

Sleep and Daylight Savings: theme for October 2022

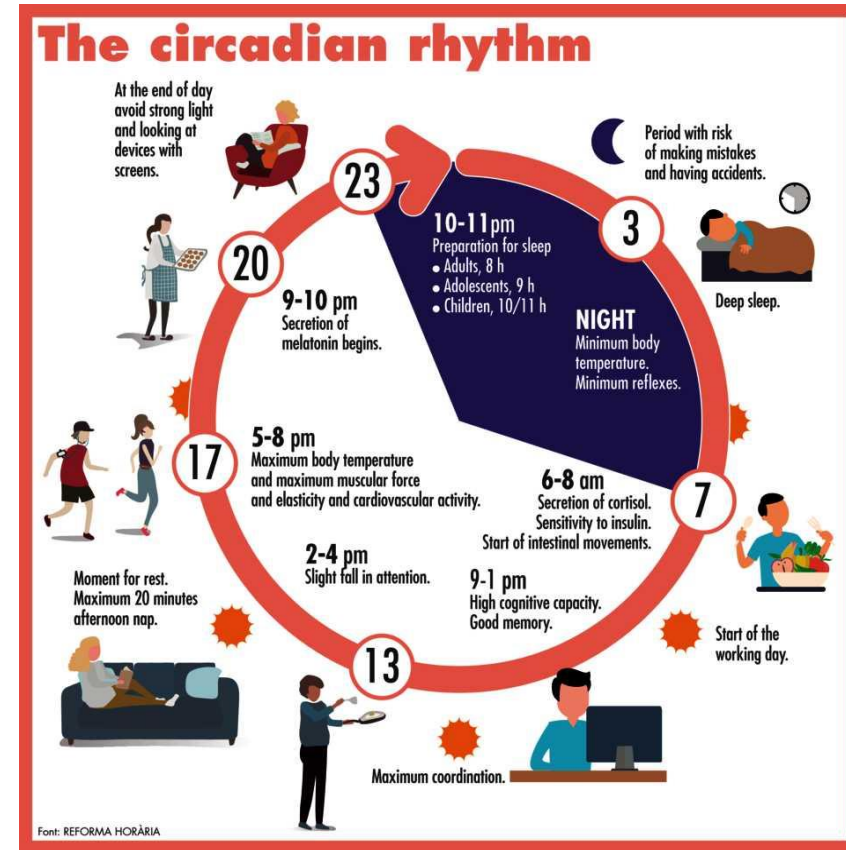
- Sleep hygiene and end of Daylight Savings.....Change of time and the impact on sleep and health.

