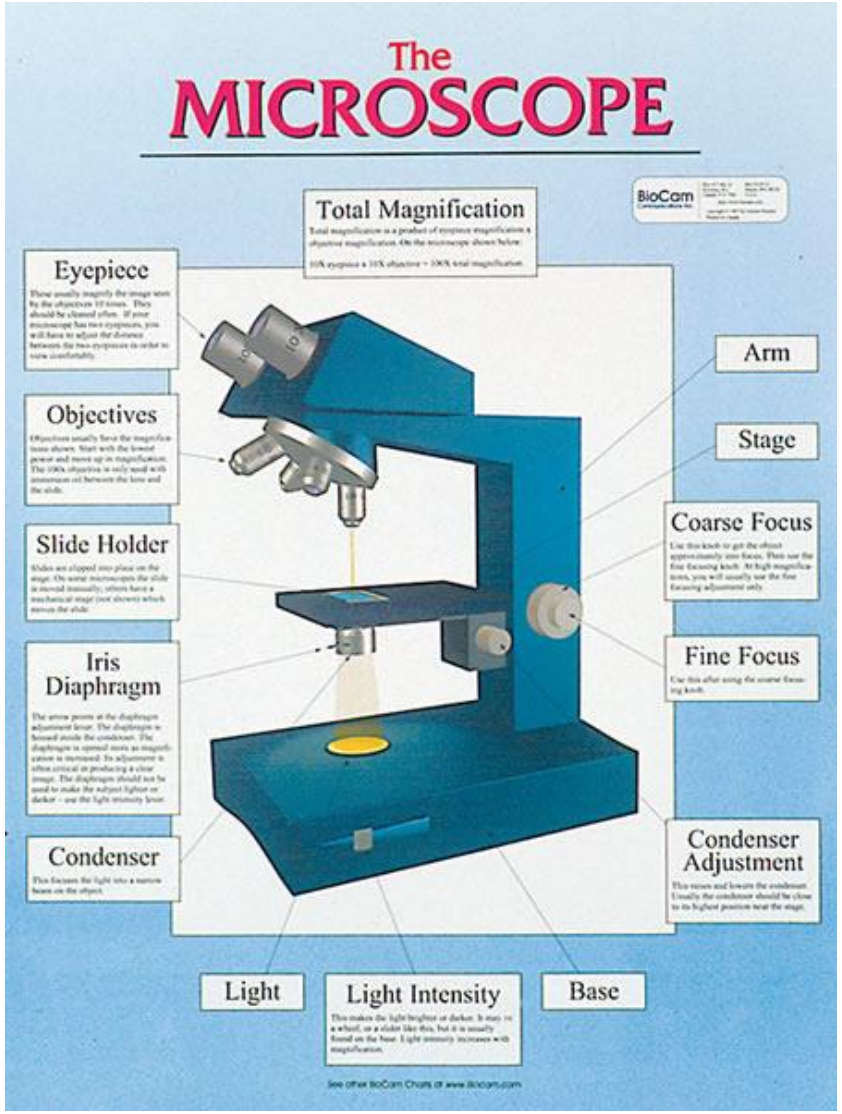
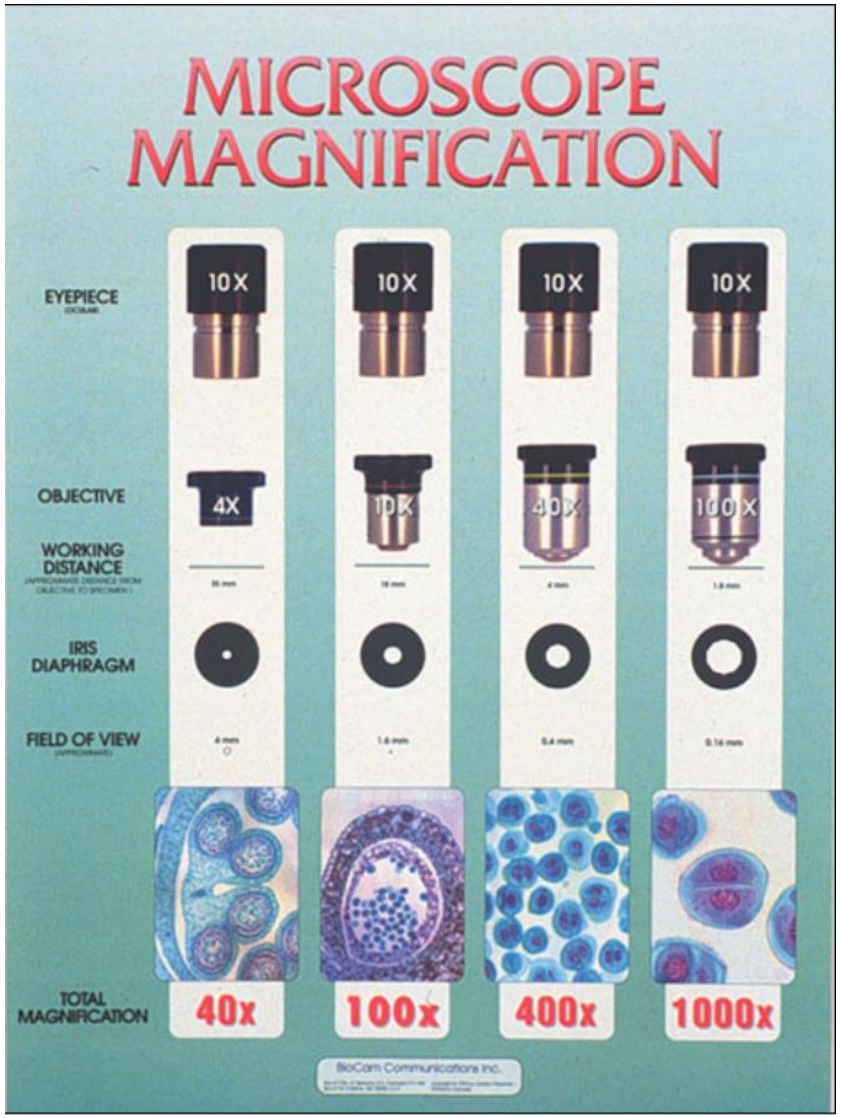
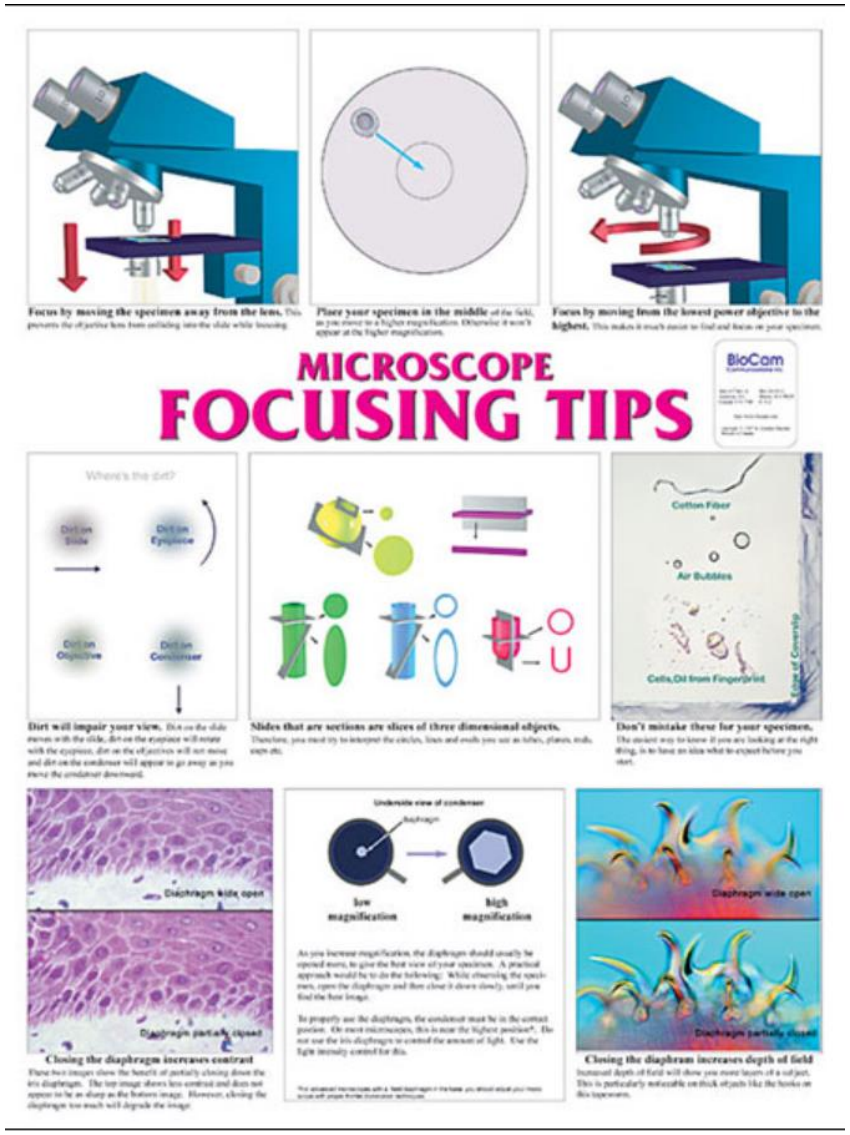
