It is my pleasure to present the twelfth volume of *Pioneering Neuroscience: The Grinnell Journal of Neurophysiology*. The articles collected in this volume represent original contributions to the field of Neuroscience offered by students *in the eleventh offering* of Biology 150: Introduction to Biological Inquiry - the Language of Neurons. As has been true for ten previous classes of Bio 150, this course was taken by most of the students during their first semester in college. For all of the students, this was their first college-level biology course!

This year we tried something a little different from previous years. All of the research projects examined the role of the peptide N-acetylaspartylglutamate, or NAAG, at the crayfish neuromuscular junction. NAAG has been touted as the most abundant peptide neurotransmitter in the mammalian central nervous system (CNS). Not surprisingly, because of its ubiquity in the CNS it has been implicated in numerous neurological problems, including amyotropic lateral sclerosis (ALS), diabetic neuropathy, pain, CNS injury, and schizophrenia. NAAG appears to work primarily as a co-transmitter, released along with several smaller neurotransmitters such as glutamate, GABA and acetylcholine. Following its release, NAAG alters the ongoing activity at the synapse by interacting with what have been traditionally considered glutamate receptors.

Despite the large amount of research that has been carried out trying to understand its distribution and function in mammals, relatively little exploration has been done in non-mammals. In particular, virtually nothing is known about the role of NAAG in crayfish. Other than a study carried out ten years ago that showed NAAG was released from crayfish nerve fibers and was probably involved in axon-to-glia signaling (Gafurov *et al*., 2001, *Neuroscience* **106**, 227-235), no one has asked whether NAAG functions at synapses in invertebrate animals, as it does in mammals. This year's class of Bio 150 students changed that! After reading about what NAAG does at synapses in mammals, each group of three students chose a specific question designed to learn something about the role of NAAG at the crayfish neuromuscular junction. I hope you enjoy this volume and trust you will be as impressed as I am with what these students have accomplished in such a short time.

I wish to thank the students of Biology 150 for their hard work and collegiality. None of this would have been possible without the major contributions of Sue Kolbe and Ashley Millet, the lab instructors for Biology 150, and the excellent mentor/lab assistant Chris Kaiser-Nyman '13. Lastly, I am pleased to acknowledge Helen Carey '04, who contributed the cover illustration.

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