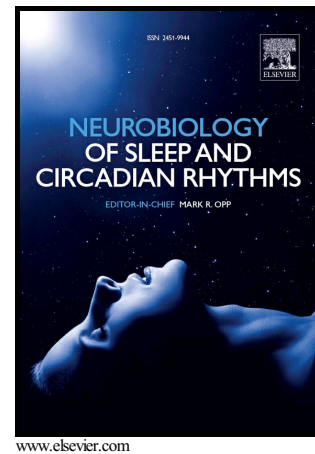


Author's Accepted Manuscript

Circadian Rhythm and Sleep-Wake Systems Share the Dynamic Extracellular Synaptic Milieu

Joanna M. Cooper, Kathryn E. Abrahamsson, Rebecca A. Prosser



PII: S2451-9944(17)30034-2
DOI: <https://doi.org/10.1016/j.nbscr.2018.04.001>
Reference: NBSCR35

To appear in: *Neurobiology of Sleep and Circadian Rhythms*

Received date: 7 November 2017
Revised date: 6 March 2018
Accepted date: 10 April 2018

Cite this article as: Joanna M. Cooper, Kathryn E. Abrahamsson and Rebecca A. Prosser, Circadian Rhythm and Sleep-Wake Systems Share the Dynamic Extracellular Synaptic Milieu, *Neurobiology of Sleep and Circadian Rhythms*, <https://doi.org/10.1016/j.nbscr.2018.04.001>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting galley proof before it is published in its final citable form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Circadian Rhythm and Sleep-Wake Systems Share the Dynamic Extracellular Synaptic Milieu

Joanna M. Cooper, Kathryn E. Abrahamsson, Rebecca A. Prosser*

Department of Biochemistry & Cellular and Molecular Biology; NeuroNET Research Center,
University of Tennessee Knoxville

*Corresponding author. RA Prosser: Dept. Biochemistry and Cellular and Molecular Biology, Walters Life Sciences Bldg Rm M407, University of Tennessee Knoxville, 37996 Tel.: 865-974-2722; fax: 865-974-6306. rprosser@utk.edu

Abstract

The mammalian circadian and sleep-wake systems are closely aligned through their coordinated regulation of daily activity patterns. Although they differ in their anatomical organization and physiological processes, they utilize overlapping regulatory mechanisms that include an assortment of proteins and molecules interacting within the extracellular space. These extracellular factors include proteases that interact with soluble proteins, membrane-attached receptors and the extracellular matrix; and cell adhesion molecules that can form complex scaffolds connecting adjacent neurons, astrocytes and their respective intracellular cytoskeletal elements. Astrocytes also participate in the dynamic regulation of both systems through modulating neuronal appositions, the extracellular space and/or through release of gliotransmitters that can further contribute to the extracellular signaling processes. Together, these extracellular elements create a system that integrates rapid neurotransmitter signaling across longer time scales and thereby adjust neuronal signaling to reflect the daily fluctuations fundamental to both systems.

Download English Version:

<https://daneshyari.com/en/article/8838689>

Download Persian Version:

<https://daneshyari.com/article/8838689>

[Daneshyari.com](https://daneshyari.com)