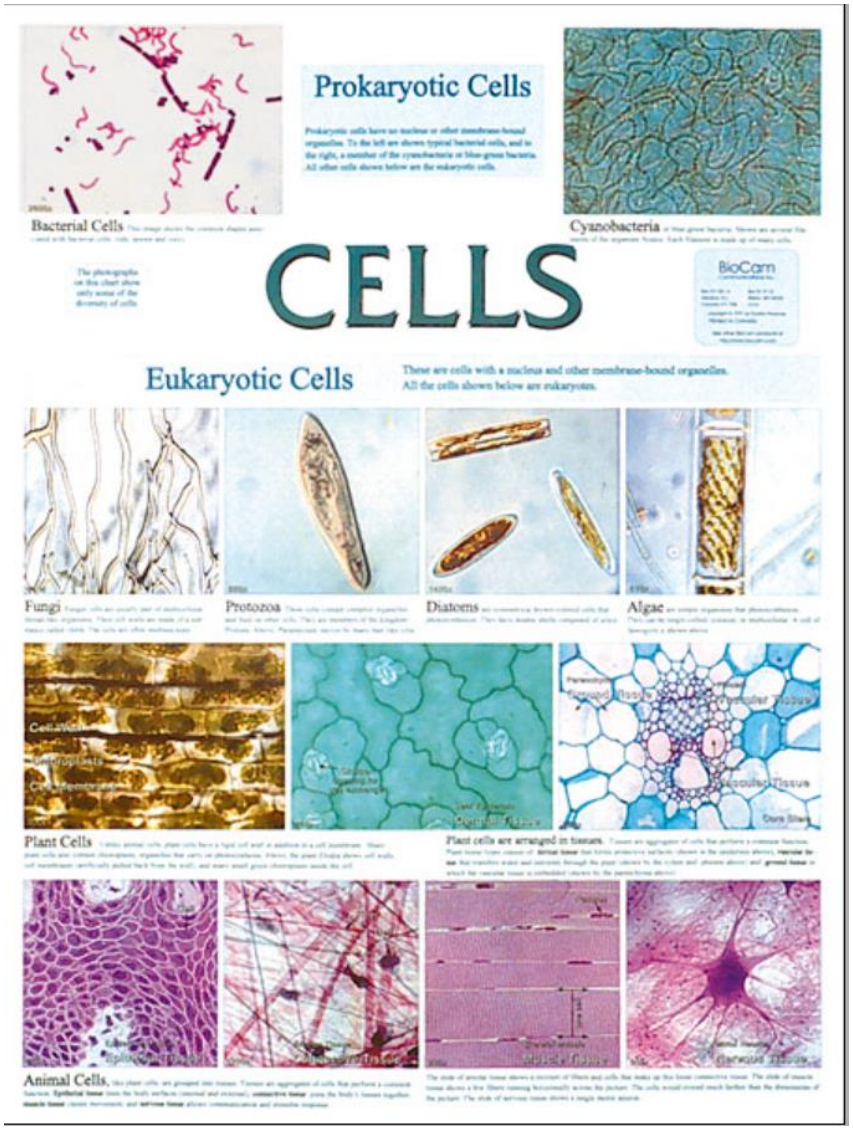
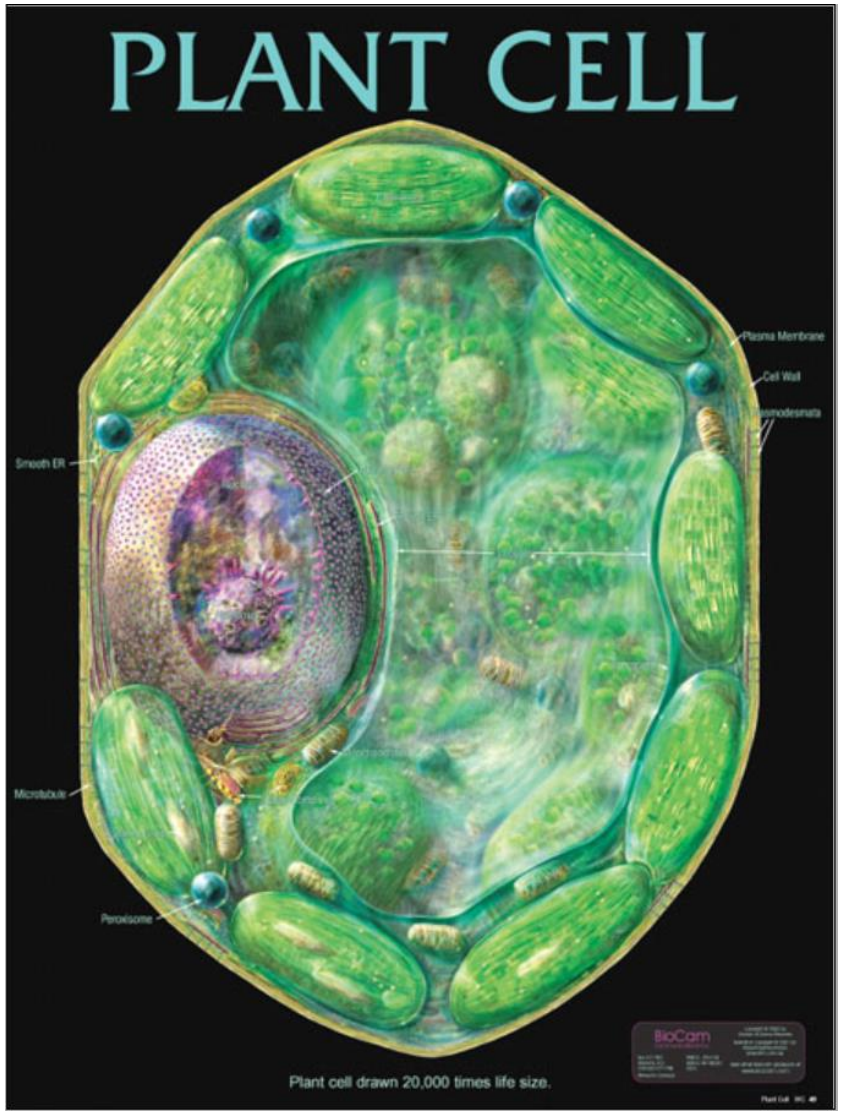
<u>BOT2010L Posters</u> - all posters courtesy of BioCam Charts. They may be accessed at:
http://www.biocam.com/Biocam_wall_charts_gallery.html

