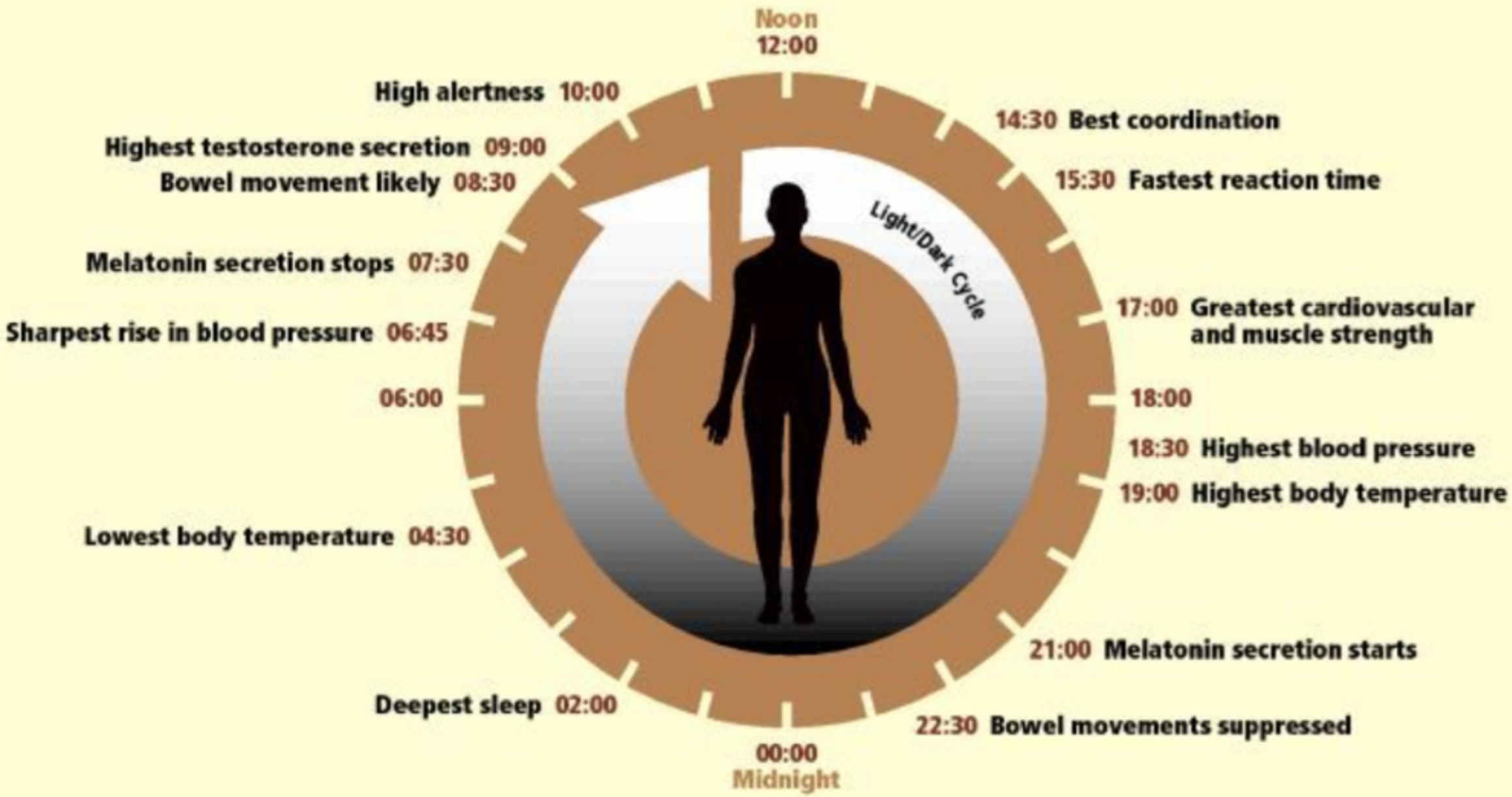
