

# Tentative Outline

## Special Thematic Issue for the journal *Current Alzheimer Research*

### Title of the Thematic Issue: Innovation in biological basis and therapeutics of vascular dementia

*Guest Editor: Dr. Ying Jiang*

*Co-Guest Editor: Dr. Jie-Qing Wan*

- **Scope of the Thematic Issue:**

Dementia is characterized by a progressive and unrelenting deterioration of memory and cognitive ability, which significantly affects a person's ability to perform everyday activities. Due to aging and a lack of effective treatments, dementia has emerged as a major health problem at an alarming rate worldwide. In 2005, Alzheimer's Disease International (ADI) reported 24.2 million dementia cases globally, which is anticipated to reach 81.1 million cases by 2040. Thus, understanding the etiology and pathophysiology remain top priorities for prevention and curative treatments of dementia.

Previously, Alzheimer's disease was considered the most common cause of dementia. However, this concept has been challenged by recognizing that vascular dementia (VaD) is more common than previously thought. The potential mechanism proposes vascular disorders impair the physiological function of cerebral blood vessels, causing subsequent hypoperfusion, neuronal death, and degeneration of the central nervous system. However, many of its details remain a matter of dispute.

In the current research topic, we first aim to put a spotlight on identifying unique patho- and molecular-biological changes of VaD, especially for its various subtypes. For example, subcortical VaD results from cerebral small artery disease, which leads to white matter lesions, lacunes infarction, and microbleeds. Meanwhile, poststroke dementia has a progressive onset and course, suggesting a degenerative rather than a vascular origin. Additionally, traumatic brain injury and glioma have also been suggested to contribute to cognitive dysfunction due to VaD. However the various causes, these VaD subtypes demonstrate common clinical scenarios and can only be distinguished at autopsy. Thus, understanding the patho- and molecular-biological features of each VaD subtype has significant implications for differential diagnosis, prevention, and treatment of VaD. Moreover, it is known that behavior and psychological changes are common among AD cases, which, however, exhibit marked regional variants. For example, Apathy was present in more than half of patients with AD in a Brazilian study, followed by depression, sleep alterations, and anxiety. Meanwhile, AD patients in India have significantly more delusions, hallucinations, anxieties, and phobias. Under the current research topic, we are also interested in understanding the unique behavioral and psychological symptoms of various VaD subtypes, since we believe the behavior and psychology are prominently different between VaD and AD and among VaD variants. Additionally, although previous studies proposed the role of diet and lifestyle in vascular system disease, there is no robust data to understand the influence of specific risk factors, such as diabetes, alcohol, and obesity, on dementia from a purely evidence-based perspective. Thus, it is imperative to identify the risk factors of VaD, which help us to prescribe a therapeutic regimen most appropriately for secondary prevention. Lastly, since the brain has already suffered from severe damage by the occurrence of the time full-blown dementia, it is crucial to capture VaD patients with minimal cognitive impairment from the general population. However, the lack of screening tools for the VaD has been recognized as a major issue in the estimation of the true burden. Therefore, we are also interested in validating novel non-invasive screening modalities to select high-risk patients from the general population.

**Keywords:** Dementia, pathophysiology, Vascular dementia, traumatic brain injury, degenerative, therapeutic regimen, etiology.

### **Sub-topics:**

- Use of in vitro or in vivo models for understanding the patho- and molecular-biological mechanisms of various VaD subtypes
- Application of novel compounds in the prevention and treatment of VaD
- Description of differences in profiles between VaD and other types of dementia-causing diseases
- Identification of unknown etiology of VaD
- Invention of screening tools for the VaD
- Understanding the role of diet and lifestyle in VaD's pathophysiological and prevention process.

### **Schedule:**

- ✧ Thematic issue submission deadline: October 1, 2023.

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