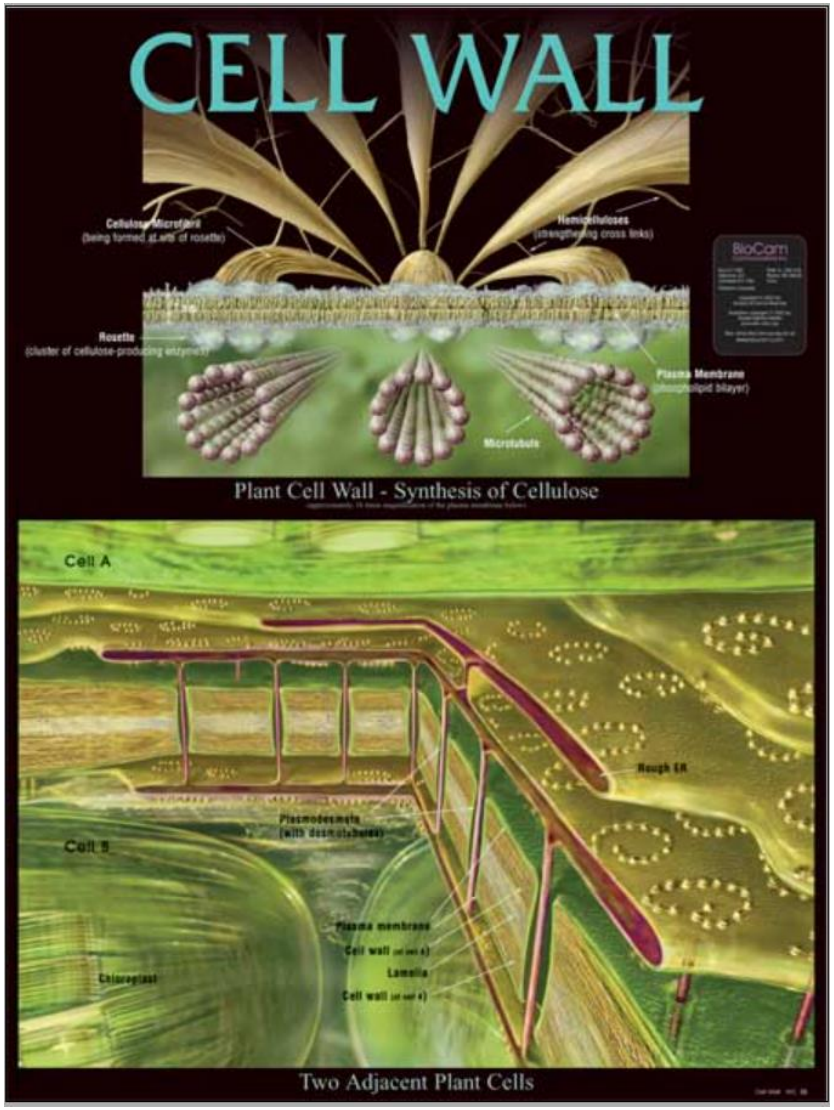


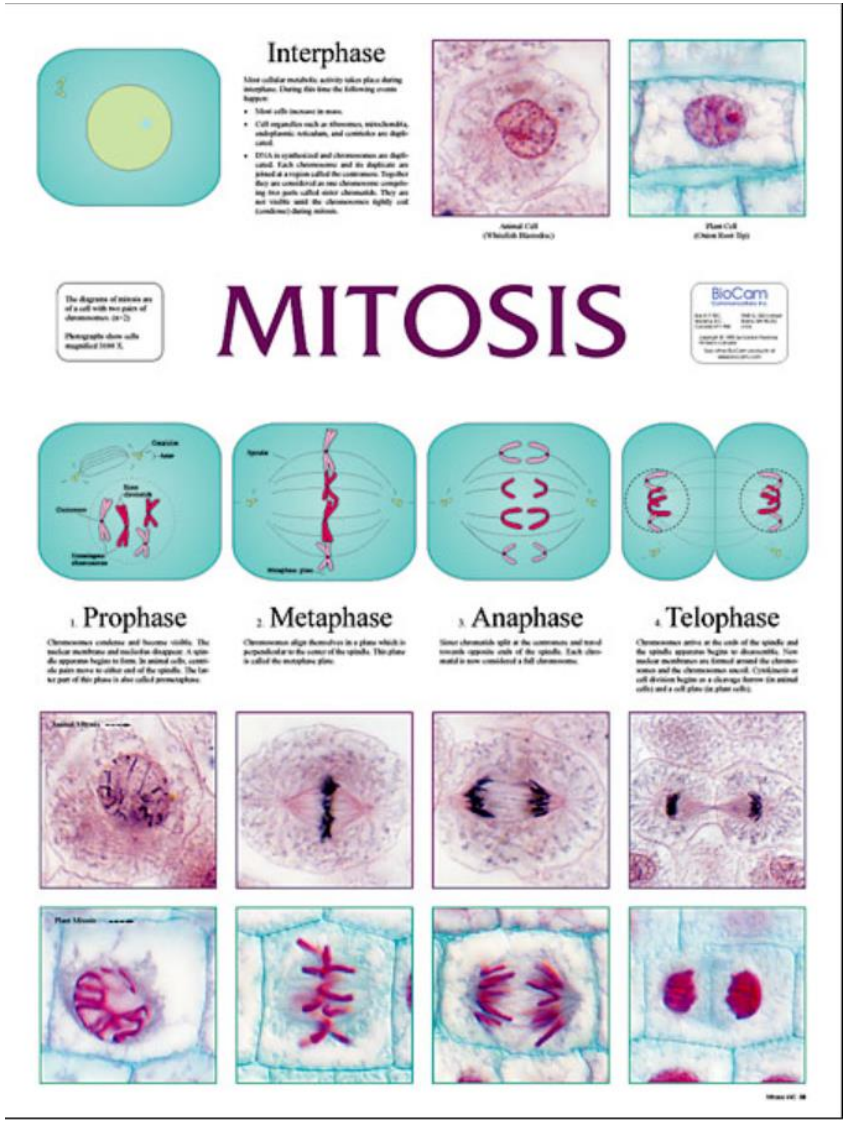


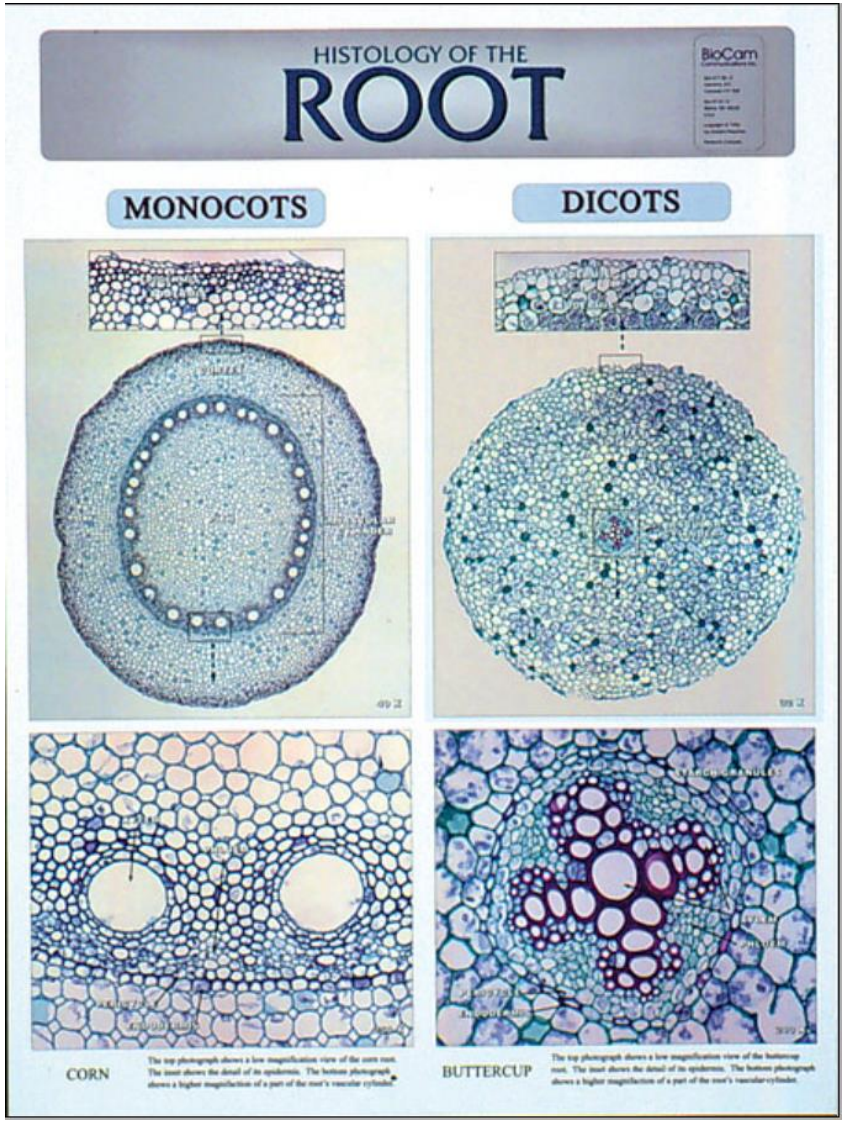

Focus by moving the specimen away from the lens.
Place your specimen in the middle
Focus by moving from the lowest power objective to the highest.
MICROSCOPE
FOCUSING TIPS
BioCam
Where's the dirt?
Dirt on Slide
Dirt on Eyepiece
Dirt on Objective
Dirt on Condenser
Dirt will impair your view.
Slides that are sections are slices of three dimensional objects.
Cotton Fiber
Air Bubbles
Cells,Oil from Fingerprint
Edge of Coverslip
Don't mistake these for your specimen.
