

MARTA KUBERA

*Department of Experimental Neuroendocrinology
Maj Institute of Pharmacology PAS
12 Smętna Str., 31-343 Kraków
E-mail: kubera@if-pan.krakow.pl*

THE NEUROBIOLOGY OF SLEEP – INTRODUCTION

Sleep is essential for the proper functioning of the brain. It has a beneficial effect on the ability to learn, remember and make rational decisions, as well as on our mental health. The studies conducted so far indicate that the functioning of most of the processes taking place in our body is significantly improved (optimized) by sleep, and sleep disturbances, including shortening its length, may contribute to the development of neurodegenerative, mental, metabolic and cancer diseases. Insomnia lasting one month or more, known as chronic insomnia, affects 10-15% of people, and shorter periods of insomnia, occurring several times a year, occur in 20 to 40% of people. Insomnia, co-occurring with an episode of depression, is found in 60-90% of patients. Globally, insufficient sleep is prevalent across various age groups, considered to be a public health epidemic that is often unrecognized, under-reported and that has rather high economic costs. Also, neurodegenerative diseases, which are a very important group of brain diseases of various etiological backgrounds, are mainly age-related and constitute an increasing health threat in aging societies, and these diseases are accompanied by sleep disturbances. All neurotransmitters and numerous areas of the central nervous system are involved in the brain's control of sleep phenomena, and understanding the neurobiology of this very complex phenomenon gives hope for the emergence of therapies that effectively treat sleep disorders.

This issue of KOSMOS presents topics related to sleep neurobiology, chronobiology, and in particular circadian rhythms generated by the molecular mechanism of the circadian clock, the influence of the immune system on sleep and the beneficial effects of sleep on the activity of the glymphatic system, sleep disorders in neurodegenerative diseases and epilepsy.

Each article contained in this issue has been written clearly enough, and in sufficient detail, for undergraduates and graduates of neurobiology and medical science, for people suffering from sleep disorders as a result of neurodegenerative diseases such as Parkinson's disease, as well as for readers interested in the current state of knowledge in the neurobiology of sleep.

Marta Kubera