

Standing on the shoulders of previous neuroscience research.

Michael Miller*

Department of Anatomy, Touro College of Osteopathic Medicine, 60 Prospect Avenue, Middletown NY 10940 USA

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Editorial

"Alas poor Yorick, I knew him. . ." uttered Hamlet as he pondered the skull and considered mind of a former colleague [1]. But did he know him well? Comprehending the human brain and nervous system is formidable. Arguably, neuroscience is the greatest remaining frontier of biomedical research. We are confronted by trying to understand how the nervous system functions during normal homeostasis and challenged by how it dysfunctions in disease states. Breaking these Gordian knotty problems requires understanding the nervous system regulation within our bodies and interactions of our physical being with the world beyond.

The field of neuroscience research dates to the 1800's and beyond. Ancient civilizations were uncertain about where thought and the soul were based. Egyptians attributed thought to the heart. Indeed, they believed that the brain was expendable; after all, it was not one of the vital organs worthy of embalming for eternity [2-4]. This is consistent with Aristotle who also believed that thought and the soul originated in the heart and that the brain was a site where blood was cooled. It was not until the Renaissance when Vesalius, Descartes, and others posited the brain as the site for cognition [5,6]. Evidence for this idea emerged in the late 19th century with Flourens, Ramon y Cajal, von Helmholtz, Broca, and others.

During much of the 20th century, neuroscience research advanced, albeit incrementally. This growth resulted from exploiting a modest array of methods that were available. State-of-the-art behavioural, electrophysiological, neurohistological methods provided a sound foundation for inquiries of brain structure and function. Toward the end of the 20th century, new methods emerged and the field of neuroscience exploded. This exponential growth particularly accelerated with the introduction of molecular and imaging approaches. These methods opened vistas that had previously been considered fantasy.

The current challenge for neuroscience is to integrate its present and future with its rich past. While it is easy to be infatuated with new approaches, conscious effort must be made to ensure that the insightful and productive research performed during the 19th and much of the 20th century is not ignored and forgotten. The narrow lens through which research is performed is also impaired by the limit of library searches which often do not facilitate looking back to earlier references. Faddish, dare I say, slavish adherence to the pursuit of research that relies only on the most current methods can result in an unfortunate prejudice and an ultimate diminution of the field of neuroscience. It is important to remember the sentiment of

George Santayana "those who do not learn history are doomed to repeat it" [7]. Was he referring to the true meaning of research?

No doubt, current researchers are driven by real-life pressures (careers, promotions, and quests for extramural funding) to report on information that is new and positive. Disappointingly, this often results in publications that describe data that are controversial and too often are not corroborated by others. While this leading edge research should be promoted, confirmatory and "negative" results should also be applauded. Such studies steady the ship of neuroscience and help guide future researchers from repeating non-profitable pursuits [8,9]. All types of research should be encouraged, so long as they advance the field of neuroscience.

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*Correspondence to

Michael Miller

Department of Anatomy, Touro College of Osteopathic Medicine

60 Prospect Avenue, Middletown, NY 10940 USA

Tel: 845-648-1256

E-mail: michael.miller21@touro.edu