2]Law School, MGH Psychiatry, Univ. of Minnesota; Harvard Med. School; MGH, Minneapolis, MN

Abstract: PURPOSE: Neuroscience and society ("NeuroX") fields such as neuromarketing, neurolaw, neuroeconomics, neuroarchitecture and more, may offer neuroscience trainees new opportunities to deploy their scientific knowledge and skills outside of biomedical contexts. But because these NeuroX fields are new, it can be challenging for trainees to identify and prepare for NeuroX careers.
METHODS: To address this gap, the Dana Foundation Career Network in Neuroscience and

Society (Career Network) was established to address this need by creating resources to increase awareness of career opportunities and support cross-disciplinary education and training in NeuroX fields. In its initial two years, the Career Network has developed website content, virtual and in-person events, and an annual NeuroX Career Fair. This poster will present on new scalable and portable strategies for growth to meet increasing demand for NeuroX training resources. In particular, these new strategies address a central challenge: how to efficiently create resources that are both broadly relevant to our domestic and international communities, while also providing more individualized and customized career trajectory advice.
RESULTS: Three pathways that balance this broad reach vs. customized content will be the focus of the poster. (1) First, we will describe strategies to facilitate personal introductions for trainees to industry representatives in NeuroX and neurotechnology fields. (2) Second, we will describe a new suite of resources to empower students to create campus-based and regional affiliate programming related to NeuroX careers. (3) Third, we will discuss our prototyping of a "train the trainer" workshop that provides mentors with tools to develop trainees' cross-disciplinary expertise in neuroscience and society fields.
CONCLUSION: The Career Network is entering its third year of operation and has seen robust growth in engagement. In order to support this growing audience we must build capacity that will provide for more high-touch NeuroX mentoring. Additional customization is highly sought after but difficult to execute. The blueprint described here will help individual institutions to develop their own Neuroscience and Society Career Networks that can be scaled and tailored to their unique contexts.

Disclosures: F. McIntee: None. **F.X. Shen:** None.

Theme K Poster

TKP08: Ethical and Policy Issues in Neuroscience

Location: SDCC Halls B-H

Time: Saturday, November 15, 2025, 1:00 PM - 5:00 PM

Program #/Poster #: TKP08.09SA/ZZ9

Topic: K.04. Ethical and Policy Issues in Neuroscience

Support: Clinical & Translational Research Ethics (CTRE) Fellowship Program funding through the Provost of the Institute of Human Values in Health Care

Title: Biomedical research using social media for recruiting and tracking subjects in neuroscientific studies: An ethical debate, literature review, and future prospectus

Authors: *T. D. DUBIN;
South Carolina Clin. & Translational Res. (SCTR) Inst., Med. Univ. of South Carolina, Charleston, SC

Abstract: Are neuroscience researchers using social media to recruit/track subjects ethical and altruistic, or violating privacy and betraying the Belmont Report? The answer involves

individual investigation, because unfortunately, governmental guidelines regarding universal social media rules for recruiting and tracking research subjects are nebulous, at best. In 2022, the U.S. government's Office for Human Research Protections proposed ethical and regulatory considerations regarding social media use for the protection of human research subjects, but they have yet to elaborate upon those guidelines. Why? The federally revised 2018 Common Rule lists protections granted to human subjects' research in 45 CFR 46, Subpart A, but there is no mention of social media privacy laws. Why? In 2016, the National Institute of Health's website listed *Guidance Regarding Social Media Tools*, but that webpage has since been removed with no new renditions. Why? Neuroscience research in the social media sphere is a burgeoning topic for ethical debate that mandates weighing the pros and cons of using social media to recruit/track research subjects and consequently establish universal rules to protect them - rules that must be updated as fast as technology advances. The ease of social media recruitment should never jeopardize research participants' welfare, create dangerous confidentiality breaches, and be haphazardly regulated. Social media's research recruitment pros are clear: it promotes new neuroscience therapies; destigmatizes disease; reaches many; generates statistical significance due to high enrollment; links to online informed consent; targets wanted subjects; and tracks them through longitudinal design. But neuroscientific studies using social media recruitment should require universal congruency, or institutions will have unequal protocols with confounding variables and incomparable data amongst studies. Who will implement rules - governments, IRBs, or researchers? Will these same rules apply internationally? Why are rules currently only in select universities? Why are rules not being updated? This review propels framework to discuss future policies. It evaluates social media's benefits/harms in neuroscientific studies then presents solutions for research betterment. Interdisciplinary engagement between researchers, MDs, ethicists, national and international governments, the NIH, and social media hosting sites is vital to safeguard neuroscientific research recruitment using social media. Operating this recruitment so positives suppress negatives is at the technological forefront of today's vision for ethical research.

