

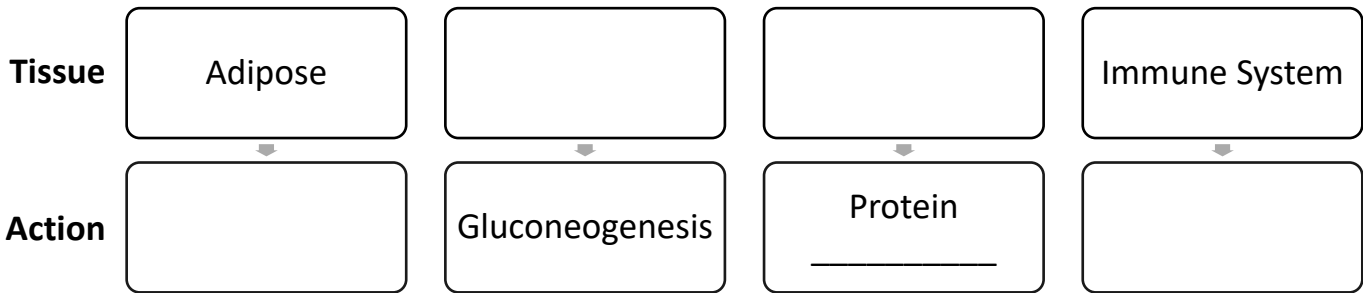
Worksheet for Midterm #2
Physiology 2130 2019-2020
TA: Greydon Gilmore

Pancreatic Hormones

	Glucagon	Insulin
Tissue		
Made by		
Stimulus		
Effect		
Class		

Cortisol Action

Cortisol



Worksheet for Midterm #2

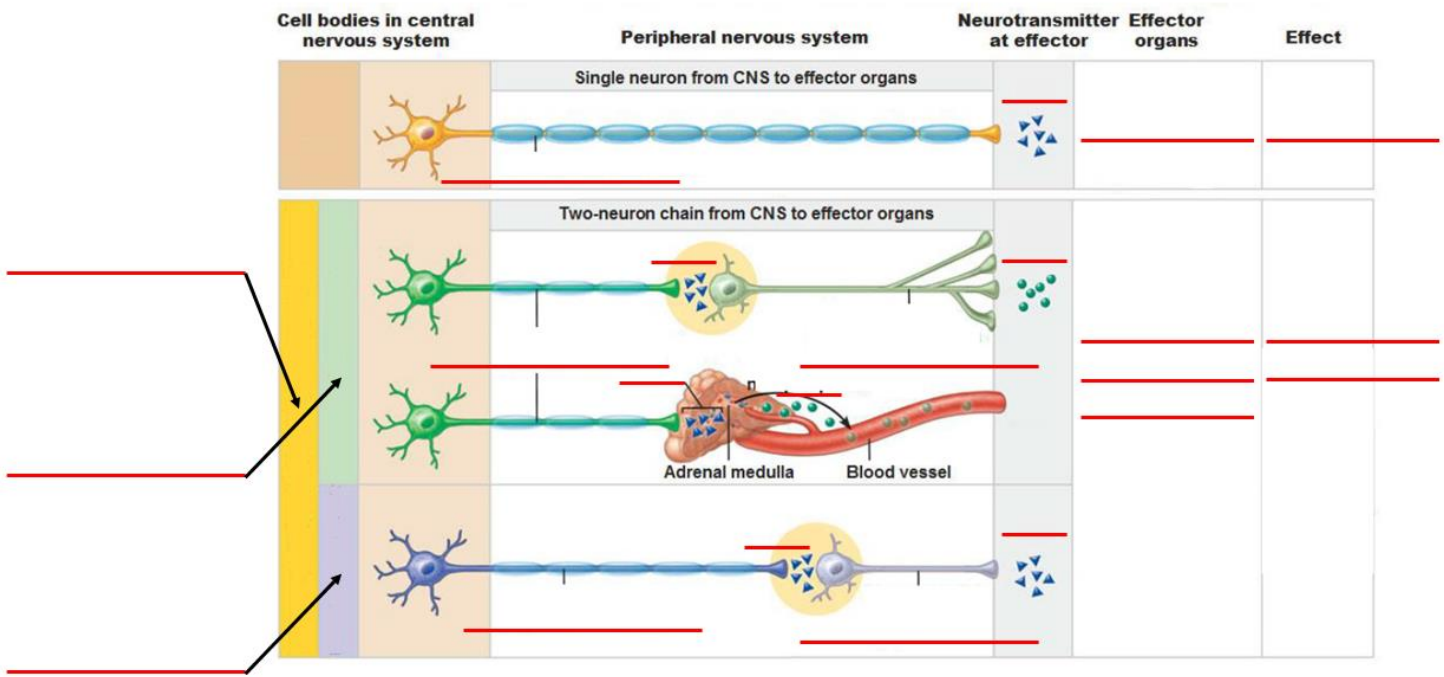
Autonomic vs. Somatic

	Autonomic	Somatic
Voluntary?		
Myelination	Preganglionic: Postganglionic:	
Number of neurons in path		
Efferent Transmitter		
Target tissue		
Effect on target		

Parasympathetic vs. Sympathetic

	Parasympathetic (PSNS)	Sympathetic (SNS)
Preganglionic Neurotransmitter		
Postganglionic Neurotransmitter		
Location of autonomic ganglion?		
Innervates adrenal medulla?		
When would you observe more activation?		
If activated, what is the effect on heart rate?		
If activated, what is the effect on breathing?		
Give an example of an organ/function with antagonistic effect.		
Give an example of a cooperative effect.		