Diaphragm wide open
Diaphragm partially closed
Closing the diaphragm increases contrast
Underside view of condenser
Diaphragm
low magnification
high magnification
Diaphragm wide open
Diaphragm partially closed
Closing the diaphram increases depth of field

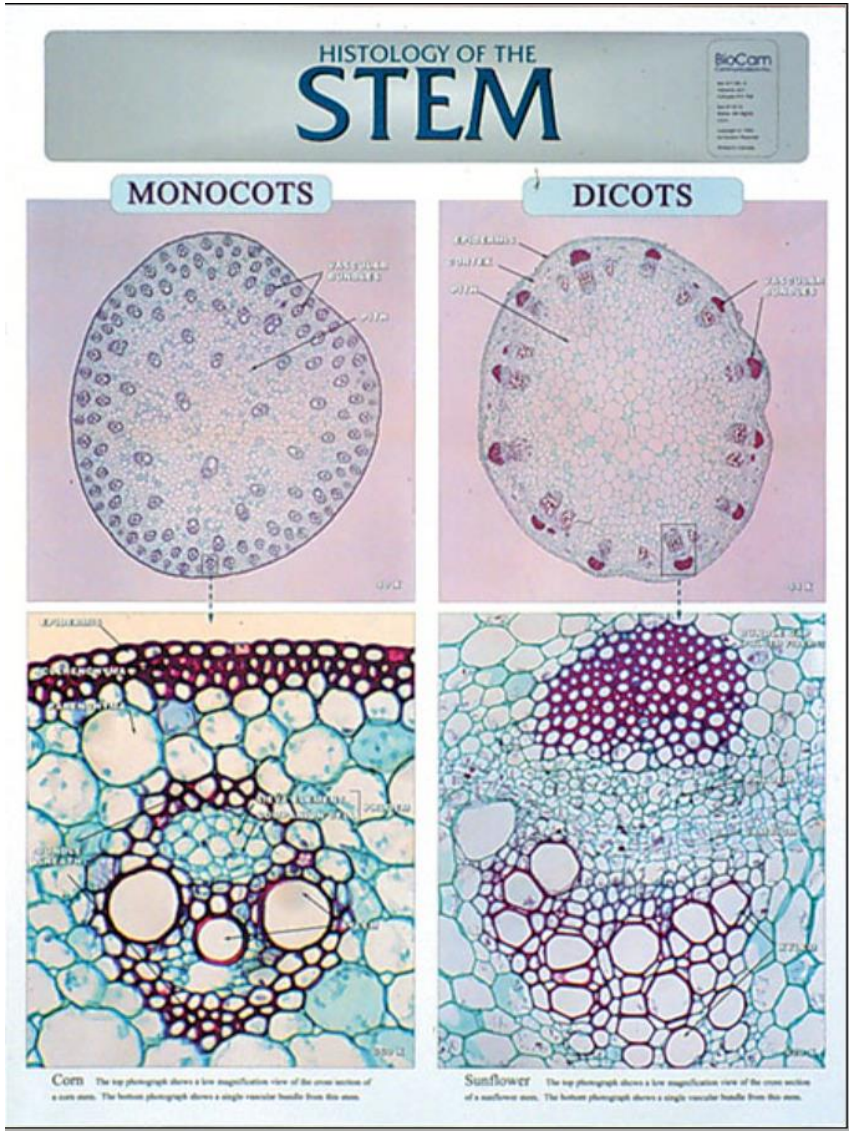

Prokaryotic Cells
Bacterial Cells
Cyanobacteria
CELLS
BioCam
Eukaryotic Cells
These are cells with a nucleus and other membrane-bound organelles.
All the cells shown below are eukaryotes.
Fungi
Protozoa
Diatoms
Algae
Plant Cells
Plant cells are arranged in tissues.
Animal Cells

