THE SCIENCE BEHIND THE SLEEP-WAKE CYCLE

Scientists are rethinking our understanding of the science behind sleep and insomnia.[1]

THE BRAIN HAS TWO SYSTEMS FOR REGULATING SLEEP.

One helps you to sleep, the other helps to keep you awake.[1]

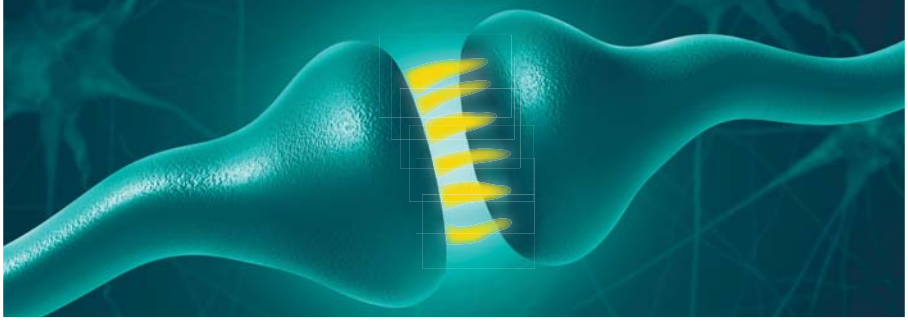
When one system is turned on, typically the other is turned off.[1]

There are neurotransmitters in these two systems which control whether you are AWAKE or ASLEEP.[2,3]

*During the day, the **WAKE SYSTEM** **is more active**.*[1]

*The **WAKE SYSTEM** is **supposed to slow down at night** to allow you to sleep.*[1]

However in some people, the wake system in the brain **remains active at night** which can contribute to insomnia.[2,4]



[1] Schwartz R.L., et al. Neurophysiology of Sleep and Wakefulness: Basic Science and Clinical Implications. *Current Neuropharmacology.* 2008;6:367-378.

[2] Scammell, TE and Winrow, CJ. Orexin Receptors: Pharmacology and Therapeutic Opportunities. *Annu Rev Pharmacol Toxicol.* 2011 February 10; 51: 243–266. doi:10.1146/annurevpharmtox-010510-100528.

[3] Saper CB, et al. Sleep State Switching. *Neuron.* 2010 December 22; 68(6): 1023–1042. doi:10.1016/j.neuron.2010.11.032.

[4] Nofzinger, E.A., Buysse, D.J., Germain, A., Price, J.C., Miewald, J.M., Kupfer, D.J. (2004) Functional neuroimaging evidence for hyperarousal in insomnia. *Am. J. Psychiatry*, 161, 2126-2128.

MERCK