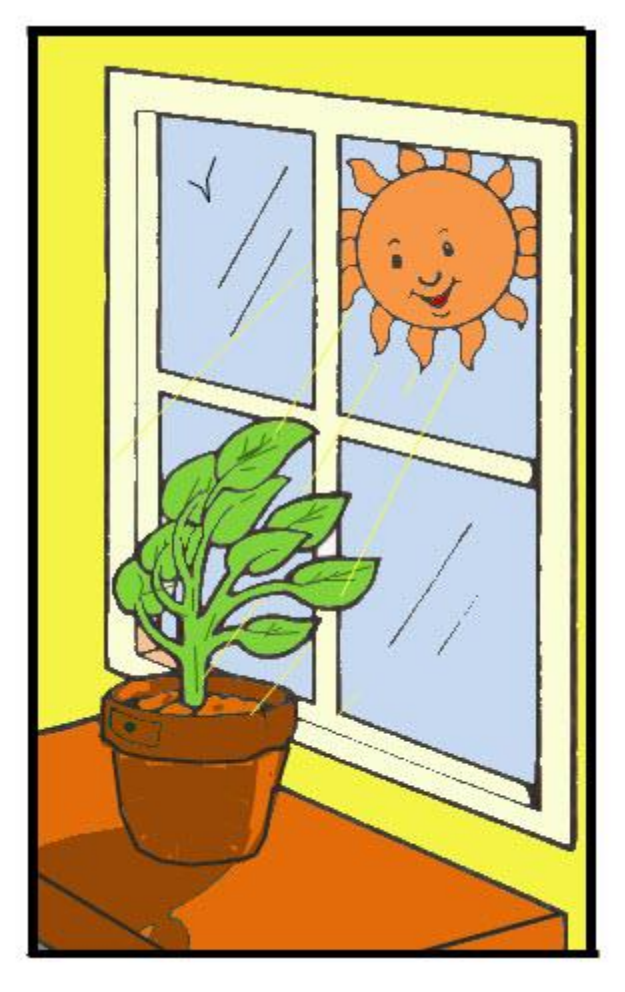
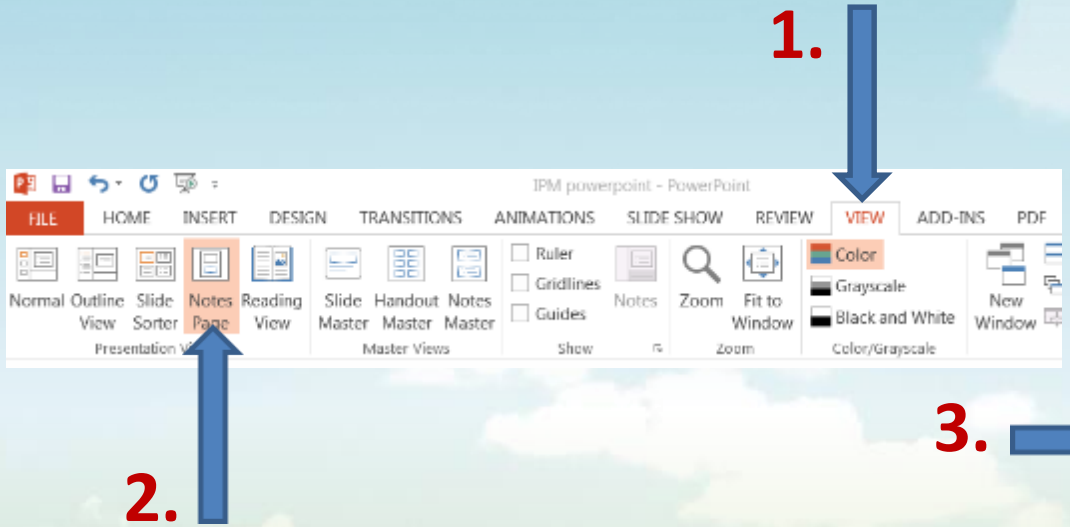
Plant Tropisms and Hormones