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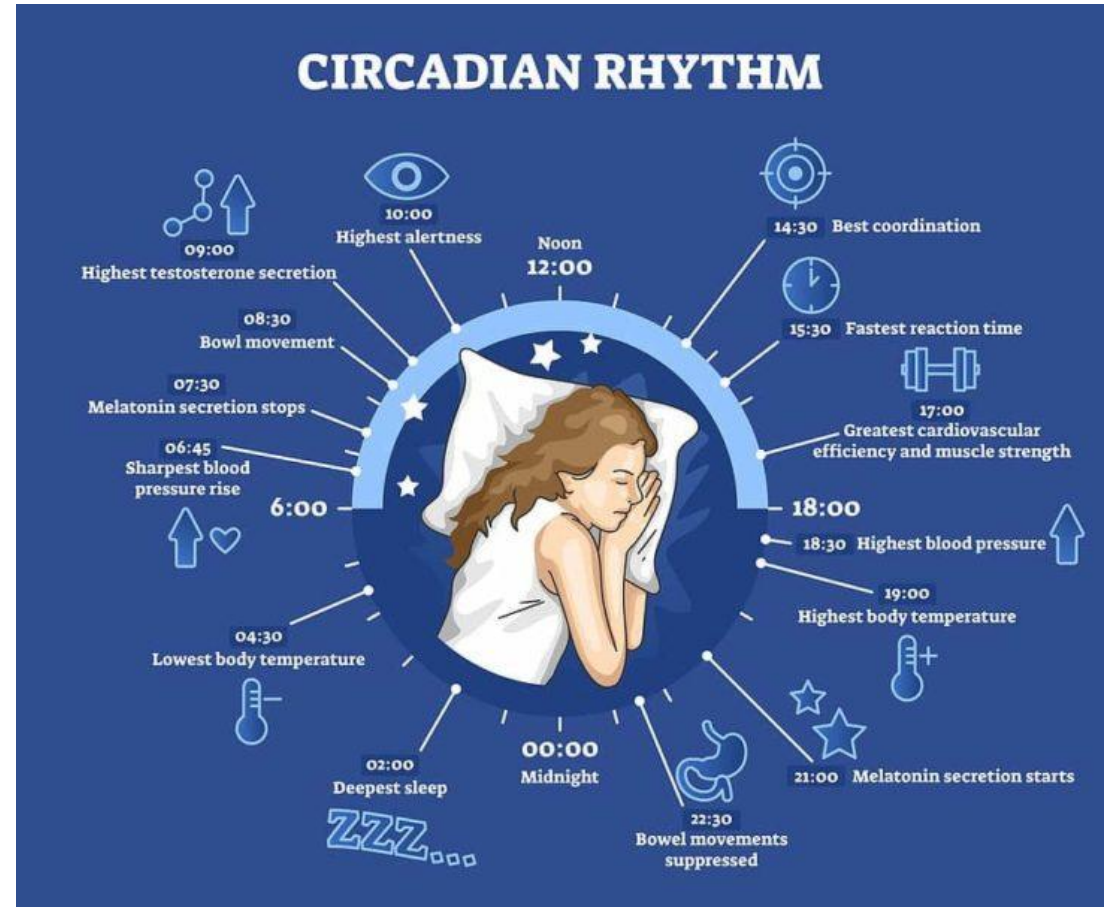
Fall and the return of Standard Time

- This year daylight savings comes to an end in early November, the 6th of November I believe. That means a return to Standard Time, or turn the clock back an hour.