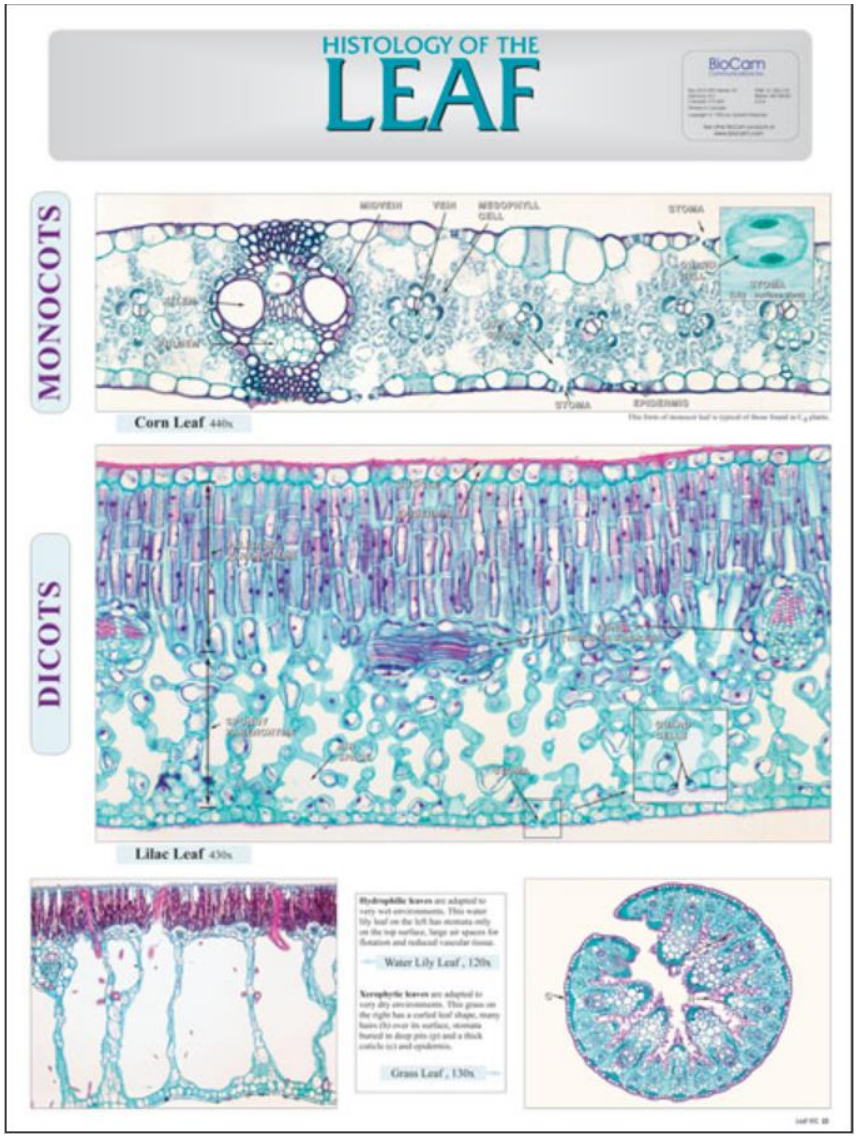

PLANT CELL
Plasma Membrane
Cell Wall
Plasmodesmata
Smooth ER
Microtubule
Peroxisome
BioCam
Plant cell drawn 20,000 times life size.

