

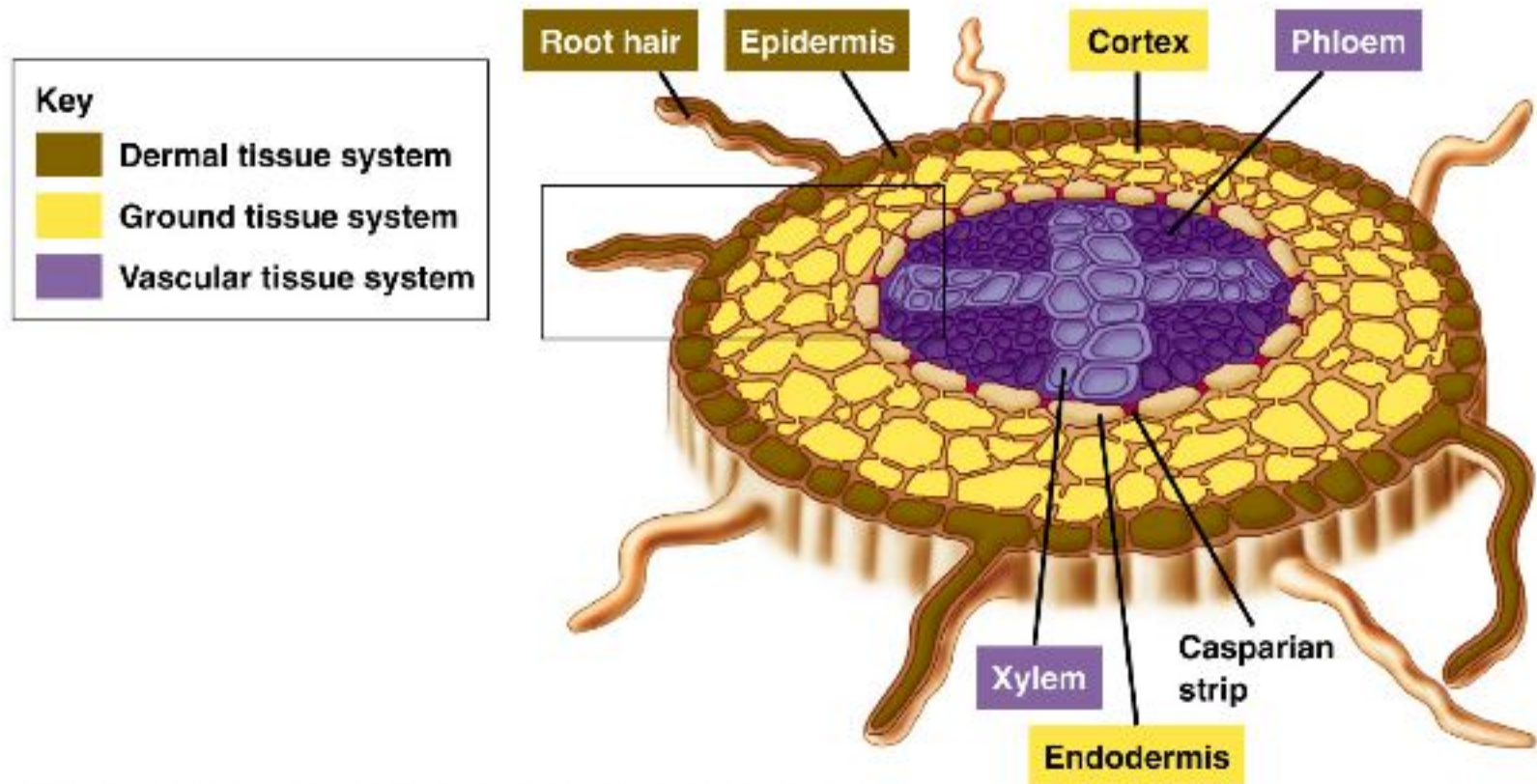
# Circulation in plants

Bio 11

# vocabulary

- Xylem - conducts the water up from the roots
- Phloem - conducts the sugars from the leaves to other areas of the plant for storage.