- The return to Standard Time can be a blessing to some and a curse to others.
- Whether you have have a sleep disorder, or not, the impact on Circadian Rhythms is deleterious.



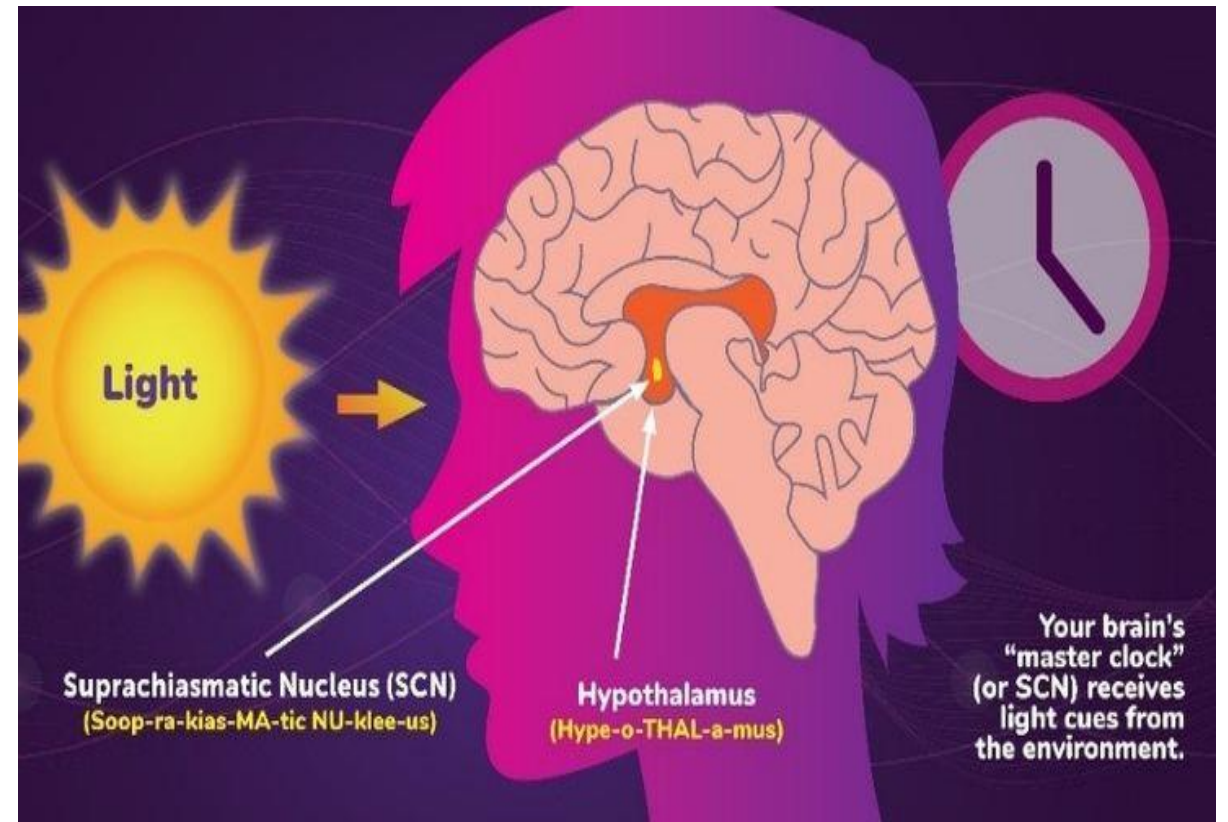
What is the human Circadian Rhythm(CR)?

