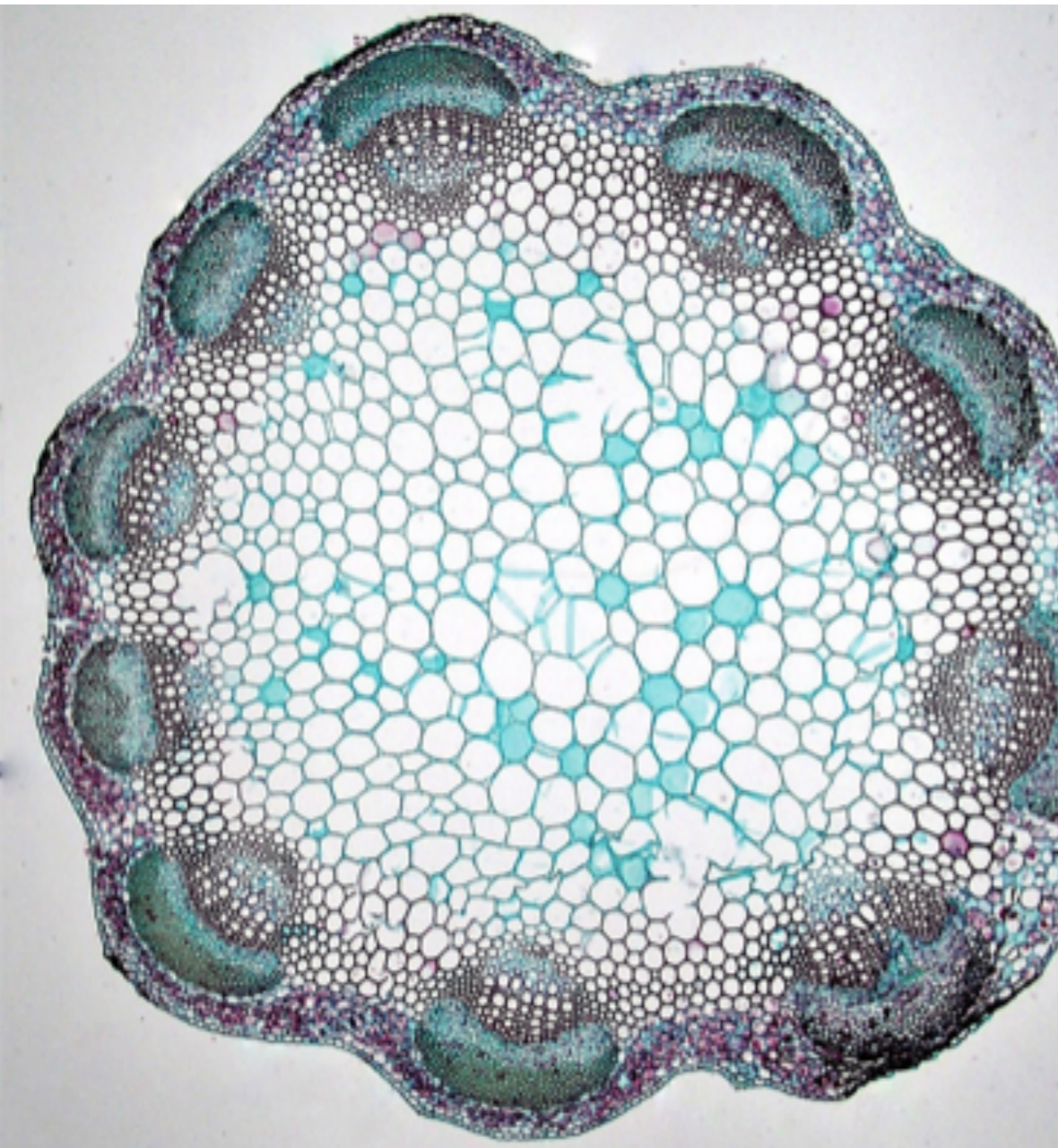


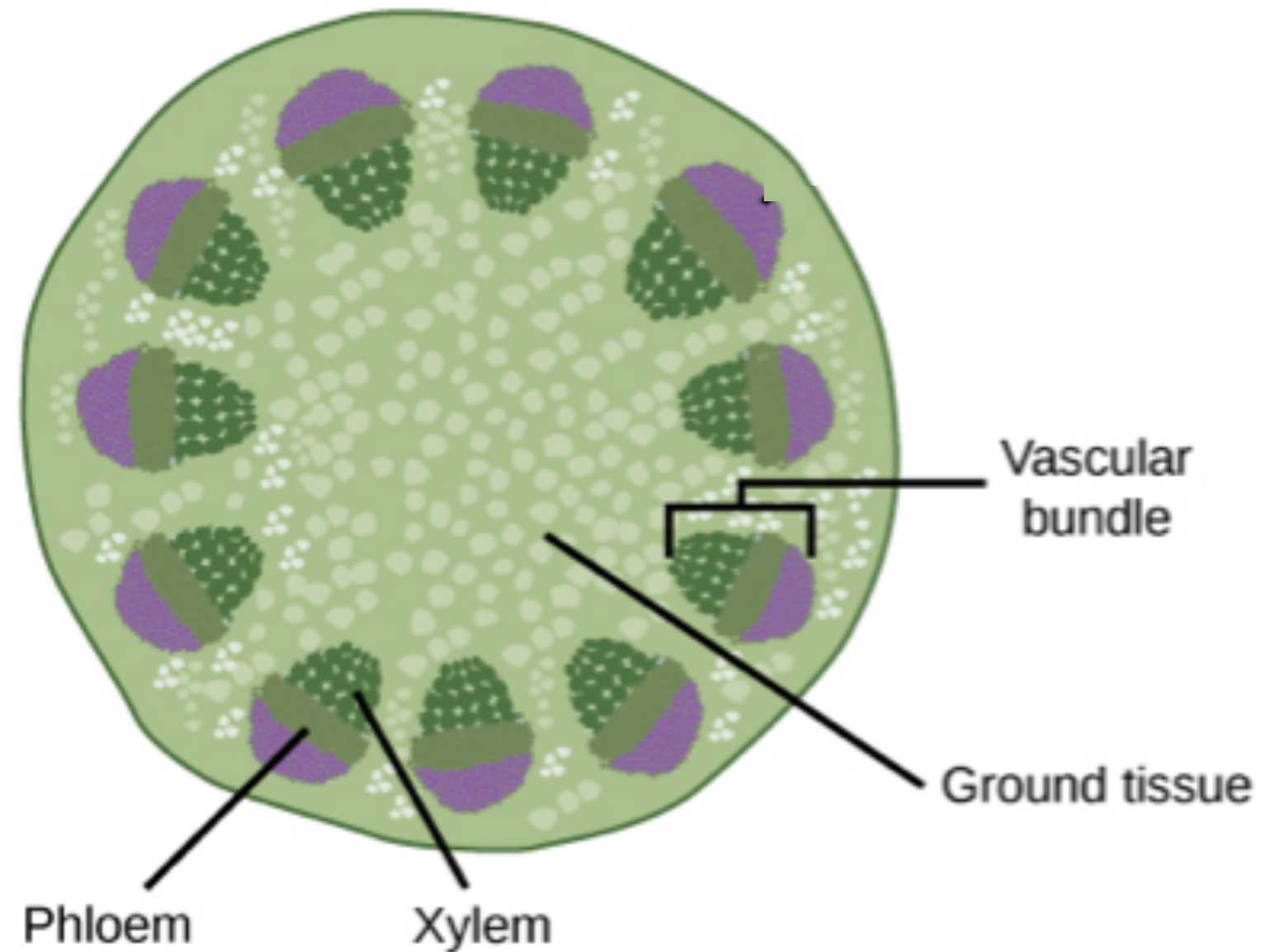
Transport in Phloem



Phloem in Stems

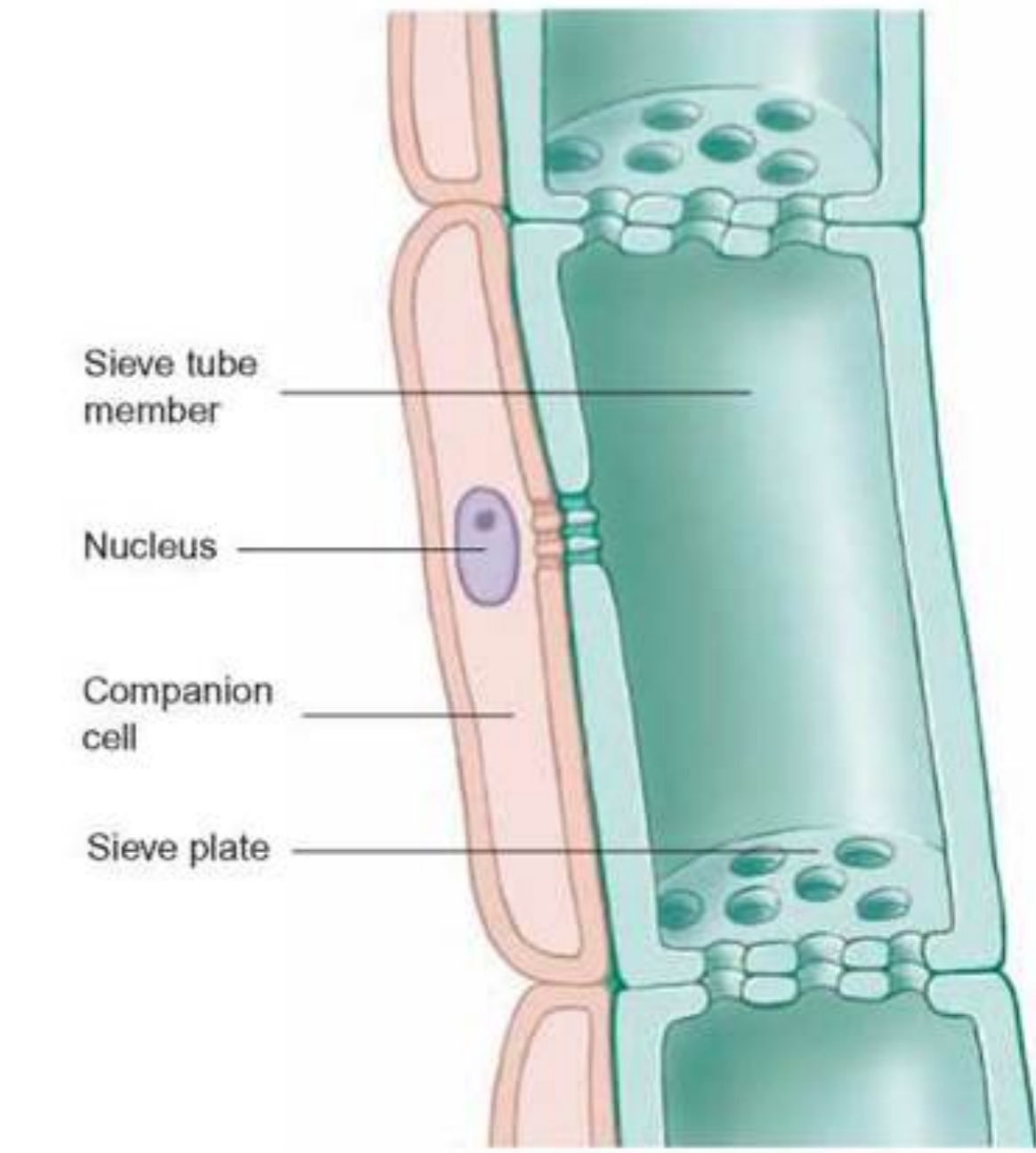