# Plant physiology



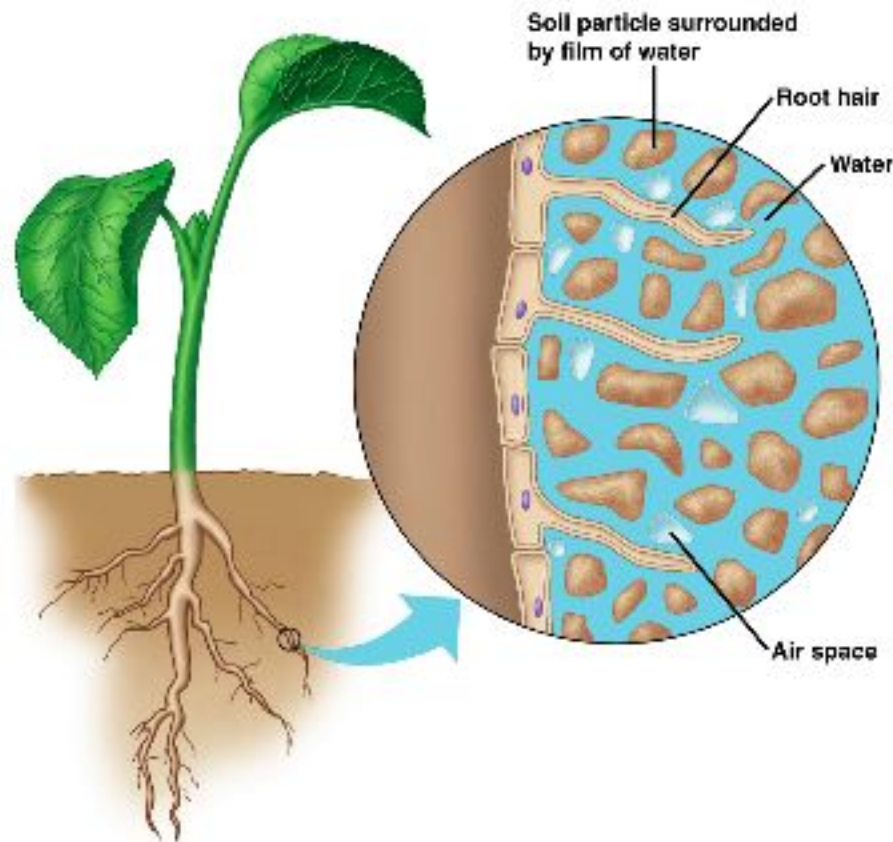
# More vocab

- Bulk flow
- Cohesion - tension
- Hydrogen bonding

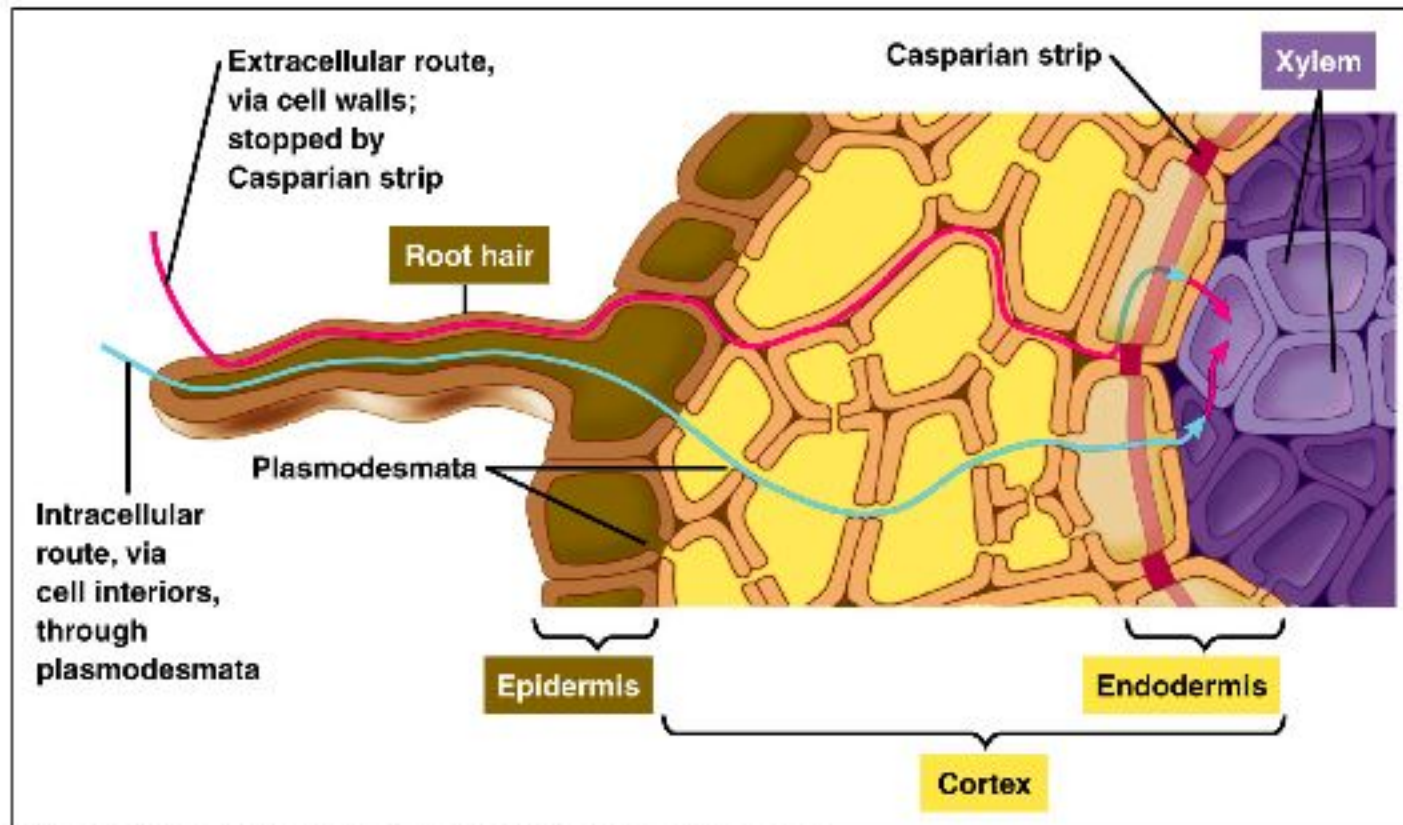