- Circadian rhythm(s) are 24-hour cycles that are part of the body's internal clock.
- circadian rhythms(or any rhythm tied to night and day) are synchronized with a master clock in the brain.
- When properly aligned the circadian rhythm can help encourage and maintain restorative sleep.



What area of the brain controls the CR?

- Circadian rhythms throughout the body are connected to the brain's master clock, or pace maker.
- Located in the supra-chiasmatic nucleus(SCN). This is located in the hypothalamus.
- At certain times of the day the SCN sends signals to regulate various systems in the body.

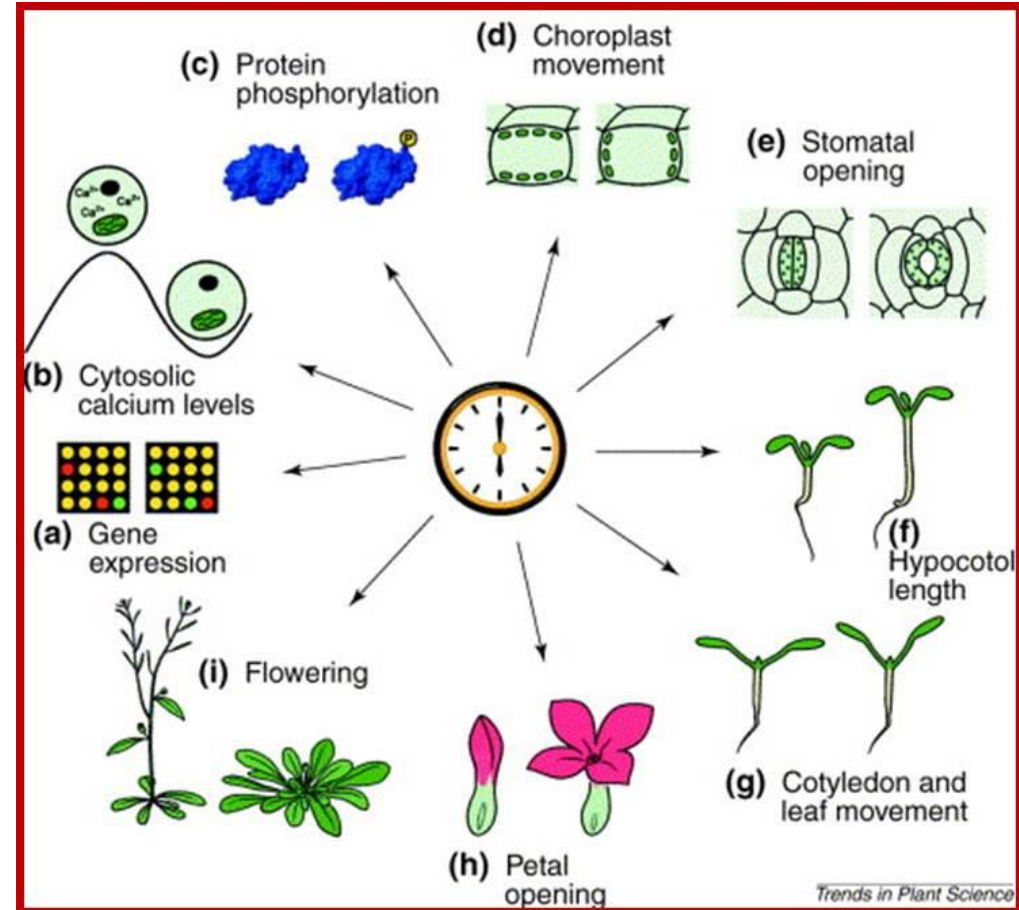


Circadian Rhythm and Your Brain's clock



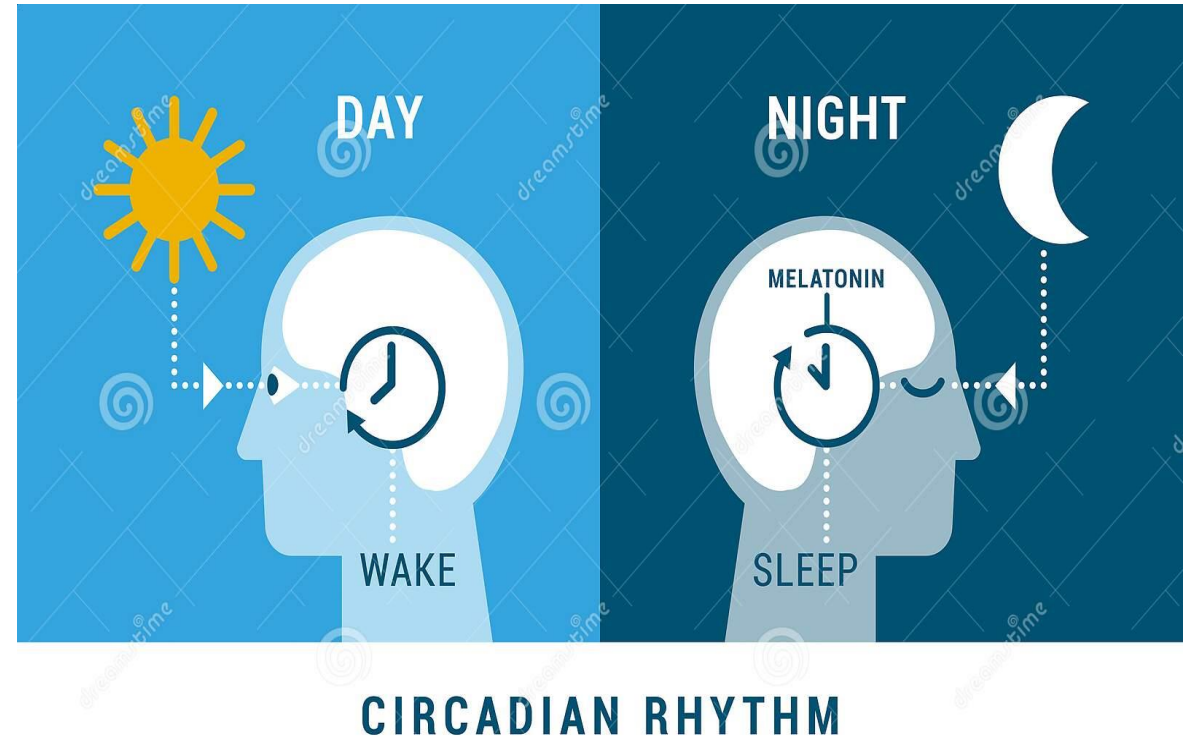
What affects the internal master clock or master pace maker?

