

# SPINAL TRACTS

1/28/86, 20 Jan 98, 18 Jan 00, 29 Jan 03, 26 Jan 05, 30Jan08, 31Jan11  
Martini's 6<sup>th</sup>: 519-, 7<sup>th</sup>: 422-447

## SENSORY PATHWAYS: (p 503)

- first order neuron: cell body in **dorsal root ganglion**
- second order: cell body in **posterior grey horn** (or **medulla**), goes to thalamus
- third order: cell body in **thalamus**, transmits to **cerebrum**, becomes conscious.

four types of *ascending* tracts: (p 504-507)

two in **posterior funiculus**:

- 1 **fasciculus gracilis** (slender bundle) (p 503) muscle position
- 2 **fasciculus cuneatus** (wedge bundle) fine touch localization: upper limb and neck, upper trunk

a pair in the **lateral and anterior funiculus**:

- 3 **spinothalamic tract**: (p 504) lateral: pain and temperature ventral: touch and pressure

one in the **lateral funiculus**

- 4 **spinocerebellar**: (p 507) 2 dorsal and 2 ventral: proprioceptors to Purkinje cells in the cerebellum, do not reach cerebrum, therefore unconscious (p 486)

## MOTOR PATHWAYS:

two *descending* tracts:

- pyramidal**: corticospinal tracts: two branches: lateral funiculus (p 510) ventral funiculus

**extrapyramidal**: influence coordination, posture, balance, visual and auditory, stimulation, etc.

## REFLEXES:

- Monosynaptic** patellar reflex (a postural reflex, helps maintain posture): (p 444) tap patellar ligament, stretches muscle spindle (p 442), generates sensory impulse  
Sensory neuron in DRG sends message to anterior horn cell  
Anterior horn cell transmits message to contract quadriceps

- polysynaptic** withdrawal reflex (step on a tack): (p 445) pain from tack generates sensory impulse  
Sensory neuron in DRG sends message to interneuronal cell (association)  
Interneuronal cell sends messages to inhibitory and motor neurons  
Motor neuron ( anterior horn cell) stimulates flexors  
Inhibitory neuron inhibits extensors

- Babinski sign**: infant fans toes when sole is stroked, adult curls (because of inhibitory impulses) (p 446)  
**Fanning in adults** indicate lack of inhibitory impulses, damage to CNS.

