

EDITORIAL AND WE'LL HAVE FUN FUN FUN...

Elaine R. Reynolds

Department of Biology and Program in Neuroscience, Lafayette College, Easton, PA 18042.

<https://doi.org/10.59390/GZLW1868>

The Journal of Undergraduate Neuroscience Education, which celebrates its twenty second year this fall, has been a leader in the publication of neuroscience laboratory exercises and innovations. The first issue featured a neurogenesis lab with crayfish from Carol Ann Paul, Erin Goergen, and Barbara Beltz; a rat behavioral lab from Alan Gittis; and the first installment of many from the Cornell team of Bruce Johnson, Bob Wyttenbach, and Ron Hoy (Paul et al., 2002; Gittis 2002; Johnson et al., 2002). In that first issue, our first editor, Barbara Lom stated, “*JUNE*’s mission is to communicate innovations in all aspects of undergraduate neuroscience education via peer-reviewed scholarly articles in an easily accessible format for an audience of undergraduate educators” (Lom, 2002). And in support of the “all aspects of innovation” mission, that first issue also included an article by Erik Wiertelak on incorporating feature films into the neuroscience classroom (Wiertelak, 2002). I personally was inspired by these articles as I developed my teaching. I used the crayfish neurogenesis in an advanced neuroscience laboratory and the viewing of neuroscience-related films in my intro class. These articles benefitted a large community of educators and their students.

This latest issue continues the tradition of laboratory inspiration. Our friends at Backyard Brain present low-cost options for laboratory investigations of wave and ERP with EEG (Smith et al., 2024). A new neurosimulator for exploration of neurophysiology is offered in Dupuis et al. (2024). The innovation here is that each part of the neuron is represented in a different module so their unique contribution to physiology can be explored. Huffman (2024) provides our community with exercises where students can analyze fMRI data themselves. Students can then critically understand two analytic techniques for this type of data, while learning a little Python coding in the process. Jeye (2024) offers a new laboratory exercise to explore taste perception using the edible flower know as buzz buttons. Wang et al. (2024) provides neuroanatomy case studies for virtual dissection tables. Reyes-Nava et al. (2024) present what they call a “dry lab experience” where student engage in the scientific process using interactive notebooks in a developmental neurobiology large class setting.

JUNE indeed has covered new innovations in aspects of education. Barbara Lom was also the first person to use the key word “active learning” in a JUNE article (Lom 2012). JUNE has been a leader in promoting active and student-centered approaches to undergraduate neuroscience education and the current issue is no exception. What is exceptional is the creative and downright **FUN** ways our authors are integrating active learning into neuroscience

education. French et al. (2024) present the “Sherlock Holmes Project”, which is a collaborative problem-solving activity in the form of a murder mystery. Angel Kaur’s article describes a game that tackles neuroscience vocabulary (Kaur 2024). Rydbom et al. (2024) describes a board game for intro neuroscience that improves student understanding of action potential properties. And finally, Ha et al. (2024) describes successes with the software Biorender, and assignments that push students to practice illustrating neuroscience concepts as a way of learning them. These authors all provide a treasure trove of references that allow our readers to understand the background and context of these active learning approaches, and all these articles provide evidence of the effectiveness of these pedagogies.

JUNE has also been a leader in the development of neuroscience programs and program level assessment. Beginning with the first FUN workshop through the most recent discussion in 2018, JUNE has published a set of Blueprints for the development of neuroscience program and curriculum (most recently, Wiertelak et al., 2018). Defining the course work, concepts, and competencies for undergraduate neuroscience as well as its intersection with other fields has been a central mission of both the workshops and journal. In this issue, Bozer et al. (2024) presents a collection of open resources designed around concepts in neuroscience.