- Light seems to be the most critical component that signals or influences the SCN.
- Other cues, like exercise, eating, temperature, noise, and social activity, also have a hand in influencing the person's circadian rhythm.
- The CR is an affect of a certain biological clock. Not all biological clocks are circadian in nature.



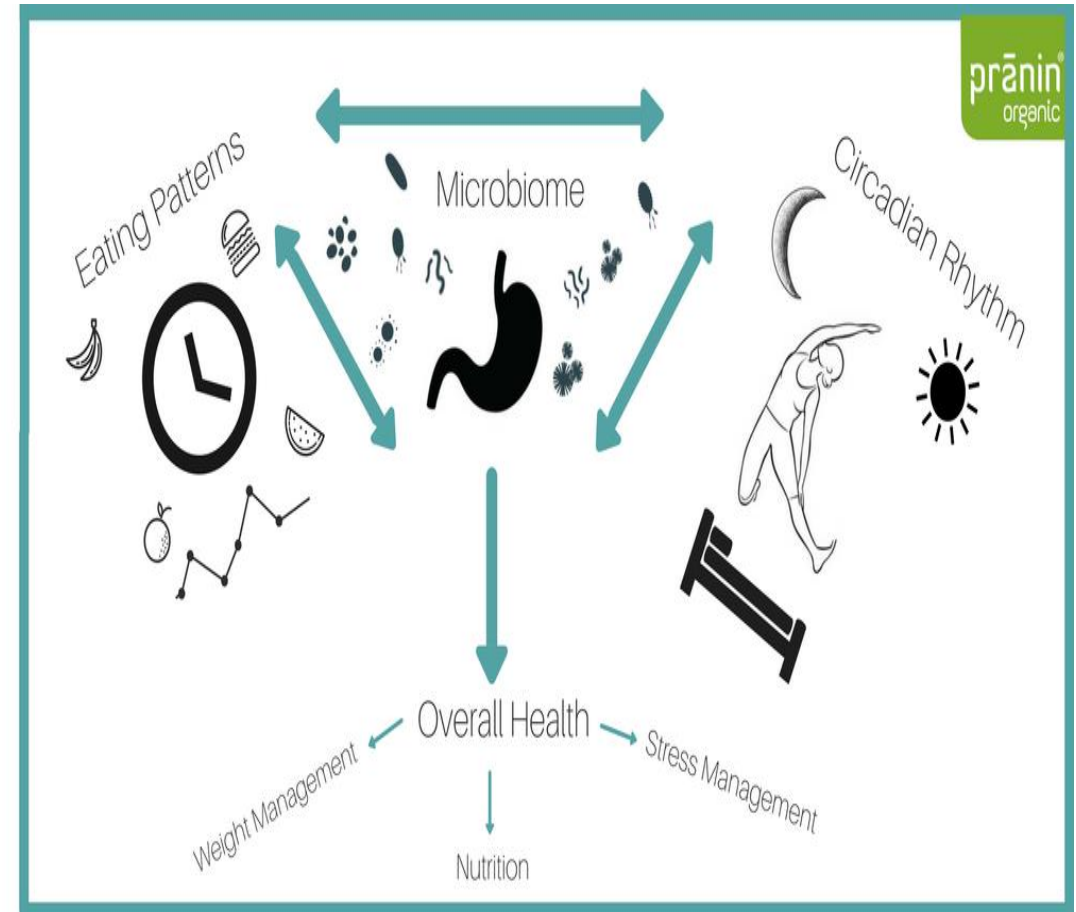
Sleep-Wake cycle of CR

- The sleep-wake cycle is influenced by light and dark. Light generates wakefulness and alertness.
- Darkness signals the hormone Melatonin to be activated which promotes sleep and continues to promote sleep throughout the night.
- This is how the sleep-wake cycle works to allow us restorative rest that enables daytime activity.