Disclosures: T.D. Dubin: None.

Theme K Poster

TKP08: Ethical and Policy Issues in Neuroscience

Location: SDCC Halls B-H

Time: Saturday, November 15, 2025, 1:00 PM - 5:00 PM

Program #/Poster #: TKP08.10SA/ZZ10

Topic: K.04. Ethical and Policy Issues in Neuroscience

Support: Culture, Mind, & Brain Network, Foundation for Psychocultural Research

Title: Prison brain: the next frontier in neurolaw for criminal justice reform

Authors: *S. SERAPHIN[1], J. HARWELL[2];
[1]Neurosci. Program, [2]Publ. Policy & Law Program, Trinity Col., Hartford, CT

Abstract: The United States criminal justice system is marked by high rates of recidivism compared to many other nations, with over seventy percent of formerly-incarcerated individuals rearrested within five years of release (Sonne & Gash, 2018). This presentation examines the neurological consequences of incarceration and argues that prison itself contributes to persistent executive dysfunction, reinforcing a cycle of criminal behavior. Drawing on recent findings in cognitive neuroscience and clinical psychology, we explore how incarceration disrupts core executive functions such as working memory, attention, planning, inhibition, and cognitive flexibility (Meijers et al., 2015). These deficits are often present prior to incarceration and are frequently associated with adverse childhood experiences (ACEs) and traumatic brain injury (TBI), both of which are overrepresented in incarcerated populations.Recent neuroimaging studies show structural and functional abnormalities in brain regions critical for emotional regulation and decision-making in individuals convicted of violent offenses (Sajous-Turner et al., 2020). These findings suggest that many incarcerated individuals possess neurobiological vulnerabilities that are exacerbated, rather than ameliorated, by incarceration. Rather than addressing the cognitive and neural impairments that underlie maladaptive behavior, incarceration often compounds them through isolation, stress, and lack of rehabilitative resources. For purposes of reducing crime, many aspects of incarceration are thus counter-productive. We propose a neuroscience-informed approach to criminal justice reform centered on the concept of radical restoration. This model emphasizes the improvement of executive function, support of mental health, and building of social connections as a foundation for reducing recidivism and promoting long-term behavioral change. By integrating neuroscientific evidence into policy and practice, we aim to shift the focus of the criminal justice system away from harsh punishment towards prevention and rehabilitation. This framework positions neuroscience not only as a tool for understanding criminal behavior but also as a catalyst for meaningful systemic reform through the emerging discipline of neurolaw.

Disclosures: S. Seraphin: None. **J. Harwell:** None.

Theme K Poster

TKP08: Ethical and Policy Issues in Neuroscience

Location: SDCC Halls B-H

Time: Saturday, November 15, 2025, 1:00 PM - 5:00 PM

Program #/Poster #: TKP08.11SA/ZZ11

Topic: K.04. Ethical and Policy Issues in Neuroscience

Title: Burnout in the caregivers of individuals living with dementia: Ethical considerations for researchers

Authors: *S. RYAN-COATS, M. BATY, A. BROOKSHIRE, L. JACKSON;
Wright State Univ., Fairborn, OH

Abstract: There is a recent push towards positive ethics in research calling upon neuroscientists and psychologists to exceed the minimum ethical requirements of the field (Knapp & Fingerhut, 2024). Dementia researchers have a unique opportunity to interact with the care takers of

