WHY CNS?

WHY DEVELOPMENT?

WHY PATHOLOGY??

ANNUAL – USA ALONE

Alzheimer’s disease (4 million; 100 billion)

Parkinson’s disease (1.5 million, 15 billion

Depression (18 million; 44 billion)

Schizophrenia (3 million) (Cost 32.5 billion/year)

Stroke (4 million) (Cost $30 billion/year)

Addiction – ?? (Cost $200 billion / year???)

• Galen – humors in brain cavities
  (130-200 AD)

  Blood, Mucus, Black bile, Yellow bile

  1500 yrs!!!!!

• Descartes (1600’s)
  Mind/Body Dualism
  – Mind (non-material) directs body/brain (material)

  – “mind”-pineal body controlled fluid
  – fluid produced movement

  – cruelty to “mentally ill”
  – losing your mind?
Galvani – animal electricity (1780s) (Shelly, 1816)

- Gall (1800)
  Phrenology vs.
- Flourens – (1850)
  ablation studies

Broca 1861

-Bell and Magendie 1800s

VENTRAL motor
DORSAL sensory
Why Animal Models?
structures/ events shared across species

- less than 1% of the number used for food
- Experiments must advance knowledge
- Pain and distress minimized
- All alternatives exhausted first

Who studies the brain?

Levels of analysis:
- Molecular
- Cellular
- Systems
- Behavioral

Clinical (M.D.)
Experimental (M.D. Ph.D.)

Clinical:
- Neurologist (diseases of nervous system)
- Psychiatrist (disorders of mood, personality)
- Neurosurgeon (surgery)
- Neuropathologist (tissue changes resulting from disease)
Experimental
- Computational (computer models)
- Developmental (maturation, evolution)
- Molecular (genetics)
- Neuroanatomist (structure)
- Neurochemist (chemistry)
- Neuroethologist (species-specific)
- Neuropharmacologist (drugs)
- Neurophysiologist (electrical activity)
- Neuropsychologist (neural basis of human behavior)
- Physiological psychologist (biology of animal behavior)
- Psychologist (perception)

- Chapter 1
  - review questions pg 21(2,4,5,7)
  - Galen
  - Descartes
  - Galvani
  - Bell and Magendie
  - Broca