

Recent activities in Finland

Local, short-term, non-systematic approach so far, e.g.

- Korpela et al. Analyzing the mediators between nature-based outdoor recreation and emotional well-being. J Environ Psychol 2014;37:1-7.
- Tyrväinen et al. The influence of urban green environments on stress relief measures: a field experiment. J Environ Psychol 2014;38:1-9.
- Lanki et al. Acute effects of visits to urban green environments on cardiovascular physiology in women: a field experiment. Environ Res 2017;159:176-85.

But, how to ensure access/exposure to green spaces/nature?

For all? For some? If the latter, for whom and at which stage of prevention (primary/secondary/tertiary)?

Defined daily (?) dose?

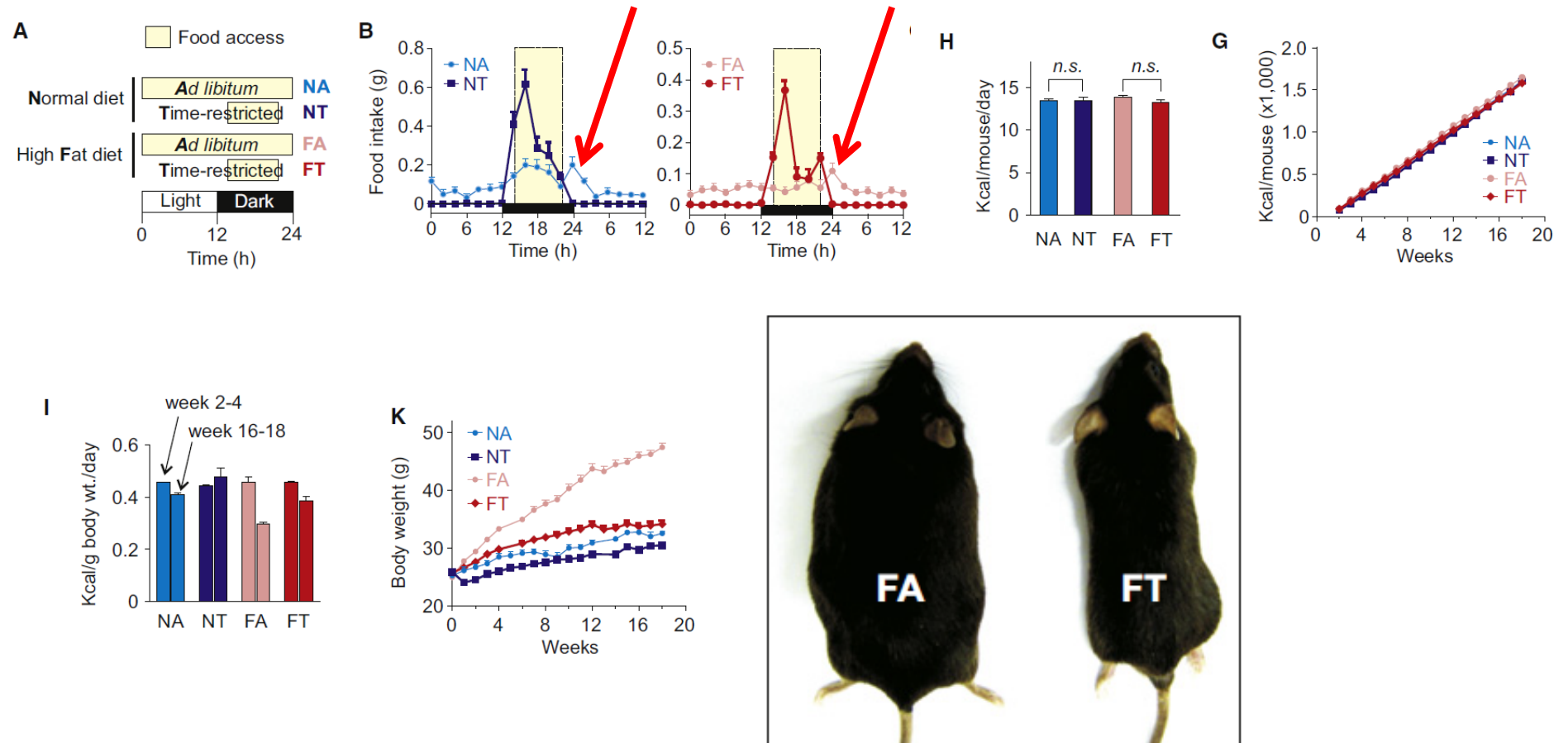
1. duration (how long)? 2. timing (when)? 3. frequency (how often)?

