

Plant Circulation

- We've seen transpiration in the xylem cells
- We've seen translocation in the phloem cells.



http://video.ecb.org/badger/download/Mic/animations/thumb/Plant_Diagram_006 http://www.costumes4less.com/Cleaver_A65119_Prod.aspx

Plant Circulation Stem View

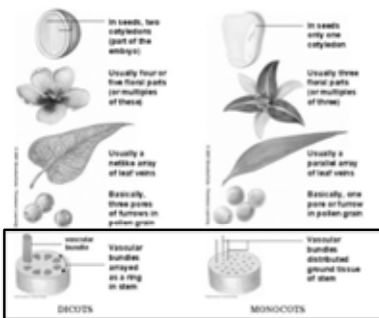
- xylem and phloem cells are grouped in vascular bundles



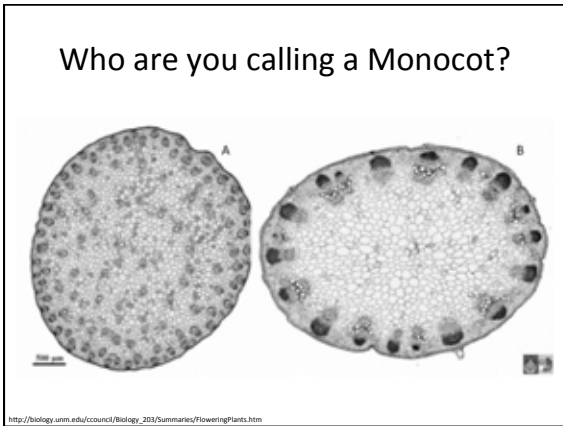
Figure 36-18 Page 802 <http://www.hippoworlds.com/> <http://www.iwatchstuff.com/2007/05/hairspray-john-travolta-is-ugly.php>

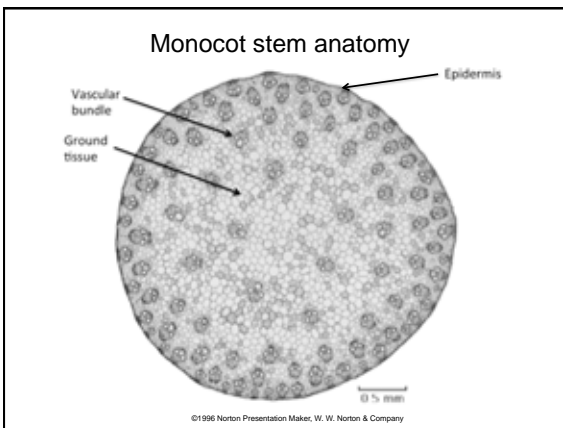
Dicots vs. Monocots

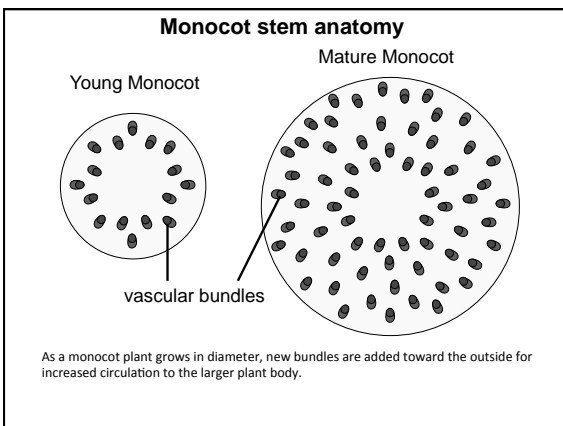
Dicotyledons and Monocotyledons
two classes of flowering plants

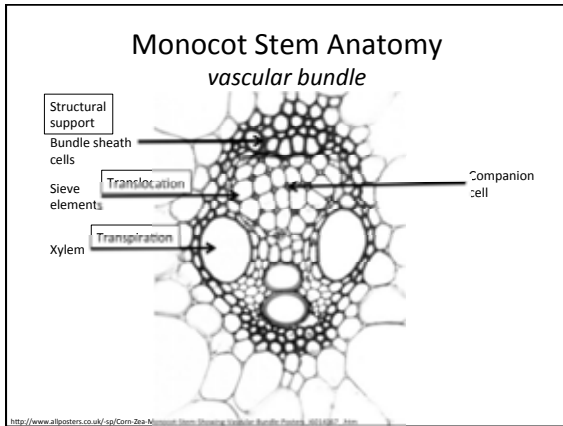


<http://www.cflieep.org/html/otich.php?i=543732415429&iid=77748813831945>





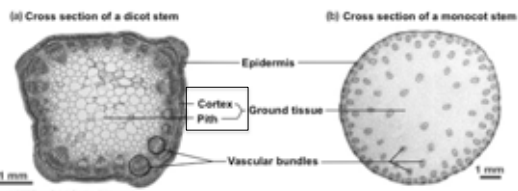




Questions

- What cells provide structural support to monocots?
 - Bundle sheath cells (Lignin)
- What kind of arrangement do the vascular bundles take in dicots?
 - Singular ring of bundles

