



Muscles - General

Skeletal Muscular Tissue

Fill in the blank boxes

COMPONENTS	LAYERS / FEATURES	CHARACTERISTICS		
		Localization	Function	General Characteristics
	Epimysium			
	Perimysium			
	Endomysium			
	Sarcolemma/ transverse tubules			
	Sarcoplasm			
	Myofibrils			
	Sarcoplasmic Reticulum			



Types of Muscles

TYPES	CELL/FIBRE STRUCTURE	LOCALIZATION	FUNCTION	GENERAL CHARACTERISTICS
Skeletal				
Cardiac				
Smooth				



Muscular Contraction – Frequency of Stimulation

TYPES		DURATION	CHARACTERISTICS	
			Phases	General Characteristics
			Latent period	
			Contraction phase	
			Relaxation phase	
	Incomplete	Summation of twitches (stimulus arrives before the relaxation phase has ended during each twitch)		
	Complete	Continuous (high frequency of stimulation eliminates relaxation phase)		

Check your solutions online at http://library.vcc.ca/learningcentre/worksheets/ap_bio1120_1220.cfm



Stimulation of a Muscle Fibre

STEP	STIMULUS	LOCATION	RESULT
1	Arrival of an electrical impulse (action potential).	Synaptic terminal	Permeability to Ca^{2+} changes in the membrane of the neuron.
2	Ca^{2+} enters the synaptic terminal.	Synaptic terminal	Synaptic vesicles containing ACh move towards the presynaptic membrane.
3	Exocytosis of ACh.	Synaptic cleft	ACh binds to the receptors on the motor end plate of muscle cell. Permeability to Na^{+} changes on the motor end plate.
4	Na^{+} enters into the muscle cell (sarcoplasm).	Muscle Synaptic cleft	Generation of an action potential in the muscle cell membrane (sarcolemma). ACh is reabsorbed by the synaptic terminal and acetylcholinesterase (AChE) removes ACh
5	Depolarization of sarcolemma. All ACh removed from the receptors.	Muscle Synaptic cleft	Release of Ca^{2+} from sarcoplasmic reticulum. Contraction of muscle fibre. No stimulation of muscle cell and muscle cell returns to the initial state (relaxation).

Study Tip Draw several diagrams to illustrate the process outlined above

