

ARCHITECTURE OF SLEEP:  
PERIODIC STAGES OF SLEEP DEPTH

★ [SLIDESHARE: NORMAL SLEEP ARCHITECTURE](#)

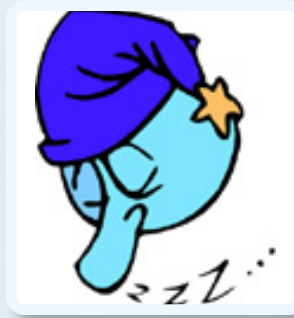
During sleep, the brain is active while the body is passive. The brain essentially shuts itself off from the outside world to do its work of repair and rejuvenation, to consolidate memories which arrived since the last sleep period.

The world outside the brain arrives during the day as neuronal impulses initiated by daylight, sound, smell, taste, touch. At night, that world is normally reduced to starlight and natural electromagnetic fields, gravity and internal physiology -- reduced by rhythmic cascades of chemicals produced largely in the brainstem.

Artificial electromagnetic fields disrupt this dance. It is like noise which cannot be turned off, light which cannot be darkened. Depending on base and modulation frequencies, power densities, and variations in exposure durations, the brain is forced to cope with distractions from its other work, distractions outside its evolutionary experience.

We cannot know for sure what the biological effects are to this forced shift from our natural sleep physiology, our "default state" (Buzsaki). Some of what we think may happen has been shown to happen in research studies and anecdotal reports. For the rest, we can only theorize as too little is known about sleep.

This series of two maps introduces some of the features of normal sleep, and some of the known disruptions caused by EMF exposure.



**WE KNOW VERY LITTLE ABOUT SLEEP**

"...very little is known about the mechanisms that force brain networks to change and stabilize their trajectory of activity during sleep."  
Gyorgy Buzsaki

SSRIs interfere with REM sleep.

Benzodiazepines block slow wave sleep.

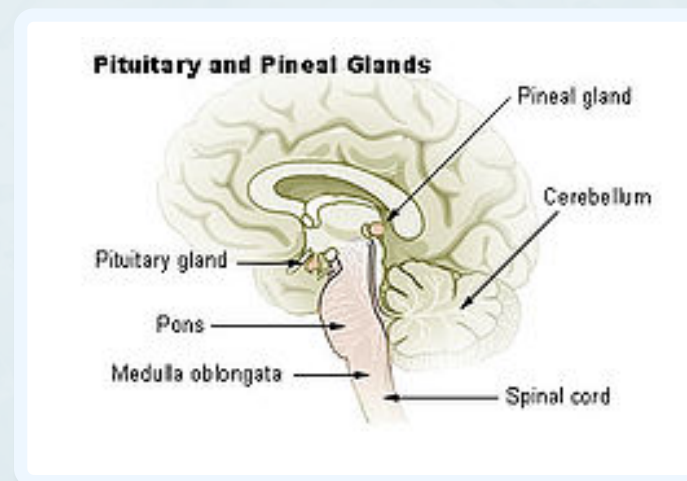
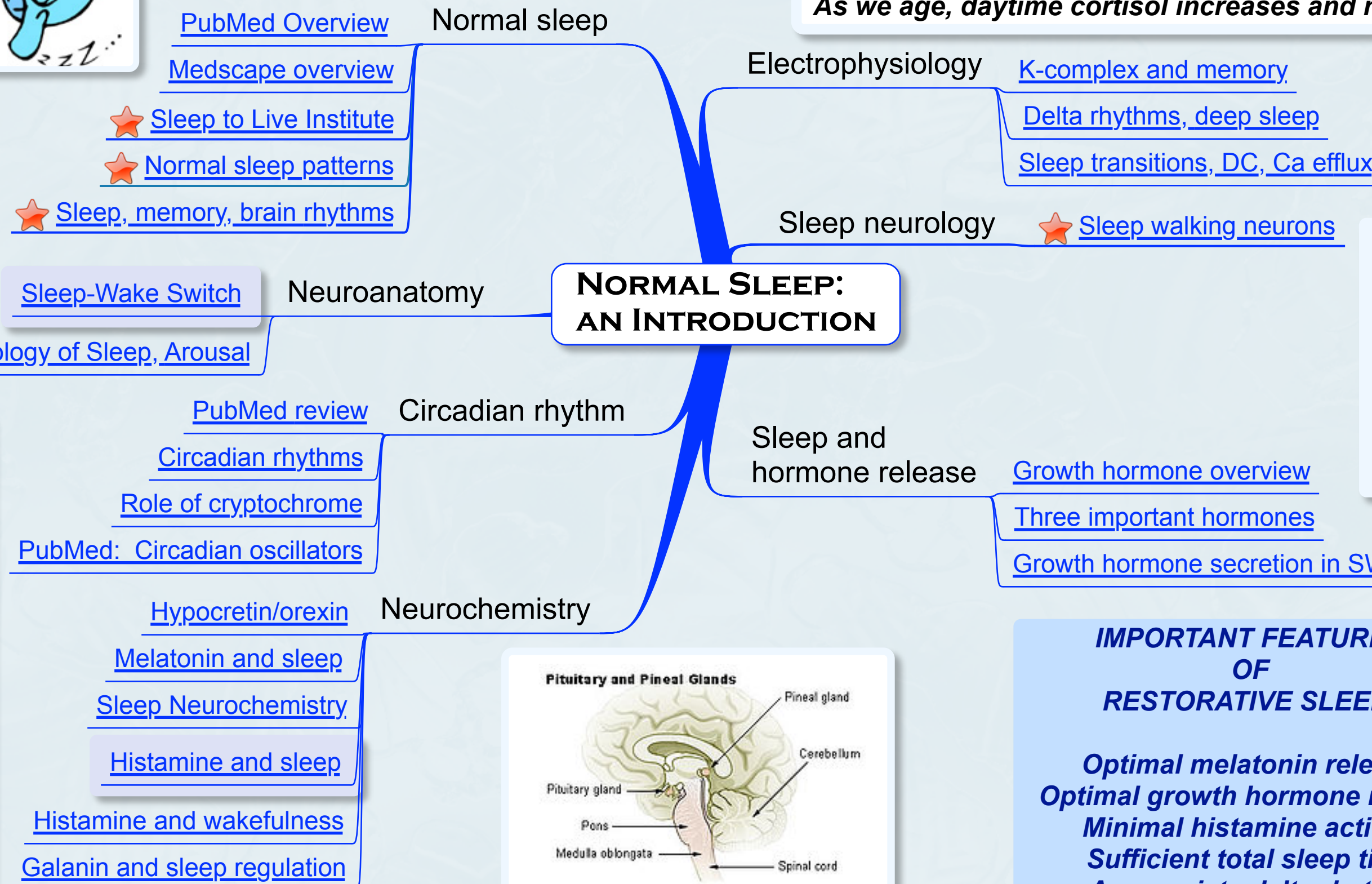
Melatonin increases growth hormone release.