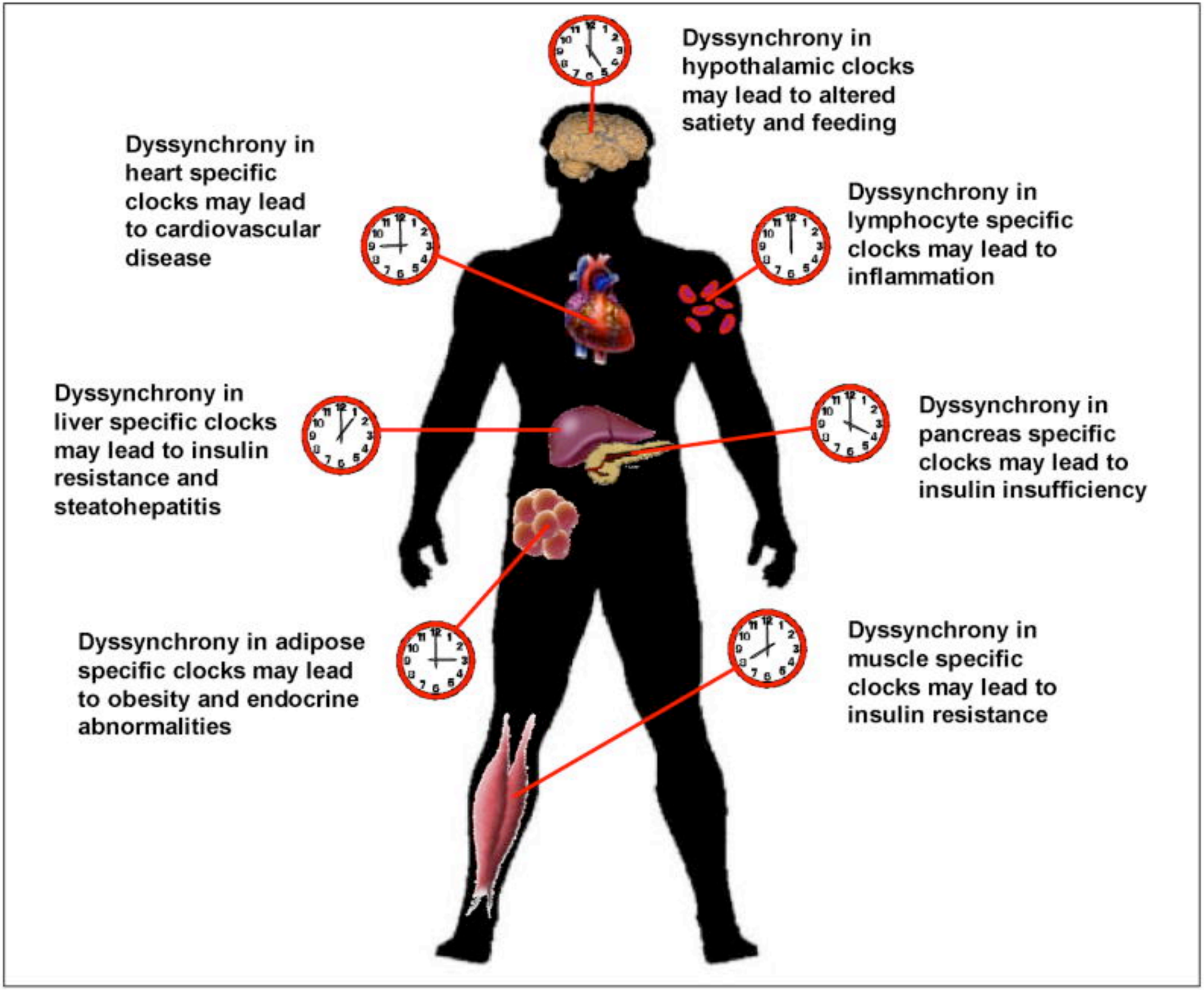
