The Role of Histamine in Sleep and Wakefulness

- The hypothalamus is a critical “control center” for sleep-wake state stability and contains several neuronal systems (e.g., hypocretin and histamine) that help maintain stable sleep and wakefulness.¹,²
- Histamine neurons originate only in the tuberomammillary nucleus (TMN) in the hypothalamus.³
- These neurons play an important role in promoting and stabilizing wakefulness by:
  - Activating wake-promoting neurons³,⁴,⁷
  - Inhibiting REM sleep-promoting neurons (i.e., preventing REM at the Wrong Time™³-⁵)
  - Inhibiting non-REM sleep-promoting neurons³,⁴,⁸
- Histamine plays an important role in disorders associated with sleep-wake state instability, such as narcolepsy.⁴,⁷

Histamine Neurons

- Histamine promotes wakefulness by activating cortical and subcortical neurons, including wake-promoting neurons outside of the hypothalamus.³,⁴
- Histamine stabilizes wakefulness by inhibiting both REM and non-REM sleep-promoting neurons.³,⁴,⁸

Histamine Neurons

Graphic is for illustration purposes only and does not depict actual anatomical locations of neuronal systems.

References: