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EDITORIAL

Translational Research in Neurotrauma: Novel Mechanisms and Emerging Therapies

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This special issue of *Translational Stroke Research* ventures into the realm of neurotrauma where many of the mechanisms are similar to that seen in degenerative changes following ischemic or hemorrhagic stroke. For example, all of the 14 papers are about traumatic brain and spinal cord injuries which have both an ischemic and a hemorrhagic component. In fact, nine of them deal directly with vascular dysfunction, which is increasingly recognized as an important contributor to the secondary degeneration seen after neurotrauma. Several of them review the growing list of emerging therapeutic agents that target vascular responses and that are showing promise to ultimately change the clinical outcomes of these devastating conditions. In fact, one paper shows original data for the therapeutic efficacy of erythropoietin which might be mediated by a vascular mechanism. We look forward to the day that some of them, yes, even one of them, are translated all the way to the clinic.

This issue is also special because of our emphasis on contributions by New Investigators, with nine contributions from Assistant Professors. We wanted to celebrate their success in research and in their career, evidenced by their recently obtained NIH awards. We sincerely wish to congratulate these Investigators and wish all of them success in their careers. How exciting to see their efforts rewarded often after a long time of setting up their laboratories, coming up with novel and important hypotheses, gathering of preliminary data, countless hours of writing, perhaps a rejected submission the first time around. But they stuck with it! We and society as a whole expect great things from them, and their work is bound to help translate treatments to the clinic. We do want to highlight three articles, by Ng et al. [1], by Morse [2], and by Xiong et al. [3], which contain original data, evidence of these Investigators' progress, and these papers make this issue even more special.

The field of neurotrauma is extensive, and different complementary scientific approaches are well-represented in this issue. The traumatic brain injury contributions include those that describe the role of intracellular signaling in hippocampal atrophy and dysfunction (Atkins) [4] and vascular issues such as the relatively small role of ischemia (Diringer et al.) [5], the neurovascular unit (Pop and Badaut) [6], the blood–brain barrier (Chodobski et al.) [7], the edema (Shields et al.) [8], and the reparative processes such as angiogenesis (Xiong et al.) [3]. Diagnostic methods are important for understanding pathophysiological changes, for classifying injury severities, and for evaluating the efficacy of therapeutics. Two papers deal with this issue, i.e., MRI imaging of vascular changes (Dijkhuizen) [9] and blood biomarkers (Zhang et al.) [10]. The SCI papers also describe varied pathology and therapeutic approaches, including the role of vascular pathology (Benton and Hagg [11], Ng et al. [1]), a comparison of pathophysiology between injuries induced by $sPLA_2$ versus

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by a contusion (Liu et al.) [12], CSF biomarkers (Ng et al.) [1], respiratory dysfunction (Terson de Paleville et al.) [13], and cellular degenerative changes in the vertebral bone (Morse) [2]. Finally, a method which will enable analysis of many different components and outcome measurements across different neurotrauma studies is presented and will help to identify common pathological mechanisms that can be targeted for therapy (Ferguson et al.) [14].

Significantly, this issue contains four articles with human data and review of human literature (Diringer et al. [5], Ng et al. [1], Terson de Paleville et al. [13], Zhang et al. [10]). How appropriate and stimulating to see these excellent contributions in a "Translational" journal.

Lastly, we want to thank all the reviewers for their essential contributions to this special issue.

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