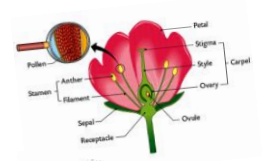
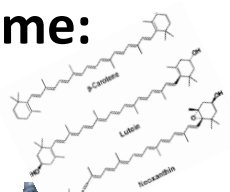
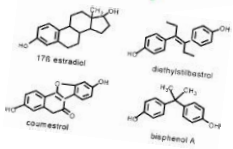
From Last Time:







Plant Structure

Cells and cell walls

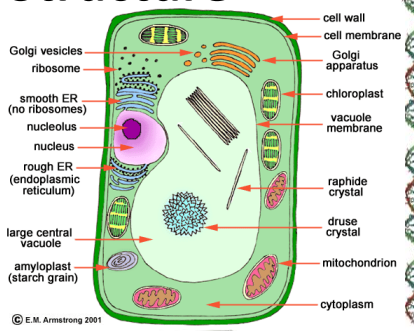


Image: http://waynesword.palomar.edu/lmexer1a.htm

Cell Wall

Structural, prevents dehydration

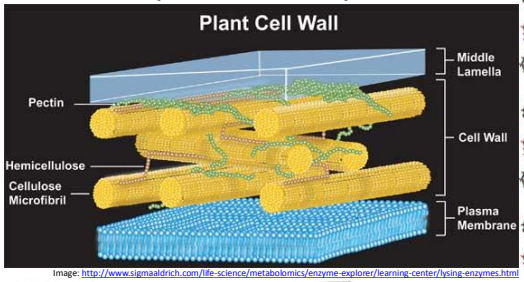


Image: http://www.sigmaaldrich.com/life-science/metabolomics/enzyme-explorer/learning-center/lysing-enzymes.html

Cell Wall

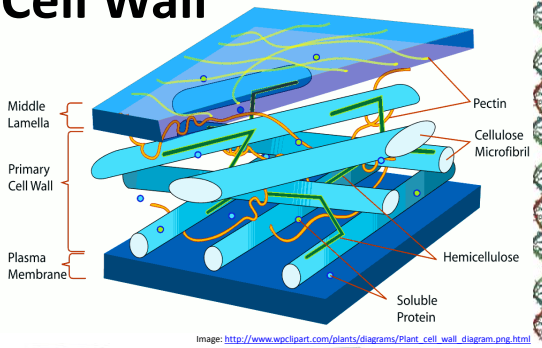


Image: http://www.wpclipart.com/plants/diagrams/Plant_cell_wall_diagram.png.html

Vacuole

"Fullness" alters rigidity of plant

Contains water & water soluble bits

Acids, sugars, proteins, pigments, enzymes, etc

Chloroplasts

Contain chlorophyll

Makes green plants green (leaf)

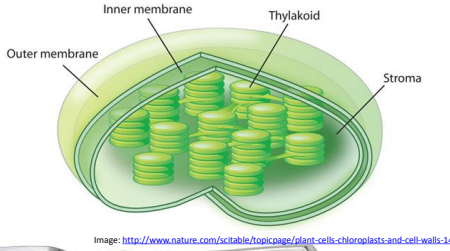


Image: http://www.nature.com/scitable/topicpage/plant-cells-chloroplasts-and-cell-walls-14053956

Plant Tissues

Ground
- Most of the cell mass, thin cell walls

Vascular
- Nutrient transport, tough & fibrous

Dermal
- Surface ("skin"), epidermis/periderm

Secretory
- Oozes things…

What do we eat?

Roots
Stems
Leaves
Flowers
Fruits
Seeds

Image: http://sagharborfoodpantry.com/

Cooking!

Consider the molecules

Cell walls = rigid/tough, fiber
- Cooking removes non cellulose part

Removing water?

Tasting Fruit & Veg

Multisensory:
- Flavor
- Aroma
- Touch
- Irritation

Fruit & Veg Allergies

Fruit = Pollen

Allergies – reaction to "foreign" bits
- Can be severe, deadly

"Oral allergy syndrome"

OAS Triggers

Alder pollen: almonds, apples, celery, cherries, hazel nuts, peaches, pears, parsley, strawberry, raspberry

Birch pollen: almonds, apples, apricots, avocados, bananas, carrots, celery, cherries, chicory, coriander, fennel, fig, hazel nuts, kiwifruit, nectarines, parsley, parsnips, peaches, pears, peppers, plums, potatoes, prunes, soy, strawberries, wheat; Potential: walnuts

Grass pollen: fig, melons, tomatoes, oranges

Mugwort pollen : carrots, celery, coriander, fennel, parsley, peppers, sunflower

Ragweed pollen : banana, cantaloupe, cucumber, green pepper, paprika, sunflower seeds/oil, honeydew, watermelon, zucchini, echinacea, artichoke, dandelions, honey (if bees pollinate from wild flowers), hibiscus or chamomile tea