# Xylem

Movement through cohesion  
tension

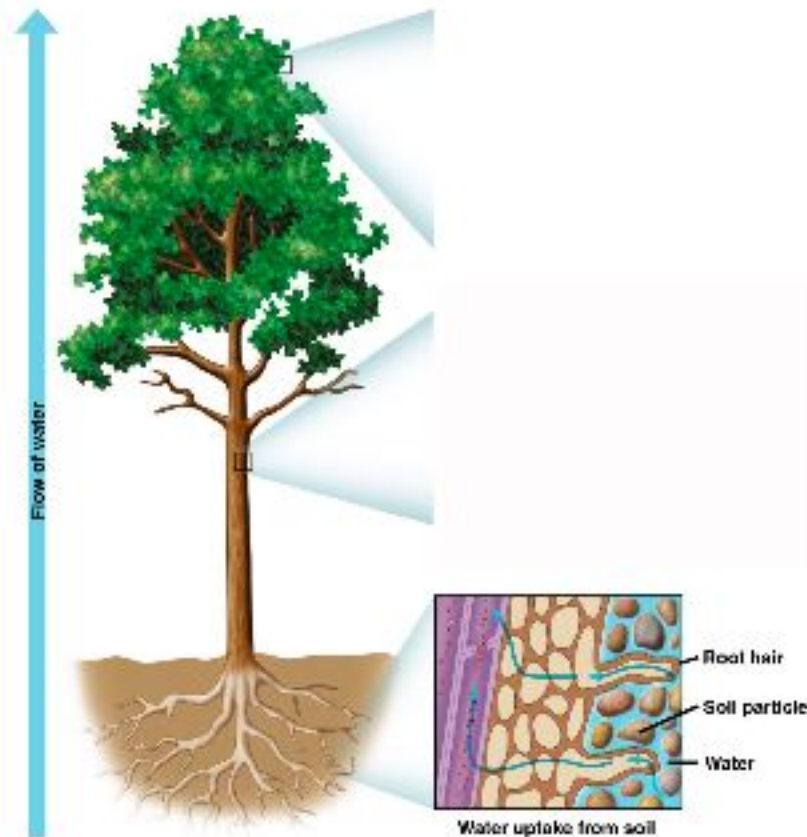
# Root hairs are surrounded by water and nutrients



