

## HST.035 Homework Assignment #1

(Due February 11<sup>th</sup>)

### PLEASE PRINT YOUR NAME:

1. For each of the features described below, write the name of the corresponding cytoskeletal fiber:

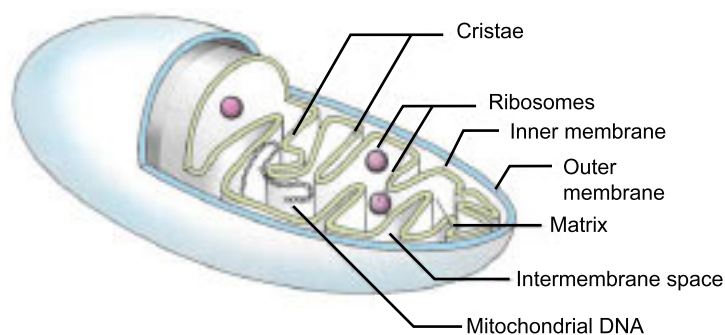
Feature	Name of cytoskeletal fiber
Is a solid fiber measuring ~7 nm in thickness	Microfilaments (actin filament)
Is a hollow fiber with a ~15 nm luminal diameter	Microtubules
Is a solid fiber measuring 8-12 nm in thickness	Intermediate filaments
Is a major structural component of cilia and centrioles	Microtubules

2. For each of the features described below, write the name of the corresponding cellular junction:

Feature	Name of junction
Virtually seals the space between two adjacent epithelial cells	Tight junctions
Is a site of epithelial cell attachment to the basal lamina	Hemidesmosomes
Facilitates intercellular communication by small molecules	Gap junctions
Is an <i>intercellular</i> junction connected to intermediate filaments	Desmosomes

3. Roughly sketch the cross-section of a mitochondrion below and label the following: cristae, matrix, mitochondrial DNA, and the membrane on which porins reside.

*Porins are in the outer membranes. Because of the porins, the intermembrane space is very similar to the cytosol in its chemical composition.*



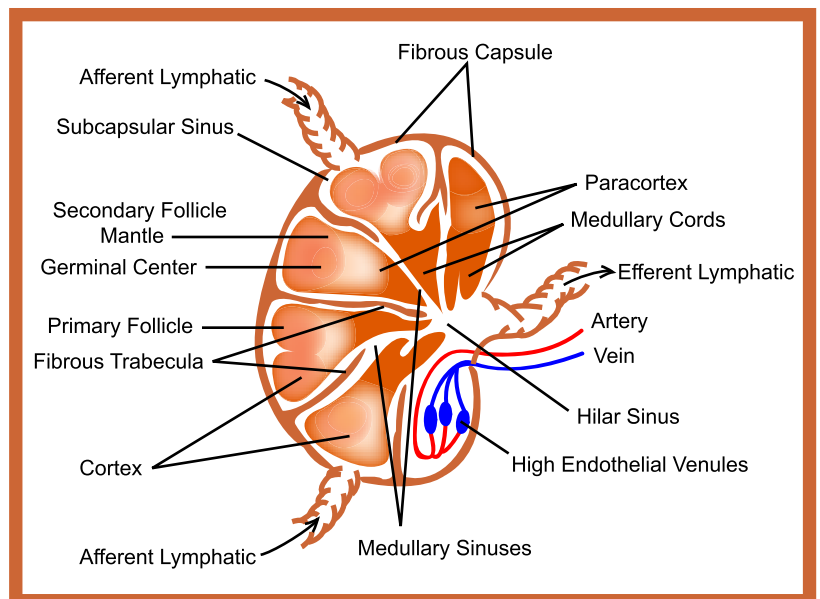
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4. For each of the descriptions below, choose between microvilli and cilia:

Description	Microvilli or Cilia
Has a core of actin cytoskeleton	Microvilli
Is designed to move the cell surface layer of mucus and debris	Cilia
Is designed to increase the surface area available for transport across the apical membrane	Microvilli
Has a well-defined arrangement of microtubules	Cilia
Is a component of the “brush border”	Microvilli

5. In this schematic drawing of a lymph node, use lines and arrows to label each of the following structures: capsule, hilum, afferent lymphatic, efferent lymphatic, primary follicle, secondary follicle, and subcapsular sinus.



6. In this histological picture of the esophageal mucosa, label each of the following structures: the epithelial layer, the lamina propria, the muscularis mucosae, the papillae.