Autonomic and Somatic Motor Systems



Cardiac Cycle

	Heart Event?	ECG	Pressure	Volume	Valve and open/close?
Phase 1					
Phase 2					
Phase 3					
Phase 4					
Phase 5					

Blood Vessels

	Blood Characteristics	Structure	Purpose
Aorta/Large Arteries			
Arterioles			
Capillaries			
Veins			

Answers: Filled in Tables

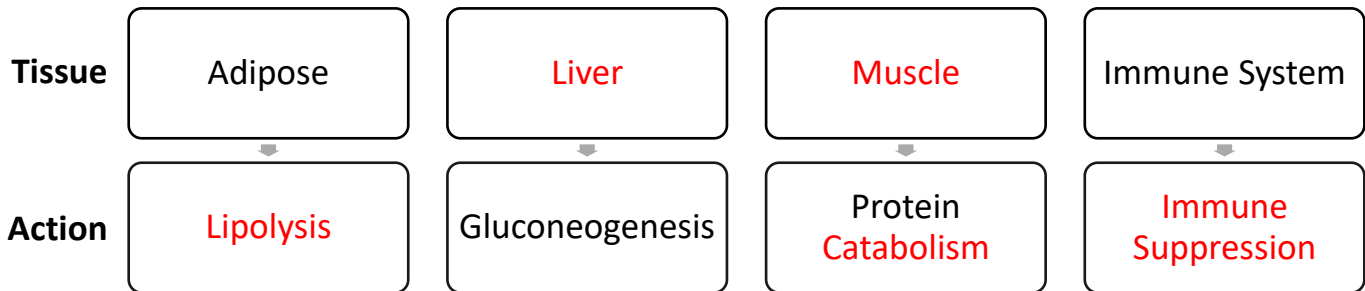
Worksheet for Midterm #2

Pancreatic Hormones

	Glucagon	Insulin
Tissue	Islet of Langerhans	Islet of Langerhans
Made by	α - cells	β - cells
Stimulus	Blood glucose Hypoglycemia	Blood glucose Hyperglycemia
Effect	Blood glucose (cells release glucose)	Blood glucose (cells take up glucose)
Class	Peptide	Peptide

