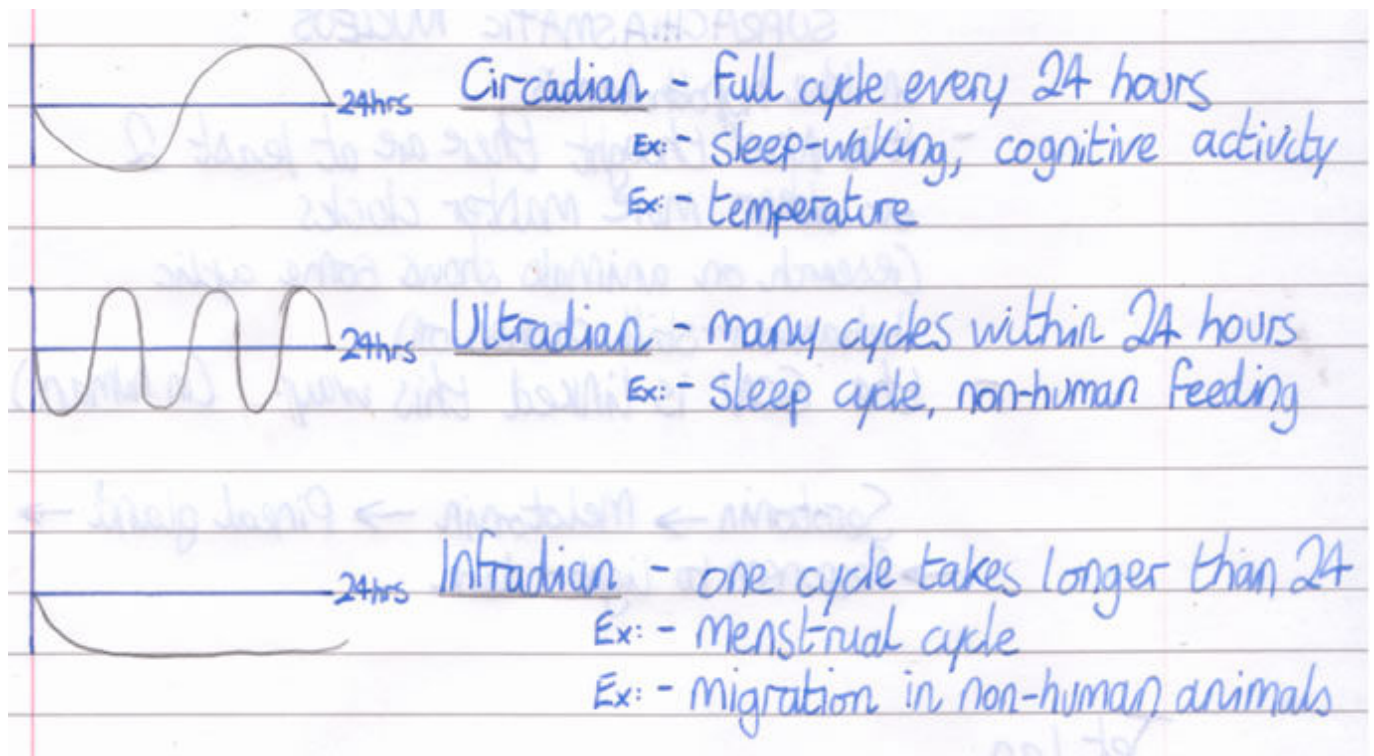


## Biorhythms, Sleep and Dreaming – Different Types of Biological Rhythms



### **Environmental Influences (External Zeitgebers) on...**

- Infradian rhythms:
  - Temperature
  - Water levels
  - Light/dark
- Ultradian rhythms:
  - Temperature
  - Position of sun in sky
- Circadian rhythms:
  - Sunrise, sunset
  - Light/dark

### **Observations**

- The single most powerful environmental influence upon cyclical behaviour is light and dark.
- The higher up the evolutionary scale, the less influential these zeitgebers are on cyclical behaviour.
- Humans are equally as capable of manipulating biological clocks to adapt to different environments.

### **Biological Clocks**

- "Endogenous Pacemakers"
- Master clock or many clocks?
- Master clock thought to exist in the *suprachiasmatic nucleus*, in the hypothalamus.
- It is now thought there are at least two master clocks (research on animals shows some cyclic activity still carries on after suprachiasmatic nucleus is destroyed).
- The SCN is linked in the following way in humans:
  - Serotonin >
  - Melatonin >
  - Pineal gland >
  - Responses to light and dark