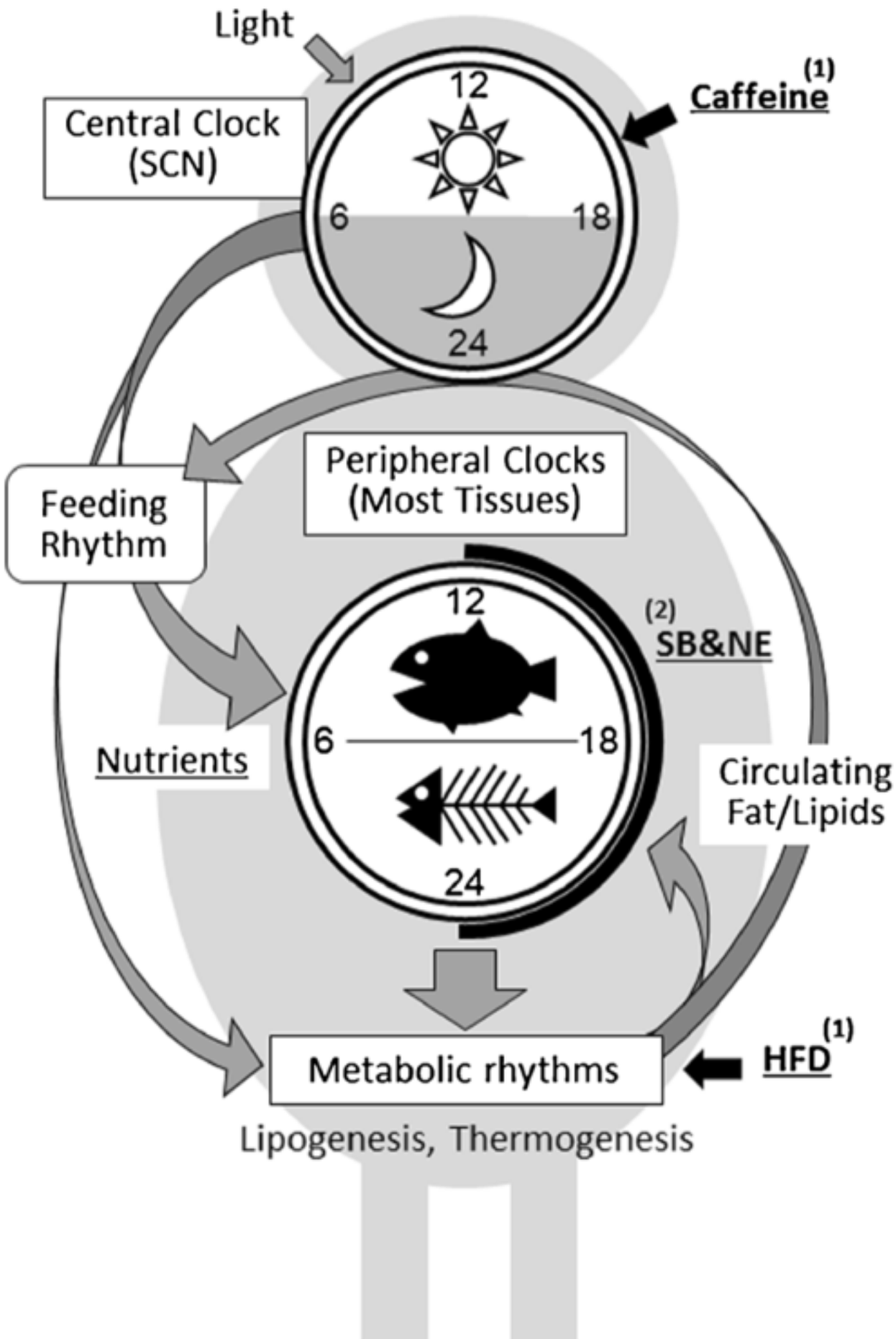
The Circuit of a Day



