

Special Issue on Circadian Rhythms in Regulation of Brain Processes and Role in Psychiatric Disorders

CALL FOR PAPERS

Recent studies have revealed that clock genes are rhythmically expressed throughout the brain and play critical roles in the regulation of normal brain processes. For example, clock genes are involved in regulating rhythms in long-term potentiation, dendritic spines, receptor trafficking, and neuronal activity in brain region and cell type specific manners. Current evidence suggests that circadian rhythms regulate short and long-term synaptic plasticity in neural circuits that underlie rhythmic behaviors, including respiration, blood pressure, cortisol, and locomotor activity, among others. Despite the evidence that circadian rhythms are involved in the regulation of several neural processes and in turn behaviors, this topic has not been extensively studied thus far, and there is much that is not known as to how and why circadian rhythms regulate such processes. Although mammalian circadian rhythms are controlled predominantly by the suprachiasmatic nucleus, recent advances made in this field on the emerging roles of clock gene rhythms across brain regions have suggested that the circadian system is involved in brain region specific regulation of cell activity and specific behaviors. Furthermore, recent studies have suggested a critical role of the circadian system in several disorders, including major depression, bipolar disorder, schizophrenia, anxiety, stress regulation, age related cognitive deficits including Alzheimer's disease, eating disorders, drug addiction, and alcoholism. The impact of circadian rhythm disruption on cognitive function, mood, and cardiovascular health, in populations of shift workers and frequent travelers, may also be due to underlying effects of circadian disruption on synaptic plasticity. This research area is thus at the interface of neuroscience, cell biology, endocrinology, and psychiatry.

This special issue aims to create a multidisciplinary collection of recent advances in the role of the circadian system in normal brain functions and psychiatric disorders. We invite authors to contribute original research articles as well as review articles that will illustrate and stimulate the continuing effort to understand the role of the circadian system in the regulation of normal brain processes and in diseases states, as well as potential use of the circadian system in development of therapeutic strategies.

Potential topics include but are not limited to the following:

- ▶ Recent advances in our understanding of peripheral brain oscillators
- ▶ Clock gene regulation of neuronal function including synaptic plasticity
- ▶ Clock gene regulation of glial cells (oligodendrocytes and astrocytes) and microglia
- ▶ Circadian rhythm abnormalities in mood disorders and psychotic disorders
- ▶ Circadian disruption and health in shift workers and frequent travelers
- ▶ Role of circadian rhythms in cognition and aging
- ▶ Circadian rhythms in regulation of reward processes and addiction
- ▶ Interactions between the circadian system and stress response system

Authors can submit their manuscripts through the Manuscript Tracking System at <http://mts.hindawi.com/submit/journals/np/crrb/>.

Papers are published upon acceptance, regardless of the Special Issue publication date.

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