# Movement of fluid- cohesion tension theory



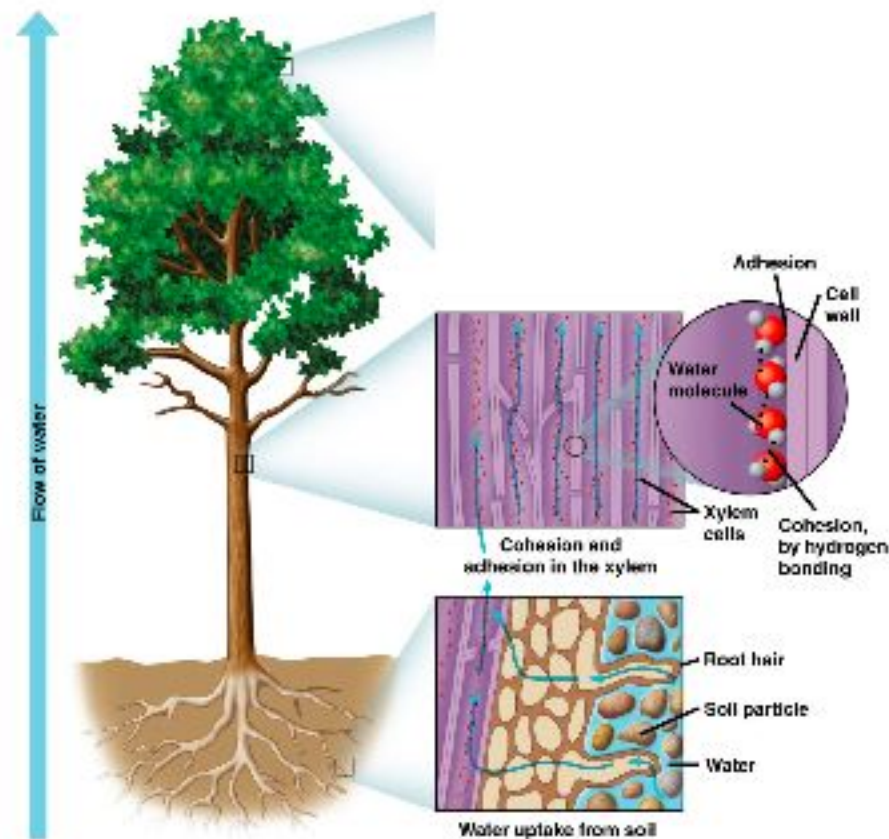
# Bulk movement of water



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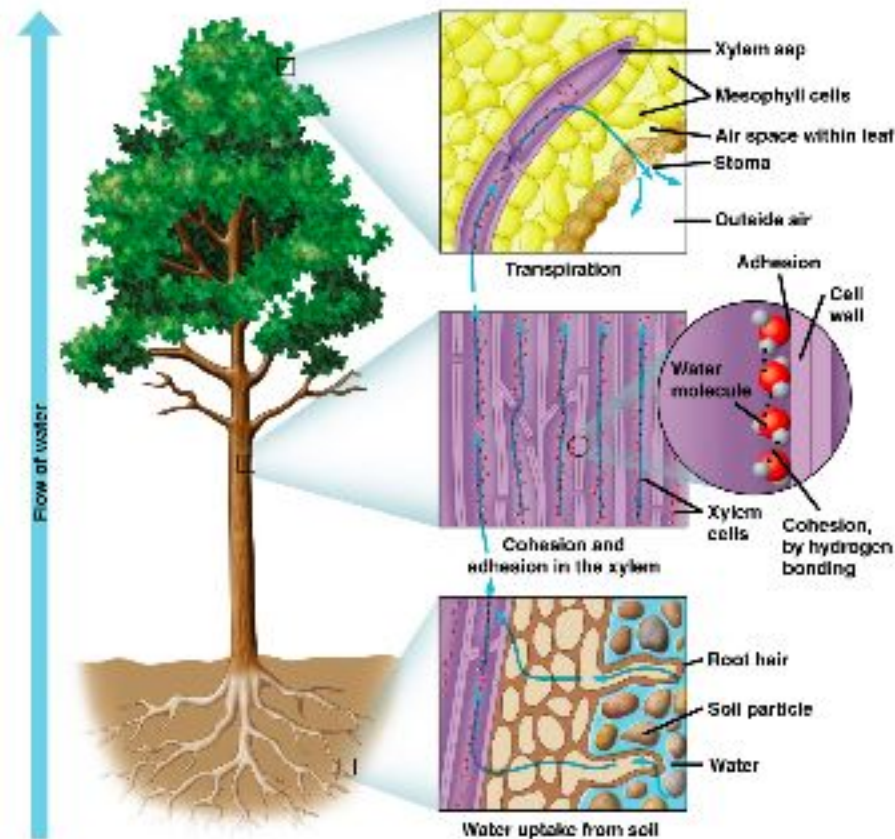