Current Care Guidelines and Best Practices by Finnish Medical Society

Not yet integrated into health (preventive/care) practice.

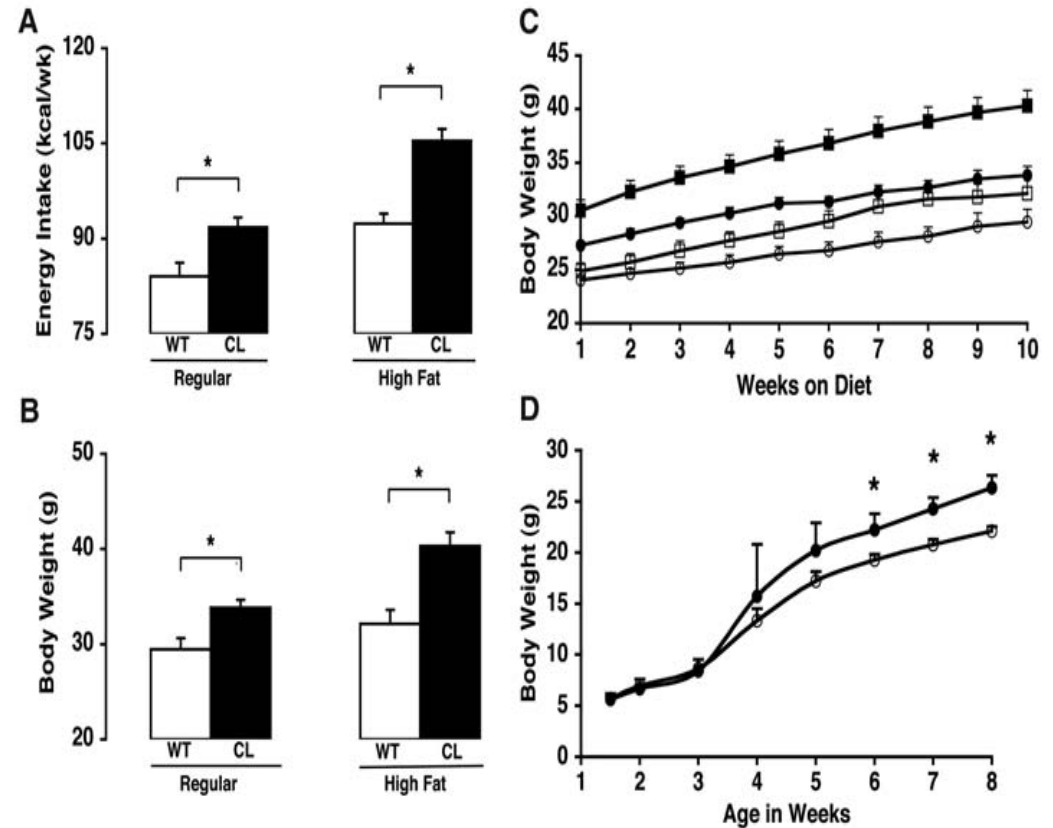
“You are that **when** ~~what~~ you eat”

Eating schedules, not the calories, make the difference.





Fred Turek has found disturbed sleep patterns in mice, caused by a faulty body clock, are linked to obesity.