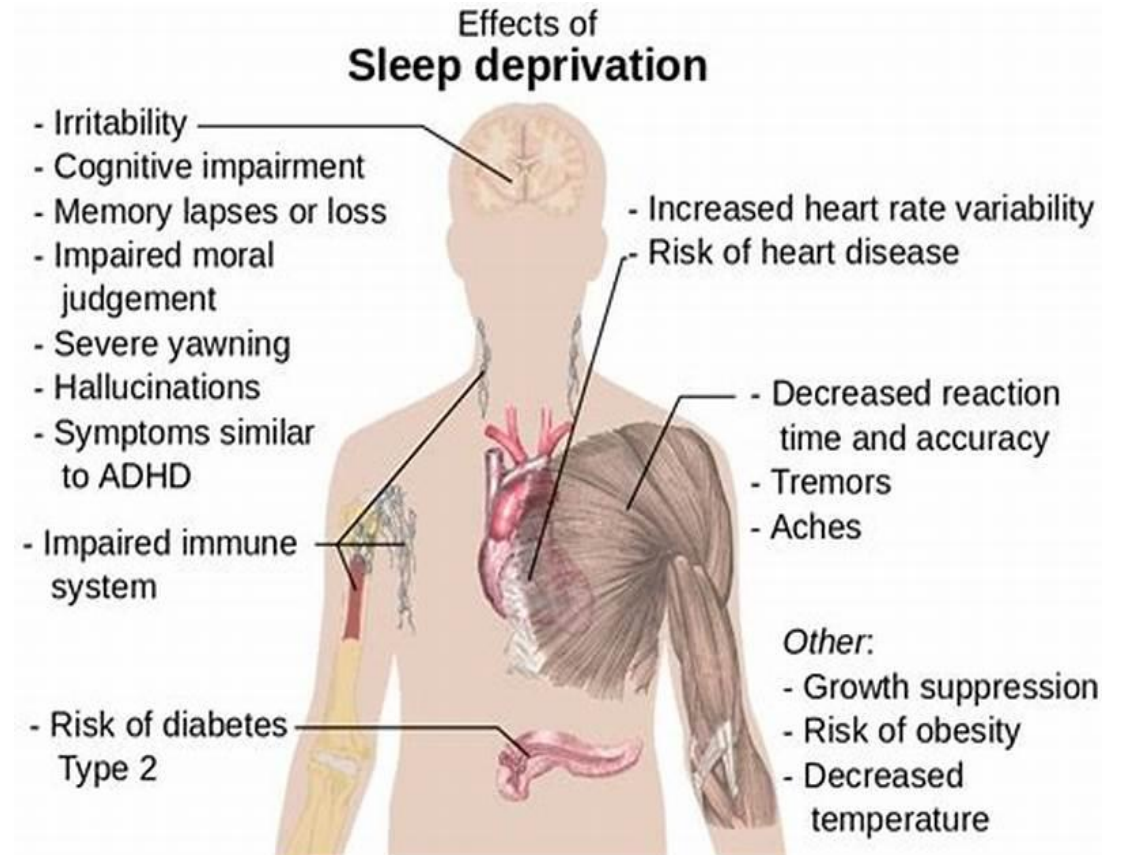
Are there other systems impacted by our Circadian Rhythm?