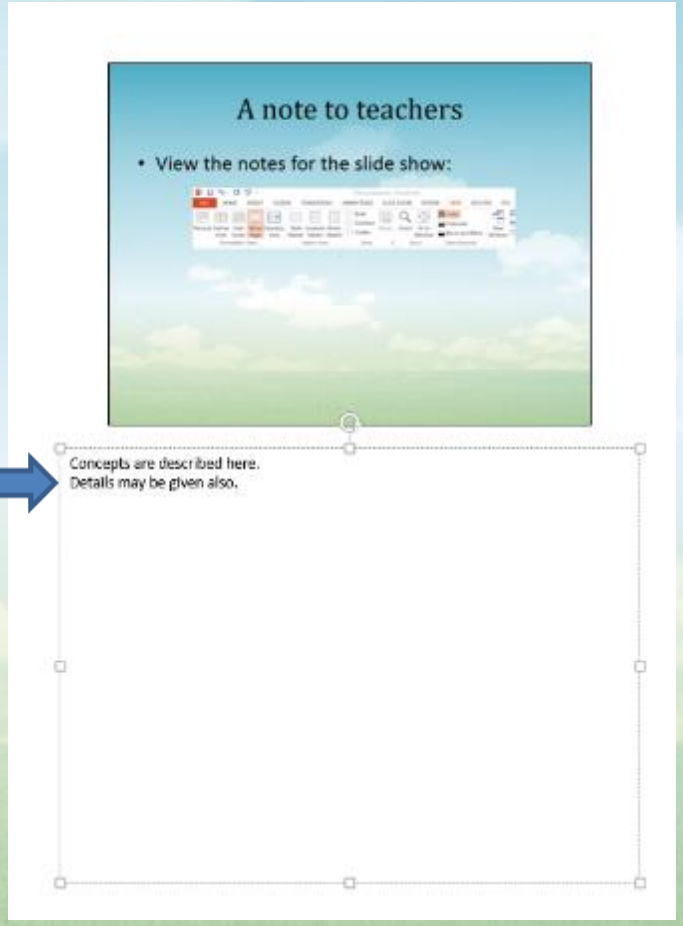


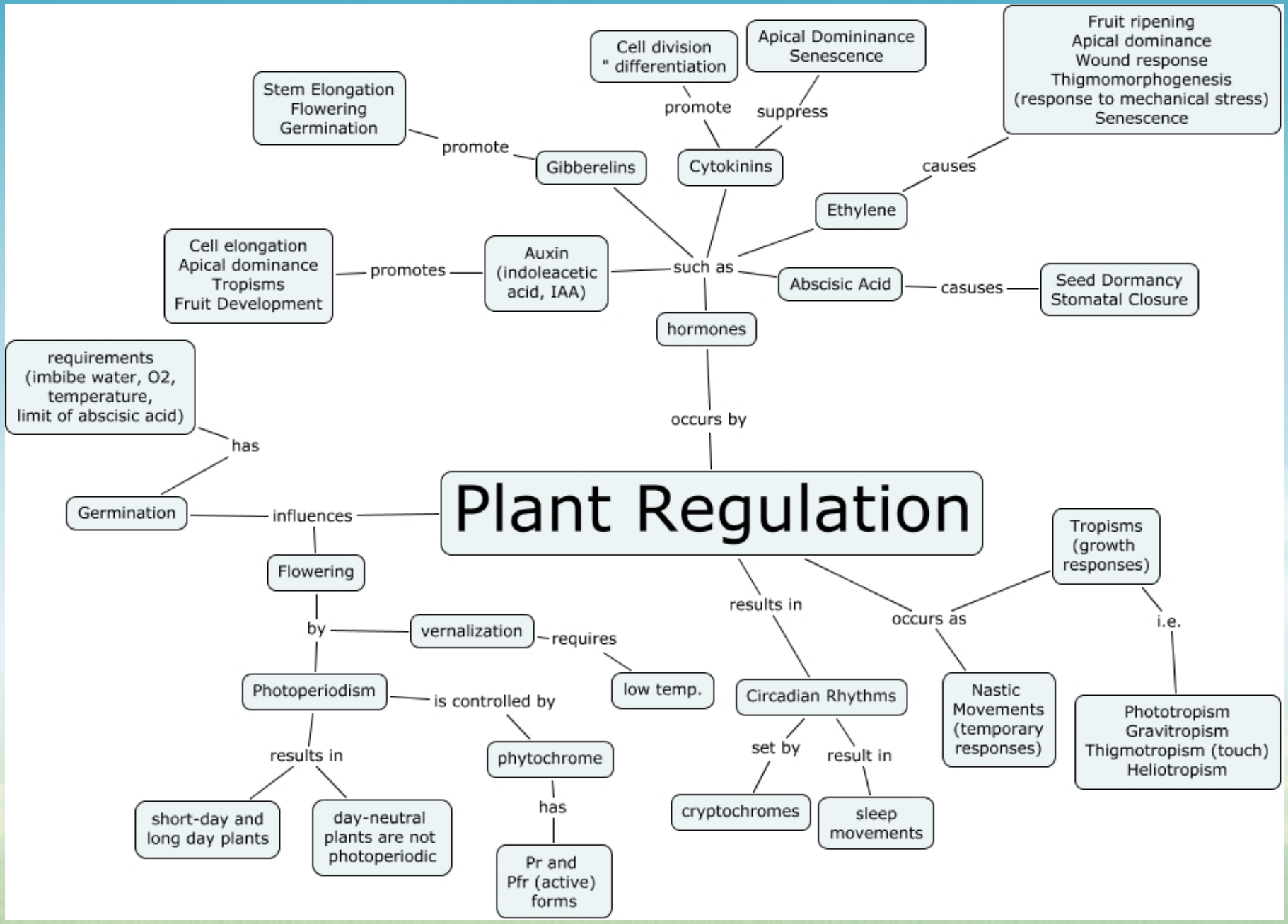
http://scienceprojectideasforkids.com/2011/experimental-science-questions/

