

Notes – Why are cells small? (SA:V Ratio)

Surface area outside or covering

Volume space inside

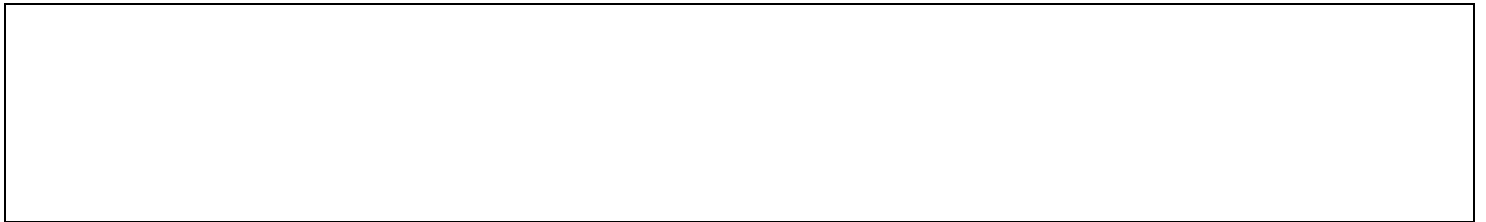
Surface Area : Volume Ratio $\frac{SA}{V}$ $SA \div V$

A cell's SA cell membrane

A cell's V Cytoplasm

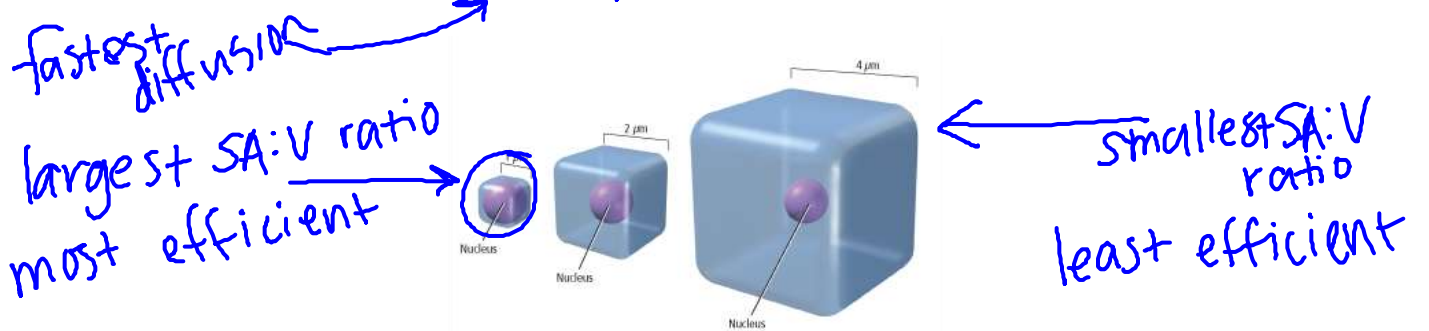
A cell benefits from having a...

- large SA (cell membrane) for diffusion & communication \swarrow faster
- small V (cytoplasm) for faster diffusion



So cells must have a large SA:V ratio $\rightarrow \frac{SA}{V}$

This means the most efficient cells are small



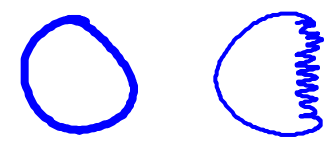
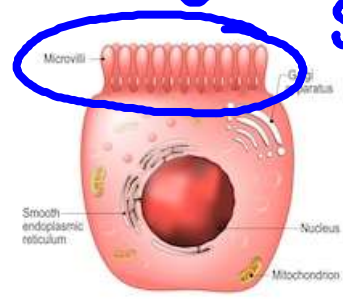
If a cell becomes extremely large...

- too little membrane \rightarrow can't maintain homeostasis
- _____
- too much volume \rightarrow slow diffusion

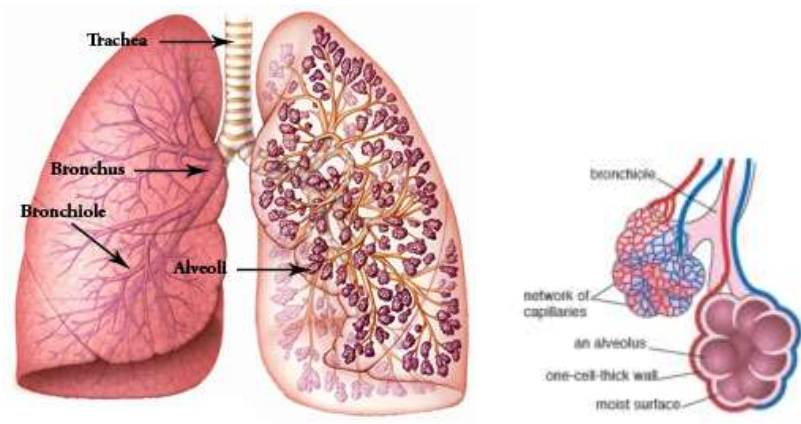
Some cells are specialized to _____

- Intestines _____

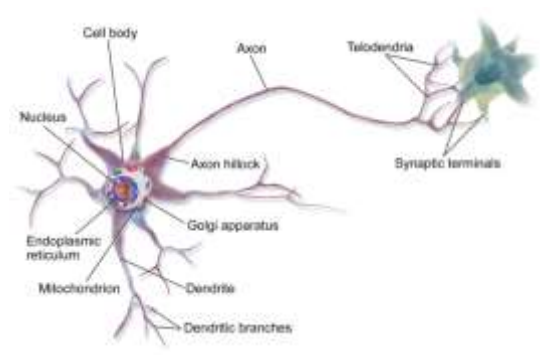
cells have folds (microvilli) that increase SA (cell membrane) w/o increasing V.



- Lungs _____



- Neurons _____



- Capillaries _____