dementia patients during recruitment and while obtaining informed consent. In the next 25 years, the number of individuals with dementia is expected to rise to 150 million, thus resulting in an increased need for caregivers (Nichols et al., 2019). These caretakers are highly susceptible to burnout, which can lead to both mental health issues and physical health concerns (Kimura et al., 2011). Common symptoms of burnout in caregivers include emotional exhaustion, depersonalization, and feelings of reduced personal accomplishment (Truzzi et al., 2012). In addition, diversity factors can play an integral role in how burnout symptoms are manifested. Some cultural groups struggle to get their needs met due to illness, shame, lifestyle choices, and religious beliefs. Reducing symptoms of burnout in caregivers can improve the quality of life of both the caregiver and the dementia patient (Truzzi et al., 2012). However, caregivers are often hesitant to seek help when experiencing symptoms of burnout due to worries of being perceived as a burden (Falshaw & Clatworthy, 2024). The interaction dementia researchers have with caregivers provides an excellent opportunity for neuroscientists to practice positive ethics by screening for burnout and providing resources to caregivers. Through screening and resources, neuroscience researchers can improve the lives of individuals with dementia and their caregivers. This presentation provides brief, cost-effective, and easy to implement recommendations to help dementia researchers take advantage of this opportunity. Existing literature was searched using PsycINFO with the key words: dementia, burnout, ethics, and caregiver. Researchers are encouraged to educate themselves on the signs of burnout and utilize screening measures to identify caretakers experiencing burnout. It is also recommended that the researchers have a list of local and national resources to provide to the caretaker (i.e., 988, 211, diversity-grounded therapists, and support groups). In conclusion, dementia researchers are in a prime position to interact with caregivers who may be experiencing burnout, thus making them an underutilized resource to aid in identifying burnout and providing recommendations for caregivers. Dementia researchers who wish to excel ethically and further serve the communities they are researching should consider the recommendations presented here.

Disclosures: S. Ryan-Coats: None. **M. Baty:** None. **A. Brookshire:** None. **L. Jackson:** None.

Theme K Poster

TKP08: Ethical and Policy Issues in Neuroscience

Location: SDCC Halls B-H

Time: Saturday, November 15, 2025, 1:00 PM - 5:00 PM

Program #/Poster #: TKP08.12SA/ZZ12

Topic: K.04. Ethical and Policy Issues in Neuroscience

Title: Ethical considerations and caregiver attitudes toward genuine proxy consent in dementia research

Authors: *R. MAHAFDEH[1], B. MAHAFDAH[2];
[1]Clin. Pharm. and Therapeut., Fac. of Pharmacy, Jadara Univ., Irbid, Jordan; [2]Fac. of Medicine, Yarmouk Univ., Irbid, Jordan

Abstract: Background: Informed consent is a key ethical requirement for biomedical research, implemented to ensure autonomy and voluntary participation. However, patients with dementia experience cognitive impairments and cannot make decisions about research participation. Proxy consent provided by family members or legally authorized representatives is required. Aim: This study aimed to assess the attitudes and understanding of dementia patient caregivers regarding genuine proxy consent for biomedical research participation in Jordan. Methods: A cross-sectional study was conducted among 184 caregivers of patients diagnosed with moderate to severe dementia. Participants were anonymously surveyed regarding their understanding of ethical principles such as substituted judgment and best interest standards. Results: Most of the respondents (70.1%) reported a positive attitude toward providing proxy consent on behalf of their relatives with dementia. Only 38% of respondents were familiar with the ethical concept of substituted judgment. A statistically significant correlation was found between the caregiver's educational level and their understanding of ethical consent principles ($p < 0.01$). Moreover, 65% of caregivers stated they would feel more confident providing proxy consent if institutional guidelines and clinician support were available. Nearly 74% expressed concern about the potential emotional burden associated with making this decision. Notably, 35% agreed that decisions should be based not only on perceived benefit. Conclusion: Caregivers of patients with dementia generally support the use of proxy consent for research participation but exhibit limited understanding of the ethical framework underlying genuine proxy consent. These findings highlight the need for public education, clinician guidance, and regulatory frameworks to ensure ethically robust and patient-centered decision-making in dementia research.

Disclosures: R. Mahafdeh: None. **B. Mahafdah:** None.

