

BIO 25 PAL Worksheet  
Week 8 (#2): Autonomic Nervous System 2

**Remember**

1. The neurotransmitter(s) released onto the target tissues by Sympathetic and Parasympathetic neurons are not themselves excitatory or inhibitory. What exactly makes a synapse excitatory (EPSP) or inhibitory (IPSP)?
2. What are the receptor types within each branch of the Autonomic Nervous System?

**Understand**

3. Blood vessels in all body areas (except genitals) have receptors for Norepinephrine and Epinephrine ONLY. Given this, how can the body accomplish both vasoconstriction (blood vessels narrow) and vasodilation (blood vessels widen), as needed?

**Apply**

4. For each of the following situations, draw the synapse between the Autonomic neuron AND the target tissue.

Some ground rules: *Dilation* means a tube is increasing in diameter, which is a relaxation of the smooth muscle that makes up that tube. *Constriction* means a tube is reducing in diameter, after the same smooth muscle contracts, squishing the tube's contents. Pupillary movement is always excitatory (constriction or relaxation).

Include:

- 1) the neurotransmitter released
- 2) the *specific* receptor type it binds to on the target tissue
- 3) the end effect (excitatory or inhibitory), with what ion would move

**Situations:**

1. pupil constriction as you're watching a documentary on lizards
2. rapid heart rate during a 30-min run
3. increased blood flow to skeletal muscle (caused by relaxing blood vessels), but decreased blood flow to stomach (caused by constricting blood vessels) as occurs during exercise
4. movement of intestines following a meal
5. dilation (relaxation) of bronchioles in the lungs during exercise