- Most all systems within the body are affected by CR, including:
- Metabolism (biobeat.nigms.nih.gov)
- Weight gain
- Blood sugar regulation
- Mental health disorders like Bi-polar disorder, Depression, and Alzheimer's dementia. (medlineplus.gov)
- CR's have an impact on properly functioning immune system and DNA repair that helps prevent some forms of cancer, according to research. (ncbi.nlm.nih.gov)



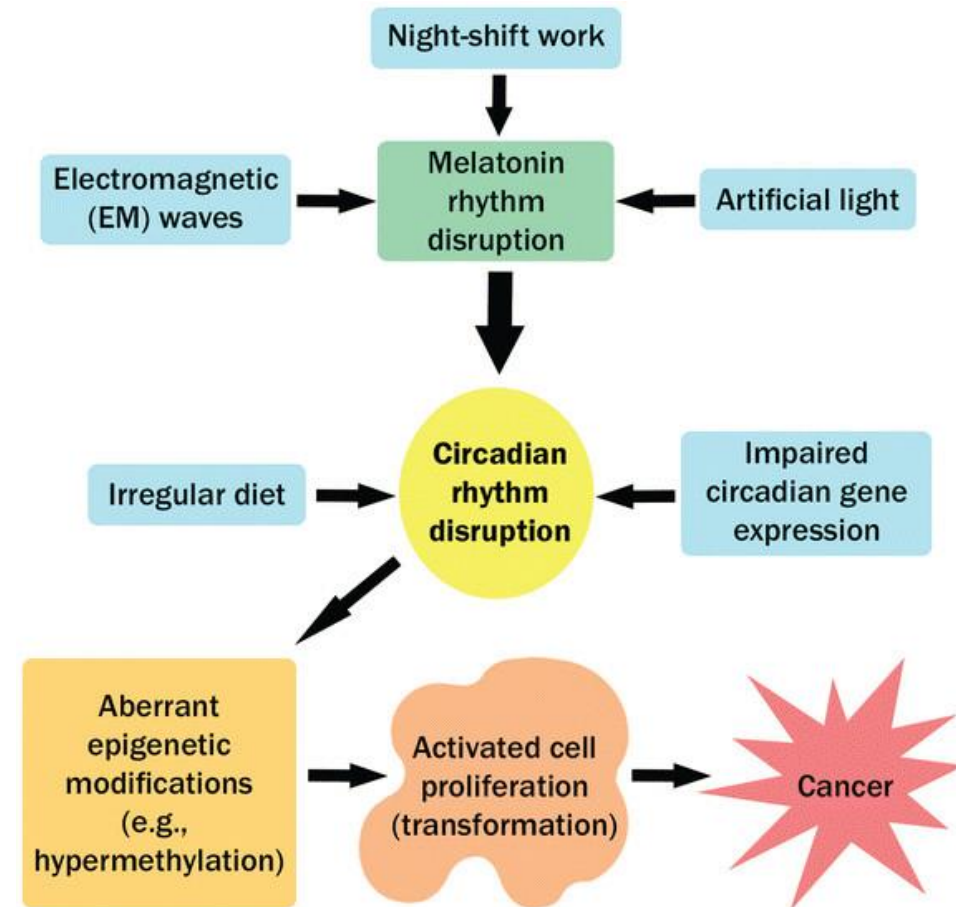
What happens if the Circadian rhythm is off?

- Poor sleep and wake-nightly
- Inadequate sleeping time, or shortened sleep quality REM and NREM sleep
- Your body systems do not function optimally to heal or repair.
- OSA sleep interruptions, lack of oxygen to the brain/body.
- Insomnia and daytime sleepiness
- Poor memory storage in the brain



What are some conditions that can disrupt adequate sleep and the Circadian Rhythm?

- Jet Lag (time zone associated acclimation)
- Shift working (change in day/night sleep pattern)
- Advanced sleep phase disorder (fall asleep early and wake early)
- Delayed sleep phase disorder (night owls)
- Noon 24h sleep phase disorder (blind)
- Irregular Sleep-Wake Rhythm disorder (connected to brain disorders)