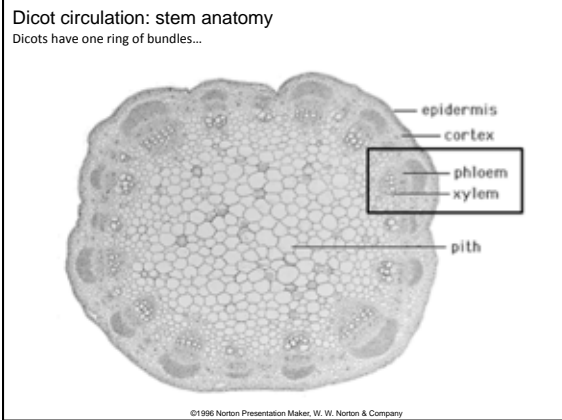
Dicots vs. Monocots

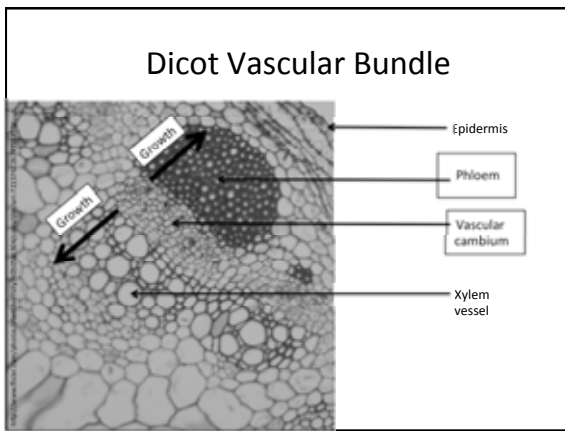


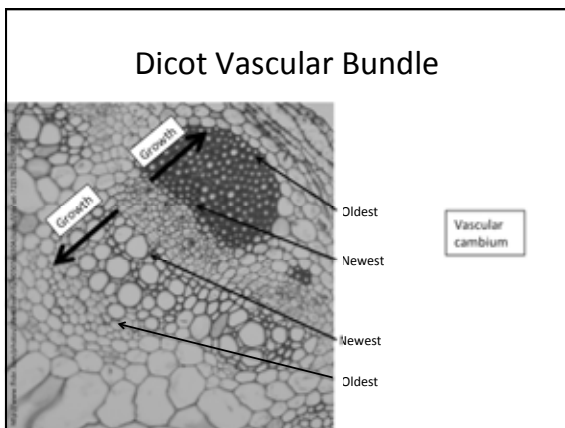
Dicots initially have one ring of vascular bundles

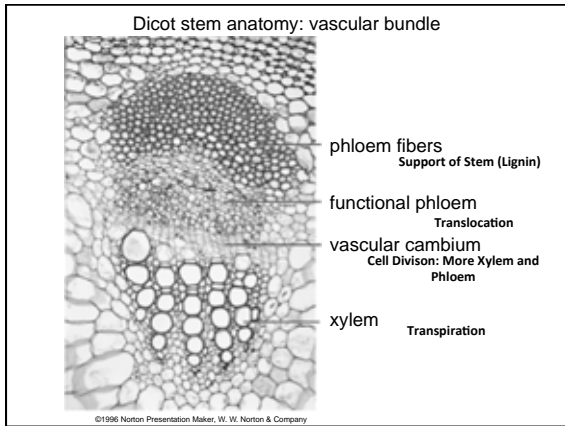
Monocots rapidly develop multiple, concentric, rings of vascular bundles