A note to teachers

- View the notes for the slide show:







http://cmapspublic3.ihmc.us/rid=1211333855375_2127449484_16080/regulation%20-%20plants.cmap

Phototropic

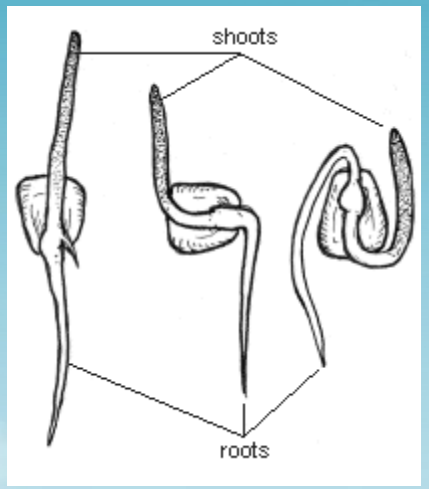
- Plant growth toward light.

http://www1.pasadenaisd.org/cms/One.aspx?portalId=80772&pageId=2105704

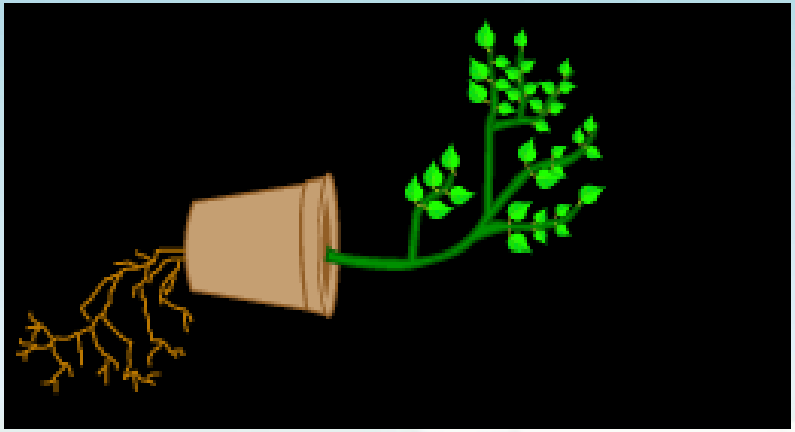
http://redwoodbarn.com/DE_sunflowers.htm