Theme K Poster

TKP08: Ethical and Policy Issues in Neuroscience

Location: SDCC Halls B-H

Time: Saturday, November 15, 2025, 1:00 PM - 5:00 PM

Program #/Poster #: TKP08.13SA/ZZ13

Topic: K.04. Ethical and Policy Issues in Neuroscience

Title: Psychedelics in Neuroscience and Medicine: Ethical and Policy Considerations for Research and Clinical Applications

Authors: *M. A. BOEHM;
Univ. of Maryland Global Campus, College Park, MD

Abstract: There is growing interest in classical psychedelics (e.g., psilocybin, dimethyltryptamine (DMT), and lysergic acid diethylamide (LSD)) and non-classical psychedelics (e.g., 3,4-metheylenedioxymethamphetamine (MDMA), ketamine, and ibogaine) in neuroscience and medicine given emerging research evidence suggesting their potential to be leveraged as treatments for a variety of health conditions (e.g., depression, posttraumatic stress disorder (PTSD), anxiety, substance use disorders, pain conditions, neurodegenerative disorders, and other indications). Over the past decade, the U.S. Federal Drug Administration (FDA) has

granted five separate Breakthrough Therapy designations to mental health treatments, including MDMA-assisted therapy for PTSD (2017), three psilocybin formulations for the treatment of depression (2018, 2019, and 2024), and an LSD formulation for the treatment of generalized anxiety disorder (2024). In addition, there are currently 100+ active/recruiting clinical trials involving treatments with psychedelics (300+ including ketamine) and a growing body of evidence related to underlying neurobiological mechanisms. However, aside from ketamine/esketamine (Schedule III with FDA approved use), all of these compounds are still classified as Schedule I substances in the U.S. (i.e., highest risk for harm/abuse/dependence and no approved medical use), and none of the psychedelic treatments with Breakthrough Therapy status have reached final FDA approval for their respective indications (the first attempt with MDMA-assisted therapy for PTSD was disapproved in 2024). The Schedule I classification makes these compounds subject to the strictest regulations around access/supply, which presents logistical challenges for researchers and clinicians. In addition, psychedelics carry unique risks and ethical considerations that should be considered when conducting research and developing clinical applications. Some unique challenges include issues related to participant blinding and informed consent, ontologically challenging/spiritual experiences, vulnerable psychological/emotional states, and sociocultural factors that are important to consider. More research is needed across the translational spectrum (i.e., preclinical, clinical, and health systems research) to optimize the safety/efficacy of treatment protocols, establish best practices for provider training/care delivery, and improve patient access and outcomes.

Disclosures: M.A. Boehm: None.

Theme K Poster

TKP08: Ethical and Policy Issues in Neuroscience

Location: SDCC Halls B-H

Time: Saturday, November 15, 2025, 1:00 PM - 5:00 PM

Program #/Poster #: TKP08.14SA/ZZ14

Topic: K.04. Ethical and Policy Issues in Neuroscience

Support: Alexander von Humboldt, Equipment grants
CNPq
Capes
Fapesc

Title: Ethical issues in neurosciences: proposal to replace vertebrates in antidepressant discovery

Authors: J. A. BOLZAN[1,3], F. BOZ ECKERT[1,5], J. COSTA[1,4], F. TRICHES[1,4], G. ZURCHIMITTEN[1,4], F. C. HAMZE[1,4], A. LIMA HOFMANN[1], M. SIDLOSKI[1], T. MARTINS[1,4], ***C. LINO DE OLIVEIRA**[2,4,6];
[1]UFSC, FLORIANÓPOLIS, Brazil; [2]CFS-CCB-UFSC, UFSC, Florianopolis, Brazil; [3]Cfs-ccb-ufsc, [4]PhD in Pharmacol. UFSC, Florianópolis, Brazil; [5] PhD in Pharmacol. UFSC, Florianópolis, Brazil; [6]CFS-CCB-UFSC, Florianópolis, Brazil

Abstract: Historically, antidepressant discovery has relied on clinical serendipity and animal studies, mostly involving vertebrates. This proposal addresses a key ethical concern in neuroscience: the use of vertebrate animals in experiments. Aligned with the principles of the 3Rs (Replacement, Reduction, and Refinement), this project aims to develop and implement scientifically robust and ethically responsible alternatives to traditional animal models in the early stages of antidepressant discovery. The project proposes an innovative pre-clinical pipeline, integrating three consecutive steps. Step 1 involves theoretical models for selecting the most promising molecular targets, based on systematic reviews and best evidence synthesis. Step 2 applies in silico assays to screen large compound libraries against these selected targets, using computational simulations to identify hit compounds with potential biological activity. Step 3 consists of ethically sound in vivo assays to assess the biological activity of the selected hits. These assays may employ predictive behavioral and neurochemical tests in invertebrates such as Drosophila melanogaster. Compounds advancing through this pipeline should be more promising and safer for subsequent drug development stages, which may still include vertebrate studies if necessary. Beyond enhancing the accuracy of antidepressant discovery, the project promotes scientific integrity by supporting more cost- and time-effective methods. Additionally, it fosters ethical awareness and education among researchers, students, and institutions, encouraging responsible innovation. The project also supports policy development and institutional changes that integrate ethical considerations into research planning and execution.

