A Motor Theory of Sleep Control

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Sleep is a fundamental biological process, and its disruption has profound impacts on human health. Using a variety of techniques including optogenetics, electrophysiology, imaging, and gene expression profiling, we identify key neurons in the sleep control circuits and map their synaptic connections. Sleep appears to be controlled by a highly distributed network spanning the forebrain, midbrain, and hindbrain, where REM and non-REM sleep neurons are part of the central somatic and autonomic motor circuits. The intimate association between the sleep and autonomic/somatic motor control circuits suggests that a primary function of sleep is to promote biological processes incompatible with movement.

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