

## Tentative Outline

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

Title of the Thematic Issue: “Glia-glia and glia-neurons crosstalk in dementia”

*Sectional Editor: Dr. Marta Valenza*

- **Scope of the Thematic Issue:**

Glia represents a population of non-neuronal cells responsible for the homeostasis of the nervous system. In the last two decades the complex and heterogeneous functions orchestrated by glial cells have been progressively discovered and understood. Their key role as supportive cells for neurons have been recognized, together with a variety of important functions including, but not limited to, participating in neurotransmission, and regulating synaptic connectivity, shaping the blood-brain barrier (BBB), defending the brain from any kind of insults, buffering pH and ions concentrations, releasing molecules acting as neuromodulators, trophic factors, and hormones as well as responding to circulating signals. CNS glia comprehends various cell types, as astrocytes, NG-2 glia, oligodendrocytes, microglia, pericytes, each of them could respond to stimuli by changing their morphology and/or gaining/losing or modulating one (or more) of their functions if, and when, necessary. Such complexity supports the conviction that glial cells are involved in quite all brain pathologies, spanning from brain injury to multiple sclerosis, from dementia to depression. In addition, the intricate interplay between all the different brain cell types, both in physiological and pathological conditions, is still poorly understood. Cell-to-cell communication between the different types of glial cells and between them and neurons concur to the proper brain function. Despite the exponentially growing knowledge regarding the brain, unveiling glial cell functions and interaction is complex, but opens the opportunity to discover novel target for treatment to develop new tools to modulate their function as treatment strategy for several diseases. The proposed issue aims to stimulate research unveiling the complex communication between different glial cell types, that could be altered in pathological conditions affecting the brain at various level of organization as Alzheimer’s diseases and other types of dementia with neurodegeneration as common feature.

**Keywords:** Cell communication, Astrocytes, Oligodendrocytes, Microglia, Neurodegeneration, Glia-neuron crosstalk, Glial cells, Glia-glia crosstalk

#### Sub-topics:

- Glia crosstalk in Alzheimer’s Diseases and other types of dementia
- Impact of glia reactivity on physiological communication between brain cells
- Neuron-glia interaction in Alzheimer’s Diseases
- Behavioral and cognitive consequences of altered glial cell communication

#### Schedule:

- Thematic issue submission deadline: **April 2023**

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