

Study Guide Chapter 15 (2-7-2025)  
Structure and Function for Autonomic Nervous System

- 1 What is the autonomic nervous system? Why is it called autonomic? Controls what? Key idea of the ANA?
- 2 What two systems regulates homeostasis? What controls these two systems (the “boss”)?
- 3 What are the two divisions of the ANS called? What phrases are used to describe the function of each divisions?
- 4 What is autonomic tone? Explain ANS tone by sing the heart (parasympathetic tone) vs a blood ves-sels (for sympathetic tone).
- 5 Will an ANS division’s signal always have a similar effects (excite VS inhibit) on all organs? Explain.
- 6 How many neurons are required to carry an ANS signal from the spinal cord to the target tissue? What phrases are used to describe this pathway? What is unique about these neurons? What is be-tween the neurons? How is this different than the somatic nervous pathway?
- 7 The ANS is an efferent pathway (sending signals to target tissue). Afferent pathways are used to tell inter-neurons the status of body. Where is the location for these inter-neurons? What terms describes the group of neurons making these types of decisions?
- 8 Where along the spinal column is the sympathetic division located? Where in the spinal cord is the soma for the pre-ganglionic fiber located? What is the relative length for the pre and post ganglionic fibers?
- 9 What is the location and structure of the paravertebral ganglia (also known as the sympathetic chain ganglia)?
- 10 The sympathetic post ganglionic fibers may take three distinctive pathways. Explain
- 11 What are the three collateral ganglia listed as lab learning objectives?
- 12 Why is the sympathetic nervous system described as “divergent”? Explain.
- 13 Where are the adrenal glands located? How is the tissue of the adrenal gland organized? What maybe secreted from each section of the adrenal gland? Why is the inner core called a sympathetic ganglion?
- 14 How is the parasympathetic division of the ANS described based on the location of the pre-ganglionic fibers? How are the pre and post ganglionic fibers of the parasympathetic division different than the fibers of the sympathetic division?
- 15 Why is the parasympathetic division described as having less neuronal divergence? Explain Signifi-cance.

- 16 We know in a synapse there are neurotransmitters and receptors. When thinking about the result between these two things, why is the receptor more important? Explain
- 17 In the ANS there are two neurotransmitters (acetylcholine and norepinephrin) and four receptors (nicotinic, muscarinic, adrenergic alpha, adrenergic beta). Draw a picture to show the relationship between neurotransmitters and receptors.
- 18 What is the significance of antagonistic and cooperative effects when you have dual innervation (both division)? Explain using the iris and heart muscles.
- 19 How may a structure be regulated using only one division of the ANA? Explain using blood vessels.
- 20 Study the slide "Summary of nervous system control of homeostasis ".