JUNE has been a leader in creating a more diverse, inclusive and equitable future in the field of neuroscience. In one of the first examples, Julio Ramirez discussed his SOMAS-URM initiative in a JUNE article (Ramirez and Tonidandel 2009). Inclusive pedagogy was the focus of the 2017 FUN workshop at Dominican University, and the 2023 FUN workshop included the themes of inclusive pedagogy, student and faculty wellness and identity, integrative STEM and decolonizing neuroscience education (Calin-Jageman et al., 2018; Basu et al., 2024). In this issue several articles discuss DEI-related initiatives. Herrin and Lewis (2024) describe the integration of intercultural competence into curriculum through study abroad. Castleman et al. (2024) incorporating concept of neurodiversity into an intro course to build awareness. Maldonado-Vlaar and García-Arrarás (2024) update our readers on their efforts to increase diversity of the neuroscience research community through their NeuroID program at the University of Puerto Rico-Rio Piedrase. This innovative research training program provides undergraduate training and develops networks of mentors that connect teaching institutions in PR with research universities in the mainland US. Sable and Lester (2024) describes their Neurostart program that is increasing the number of underrepresented students applying to

graduate programs through a supportive undergraduate research program that makes them better candidates for post graduate programs in neuroscience and health related disciplines.

With this spring issue delayed to summer, I was feeling the Beach Boy vibe. I hope you will agree that this issue was worth the wait as it offers so much of the innovation in pedagogy that marks the journal's history. FUN has always been the foundation of this journal and the development of pedagogy in neuroscience. But in these times, we can also introduce FUN into our teaching with a board game, an escape room, a cool case study, some visual creativity, and other active approaches to make the classroom enjoyable.