Possible cross-reactions (to any of the above): berries (strawberries, blueberries, raspberries, etc), citrus (oranges, lemons, etc), grapes, mango, figs, peanut, pineapple, pomegranates, watermelon

List from: http://en.wikipedia.org/wiki/Oral_allergy_syndrome

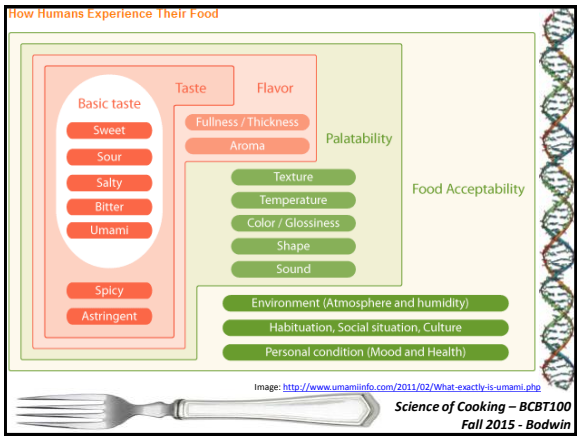


Image: http://www.umamiinfo.com/2011/02/What-exactly-is-umami.php

Flavor/Taste

Salty – salt
Sweet – sugar & sugar-like molecules
Sour – acids
Savory – protein richness
Bitter – alkaloids
Umami – glutamate/DNA richness
Metallic – bitter/sour

Tastes

Receptors

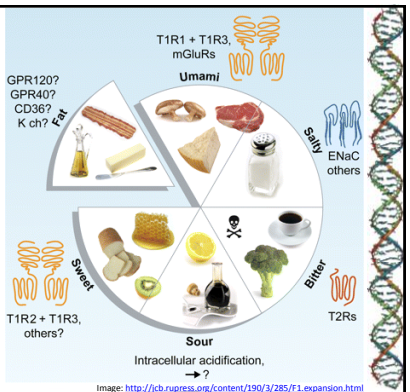


Image: http://jcb.rupress.org/content/190/3/285/F1.expansion.html

Tongue Map…

Where do we taste?

Use ***science*** to ***test*** this!

Not completely accurate…

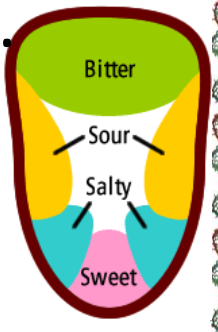


Image: http://www.musingsonthevine.com/tips_pai.shtml

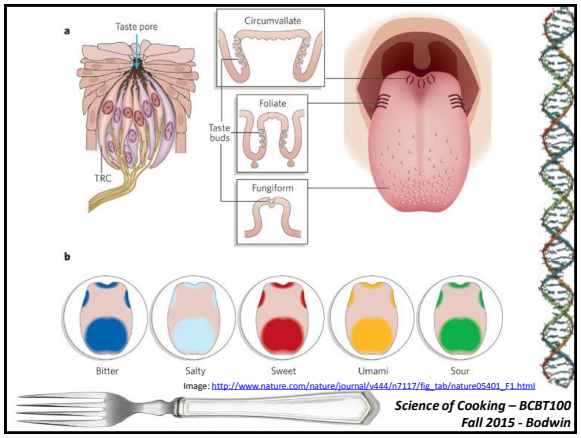


Image: http://www.nature.com/nature/journal/v444/n7117/fig_tab/nature05401_F1.html

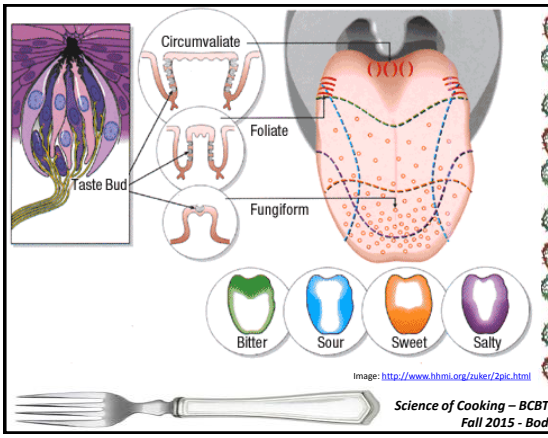


Image: http://www.hhmi.org/zuker/2pic.html

Cooking Plants

Chlorophyll

Acid or base hydrolysis

Displace Mg^{2+}

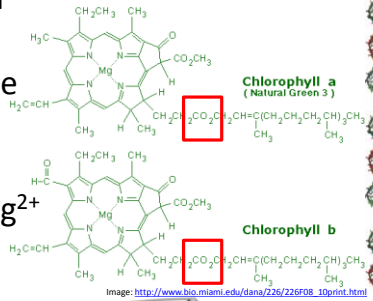


Image: http://www.bio.miami.edu/dana/226/226F08_10print.html

Keeping them green

Neutralize acid with baking soda

Baking soda = Sodium bicarbonate