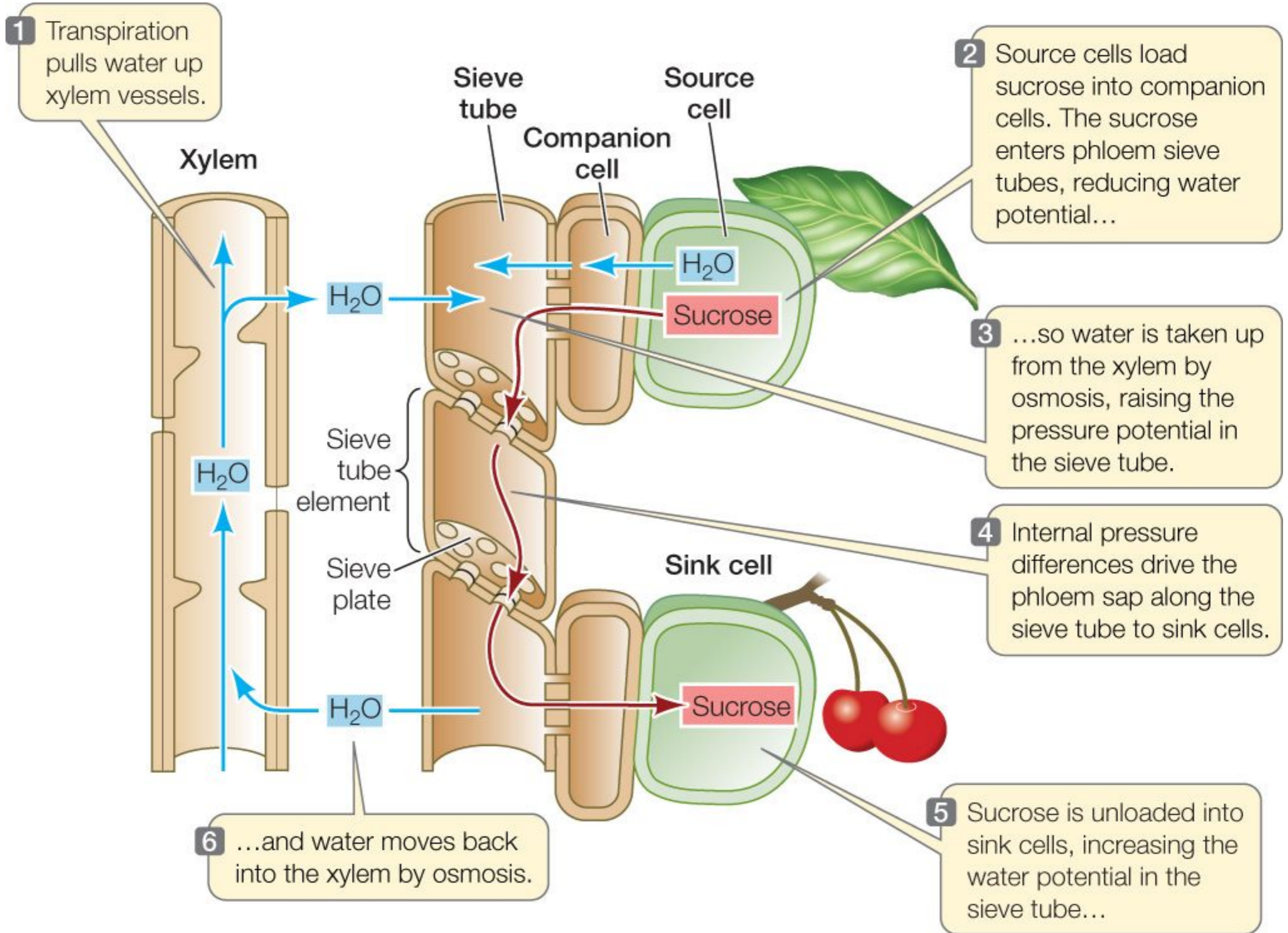
Dicot stem



Phloem Sieve Cells

- Are living cells throughout the plant
- specialized **sieve tube cells** with perforated end
- associated **companion cell**
- **Translocation** of organic molecules up and down the plant (eg sucrose, amino acids, fructose glucose)





Phloem Sources

- sources of organic molecules include
 - Green leaves and Green stems (photosynthesis)
 - Tap root and tubers in the spring