As we age, daytime cortisol increases and nighttime melatonin decreases.

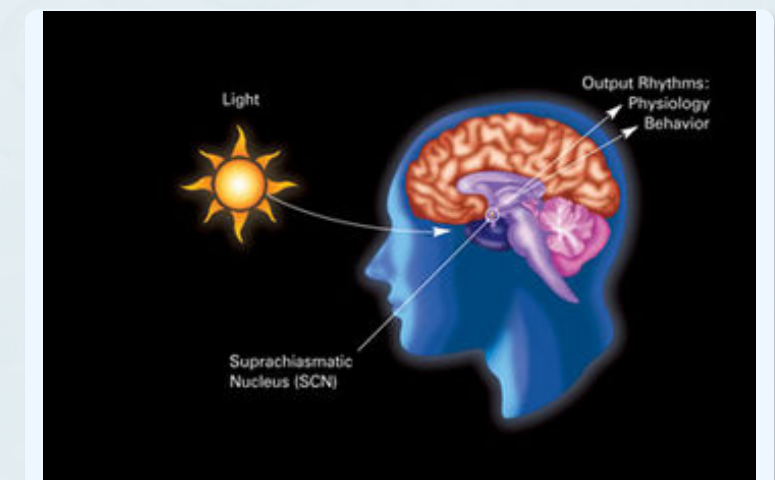
[Sleep, Learning, Memory, Neurology](#)  
Gyorgy Buzsaki

**NORMAL SLEEP: AN INTRODUCTION**



**HOW TO WE FALL ASLEEP?**

Reduction of light signals retinal clock cells  
Retinal cells signal suprachiasmatic nucleus (SCN)  
SCN triggers pineal to release melatonin  
Melatonin makes us drowsy  
SCN also triggers slow brain waves (SWS)  
During SWS, growth hormone is released  
Growth hormone induces tissue repairs