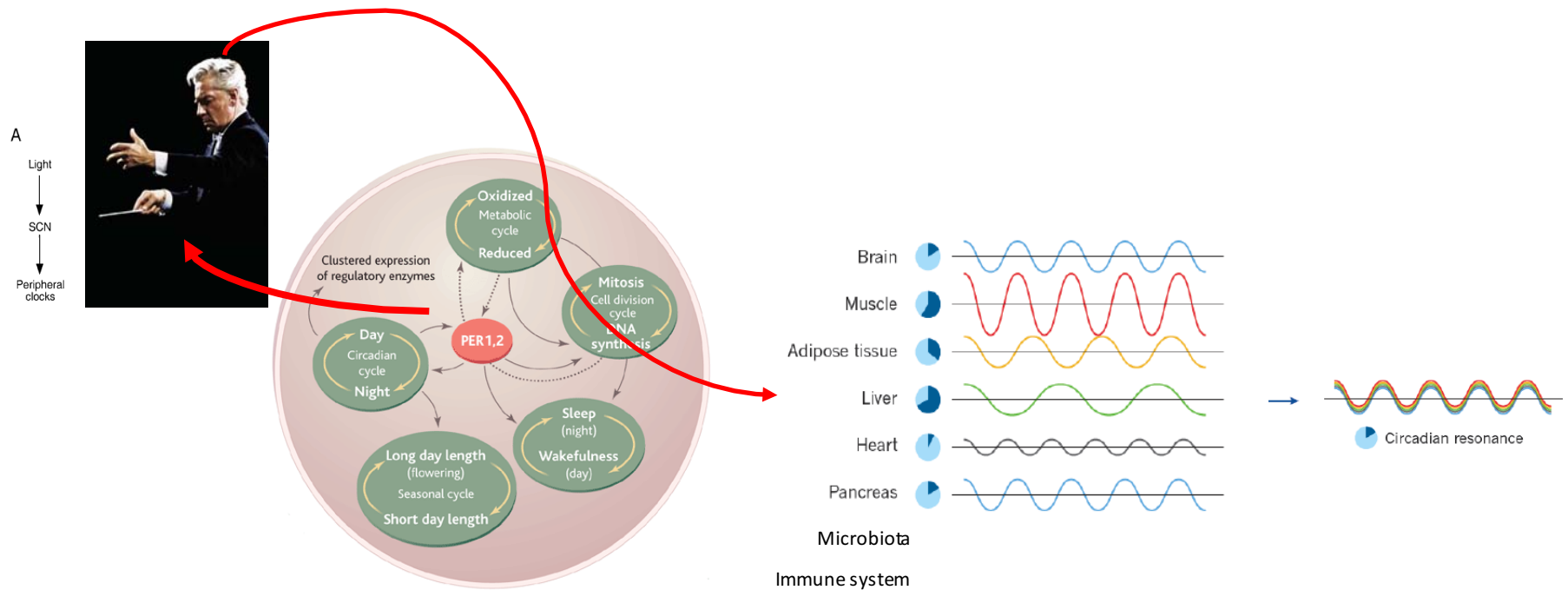


Clock mutant mice have a **greatly attenuated diurnal feeding rhythm**, are **hyperphagic and obese**, and **develop a metabolic syndrome** of hyperleptinemia, hyperlipidemia, hepatic steatosis, hyperglycemia, and *hypoinsulinemia*.

Clock mutant mice have a **longer circadian period**, but **sleep less** and have 25–51% smaller increases in REM sleep after sleep deprivation.

Intrinsic clocks generate and maintain rhythms

Master clock paces the clocks throughout the body.