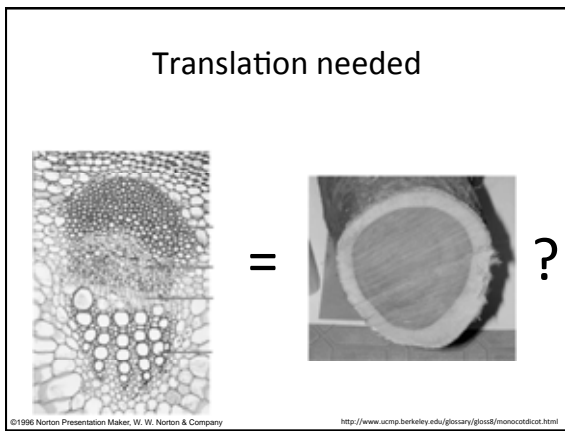
Figure 36-18 Page 802

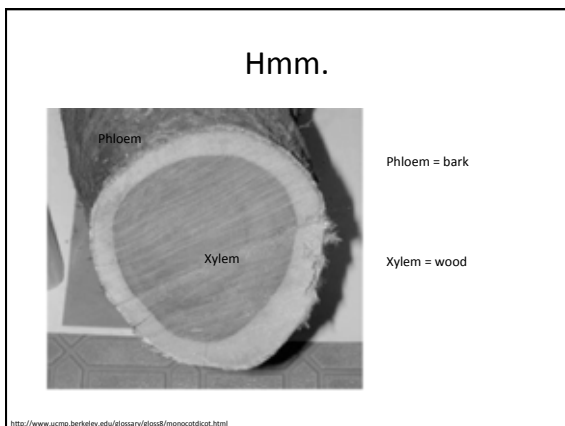




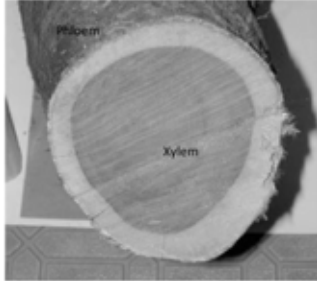








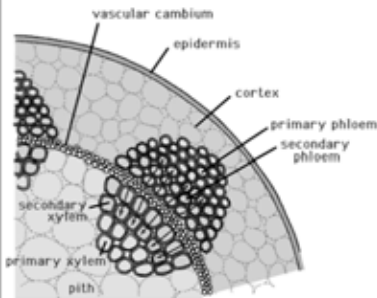
Hmm.



- If xylem and phloem both grow from the vascular cambium, why is there so much more xylem than phloem?
- Growth is asymmetrical between the two tissues.
- Secondary Phloem is eventually crushed and replaced

<http://www.ucmp.berkeley.edu/gosari/gosd/monocotdic.html>

Dicot stem anatomy: vascular cambium adds secondary tissues



Primary xylem and phloem made by apical meristem

Secondary xylem and phloem made by lateral meristem

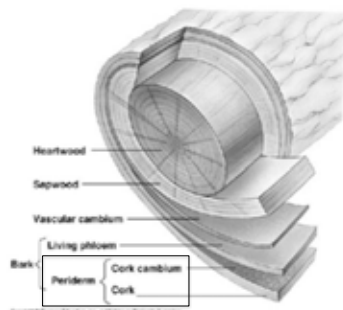
Meristem: undifferentiated cells that still undergo mitosis and produce new cells

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Heartwood = old xylem filled with resin, gum

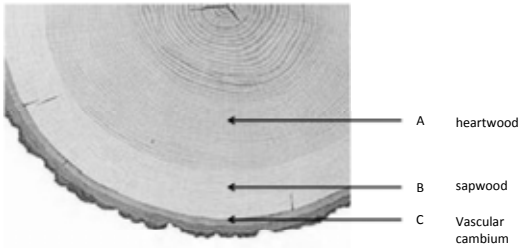
Sapwood = functional xylem

Phloem + Periderm = bark



<http://grandpactiff.com/Trees/ing-Trees/stem-parts.jpg>

Questions



<http://www.kayarchy.co.uk/html/01equipment/007plywood.htm>

Questions

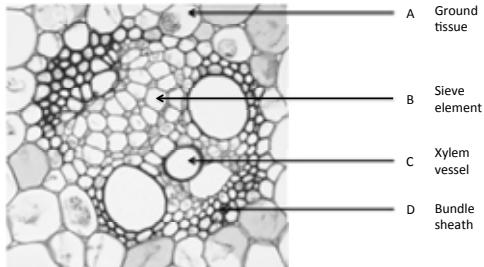
Where would you expect to find the phloem?



<http://www.kayarchy.co.uk/html/01equipment/007plywood.htm>

Question

Is this a monocot or a dicot?



<http://bottt.botany.wisc.edu/Resources/Botany/Shoot/Stem/Zsa%20stem/Vascular%20bundle%20sea.jpg.html>
