LETTERS
edited by Jennifer Sills

Sleepless in the Sea

IN THEIR RESEARCH ARTICLE “IDENTIFICATION of SLEEPLESS, a sleep-promoting factor” (18 July, p. 372), K. Koh et al. note that “[s]leep is an essential process conserved from flies to humans.” This is not quite true. Many piscine species are active continuously without sleep (1), including species of marine and freshwater fishes in which schooling—swimming synchronously in polarized groups (2)—is fully developed (3).

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References

A Bird’s Eye View of Sleep

IN THE NEWS FOCUS STORY “SIMPLE SLEEPERS” (18 July, p. 334), E. Youngsteadt highlights recent advances, derived from genetic research in fruit flies and other “simple” animal models, in our understanding of sleep. The power of this genetic approach is undeniable, but the simplicity that renders such model animals amenable to genetic manipulation necessarily limits their ability to model all aspects of sleep in mammals. Most notably, simple animal models lack the changes in brain activity that define mammalian slow-wave sleep (SWS) and rapid eye movement (REM) sleep (1). Until we determine the functional relevance of the changes in brain activity that define these characteristics of mammalian sleep, our understanding of human sleep may be incomplete.

We contend that birds, as the only non-mammalian taxonomic group to exhibit SWS and REM sleep, provide a largely untapped opportunity to determine the functions of these states in mammals. Reptiles and amphibians lack comparable sleep states, indicating that SWS and REM sleep evolved independently in the respective ancestors of mammals and birds (2). Consequently, traits shared only by mammals and birds may be the functional targets of these states. Interestingly, mammals and birds also independently evolved complex brains capable of orchestrating complex cognition, unlike that observed in reptiles and amphibians (3). Given that complex brains, complex cognition, and SWS and REM sleep evolved in concert, these shared traits may be functionally interrelated (2, 4).

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References

NSO’s Environmental and Cultural Efforts

IN THE NEWS FOCUS STORY BY Y. BHATTACHARJEE “From atop a mountain, a deeper look at the Sun” (25 July, p. 478), the quote attributed to me next to my picture was used outside of the context of our discussion, leaving an unfavorable and highly inaccurate impression. Bhattacharjee and I were discussing the upcoming schedule for the construction of the Advanced Technology Solar Telescope (ATST) and the potential impact (on schedule) in the event of an impasse during mitigation negotiations. We do not expect this. It has been and remains the project’s intention to support the National Science Foundation (NSF) in its plan to mitigate impacts that the ATST may have.

The impression that the National Solar Observatory (NSO), the ATST project office, or...