Geotropic

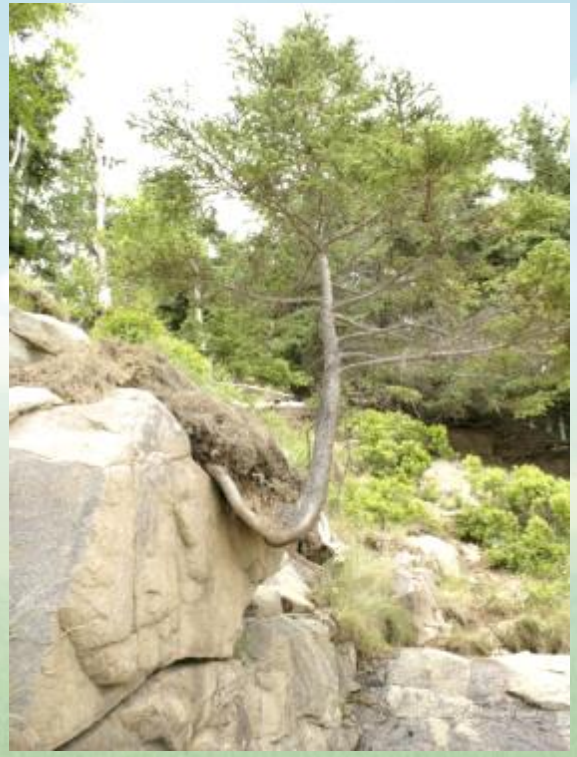
- Plant growth in response to gravity.



http://assoc.garden.org/courseweb/course1/week2/page15.htm



http://www.meritnation.com/ask-answer/question/what-is-geotropism/control-and-coordination/5796707



http://www.allposters.com/-sp/Tree-Showing-Geotropism-Acadia-National-Park-Maine-Posters_i9014827_.htm

Thigmotropism

- Growth in response to touch

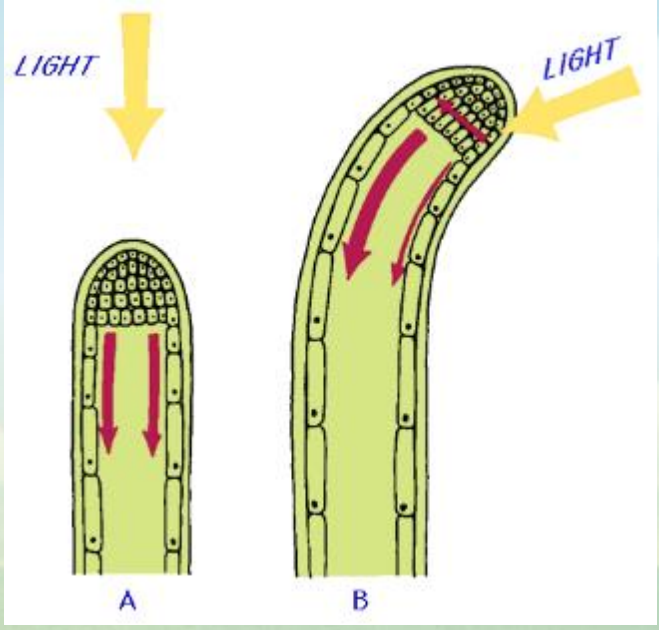
http://www.carolinanature.com/trees/viro.html

http://www.theguardian.com/money/2013/sep/09/fca-investigate-savings-teaser-interest-rates