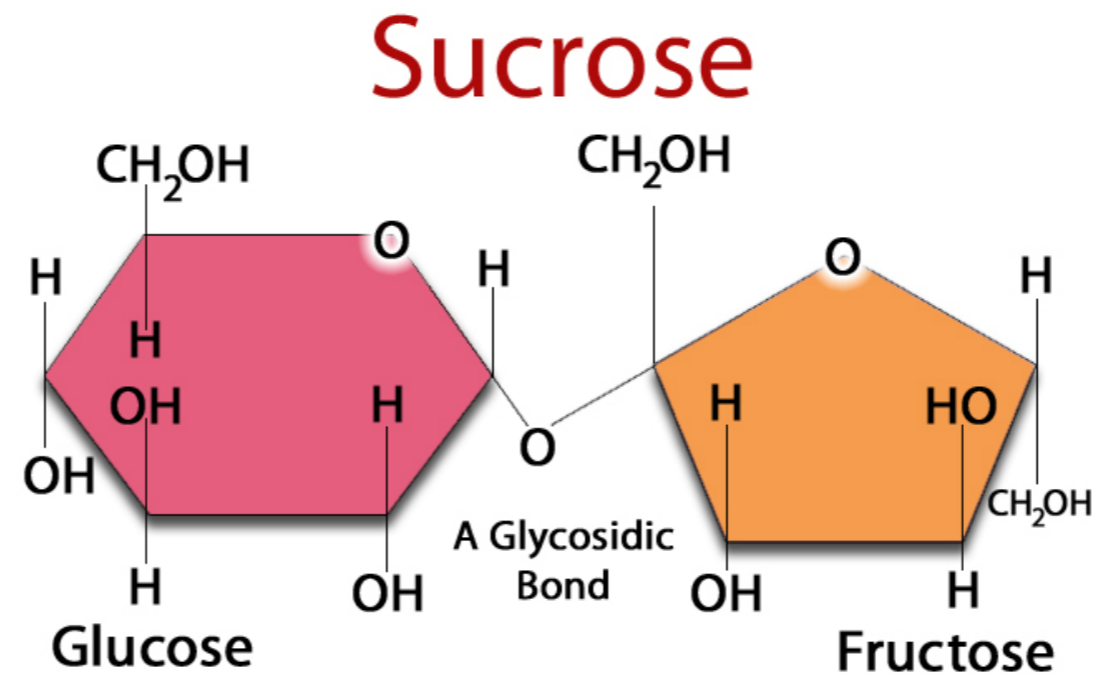
Phloem Sinks

- sinks of organic molecules include
 - developing fruits
 - developing seeds
 - new shoots
 - developing tap and tuber roots

