Autonomic Nervous System
PNS has 2 functional divisions

1 Sensory (afferent) division
   a) Somatic afferent fibers – carry impulses from skin, skeletal muscles, and joints to the brain
   b) Visceral afferent fibers – transmit impulses from visceral organs to the brain

2 Motor (efferent) division - transmits impulses from the CNS to effector organs, (2 main parts)
   a) Somatic motor nervous system – conscious control of skeletal muscles
   b) Autonomic motor nervous system (ANS) - regulates smooth muscle, cardiac muscle, and glands, (2 divisions)
      1) Sympathetic – fight or flight
      2) Parasympathetic – Rest or Digest
Autonomic Nervous System (ANS)

ANS is Part of the motor division for the PNS

- It’s the efferent control of everything except skeletal muscle
- Pupil size, accommodation for near/far vision
- Dialation/constriction of blood vasculature
- Rate and force of heart contractions
- Gastrointestinal movements
- Secretion of most glands
Difference from Somatic Nervous System

• All fibers are efferent (motor)
• 2 different types of efferent fibers
  two neurotransmitters (Acetylcholine (Ach) and Norepinephrine (NE))
• Must synapse on ganglion before effecting target
• 2 primary divisions
  Sympathetic
  Parasympathetic
• Can act in both inhibitory and excitatory fashion

Best way to remember the difference is by the terminology. What helps me is
  Somatic I think of s as in skeletal and matic as motion, so somatic deals
  skeletal muscle that involves motion
  Autonomic reminds me of involuntary, parts that work on their own
  automatically, so that would be smooth muscle, glands and cardiac muscle
The ANS is composed of both Sympathetic and Parasympathetic

Both Sympathetic and Parasympathetic have preganglionic neurons (spinal cord → ganglion), autonomic ganglia (house cell bodies of effector), and postganglionic neurons (motor to effected organ).

1. Sympathetic:
   A. **short** preganglionic neurons (synapses the thoracolumbar area – lateral grey horn of T1-L3)
   B. the autonomic ganglia
      1) Vertebral ganglia – along the spine
      2) Prevertebral ganglia – near arteries
   C. **Long** postganglionic neurons

2. Parasympathetic:
   A. **Long** preganglionic neurons (synapses the lateral grey horn of S2-S4 and nuclei of cranial nerves III, VII, IX, and X)
   B. Autonomic ganglia (in the visceral effector organs)
   C. **Short** postganglionic