# Cohesion part - attraction of water



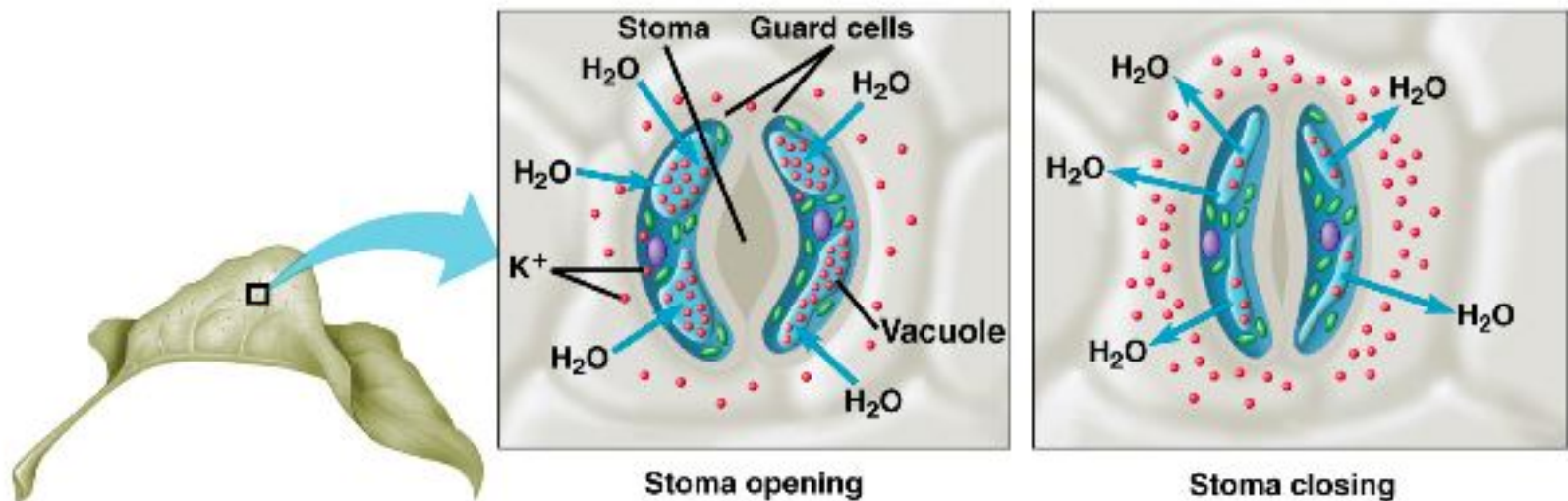
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# Tension part - evaporation of water - transpiration



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# This is the source of the tension



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# tension

- Evaporation out of the stomata

# Phloem

Movement through bulk flow

# Phloem

- 25% sugar
- Structures making sugar are called sources
- Structures using sugar are sinks.
- What is a newly formed leaf?
- Which direction can phloem flow?

# Pressure flow theory

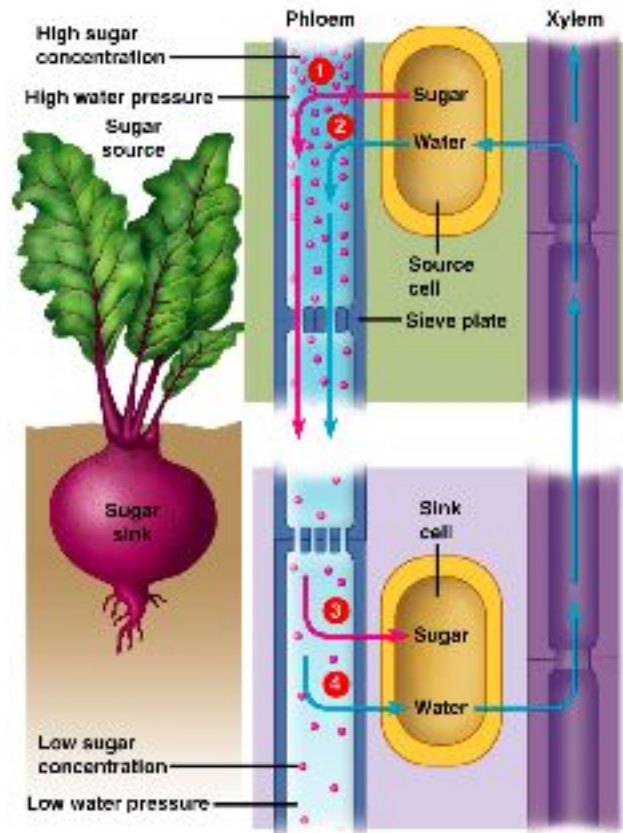
1. Sucrose source (photosynthesis)
2. Phloem sieve-tube loading - active transport into the phloem by companion cells
3. Water flows from xylem to phloem (proximity) - osmosis.

# Pressure flow theory

4. Sucrose sink fruit or root - active transport of sucrose.
5. Osmosis of water
6. Bulk flow driven by pressure gradient.



# Pressure flow theory



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