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Theme K Poster

TKP08: Ethical and Policy Issues in Neuroscience

Location: SDCC Halls B-H

Time: Saturday, November 15, 2025, 1:00 PM - 5:00 PM

Program #/Poster #: TKP08.15SA/ZZ15

Topic: K.03. Public Awareness of Neuroscience

Title: Promoting awareness, implementation, and validation of in-vivo translational digital biomarkers

Authors: *L. P. J. J. NOLDUS[1,2], M. VAN GAALEN[3], Y. WINTER[4,5], M. R. LAFOLLETTE[6]; [1]Donders Inst. for Brain, Cognition and Behavior, Radboud Univ., Nijmegen, Netherlands; [2]Noldus Information Technol. BV, Wageningen, Netherlands; [3]Evotec Intl. GmbH, Goettingen, Germany; [4]Dept. of Biol., Humboldt Univ., Berlin, Germany; [5]PhenoSys GmbH, Berlin, Germany; [6]The 3Rs Collaborative, Denver, CO

Abstract: Promoting awareness, implementation, and validation of in-vivo translational digital biomarkers Lucas P.J.J. Noldus[1,2], Marcel van Gaalen[3], York Winter[4,5], Megan R. LaFollette[6] [1]Noldus Information Technology BV, Wageningen, Netherlands [2]Radboud University, Nijmegen, Netherlands [3]Evotec International GmbH, Göttingen, Germany [4]PhenoSys

GmbH, Berlin, Germany [5]Humboldt University, Berlin, Germany [6]The 3Rs Collaborative, Denver, CO, USA Traditional measurements of animals in neuroscience typically occur at limited time points and within stressful surroundings, which can compromise scientific quality and animal welfare. However, modern technologies can provide continuous monitoring of behavior and physiology of research animals in their home cages. These technologies thereby offer immense opportunities to improve science, welfare, strategy, and operations. However, the adoption of these technologies is not yet widespread due to a number of barriers. Therefore, to assist in advancing these impactful technologies, the 3Rs Collaborative's Translational Digital Biomarkers initiative has united expert stakeholders to work together to promote awareness and implementation. This group has outlined key value proposition, implementation tips, and both opportunities and challenges to Translational Digital Biomarkers. Furthermore, as part of their efforts to ensure the reliability and relevance of digital biomarkers, they have adopted a variation of the Digital Medicine Society's (DiMe) V3 Validation Framework for preclinical contexts. This approach emphasizes verification, analytical validation, and clinical validation to ensure the reliability, precision, and applicability of digital biomarkers. Ultimately, by fostering interdisciplinary collaboration and integrating robust validation processes, the adoption of impactful neuroscience techniques can be accelerated, ultimately advancing the 3Rs and translational research and ensuring research animals benefit from technological evolution.

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Theme K Poster

TKP08: Ethical and Policy Issues in Neuroscience

Location: SDCC Halls B-H

Time: Saturday, November 15, 2025, 1:00 PM - 5:00 PM

Program #/Poster #: TKP08.16SA/ZZ16

Topic: K.04. Ethical and Policy Issues in Neuroscience

Support: Banner-ASU Neurodegenerative Disease Research Center

Title: On prioritizing human-centered models in neuroscience research: Scientific and ethical issues from the lab to the clinic

Authors: O. G. POOLE, B. PRINZHORN, A. MOVAHED, ***J. S. ROBERT**;
Sch. of Life Sci., Arizona State Univ., Tempe, AZ