The word "circadian" derives from the Latin *circa*, meaning "approximately," and *dies*, meaning "day." The circadian clock (as shown here representing a person who rises early in the morning and sleeps at night) synchronizes with cycles of light/dark, eating, and activity.

Source: School of Biological Sciences, Royal Holloway University of London. Adapted by Matthew Ray/EHP.


Dyssynchrony in hypothalamic clocks may lead to altered satiety and feeding
Dyssynchrony in heart specific clocks may lead to cardiovascular disease
Dyssynchrony in lymphocyte specific clocks may lead to inflammation
Dyssynchrony in liver specific clocks may lead to insulin resistance and steatohepatitis
Dyssynchrony in pancreas specific clocks may lead to insulin insufficiency
Dyssynchrony in adipose specific clocks may lead to obesity and endocrine abnormalities
Dyssynchrony in muscle specific clocks may lead to insulin resistance



Chrono-nutrition

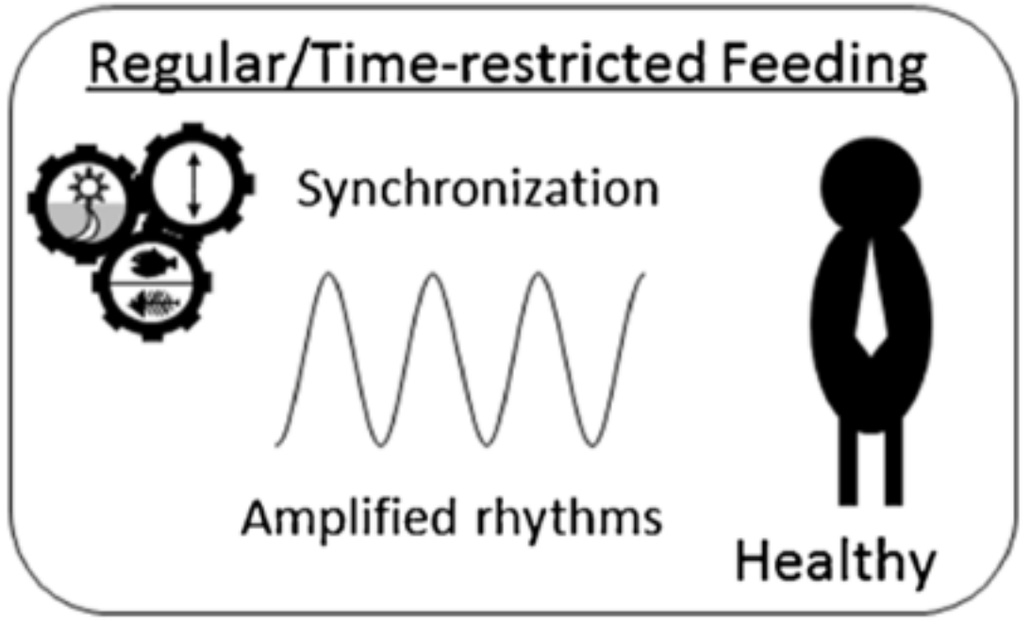
(1) Clock regulation

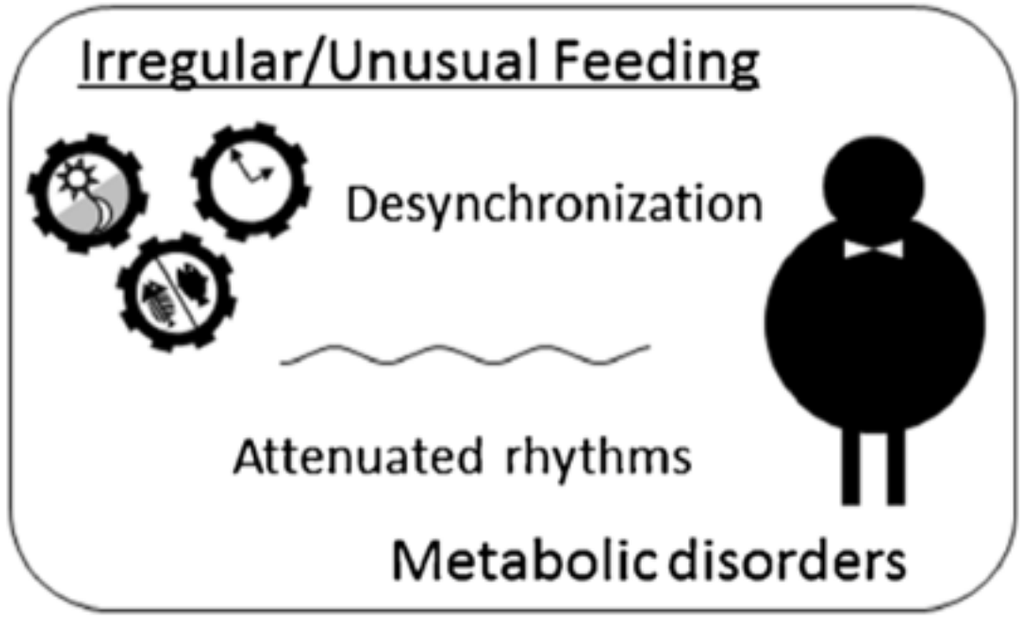
ex. High-fat diet (HFD), Caffeine

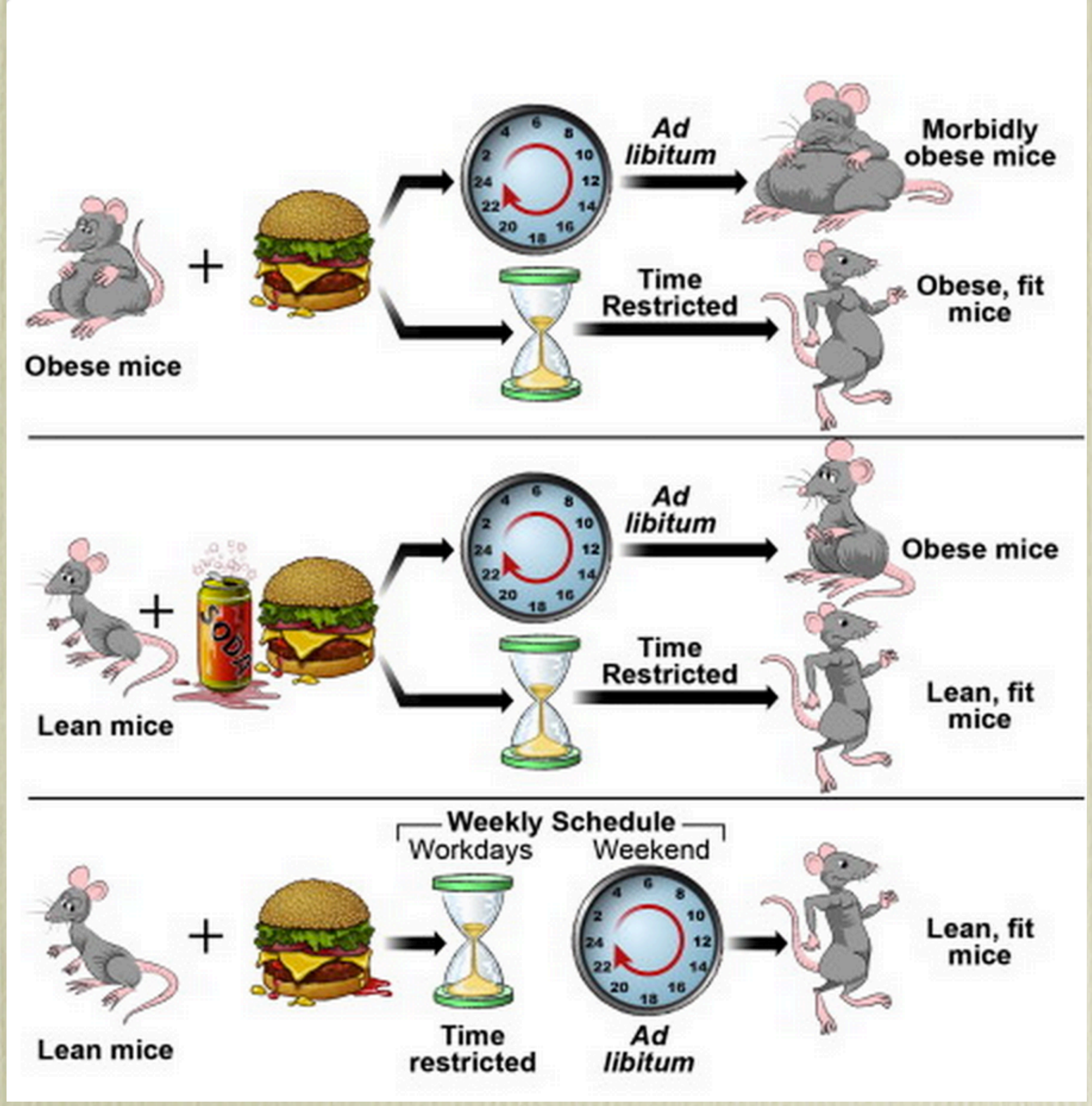
(2) Meal-time effects

ex. Skipping breakfast (SB)

