

Special Issue: circadian rhythms, clock genes and neuropsychiatry: interesting times

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Published online: 1 September 2012
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Circadian rhythms are cycles in physiological, behavioural, psychological and other domains that recur approximately every 24 h. Such rhythms are driven by an endogenous circadian timekeeping system, whose molecular basis consists of the interlocking transcription and translation of a panel of “clock” genes, the expression of which then regulates gene expression and cellular function in a tissue-specific manner. Such rhythmic expression of clock genes is observed in most tissues, including the master circadian pacemaker in the suprachiasmatic nucleus of the hypothalamus, other CNS sites and peripheral organs. Therefore, the circadian system exerts considerable control over physiology and behaviour, and equally dysfunction of this circadian system may result in detrimental pathophysiological and psychopathological consequences.

It has been observed for many years that a number of neuropsychiatric conditions, most markedly mood disorders, are associated with circadian rhythm and sleep disturbances, with the implications that such disturbances are important in the aetiology and/or the clinical phenomenology of such conditions. In this special issue of the *Journal of Neural Transmission*, the contributing authors provide a comprehensive collection of reviews and original investigations that cover the field of circadian rhythm and sleep investigations across a broad range of neuropsychiatric disorders. The evidence for circadian rhythm disturbance in schizophrenia (Pritchett et al.), obsessive-

compulsive disorder (Lange et al.), depression (Lall et al.), childhood and adolescent psychiatric disorders (Dueck et al.), borderline personality disorder (Fleischer et al.) and alcoholism are reviewed (Wong and Schumann), as are the links between shift work (which results in circadian disruption) and mood disorders (Braungart et al.). These reviews illustrate a notable fact that some measure of circadian rhythm disturbance is observed across a spectrum of psychiatric disorders. Genetic evidence that implicates polymorphisms in clock genes with mood disorders is also overviewed (Partonen) and such evidence may point to circadian roles in disease aetiology. Given that the circadian system is complex and pervasive, there are many potential pathways through which circadian dysfunction might ultimately affect affective and cognitive as well as psychomotor, volatile and perceptive processes. This is highlighted in a review focussing on links between the circadian and immune systems, and the implications arising for major depression (Eyre and Baune). The therapeutic opportunities offered by addressing abnormal circadian rhythm is highlighted in a review on the use of light therapy in childhood, adolescent and postpartum depression, as well as in eating disorders (Krysta et al.). Original investigations address circadian rhythmicity and sleep in those with, and those at elevated risk of, bipolar disorder (Ritter et al.), assessing skin temperature rhythms in Alzheimer’s disease (van Someren et al.), the links between sleep and diurnal preference and ADHD in adults (Voinescu et al.), changes of subjective time estimation in mentally traumatised patients (Kowalski et al.), alterations of time-dependent psychological processes in migraine patients (Kropp et al.), associations between salivary oxytocin and cortisol and sleep stage (Blagrove et al.), the role of circadian rhythms and sleep in cognitive function in healthy older adults (Cochrane et al.) and how circadian

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and photoperiodic influences on seasonal affective disorder may be investigated with diurnal rodent models (Einat et al.).

As guest editors, we feel that this special issue illustrates the breadth of issues and opportunities presented by the interface of psychiatry and chronobiology and hopefully will stimulate further debate and research in this important field. We would like to thank all contributors for their high-

quality papers and the Editor-in-Chief of the *Journal of Neural Transmission*, Professor Peter Riederer for affording us the chance to guest edit this special issue.

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Guest Editors