Abstract: The US NIH created the Office of Research Innovation, Validation, and Application (ORIVA) in 2025, part of a new initiative to "prioritize human-based research technologies" to reduce the over-reliance on animal models in biology and biomedicine, as too many findings from animal studies fail to translate into clinical treatment.
It's clear that improving translational success in neuroscience requires a shift toward research strategies that integrate both human-centered models and animal models. While animal models remain indispensable for studying whole-brain circuitry and behavior, their predictive limitations

(driven by biological differences) contribute to high failure rates in human clinical trials - an ethical problem worth further scrutiny.
Here, based on a review of the ORIVA website and other DHS sites, academic scholarship, and public commentary, we document and evaluate the initiative, which putatively signals a growing interest in promoting human-centered tools such as organoids, computational models, diseases-in-a-dish, and tissue chips. These alternatives for modeling disease pathology will likely improve drug and toxicity screening accuracy and, if ethically deployed, will enhance our neuroscience toolkit.
Human brain organoid research has already yielded insights into Zika virus and encephalitis and promises similar results across a wide range of human diseases and disorders. Systems neuroscience integrates computational models by allowing researchers to simulate, predict, and analyze neural processes that are otherwise difficult to study through experimental methods. These models can simulate electrical activity of neurons, integrate data to provide a larger picture of brain function, and test hypotheses without invasive experiments.
This broad set of human-centered approaches ought to augment and not fully replace existing methodologies in neuroscience, but only if they generate the kind of evidence that would warrant more sound clinical studies in humans, across the entirety of the population. It is critical that we not - however intentionally, accidentally, or indiscriminately - undermine our progress or ignore or threaten the source language of translation: the fundamental research that can drive innovation.
We argue that a flexible model-integrative approach is a necessary evolution in translational neuroscience research; re-aligning model choice with research goals will strengthen methodological rigor, improve the integrity of our knowledge base, and accelerate clinical outcomes.

Disclosures: O.G. Poole: None. **B. Prinzhorn:** None. **A. Movahed:** None. **J.S. Robert:** None.

Theme K Poster

TKP08: Ethical and Policy Issues in Neuroscience

Location: SDCC Halls B-H

Time: Saturday, November 15, 2025, 1:00 PM - 5:00 PM

Program #/Poster #: TKP08.17SA/ZZ17

Topic: K.04. Ethical and Policy Issues in Neuroscience

Support: Banner-ASU Neurodegenrative Disease Research Center

Title: From Zika to Alzheimer's: Neural activity in human cerebral organoid research

Authors: *A. MOVAHED, J. S. ROBERT;
Sch. of Life Sci., Arizona State Univ., Tempe, AZ

Abstract: Human cerebral organoids (hCOs) are used to model a wide range of brain conditions, from early neurodevelopmental disorders such as Zika-virus-induced microcephaly to late-stage neurodegeneration in Alzheimer's disease (AD). While promising, hCOs raise novel ethical

challenges as they exhibit increasingly complex neural activity. This project investigates whether specific neurophysiological patterns in hCOs might indicate ethically significant thresholds, particularly regarding the theoretical risk of consciousness. We conducted a systematic review of empirical studies reporting neural activity in hCOs using calcium imaging, electrophysiology, and multi-electrode arrays (MEAs). Our review focuses on recurring features such as synchronized bursting, oscillatory behavior in the gamma and delta frequency bands, and spontaneous network self-organization. We then analyze these features using two leading consciousness frameworks: Integrated Information Theory (IIT), which emphasizes system-wide information integration (Φ), and Global Neuronal Workspace Theory (GNWT), which prioritizes recurrent connectivity and large-scale broadcasting. Preliminary analysis suggests that while current hCOs lack structural complexity sufficient for full integration or global broadcasting, some studies report local network dynamics that may approximate IIT's early-stage complexity indicators. Based on this, we propose a set of "early ethical flags" for hCO monitoring, including persistent oscillations >10 Hz, functional connectivity across organoid regions, and response to external stimulation. These markers are intended not to imply consciousness, but to support proactive governance as organoids mature. We are also preparing an IRB submission to begin expert interviews with neuroscientists and neuroethicists in late 2025. The SfN meeting will serve as an opportunity to gather feedback on our preliminary findings and recruit interview participants for the next phase. Sharf, T., van der Molen, T., Glasauer, S.M.K. et al. Functional neuronal circuitry and oscillatory dynamics in human brain organoids.

Disclosures: A. Movahed: None. **J.S. Robert:** None.