Nocturnal eating (NE)

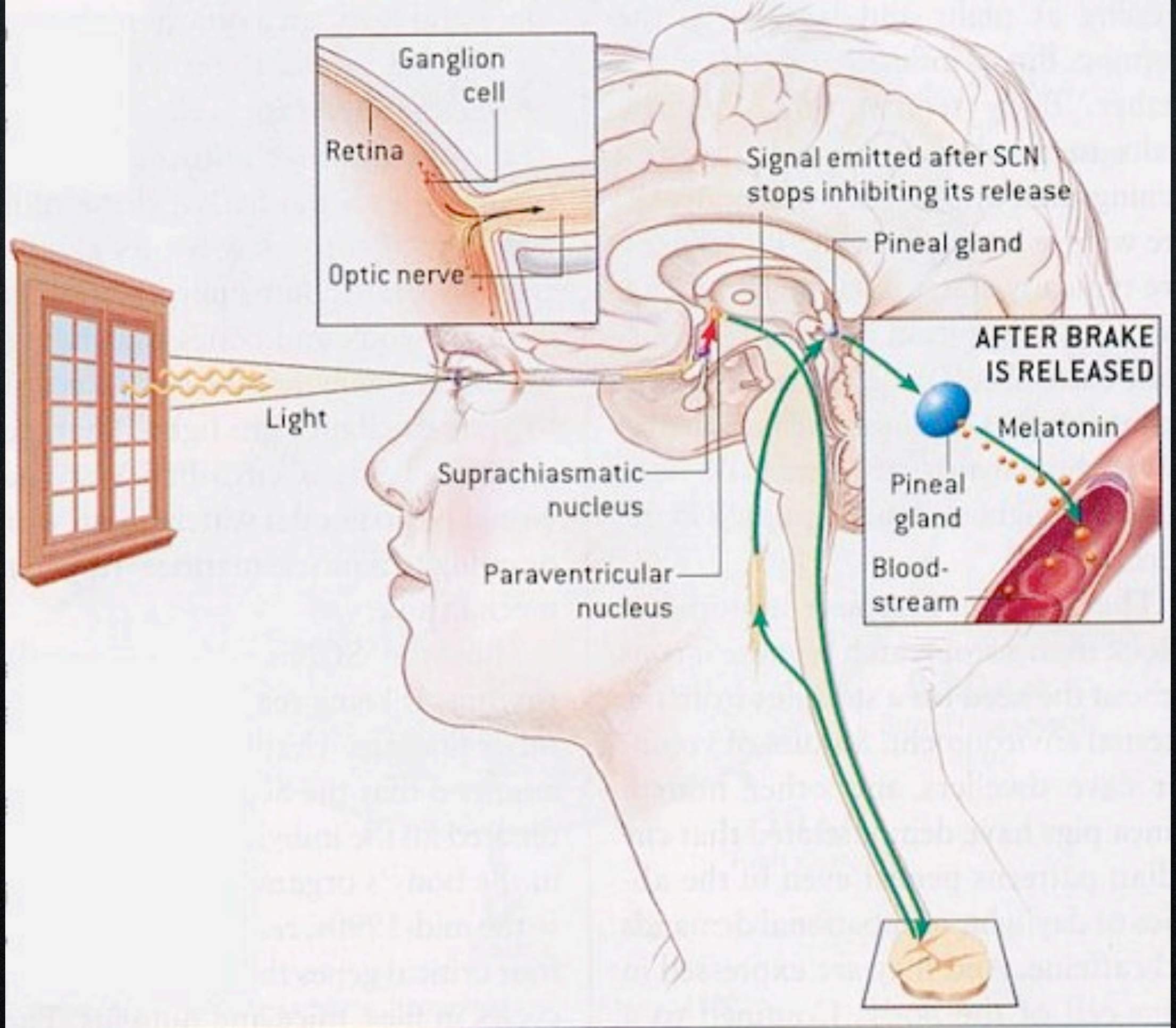


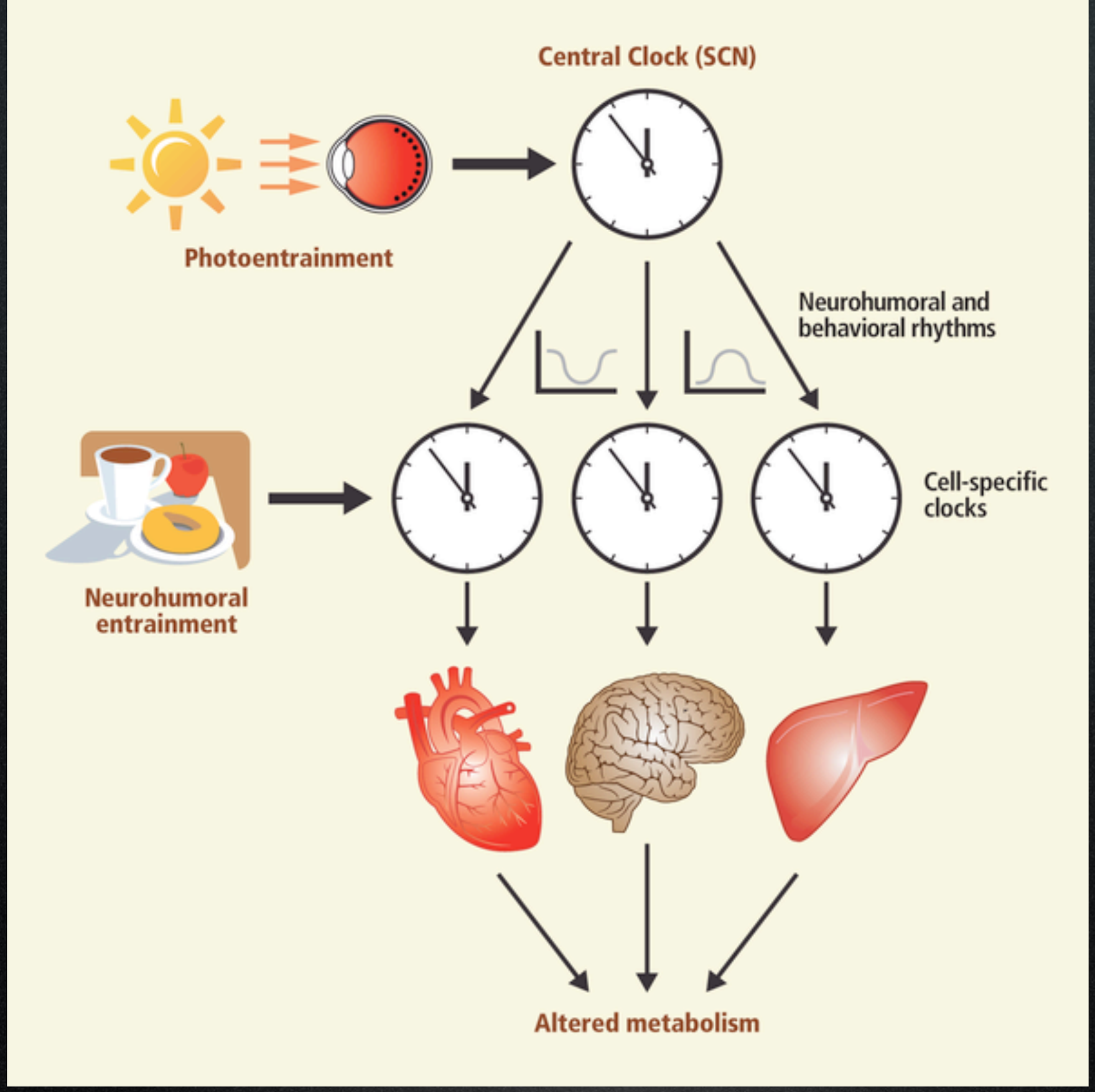




Time-restricted feeding is a preventative and therapeutic intervention against diverse nutritional challenges.