http://therealgarden.com/2011/08/squash-in-the-sky/

Auxins

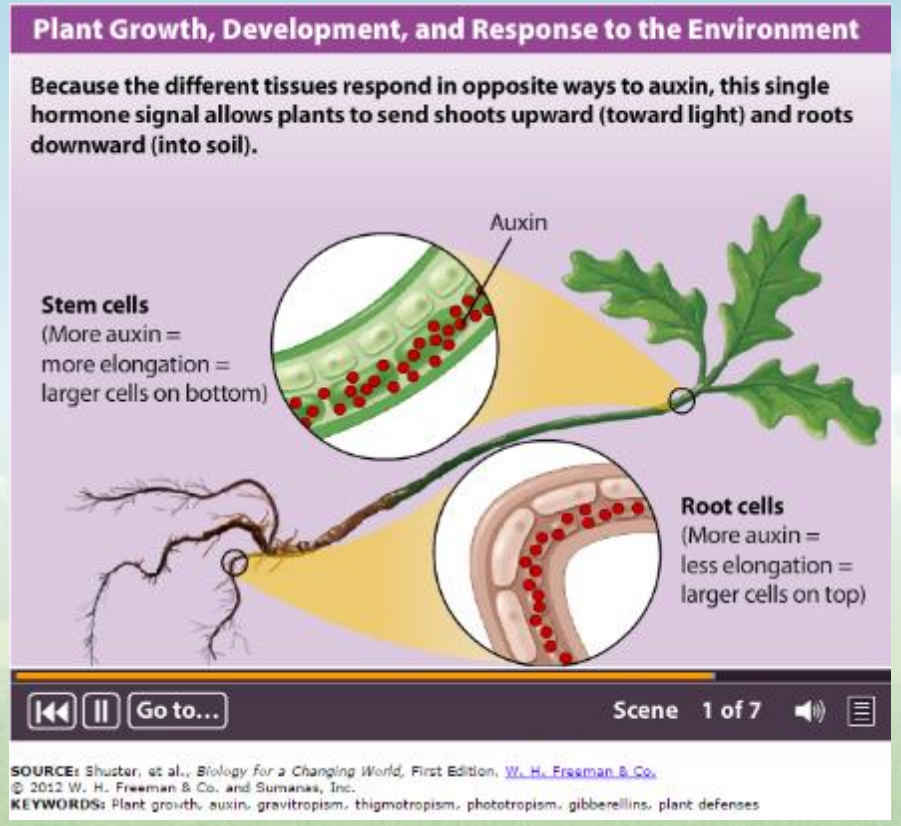
- Cell elongation (tropism bending)
- Causes all tropisms by collecting in one side of plant stem, causing the stem to bend.
- Causes root growth from cut stem (rooting hormone).
- Fruit drop or retention
- Apical dominance

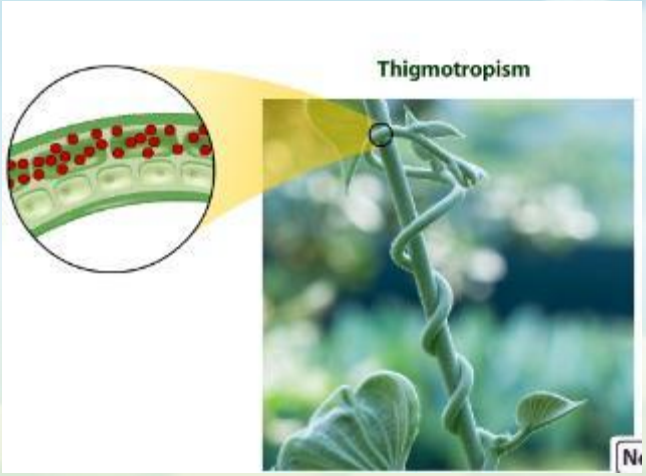


http://igbiologyy.blogspot.com/2014/03/132-control-of-plant-growth-by-auxins.html

Auxins continued

- ANIMATION:
  http://www.sumanasinc.com/webcontent/animations/content/plantgrowth.html

