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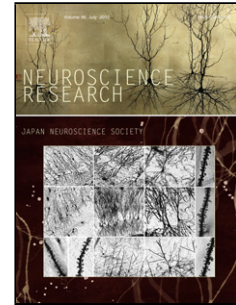
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Sleep in vertebrate and invertebrate animals, and insights into the function and evolution of sleep

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Highlights

- Sleep states can be generally defined in both vertebrates and invertebrates
- REM and NREM sleep stages might have existed in the common ancestor of amniotes
- The molecular mechanisms of mammalian NREM sleep and invertebrate sleep are conserved
- Some functions of sleep are conserved across the animal phylum.

Abstract

Many mammalian species, including humans, spend a substantial fraction of their life sleeping. Sleep deprivation in rats ultimately leads to death, indicating the essential role of sleep. Exactly why sleep is so essential, however, remains largely unknown. From an evolutionary point of view, almost all animal species that have been investigated exhibit sleep or sleep-like states, suggesting that sleep may benefit survival. In certain mammalian and avian species, sleep can be further divided into at least two stages, rapid eye movement (REM) sleep and non-REM sleep. In addition to a widely conserved role for sleep, these individual sleep stages may have roles unique to these

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