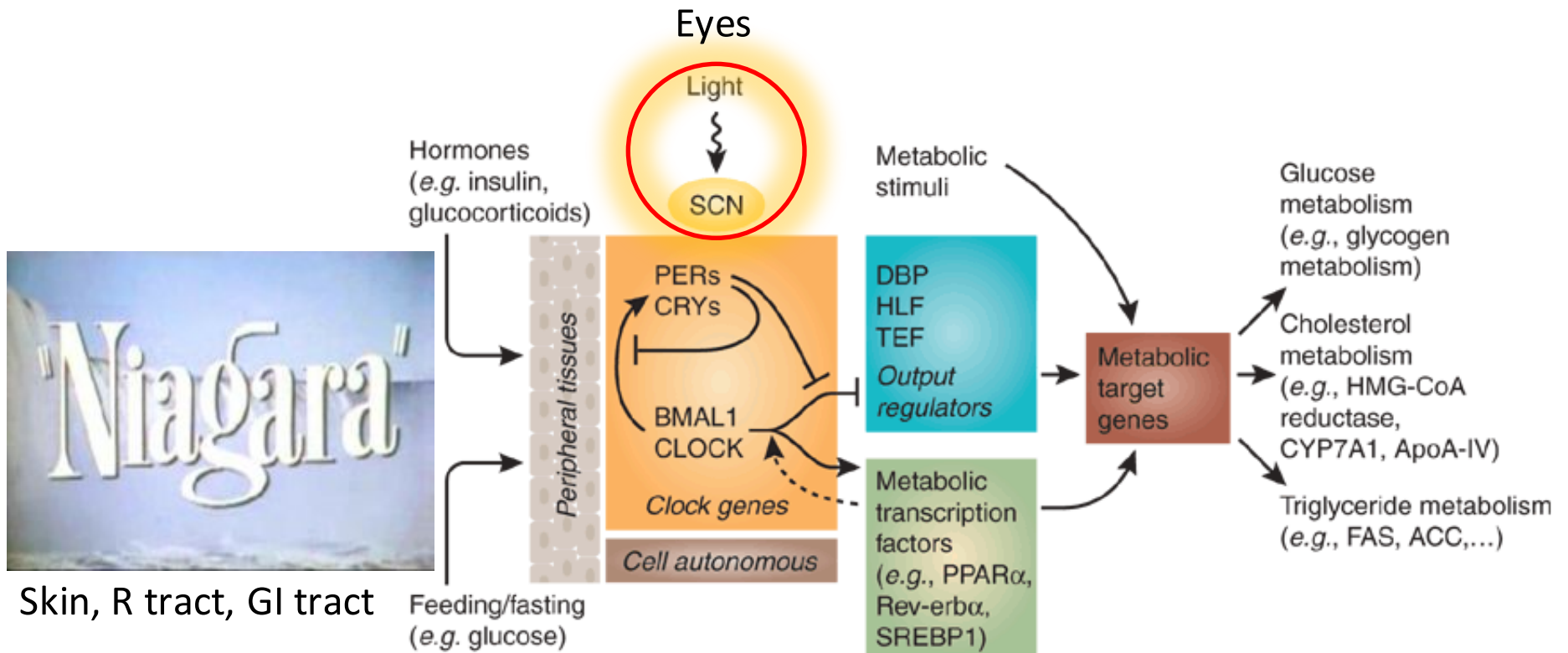


3 key factors that give feedback to the master clock and need to be controlled for in analyses of the green-space effect:

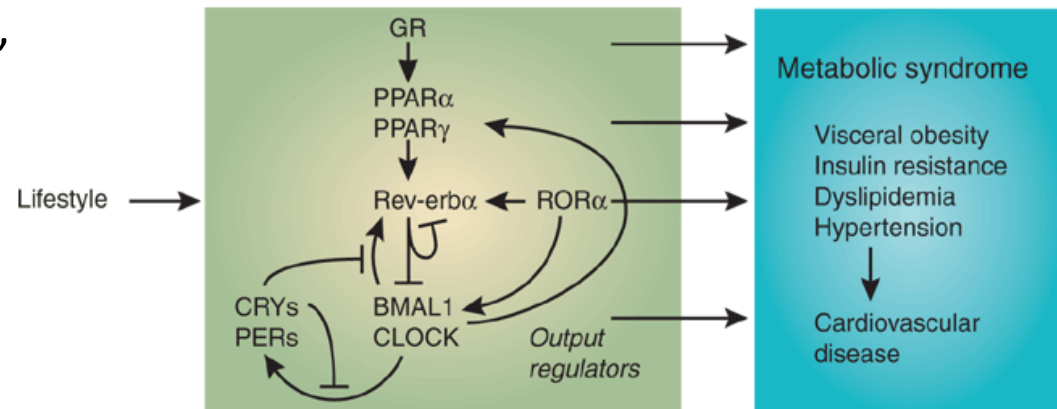
- 1. **sleep**
 - 2. physical activity
 - 3. nutrition.
- } **wakefulness**

If you disturb the master clock, then a similar outcome than that from the loss of microbiota, unhealthy diet, or sleep debt.

Master clock is at the top of hierarchy



So, in addition to these interphases, there is the intrinsic clock which reacts to light intensity and tracks the light-dark transitions. Light pollution in the habitat and climate change will challenge it.



Master clock drives the brain, body & microbiota