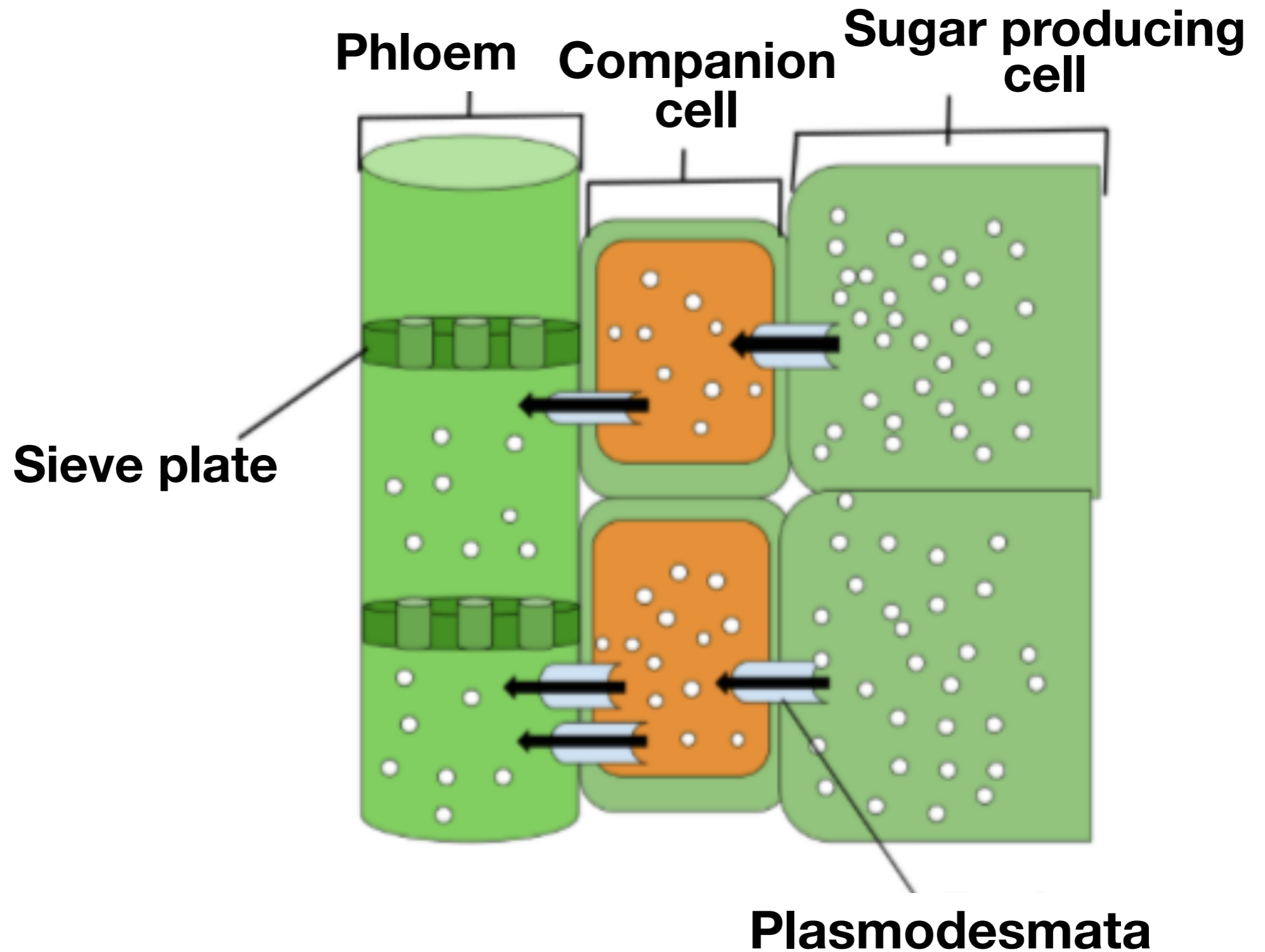


Sucrose

- Sucrose is the main organic molecule of phloem
- it's a disaccharide molecule composed of two simpler sugars called Glucose and Fructose.