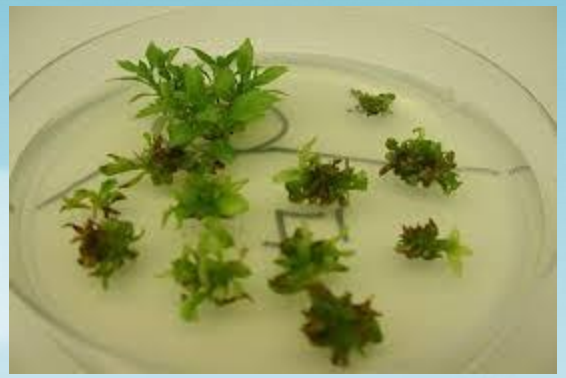




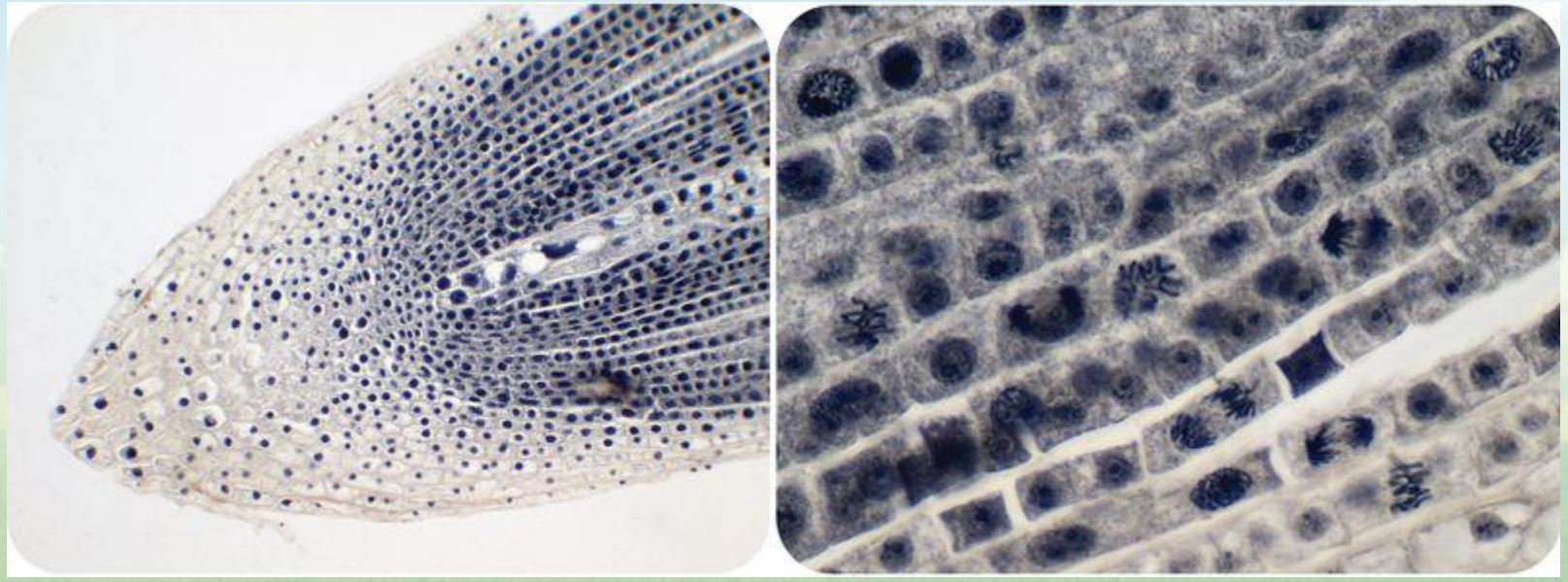
Cytokinins

- Promote cell division
- Influence cell differentiation

  (root and shoot in tissue culture).
- Aging of leaves.



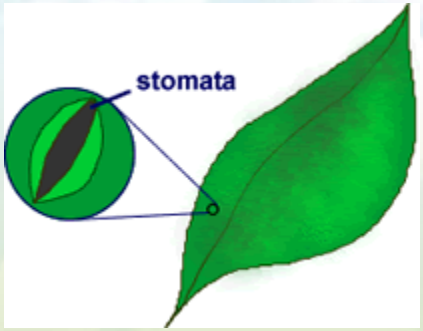
http://www.wageningenur.nl/en/Expertise-Services/Collaboration-and-partnerships/Plant-Breeding/Tissue-Culture.htm



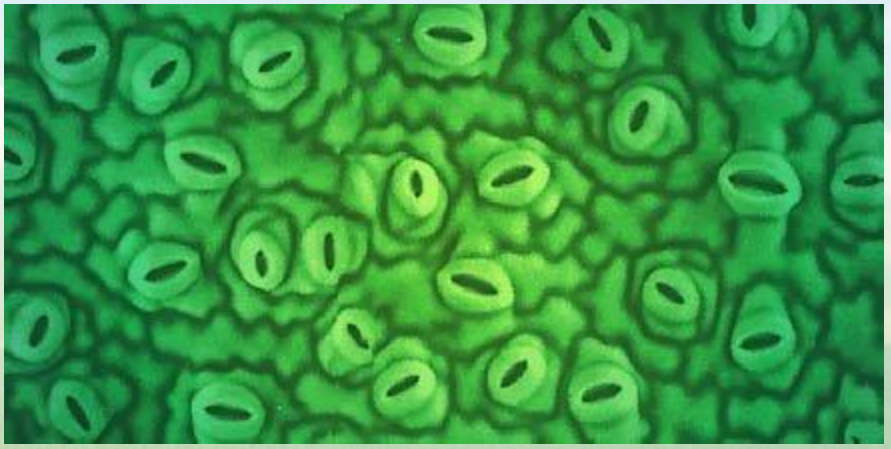
http://www.ck12.org/book/CK-12-Biology-Concepts/r11/section/9.13/

Abscisic Acid

- “Stress” hormone.
- Reduce growth during times of plant stress by inhibiting other hormones.
- Keeps seeds dormant.
- Closes plant stomata in drought.