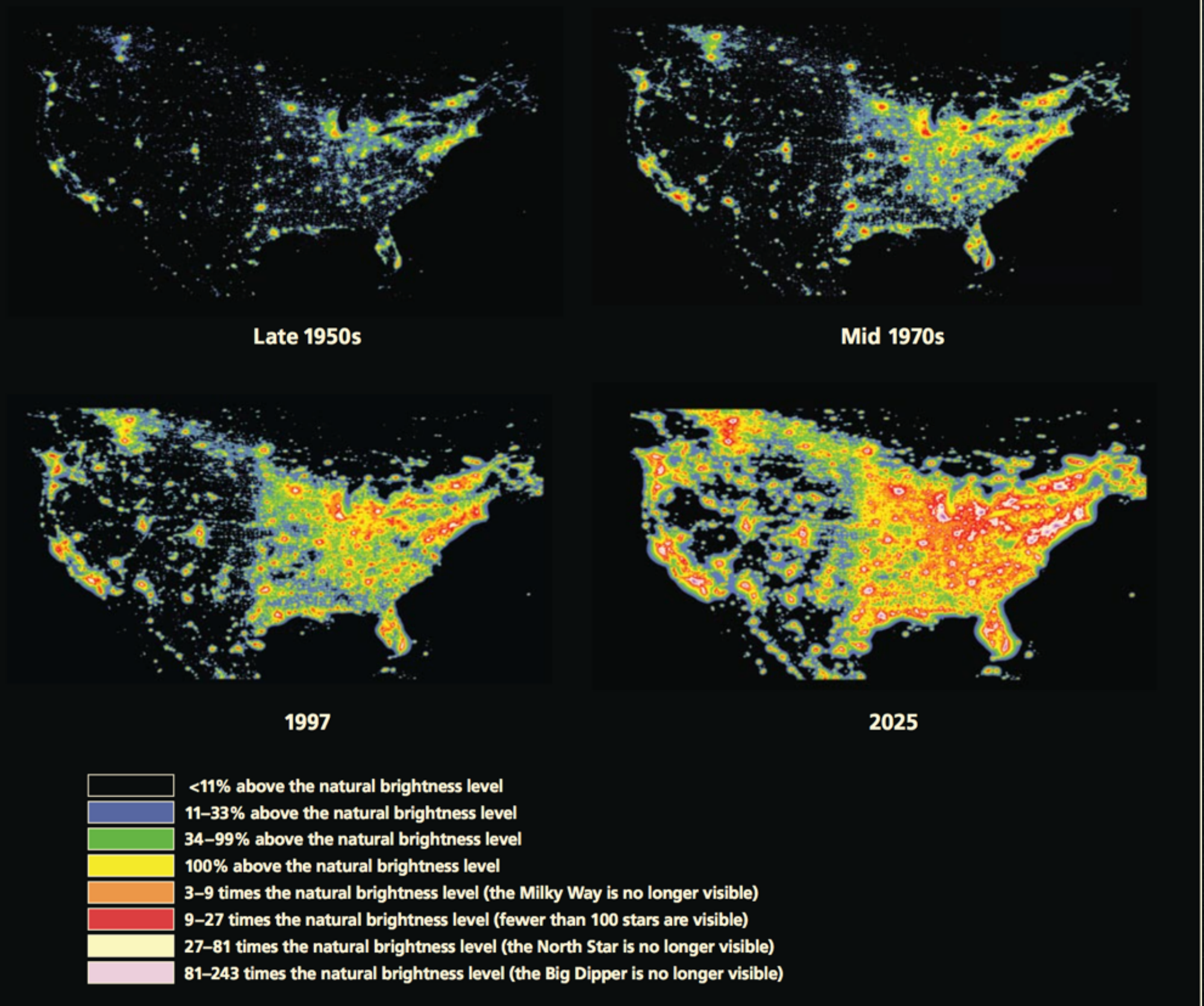
Cell Metab. 2014 Dec 2;20(6):991-1005


Ganglion cell
Retina
Optic nerve
Signal emitted after SCN stops inhibiting its release
Pineal gland
AFTER BRAKE IS RELEASED
Melatonin
Pineal gland
Blood-stream
Light
Suprachiasmatic nucleus
Paraventricular nucleus



SOURCE:Environmental Health Perspectives

2010;118(1):A28-A33



Source: Environmental Health Perspectives
volume 117 | number 1 | January 2009