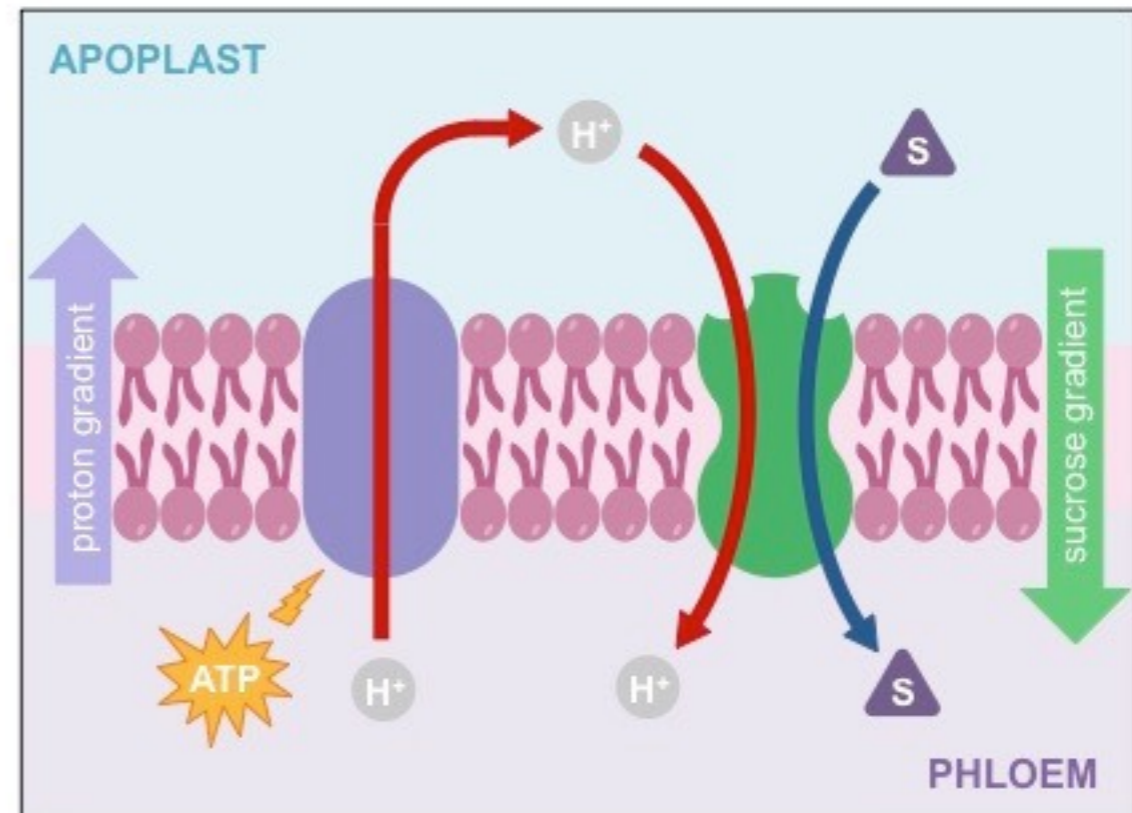
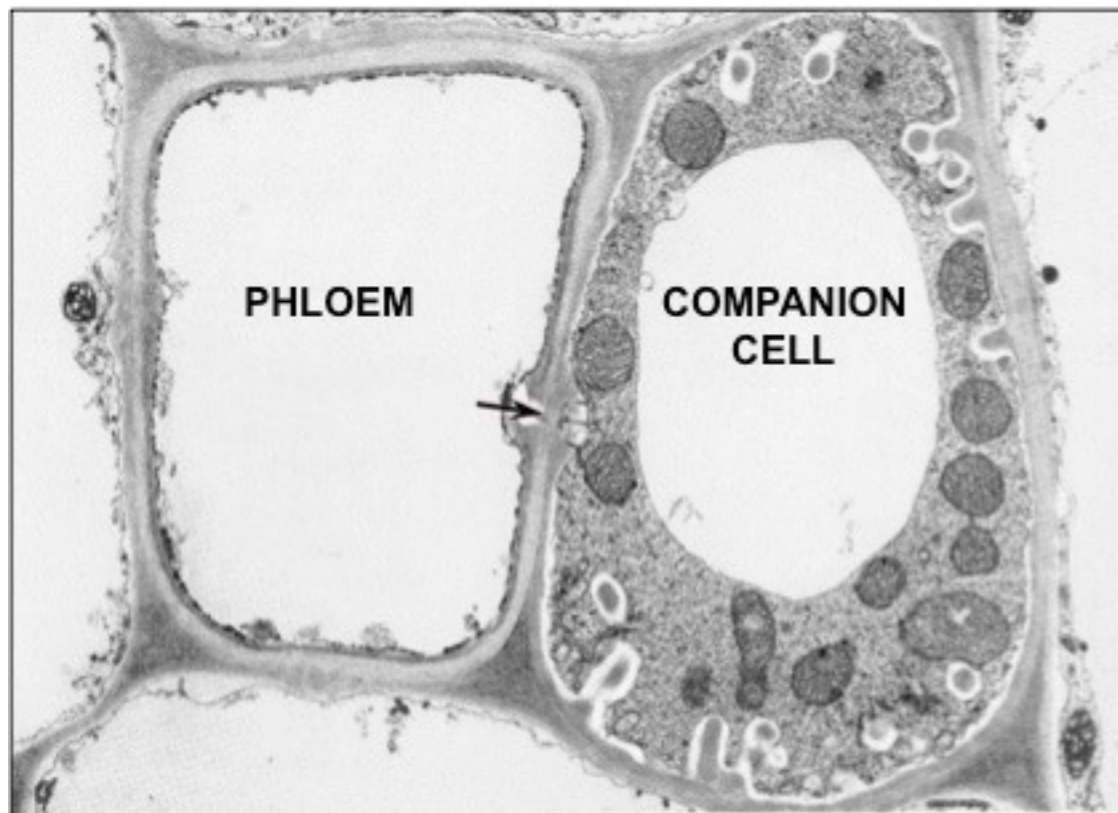


Phloem Loading



Phloem Loading

- a process that involves the use of active transport.
- one pump (a proton pump) moves hydrogen ions out of the companion cell to create a **gradient**
- The gradient acts as stored energy to pump sucrose across the membrane into companion/ sieve tube complex (phloem) (Co-transport)
- some plant, this happens at connecting point called **Plasmodesmata**



Phloem Translocation

1. Sucrose builds up in phloem at 1 from loading by companion
2. Water move to the area (DOWN a gradient which builds up pressure.
3. Water with sucrose then flows to areas of low pressure (usually sinks) where sucrose is withdrawn
4. water flow back to the transpiration stream in xylem