Cortisol Action

Cortisol



Worksheet for Midterm #2

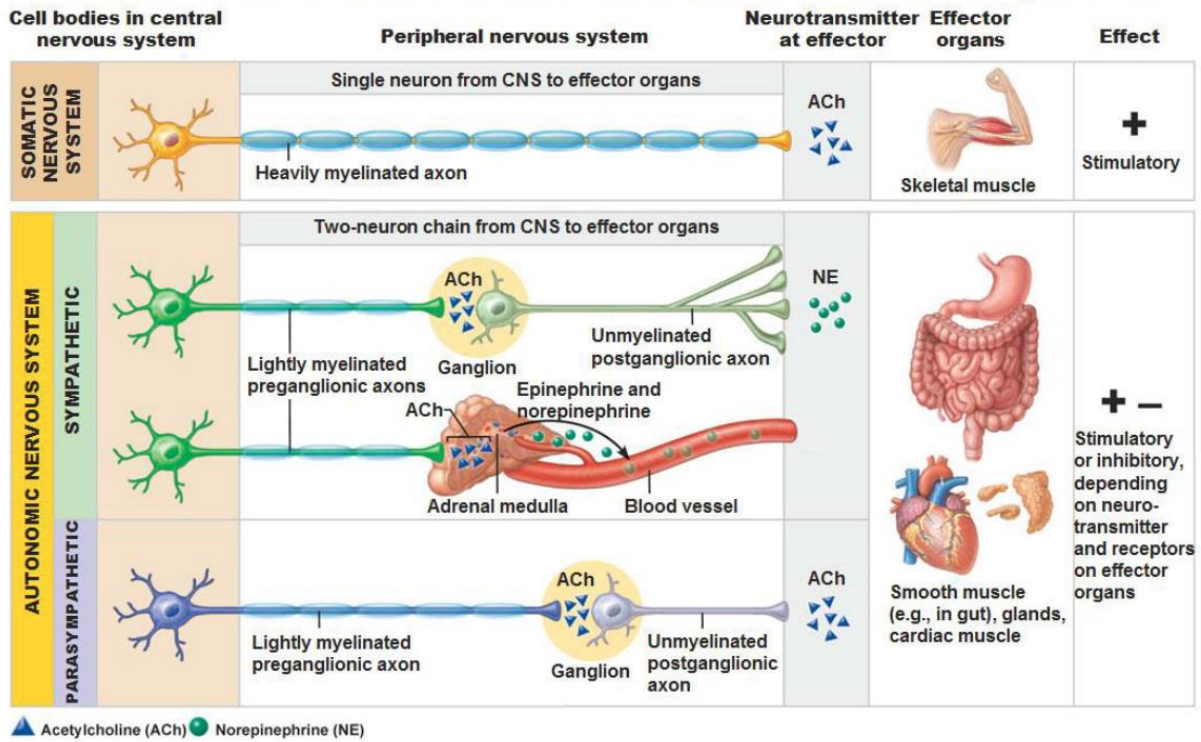
Autonomic Vs. Somatic

	Autonomic	Somatic
Voluntary?	No	Yes
Myelination	Preganglionic – Myelinated Postganglionic – Non-myelinated	Myelinated
Number of neurons in path	Two	One
Efferent Transmitter	Acetylcholine and Noradrenaline	Acetylcholine
Target tissue	Smooth and cardiac muscle Adipose tissue, endocrine/exocrine glands	Skeletal muscle
Effect on target	Excitatory or inhibitory	Excitatory (Muscle contracts)

Parasympathetic vs. Sympathetic

	Parasympathetic (PSNS)	Sympathetic (SNS)
Preganglionic Neurotransmitter	Acetylcholine	Acetylcholine
Postganglionic Neurotransmitter	Acetylcholine	Norepinephrine
Location of autonomic ganglion?	Close to organ	Close to spinal cord
Innervates adrenal medulla?	No	Yes
When would you observe more activation?	Rest & Digest	Fight & Flight
If activated, what is the effect on heart rate?	Slows heart rate	Increases heart rate
If activated, what is the effect on breathing?	Constricts airways	Relaxes airways
Give an example of an organ/function with antagonistic effect.	<ul style="list-style-type: none"> - Constricts pupils - Increases digestion (ie. increases bile secretion, stomach motility increased) - Increases secretions from pancreas 	<ul style="list-style-type: none"> - Dilates pupils - Decreases digestion (reduces bile secretions, decreases stomach motility) - Decreases secretions from pancreas
Give an example of a cooperative effect.	<ul style="list-style-type: none"> - Genitalia - M/induces erection - F/engorgement and secretions 	<ul style="list-style-type: none"> - Genitalia - M/induces ejaculation - F/stimulates contractions

Autonomic and Somatic Motor Systems



Cardiac Cycle

	Phase Event?	ECG	Pressure	Volume	Valve and open/close?
Phase 1	Atrial contraction	P-Wave	Atria>ventricles	30% blood fills ventricles	Bicuspid AV
Phase 2	Isovolumetric ventricular contraction	QRS	Aorta>Ventricles>Atria	No Change	Aortic valve closed
Phase 3	Ventricular ejection	T-wave	Ventricles>Aorta	Blood leaves ventricles to ESV	Aortic valve open
Phase 4	Isovolumetric ventricular relaxation	None	Aorta>Ventricles>Atria	No Change	Aortic valve and Bicuspid valve closed
Phase 5	Ventricular filling	None	Atria>Ventricles	70% blood fills ventricles	Bicuspid valve open

Blood Vessels

	Blood Characteristics	Structure	Purpose
Aorta/Large Arteries	<ul style="list-style-type: none"> - High blood pressure - 80-120 mmHg - High blood velocity 	<ul style="list-style-type: none"> - Large diameter - Elastic tissue - Thin walls <ul style="list-style-type: none"> ▪ Easily distended ▪ Low resistance to blood flow ▪ Small drop in blood pressure 	<ul style="list-style-type: none"> - 'Shock absorbers' - Distribute the blood
Arterioles	<ul style="list-style-type: none"> - Large drop in blood pressure - Lower blood velocity 	<ul style="list-style-type: none"> - Small diameter - Very thick walls - Smooth muscle of walls innervated by ANS <ul style="list-style-type: none"> ▪ Causes vasoconstriction/dilation ▪ Controls blood flow velocity 	<ul style="list-style-type: none"> - Resistance vessels - Control blood flow velocity to organs
Capillaries	<ul style="list-style-type: none"> - Low blood pressure - Small drop in blood pressure - Very low blood velocity (1-2 cm/sec) 	<ul style="list-style-type: none"> - One endothelial cell thick - Large cross-sectional area - Very large surface area <ul style="list-style-type: none"> ▪ Diffusion of gas, nutrients, and waste 	<ul style="list-style-type: none"> - Exchange vessels
Veins	<ul style="list-style-type: none"> - Low blood pressure - Low to medium blood velocity (5-10 cm/sec) 	<ul style="list-style-type: none"> - Very thin walls with large diameter - Contain valves - Some elastic tissue - Smooth of smooth muscle innervated by ANS <ul style="list-style-type: none"> ▪ Vasoconstriction/dilation 	<ul style="list-style-type: none"> - Capacitance vessels: 70% of TBV