

Tentative Outline

Special Thematic Issue for the journal *Current Molecular Medicine*

Molecular Regulation Scenarios behind Cerebral Autoregulation

Guest Editors: Prof. Yi Yang

- **Scope of the Thematic Issue:**

Cerebral autoregulation (CA) defines the brain's capacity to maintain stable cerebral blood flow despite fluctuations in arterial blood pressure or intracranial cerebral pressure within a certain range. An intact CA could protect the brain from either hyperperfusion or hypoperfusion, whereas impairment of CA can lead to disturbance of cerebral blood flow which may exert detrimental effects on the occurrence, progression, and even outcomes of various neurological diseases. With the widely application of transcranial Doppler in combination with continuous blood pressure measurement, the clinical studies on CA, especially dynamic CA, are explosively increasing in recent years. Clinical evidence has implicated that CA was impaired to some extent in cerebral vascular diseases, traumatic brain injury, neurodegenerative diseases as well as neuropsychiatric diseases, etc. However, the pathophysiological mechanisms of impaired CA on a basic research field have been seldom deeply investigated. Several theories underlying the physiological control of CA have been put forward including endothelial related regulation (e.g. nitric oxide), neurogenic regulation (e.g. sympathetic activity), and intrinsic myogenic control. Nevertheless, only a few molecules and pathways have been confirmed to participate in regulatory mechanisms of CA and vast of regulatory information has not been revealed yet. Moreover, studies revealed that some treatments (e.g. statin, ischemic preconditioning) might have beneficial effects on CA, but most studies were focused on CA itself, the regulatory mechanisms are still needed to be fully discussed.

To further provide deep insights into the mechanisms of CA as well as excavate potential clinical targets to improve CA, in this thematic issue, investigators are encouraged to undertake some basic research on the molecular regulatory mechanisms and biomarkers which are related to CA, seeking for novel approaches and evidence for CA improvement in molecular level. Studies with animal models or clinical laboratory samples are all welcomed.

Keywords: Cerebral autoregulation, neurological diseases, regulatory mechanisms, molecular, biomarker, animal models, clinical laboratory samples

Sub-topics:

The sub-topics to be covered within the issue should be provided:

- Basic research of CA on healthy humans
- Basic research of CA on neurological diseases
- Molecular regulatory mechanisms and biomarkers of CA
- Novel approaches and evidence for CA improvement

Tentative titles of the articles and list of contributors:

The biomarker study on the cerebral autoregulation of OSAHS, Prof. Zan Wang, Department of Neurology, the First Hospital of Jilin University, Changchun, China, wangzandoctor_01@163.com

Clinical application of cerebral hemodynamics with transcranial Doppler and tilt testing in orthostatic intolerance, Prof. Fang Deng, Department of Neurology, the First Hospital of Jilin University, Changchun, China, defrances2000@163.com

A systematic review of possible molecular mechanisms in cerebral autoregulation, Dr. Yue He, Department of Neurosurgery, Tongji Hospital, Tongji Medical College, Huazhong University of Science and Technology, Wuhan, China, drhywind@163.com

Canonical Wnt signaling regulates brain endothelial function through crosstalk with VEGF-A/VEGFR2 signaling, Prof. Junlei Chang, Shenzhen institutes of advanced technology, Chinese academy of sciences, Shenzhen, China, jl.chang@siat.ac.cn

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Schedule:

✧ Thematic issue submission deadline: December 31 2020

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