



The faculty of Biotechnology and Food Engineering

Seminar

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Imaging the cellular function of sleep

Abstract

Sleep is essential to all animals with a nervous system. Nevertheless, the core cellular function of sleep is unknown, and there is no conserved molecular marker to define sleep across phylogeny. Time-lapse imaging of chromosomal markers in single cells of live zebrafish revealed that sleep increases chromosome dynamics in individual neurons but not in two other cell types. Manipulation of sleep, chromosome dynamics, neuronal activity, and DNA double-strand breaks (DSBs) showed that chromosome dynamics are low and the number of DSBs accumulates during wakefulness. In turn, sleep increases chromosome dynamics, which are necessary to reduce the amount of DSBs. These results establish chromosome dynamics as a potential marker to define single sleeping cells, and propose that the restorative function of sleep is nuclear maintenance.

Wednesday, 15.5.19, 14:00 – 15:00, Room 300

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