Announcements

- Office hours canceled Friday Nov. 4
- New office hours: Wed. Nov. 9, noon-3pm
- Exam review review: Tuesday Nov. 8
- Exam: Thursday Nov. 10

Motivation

Homeostasis

Stability in body state maintained through self-regulation
Involves set points
E.g., 98.6 degrees F

Hunger

- Example of a drive state
  - State of internal tension
  - The system behaves so as to reduce the tension
- Determined by a complex set of signals
  - Many involving the endocrine system (hormones)
  - E.g., fat cells secrete leptin when full
  - High leptin levels suppress appetite
- Signals are monitored and integrated by the hypothalamus

Some appetite-related signals
Weight set points

• Excess calories are converted to fat
• When fat levels decrease, so does metabolism
  – A negative feedback loop
    • The more you lose, the fewer calories you burn
    • Even if you exercise
  – If you gain again, metabolism stays low
  • nytimes.com/2016/05/02/health/biggest-loser-weight-loss.html
• Losing weight and keeping it off can be very difficult

Nature vs. nurture

Sexual orientation

• Influenced by genes and environment
  – whomyoulove.com (Marc Breedlove, MSU)
• Concordance rate of a characteristic:
  – The probability that one member of a twin pair has the characteristic, given that the other does
• Identical vs. fraternal twins:
  – 100% vs. 50% shared genetic material

Sexual orientation

• Concordance rates for being gay:
  – Male identical twins: 52%
  – Male fraternal twins: 22%
• Evidence for genetic influence:
  – Identical > fraternal
• Evidence for environmental influence:
  – Identical < 100%

The older brother effect

• The more older brothers a male has, the more likely he is to be gay
• One possible mechanism:
  – Chromosomes: Girls are XX, boys are XY
  – Mom’s body views new proteins on the Y chromosome as invaders
    • Generates antibodies that affect later male fetuses
    • Somehow making them more likely to be gay