EDITORIAL
Candles in the Dark

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In his book, "The Demon-Haunted World: Science as a Candle in the Dark," Carl Sagan (1996) reminds us that our work as scientists/educators is to bring rational light into a world easily influenced by the darkness of human ignorance. This darkness is expressed in many forms, for example in superstitions, racism, misogyny, and in the denial that humans adversely affect life on this planet. Deep cruelty directed to the "other" is often stirred up by the fear mongering of voices emerging from this darkness. We teach our students to think critically, to learn the scientific process and the tools used to gather new knowledge, to learn our organized conventions of presenting our ideas, results, and conclusions through talk and prose, and to use the concepts and tools of Neuroscience creatively to generate new knowledge. Sagan's book helped me appreciate that one of the most important things we do is teach students the critical thinking skills they can apply not only to science, but to navigate the world thoughtfully and rationally.

Before I introduce the contents of this *JUNE* issue I announce our *JUNE* "Editor's Choice Awards" for especially noteworthy papers appearing in the last year's Fall and Spring *JUNE* issues (Vol. 14, 1 & 2). A subcommittee of our *JUNE* editorial board, organized by Barbara Lom, is tasked yearly to designate two of the excellent full articles published in each year's *JUNE* issues for these awards. For "Outstanding Neuroscience Pedagogy Article," we chose "The BRAIN Initiative Provides a Unifying Context for Integrating Core STEM Competencies into a Neurobiology Course." This paper describes an undergraduate neuroscience course teaching traditional content in the context of the Brain Research Through Advancing Innovative Neurotechnologies (BRAIN) initiative, while focusing on core STEM competencies (Schaefer, 2016). Student feedback was very favorable, indicating that they learned foundational neurobiology content, increased their critical thinking skills, their ability to read the primary literature, and their scientific communication skills. Our award for "Outstanding Neuroscience Laboratory Article," "Undergraduate Biocuration: Developing Tomorrow's Researchers While Mining Today's Data," describes the training of undergraduates to curate biological and clinical data in user-friendly data bases for informatics analyses (Mitchell et al., 2015). The authors describe their recruitment, and training and organizational procedures for students to construct experimental and clinical databases from transgenic mouse models and from Amyotrophic Lateral Sclerosis patient records. Students achieved an accuracy rate (almost 100%!), similar to professional biocurators holding PhD degrees. These and other fine examples of creative initiatives in neuroscience education can be seen in *JUNE* articles at: http://www.funjournal.org/archives/.

The editorial section of this new *JUNE* issue starts with a description of the history, mission and evolving format of our "Amazing Papers" review section (Harrington et al.). Three of the "Amazing Paper" submissions (by Kennedy, Sable, and Cecala) are described as examples of how this section is broadening its instructional content. Two additional "Amazing Papers" reviews also showcase primary research articles with instructionally rich content: 1) genetic manipulation and environmental enrichment can both influence the performance of learned behavioral tasks in mice (Flinn), and 2) the fast time scale of evolutionary plasticity for a sensory system to adapt to changing environmental conditions (Bies). An opinion piece in this section walks us through the process of engaging students in the planning of a new neuroscience course, with positive educational, personal and practical outcomes for both students and faculty (Birgbauer).

The first of the 14 articles in this issue continues a productive thread by Ramos et al. of quantitatively analyzing the impact of undergraduate neuroscience programs on undergraduates' experiences and career decisions. They focus here on the importance of neuroscience as one of the most popular life science majors. We welcome our first *JUNE* article that focuses mainly on Neuroscience graduate education. Harrison et al. describe a literature-based beginning grad student course to familiarize new students with modern research methods. In class sessions, "expert" advanced grad students support beginning grad students in presenting research methods new to them. Six articles present new laboratory exercises or evaluate lab techniques. In two of these, students determine the modification by plant extracts of taste sensations in humans: 1) the reduction of perceived sweetness by the herb *Gymnema sylvestre* ("Sugar Destroyer"; Aleman et al.), and 2) the ability of the Miracle Fruit (*Synsepalum dulcificum*) to make sour foods taste sweet (Lipatova and Campolattaro). Two more human subject exercises examine tactile sensitivity under protocols that distinguish peripheral and central sensory processing (Lowe et al.), and report a student evaluation of EEG recording methods in terms of cost effectiveness and recording requirements (Shields et al.). Quiroga and Price describe a simulated sensory computer lab exercise that allows students to manipulate and "record" the firing properties of a virtual, motion sensitive neuron from V1 that displays realistic physiological properties. In the last lab

exercise, Lemons presents an investigative, "mystery mutant" lab exercise with the nematode model *C. elegans* for students to determine the synaptic site of a mutation that disrupts behavior. Remaining articles describe the effectiveness of using the structural assessment of knowledge approach (SAK) for evaluating student learning of basic Neuroscience concepts (Stevenson et al.), a comparison of the success of instructional rubrics with other styles of teaching scientific writing (Clabough and Clabough), the use of social media to engage students in deeper understanding of neuroscience content, and in disseminating this content to the general public (Valentine and Kurczek), a novel student internship experience with neuropsychological techniques at a university neurotraining center (Schicatano and Bohlander), and the development of a word origin library to help students understand complex Neuroscience terminology (Hallock et al.). The last two articles are based on talks presented at a symposium, "Teaching Neuroscience to Non-Scientists," at the 2015 Annual Meeting of the Society for Neuroscience in Chicago, IL, organized by Dr. Richard Olivo of Smith College. These invited articles report the success of courses using popular Neuroscience literature (Been et al.), and Neuroscience related cultural or news themes (Roesch and Frenzel) as contexts to teach Neurobiology content.

Our new "Case Studies" feature, which uses clinical themes to teach basic neuroscience content, continues with two new case presentations, edited by Leah Roesch and Kristen Frenzel. These educational cases center on a patient born without a cerebellum (Brielmaier) and a patient with the retinal degenerative disorder *Retinitis pigmentosa* (Ogilvie and Ribbens).

We present four book reviews in this *JUNE* issue: Schatz's *A Matter of Wonder: What Biology Reveals About Us, our World, and our Dreams (*Kalat*),* Bouton's *Learning and Behavior: A Contemporary Synthesis, 2nd edition (Meyers-Manor),* Kingdom and Prins' *Psychophysics: A Practical Introduction, 2nd edition* (Cecala), and Luo's *Principles of Neurobiology* (Hoy).

Finally, a note on the art of a thoughtful book review. In our recent review of Watson and Breedlove's *The Mind's Machine: Foundations of Brain and Behavior, 2nd edition* (Johnson and Weldon, 2016), I did not consider the authors' target audience. I am enthusiastic about this book and its potential to excite students across broad sub-disciplines of Neuroscience. However, I commented that the book lacked sufficient rigor in its discussion of neuronal excitability. This criticism arose from my perspective teaching upper level neurobiology classes to biology and engineering students. I expect these students to learn finer details of signal transmission in the nervous system than beginners need to know. The Watson and Breedlove book is intended as an initial introduction to Neuroscience and is written appropriately for its audience. I will pay more attention to authors' objectives in future book reviews.

This new issue of *JUNE* contains creative contributions that enlarge our neuroscience teaching toolbox.

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I thank Kathleen Wilcox for constructive comments on this editorial.

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