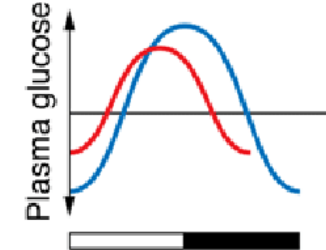
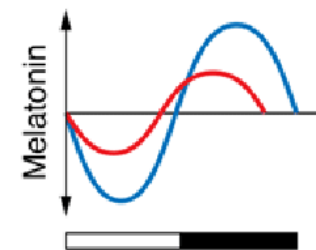
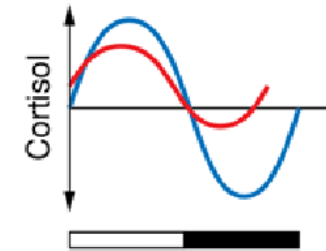
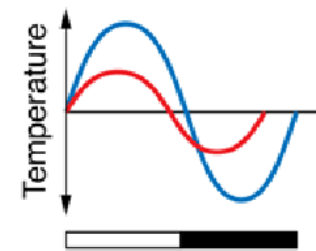
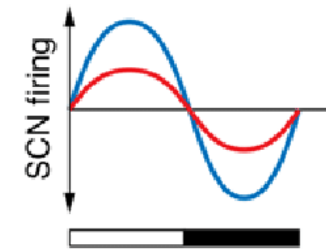
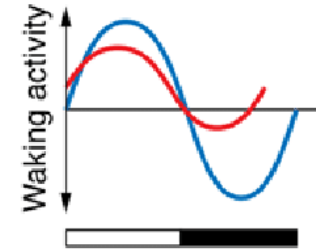
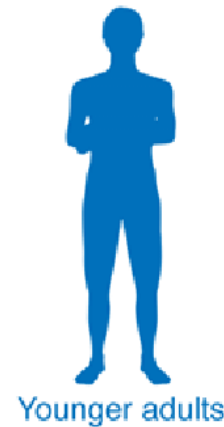
What else causes disruptions in sleep?

- Blue light from electronic devices
- Artificial lights
- Alcohol consumption
- Caffeine consumption
- Stress
- Noise
- Temperature



What Happens to Circadian Rhythms as we age?

- Starting at age 60 to 65, [circadian rhythms get earlier.](http://pubmed.ncbi.nlm.nih.gov)(pubmed.ncbi.nlm.nih.gov)
- Known as “phase Advance”, meaning older individuals perform mental tasks better earlier in the day, but get sleepier early in the evening.



What Happens to Circadian Rhythms as we age?

- As we age we tend to spend more time in light sleep (Non REM) and less time in (REM) sleep. Non REM sleep is less restful. This means the average older adult will wake up 3 to 4 times per night.
- This means it is common for older adults to wake up and fall asleep, more common than in younger adults, leading to the feeling that you've been up all night.
- On the whole older adults get less sleep than their younger counterparts, yet their sleep needs are the same.
- In addition, older adults seem to have more trouble adapting to new sleep rhythms, so small changes can be difficult to manage.

Aging and Sleep problems



The SCN(Suprachiasmatic nucleus), Light and their effects on CR's

- Based on studies in mice, researchers also suspect the SCN in humans may become weaker, leading to less pronounced fluctuations in the circadian rhythm. In turn, less melatonin is produced at night, so older adults may experience less of a distinction between sleep and wake. This results in sleeping less soundly at night and feeling sleepier throughout the day. (www.sleepfoundation.org)
- Light plays a critical role: As we age it appears the eyes begin to let less light in and this has a significant influence on our circadian rhythms. So, time spent outside seems to play a critical role in our daily rhythms.

How can we get a better nights sleep?

- Expose yourself to light during the day hours(strong CR use)
- Be consistent with your sleep schedule(variance hinders CR)
- Daily exercise
- Avoid caffeine in after 12 noon
- Avoid excessive alcohol
- Limit light before bedtime
- Short naps



What types of Sleep studies or questionnaires have been useful in diagnosis?

- Polysomnogram(clinic)
- Home test for sleep disturbances
- Questionnaires/ Surveys SF-36 Questionnaire, or the Pittsburgh Sleep quality index
- Sleep logs
- Depression scales to asses onset of sleep and sleep patterns



Questions????????????????