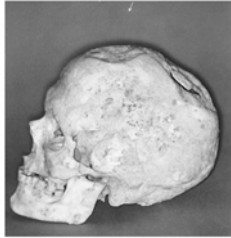


WHY CNS?

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

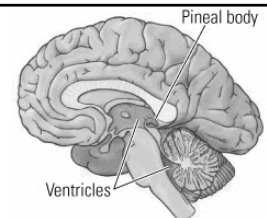
– Mind (non-material) directs body/brain (material)

– “mind” -pineal body controlled fluid

– fluid produced movement

– cruelty to “mentally ill”

–losing your mind?

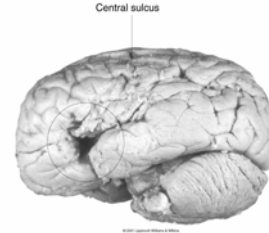


Galvani – animal electricity (1780s) (Shelly, 1816)

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



Broca 1861



– Bell and Magendie 1800s

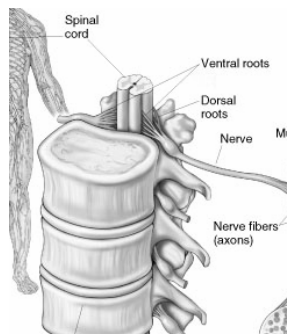
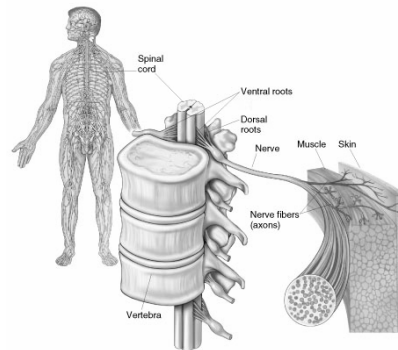
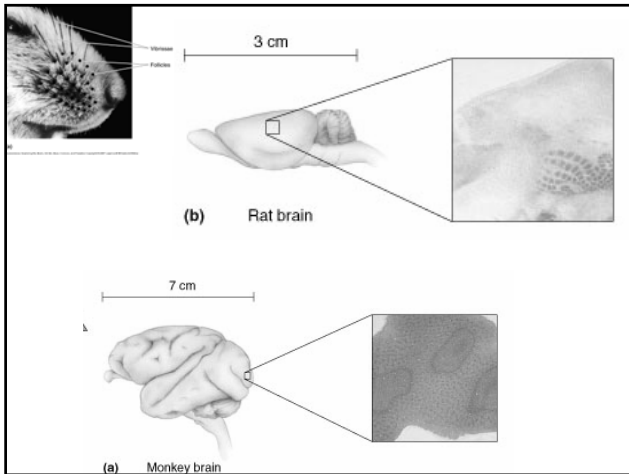


Figure 1.5
Spinal nerves and spinal nerve roots. Thirty-one pairs of nerves leave the spinal cord to supply the skin and the muscles. Cutting a spinal nerve leads to a loss of sensation and a loss of movement in the affected region of the body. Incoming sensory fibers and outgoing motor fibers divide into spinal roots where the nerves attach to the spinal cord. Bell and Magendie found that the ventral roots contain only motor fibers and the dorsal roots contain only sensory fibers.



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

They've Saved More People Than 911.

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)
- Psychophysicist (perception)

• Chapter 1

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