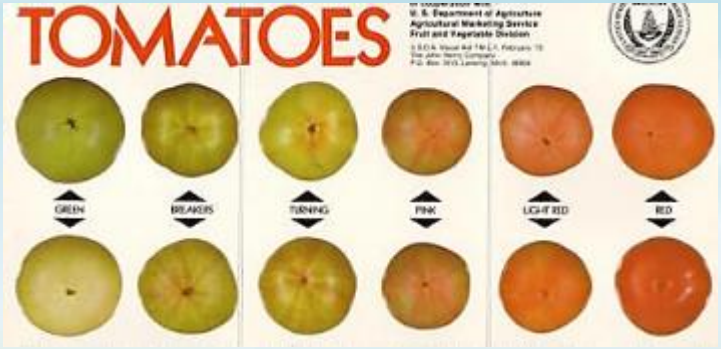
http://www.meritnation.com/ask-answer/question/what-is-a-stomata/life-processes/2418648



http://biology.anu.edu.au/research/projects/electrophysiology-and-molecular-studies-stomata-during-drought

Ethylene

- Released from plant as a gas
- Ripens fruit
- Used to ripen fruit such as bananas, oranges , and tomatoes



http://www.missionpro.com/avocadoripening.html

Gibberellins

- Seed and bud dormancy
- Causes flowering
- Increase in size of leaves and fruits
- Used commercially on some crops.

http://www.wholefoodsmarket.com/blog/whole-story/grapes-integrity

http://www.keenforgreen.com/b/reusing-clementine-boxes

Prove it!

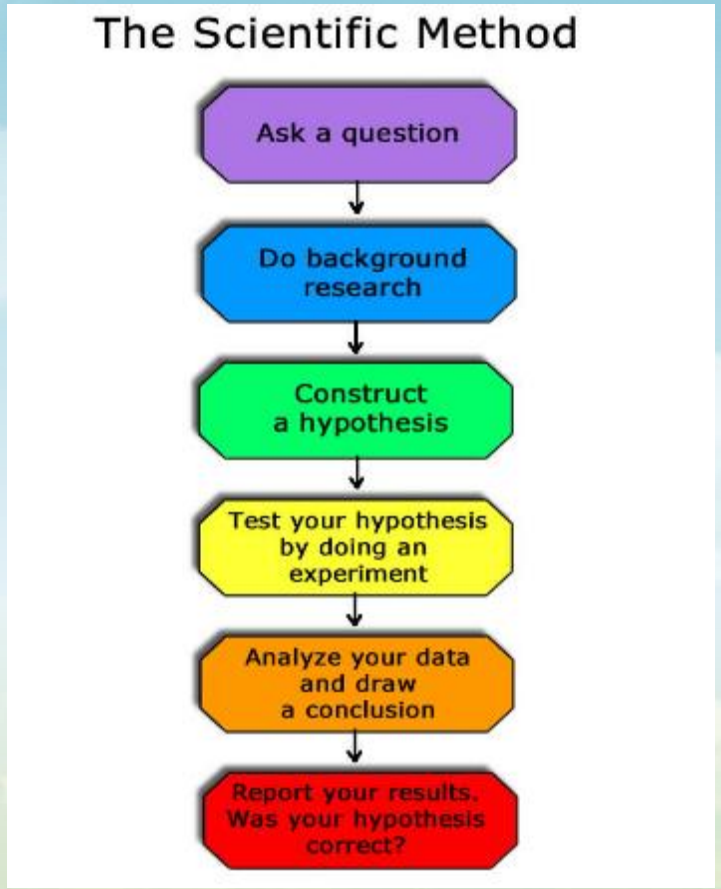
- Now that you have learned about plant hormones and tropisms, prove it!

- Design an experiment to show these mechanisms of plant regulation at work.

Scientific Method

- Question
- Hypothesis (If… then…)
- Procedure
- Experiment (collect data)
- Results (graphs and tables)
- Conclusion

- Independent variable (*I* change)
- Control
- Dependent variable (response)



http://www.tomatobubble.com/id817.html