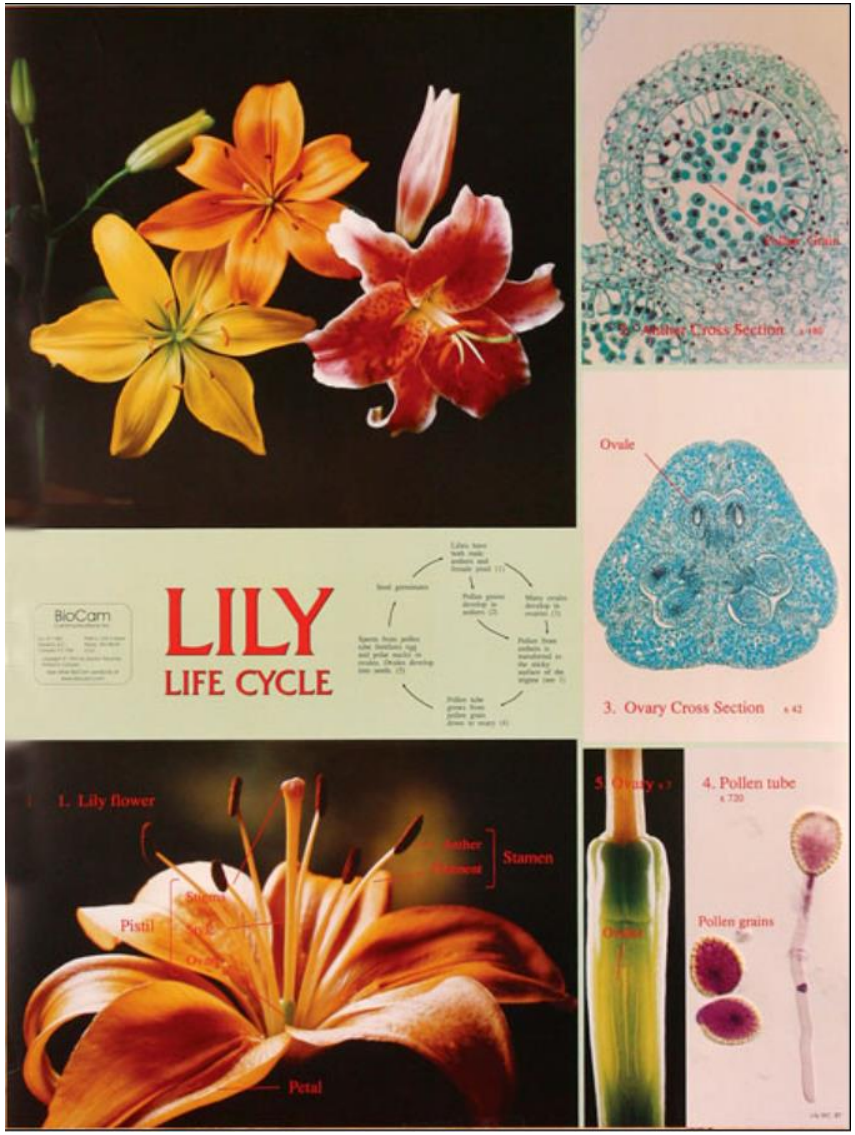

CELL WALL
Cellulose Microfibril
(being formed at arm of rosette)
Hemicelluloses
(strengthening cross links)
Rosette
(cluster of cellulose-producing enzymes)
Plasma Membrane
(phospholipid bilayer)
Microtubule
BioCam
Plant Cell Wall - Synthesis of Cellulose
Cell A
Rough ER
Plasmodesmata
(with desmotubules)
Cell B
Plasma membrane
Cell wall
Lamella
Cell wall
Chloroplast
Two Adjacent Plant Cells

