INTRODUCTION FROM THE EDITOR-IN-CHIEF

In the 17th century, the human body began to be viewed as a system of subunits and independent compartments. This eventually led to the first human anatomical descriptions that mapped the body into different organs and tissues. What followed was a series of significant advances in the understanding of human biology. One of the greatest achievements in physiology during the 17th century was William Harvey's documentation that blood within the human body was under continuous circulation. Yet, much of the initial credit for the recognition of the ultimate dependence of the vital organs on the circulatory system dates back to the 2nd century AD with Galen. The doctrines of Galenic physiology outlined that blood was produced in the liver, flowed to the heart to obtain "vital spirits," and subsequently bathed the brain to gain "animal spirits." The "vital spirits" described by Galen were later discovered independently by Schiele in Sweden and by Priestly in England to consist of the element oxygen that was a critical component to sustain the body and brain. Oxygen, also termed "acid-former", obtained its current name from Antoine Lavoisier of France. Lavoisier made essential medical discoveries concerning the role oxygen in respiration and its necessity to sustain life. He determined that oxygen comprises about one-fifth of the volume of atmospheric air and is the only gas in air that sustains combustion and respiration.

These investigators, who were at the vanguard of science during their time, are considered to be some of the earliest researchers who attempted to bridge the gap between basic science and clinical medicine. The initial work by these investigators helped provide direction for modern clinical science and the treatment of disease, especially concerning disorders of the nervous system. Incredibly, our understanding of human disease continues to grow at an exponential rate. At times, the accumulation of knowledge of the cellular and molecular components of clinical disease exceeds all prior expectations held just a few years ago, such as evidenced by the recent cloning of the human genome, the growth of proteomics for drug discovery, and the realization of inherent plasticity of the central nervous system during injury or neurodegenerative disorders.

Despite theses advances, both basic investigators and clinicians sometimes are unable to identify the vital link between basic science discovery and the development of effective therapies for clinical disease. Even more critical to this process is the initiative to foster novel ideas that may be contrary to "accepted dogmas" of the scientific community. Multiple anecdotes by both Noble laureates and visionary investigators describe the persistent resistance to their theories and work that eventually gave way with the maturation of scientific discovery. In particular, if one focuses upon the nervous system, greater understanding of the mechanisms that determine neuronal and vascular survival do not on the surface always appear to integrate well with prior beliefs.

As a result, publication of novel work that bridges the gap between basic science research and clinical discovery becomes critical for the development of new therapeutic regimens. To foster this process, a new neuroscience journal, *Current Neurovascular Research*, is making its debut. *Current Neurovascular Research* provides a cross platform for the publication of scientifically rigorous research that addresses disease mechanisms of both *neuronal and vascular* origins in neuroscience. The journal serves as an international forum for pioneering original work as well as timely neuroscience research reviews in the disciplines of cell developmental disorders, plasticity, and degeneration and emphasizes the elucidation of disease mechanisms that can impact the development of therapeutic strategies for neuronal and vascular disorders.

In this inaugural issue, *Current Neurovascular Research* covers a wide breadth of research topics for an expanding audience of both basic scientists and physicians that maintain interest in the nervous system. From respected leaders in the field, topics examine potential cellular and molecular targets that modulate

neuronal and vascular function for translation into therapeutic strategies, such as the role of mossy fiber sprouting during epileptogenesis, apoptotic protease pathways during retinal degeneration, heat shock proteins and cellular plasticity, mechanisms that drive human complex I deficiency, and inhibitory pathways that involve myelin-associated proteins such as Nogo. Investigations that translate cellular injury into more broad impairments that involve altered synaptic transmission and nervous system dysfunction outline the cellular and molecular mechanisms that determine endogenous facilitation of pain, the extinction of fear motivated learning, and the physiological and pathological mediators of brain hyperthermia.

Even prior to its launch, *Current Neurovascular Research* has garnered the support of well recognized investigators and boasts a highly respected editorial board. As a result, we believe that the journal promises to become one of the essential resources for new and exciting developments in the neuroscience field. It is our goal that both basic scientists and physicians will glean further insight into the methods of translating investigative work into viable therapeutics for diseases of the nervous system. With this objective, we hope to continue in the forefront of science with the same vision and intuition as evidenced by not only many of our contemporaries, but also by the early pioneers who preceded us such as Galen, Harvey, and Lavoisier.

Kenneth Maiese
Editor-in-Chief