

**Cover illustration**

Top right: A lamp illuminates the face of a sleeping man (Credit: Corbis). Top left: Tracings from an electroencephalogram recording eye movements during rapid eye movement sleep (Credit: M. Mahowald and C. H. Schenck). Bottom: A man asleep at this desk (Credit: B. Van der Meer/Getty).

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SLEEP

The fundamental truths of sleep are not difficult to master: one sleeps when one is tired — mostly at night—and awakens the next day usually feeling rested and refreshed.

So why put together an Insight on a topic that seems so straightforward?

Although it is often true in biology that things are more complex than they seem at first glance, it is especially accurate for sleep. This became apparent about 50 years ago with the discovery of rapid eye movement (REM) sleep. This is a sleep state marked by intense brain activity, rapid bursts of eye movement and vivid dreaming. The high level of brain activity during REM sleep created a serious challenge to the prevailing dogma — that we sleep simply to provide rest — and raised a host of largely unanswered questions about the function of sleep.

Intuition also fails us when considering other aspects of sleep — namely that ‘drifting off to sleep’ is a slow process and that sleep and wake are completely separate states. On the contrary, the act of switching from being awake to sleeping can be extremely rapid, an observation that carries significant public health implications. And patients with various sleep disorders can exist in curious states that combine aspects of both sleep and wakefulness, indicating that the two are not always mutually exclusive.

That so many big questions in sleep research remain unanswered makes it a fascinating field to follow. This Insight highlights much of that excitement with a diverse collection of articles.

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John Spiro, Senior Editor

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