

Potential effects of Blue light

- 1. Circadian rhythm
- 2. Direct damage to the retina

What is Circadian Rhythm? And why do we have it?

"Circadian" (circa – about; diem – day)

Coined in 1959 by Franz Halberg to describe physiologic processes that follow a 24-hour rhythm

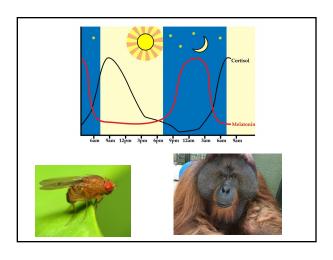
Two major criteria

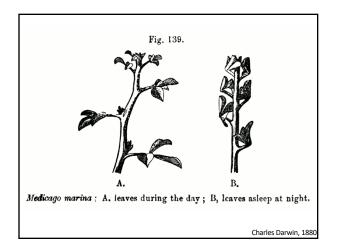
- Endogenous: Internally driven rhythm with a period of ~24 hours (persists even in 24 hours of darkness)
- **2. Entrainable**: The rhythm can be reset by external stimuli (e.g. light or heat)



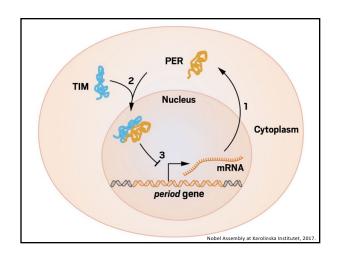


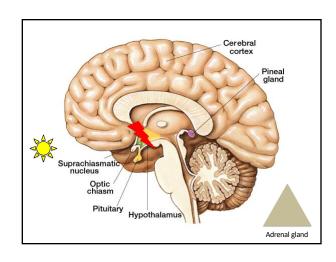






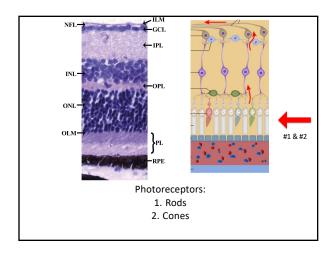


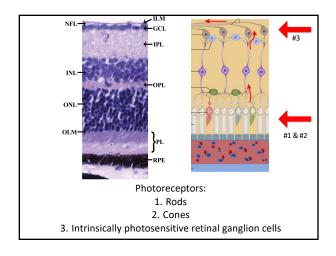


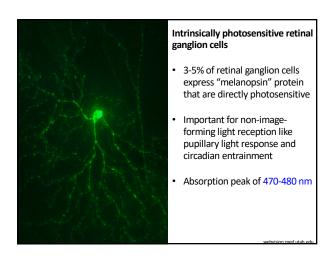










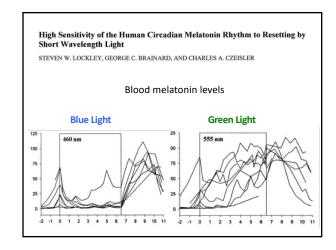


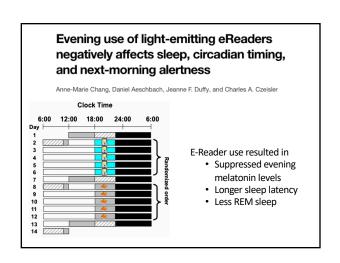
Human phase response curve to a single 6.5 h pulse of shortwavelength light

Melanie Rüger, Melissa A. St Hilaire, George C. Brainard, Sat-Bir S. Khalsa, Richard E. Kronauer, Charles A. Czeisier, Steven W. Lockley

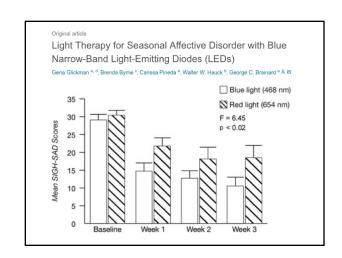
constructed previously using a similar protocol. Eighteen young healthy participants (18–30 years) were studied for 9–10 days in a time-free environment. The protocol included

Blue light was most effective in phase-shifting the human circadian rhythm

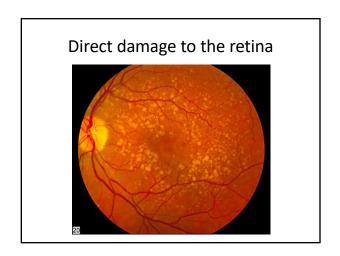




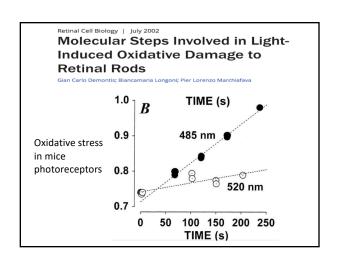
Is blue light all bad?



Blue light helpful for Jet Lag?



Macular pigment (Lutein and Zeaxanthine)
Absorb free radicles and filter UV and Blue light



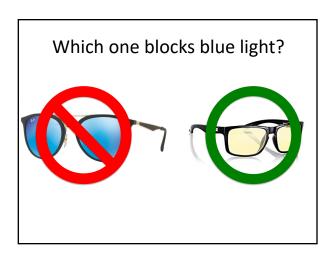
Strategies for decreasing blue light

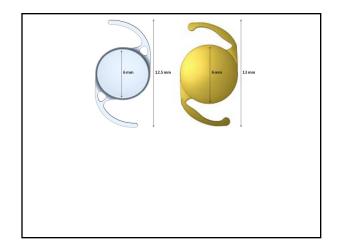
• Should we do it?

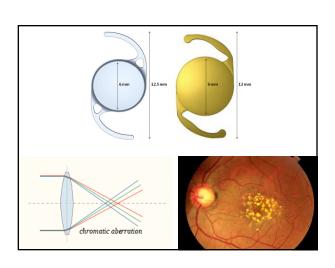
Strategies for decreasing blue light

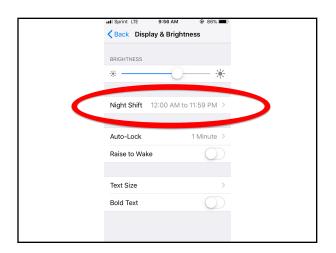
- Should we do it? No perfect answer
 - 1. Block with glasses
 - 2. Block with IOL
 - 3. Decrease exposure for devices

Which one blocks blue light?









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- "Absence of evidence is not evidence of absence"
- Multiple strategies to support motivated patients who want to reduce blue light exposure