

# Overview: Sleep Physiology and Sleep Medicine

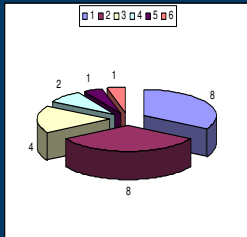
Goodfellow Symposium 2009

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## Topics

- Sleep physiology
- Overview of Sleep disorders

## Sleep



- 24 hours
- 8 sleep
- 8 work/ study
- 4 socials, sports, entertainment
- 2 meals
- 1 self cares
- 1 driving

Why we do we need to sleep?



## Why Sleep

- Body repair?
- Energy replenishment?
- Predator avoidance?
- Thermoregulation?
- Memory consolidation?
- Neuronal Integrity?
- Resculpting of synaptic populations?

- Recent Research on Sleep and the Brain
  - Sleep improves procedural memory
    - tasks requiring practice and repetition
  - Problem solving skills
  - Pruning and strengthening of circuits that promotes learning new things and reinforcing old ones

## Total (REM + NREM) Sleep Deprivation

- Death 11-32 days (avg = 20)
- Brownish/disheveled fur
- Skin lesions on tails/paws
- Increased food intake
- 20% weight loss
- Increased energy expenditure (1.9X increase in energy use)
- Decreased body temperature terminally

- Sleep Deprivation and Junior Doctors
  - Impaired performance tests on vigilance
  - Impaired serial mathematical calculations
  - Verbal processing, complex problem solving



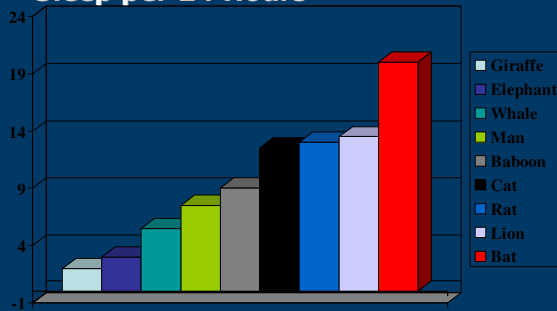
- Sleep Deprivation and Junior Doctors
  - Among surgical trainees, significant decrements in procedural skills post call
  - Among ED trainees, worsening of simulated intubation tasks



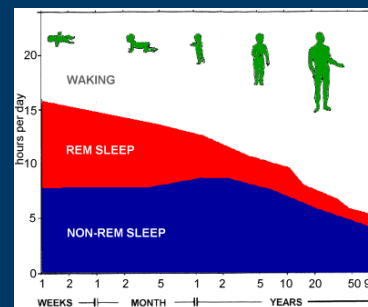
## Complaints of Patients with Insomnia

- Fatigue, low energy, "running on empty"
- Irritability, "grumpy", less tolerant
- Tired but having a nervous buzz, "feeling wired"
- Eye bags, racoon eyes, heavy feeling around eyes
- Poor memory

## Sleep per 24 Hours



## Sleep changes through life





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