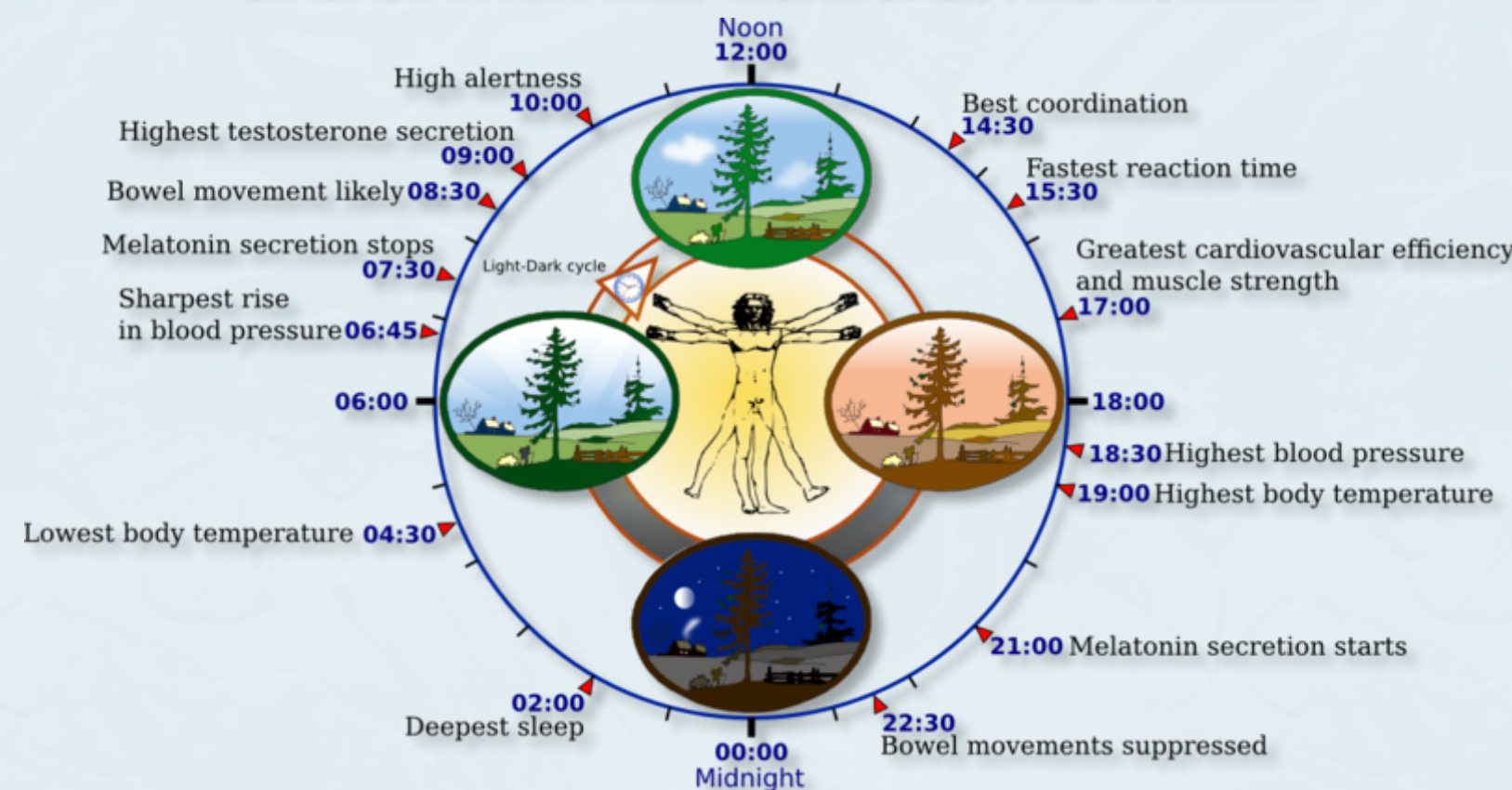
THE SUPRACHIASMATIC NUCLEUS IN THE HYPOTHALAMUS

**IMPORTANT FEATURES OF RESTORATIVE SLEEP:**

- Optimal melatonin release
- Optimal growth hormone release
- Minimal histamine activity
- Sufficient total sleep time
- Appropriate delta rhythm
- Appropriate number K-complexes
- Sufficient slow wave sleep
- Sufficient REM sleep
- Optimal growth hormone release
- Minimal distraction by symptoms

Home: [Oscillatorium](#)  
Newest version [this map](#)  
Date of this update: 02-24-18

**CIRCADIAN RHYTHM: HORMONES AND ACTIVITY**



**EFFECTS OF RESTORATIVE SLEEP:**

- Growth and repair optimized
- Immune system facilitated
- Memories consolidated
- Sugar metabolism optimized
- Endocrine function optimized
- Seasonal adaptation optimized