REFERENCES

- Basu A, Bradaric B, Donley D, Gaudier-Diaz MM, Grimm J, Kaplan J, Nahmani M, Reynolds ER, Rose J, Tan TM (2024) Proceedings of the 2023 Faculty for Undergraduate Neuroscience Workshop at Western Washington University, Bellingham, WA, July 27-30, 2023. *J Undergrad Neurosci Educ* 22(2):E4-E10.
- Bozer ALH, Civitello NA, Rawlings ED, Leach LF (2024) Introducing BRAINOER: The Behavioral Research and Interdisciplinary Neuroscience Open Educational Repository. *J Undergrad Neurosci Educ* 22(3):R1-R5.
- Calin-Jageman RJ, Calin-Jageman IE, Martinez Acosta V, Hardwick J, Johnson B and Wiertelak EP (2018) Best Practices for Developing, Assessing, and Sustaining Inclusive Curricula: Proceedings of the 2017 Faculty for Undergraduate Neuroscience Workshop. *J Undergrad Neurosci Educ* 16(3):A42-A43
- Castleman BV, Jarvinen LZ, Jarvinen MK (2024) Neurodiversity in the Minds of Students: From Perception to Campus Programming. *J Undergrad Neurosci Educ* 22(3):A217-A223.
- Dupuis F, Shlyonsky V, de Puelle B, Gall D (2024) Neurosimulator for Undergraduate Biophysics and Neurophysiology Courses. *J Undergrad Neurosci Educ* 22(3):A207-A216.
- French LB, Stauffer M, & Salazar Requena M (2024) Sherlock Holmes and the Neurophysiologists: unraveling the "mystery" of active learning success. *J Undergrad Neurosci Educ* 22(3):A160-A166.
- Gittis AG (2002) The Emergence of Non-Match-to-Sample Behavior in the Developing Rat Pup. *J Undergrad Neurosci Educ* 1(1):A1-A3.
- Ha J, Afana D, Nassimi Moghaddam K, Nicholas A (2024) Using BioRender for Active Learning: Exploring Learning-Style Preference and Visual-Spatial Ability in Undergraduate Students. *J Undergrad Neurosci Educ* 22(3):A289-A296.
- Herin GA, Lewis GM (2024) Integrating intercultural competence into a Neuroscience curriculum through a short-term study abroad program. *J Undergrad Neurosci Educ* 22(3):A167-A176.
- Huffman DJ (2024) An in-depth Exploration of the Interplay between fMRI Methods and Theory in Cognitive Neuroscience. *J Undergrad Neurosci Educ* 22(3):A273-A288.
- Jeye BM (2024) Use of Buzz Buttons to Illustrate Taste Perception Principles in a Sensation and Perception Laboratory Exercise. *J Undergrad Neurosci Educ* 22(3):A177-A184.
- Johnson BR, Wytttenbach RA, Wayne R, and Hoy RR (2002) Action Potentials in a Giant Algal Cell: A Comparative Approach to Mechanisms and Evolution of Excitability *J Undergrad Neurosci Educ* 1(1):A23-A27.
- Kaur AW (2024) *Forbidden Neurds: A Neuroscience Word Game*. *J Undergrad Neurosci Educ* 22(3):A185-A196.
- Lom (2002) Introducing *The Journal of Undergraduate Neuroscience (JUNE)*. *J Undergrad Neurosci Educ* 1(1):E1.
- Lom B (2012) Classroom Activities: Simple Strategies to Incorporate Student-Centered Activities within Undergraduate Science Lectures *J Undergrad Neurosci Educ* 11(1):A64-A71
- Maldonado-Vlaar CS, García-Arrarás JE (2024) The Neuroscience Research Opportunities to Increase Diversity program: transformative and successful research training strategies for undergraduate students within Hispanic serving institutions. *J Undergrad Neurosci Educ* 22(3):A224-A232.
- Paul AC, Goergen EM, and Beltz BS (2002). Exploring Neurogenesis in Crustaceans. *J Undergrad Neurosci Educ* 1(1):A18-A21.
- Ramirez JJ and Tonidandel S (2009) SOMAS-URM: The Evolution of a Mentoring and Summer Research Program. *J Undergrad Neurosci Educ* 8(1):A69-A72.
- Reyes-Nava NG, Esparza D, Suarez V, Quintana A, & Jeffrey T. Olimpo JT (2024) Interactive Notebooks Improve Students' Understanding of Developmental Neurobiology, Attitudes Toward Research, and Experimental Design Competency in a Lecture-Based Neuroscience Course. *J Undergrad Neurosci Educ* 22(3):A265-A272.
- Rydbom J, Das S, Storm A, Nemes-Baran A (2024) The efficacy of a novel board game to teach cable properties to introductory neuroscience undergraduate students. *J Undergrad Neurosci Educ* 22(3):A233-A245.
- Sable HJK, Lester DB (2024) Memphis NeuroSTART Program: Promoting Student Success and Increasing the Diversity of Applicants to Neuroscience Graduate Programs. *J Undergrad Neurosci Educ* 22(3):A246-A255.
- Smith K, Pilger A, Amorim MLM, Marcic S, Reining Z, Ristow N, Miller D, Leonhardt A, Donovan JC, Meier M, Marzullo TC, Serbe-Kamp E, Steiner AP, Gage GJ (2024) Low-cost classroom and laboratory exercises for investigating both wave and event-related electroencephalogram potentials. *J Undergrad Neurosci Educ* 22(3):A197-A206.
- Wang J, Beecher K, Chehrehasa F (2024) Virtual dissection table case studies for undergraduate neuroanatomy written assignments. *J Undergrad Neurosci Educ* 22(3):A256-A264.
- Wiertelak, EP (2002) And the Winner Is: Inviting Hollywood into the Neuroscience Classroom. *J Undergrad Neurosci Educ* 1(1):A4-A17.
- Wiertelak EP, Hardwick J, Kerchner M, Parfitt K & Ramirez JJ (2018) The New Blueprints: Undergraduate Neuroscience Education in the Twenty-First Century. *J Undergrad Neurosci Educ* 16(3):A244-A251.

Received July 31, 2024; accepted July 31, 2024.

This work was supported by The Association for the Development of Undergraduate Neuroscience Education (SRA & RLN), The Endowment for Science Education (EA), and The Synaptic State Faculty Research Foundation (EA). The authors thank Mr. Spine L. Cord, Dr. Amy G. Dala, and the students in Neuroscience 101 for technical assistance, execution, and feedback on this lab exercise.

Address correspondence to: Dr. Rita L. Neurotrophin, Biology Department, 123 Growth Cone Avenue, Action Potential College, Hillcock, IL 60101. Email: rln@apc.edu