



Prologue: Glial and Neuron-Related Diseases

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Received: 4 October 2022 / Revised: 8 October 2022 / Accepted: 12 October 2022 / Published online: 29 October 2022
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Over the last half decade the journal *Neurochemical Research* has played an integral role in bringing together, and shaping multidisciplinary groups of scientists and clinicians that have an interest in neuron and glial cells. Fuelled by breakthroughs in multi-omics and information technology, new technologies and cutting-edge tools have led to novel insights into the fundamental interplay between neuron and glial cells under both physiological and pathological conditions, which is attracting significant attention not only for the bench, but also for the applications in drug discovery and clinical relevance.

The promise nowadays is that we could answer some intriguing questions, often questions that we were unable to delineate before the advent of the new technologies. For instance: What makes neuron and glial cells different from each other? What happens to neuron and glial cells shifting from health to disease conditions? To better demonstrate how monitoring the cellular status by multi-omics contributes to

the development of novel and effective treatment options, five papers are collected in this special issue to present transcriptomic analysis of glioma and neuroblastoma, pan-cancer analysis of glioma, and network pharmacology.

While several treatment options are currently available to control the symptom of neurodegenerative disorders, treatment options to ameliorate neurodegenerative pathology and strengthen neuronal health are, unfortunately, limited. For the development of novel therapies, a basic understanding of neuron-glia interaction is needed. In this special issue, seven papers address inspiring and versatile perspectives including astrocytic autophagy, regulation of iron homeostasis by microglia, metabolic homeostasis of satellite glial cells, aggregation of α -synuclein in the peripheral tissues, as well as novel anti-inflammatory therapies.

The need for the translational research from bench to bedside can never be overestimated. It remains consistently as huge clinical and economic burden for many neurological diseases e.g., brain tumours, stroke, and dementia. One of challenges existing in the drug development is the paucity of appropriate animal models and comparative studies addressing characteristic features of the disease. To this aim, the special issue collects nine articles that apply different models to understand underlying pathologies in the clinic.

In summary, the articles in the special issue ‘*Glial and Neuron-Related Diseases*’ represent an exciting overview of where we are with some suggestions of where we are going. The burgeoning use of cutting-edge technologies to elucidate long-lasting biological questions is a highly multidisciplinary effort. With higher precision and sophistication, new observations are opening our understanding of molecular and cellular biology, which has led direct impact to medicine.

Funding This work was supported by the National Natural Science Foundation of China (81471253); the Foundation for Innovative Research Groups of the National Natural Science Foundation of China (81221002); the Natural Science Foundation of Beijing (7091004); the China Postdoctoral Science Foundation (YJ20210222).

Data availability Data sharing not applicable to this article as no datasets were generated or analyzed during the current study.

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Declarations

Conflict of interest The authors declare no conflicts of interest.