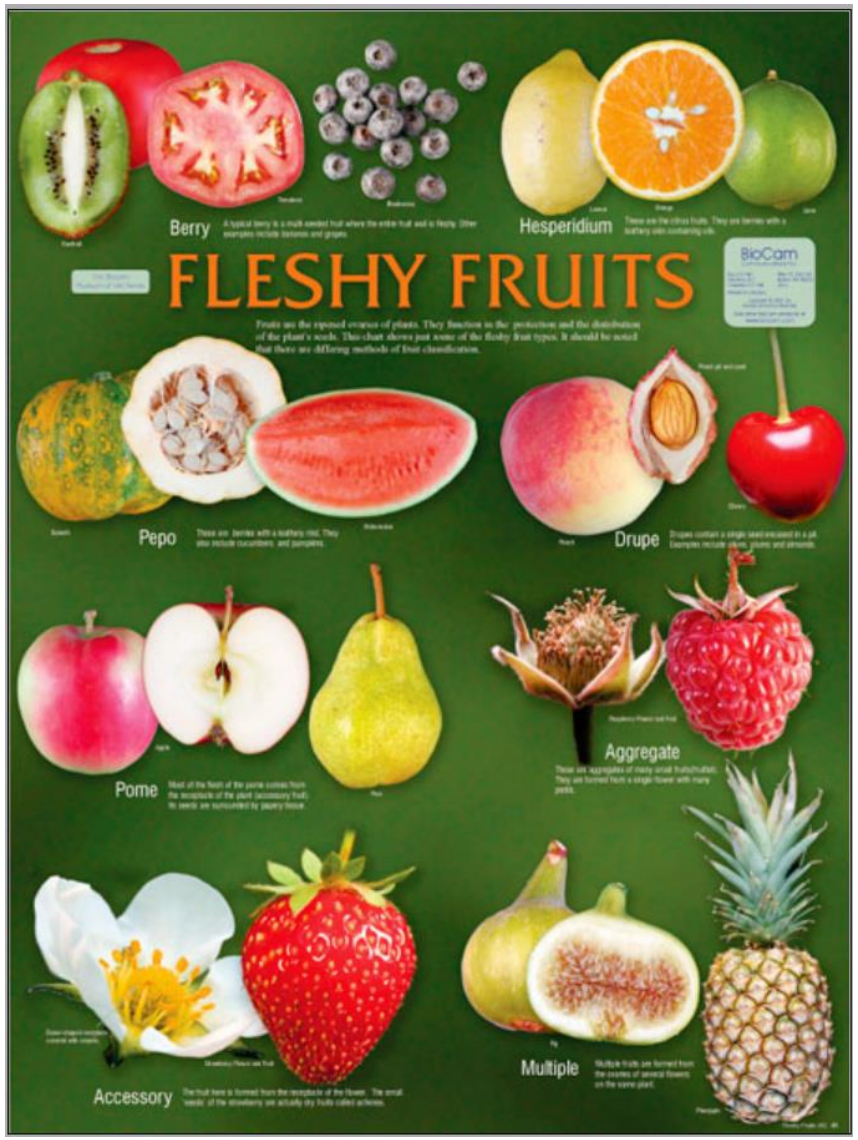

Interphase
MITOSIS
BioCam
1. Prophase
2. Metaphase
3. Anaphase
4. Telophase

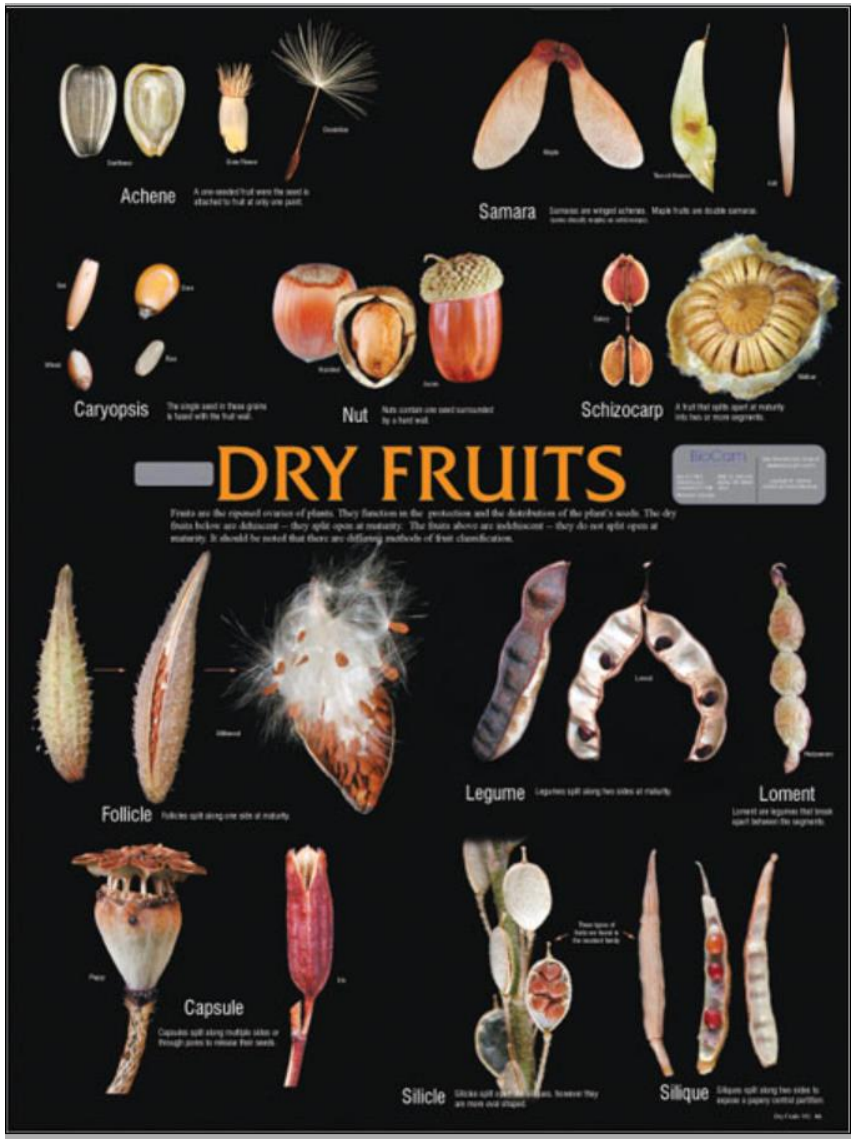

HISTOLOGY OF THE
ROOT
BioCam
MONOCOTS
DICOTS
CORN
BUTTERCUP

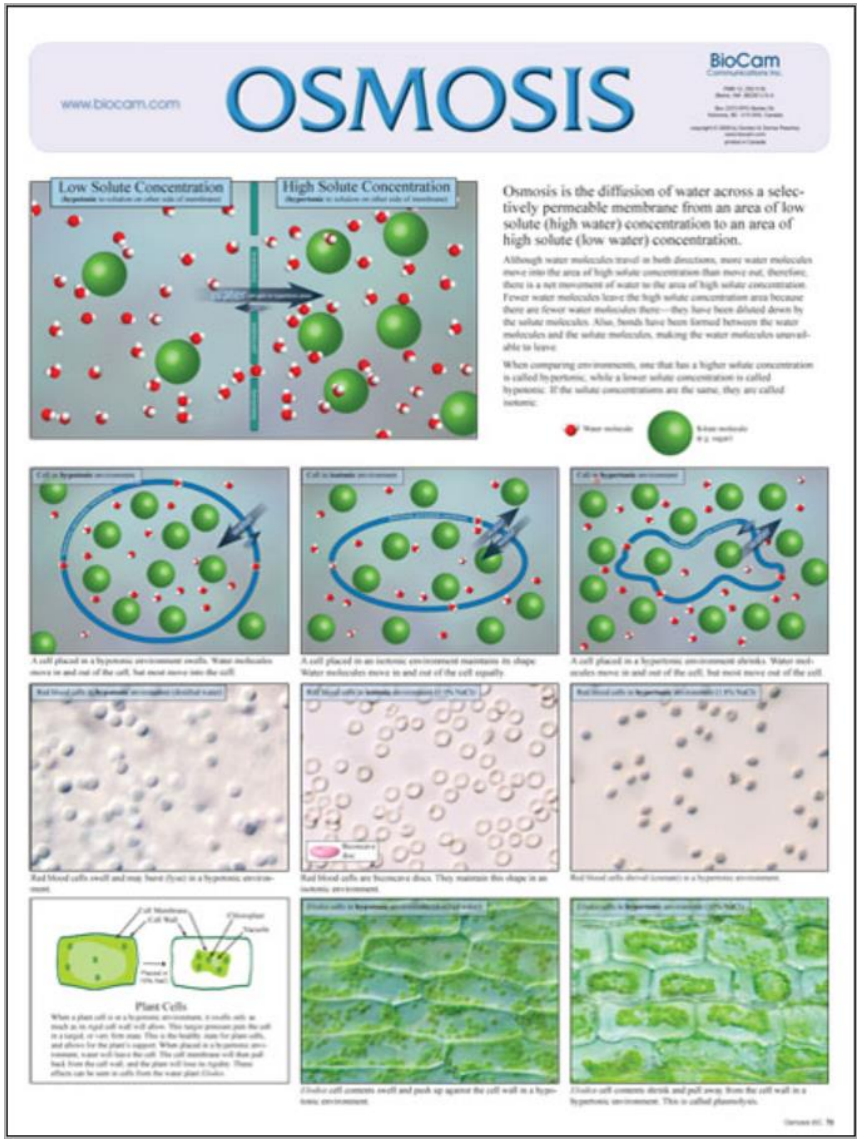

HISTOLOGY OF THE
STEM
BioCam
MONOCOTS
DICOTS
Corn
Sunflower

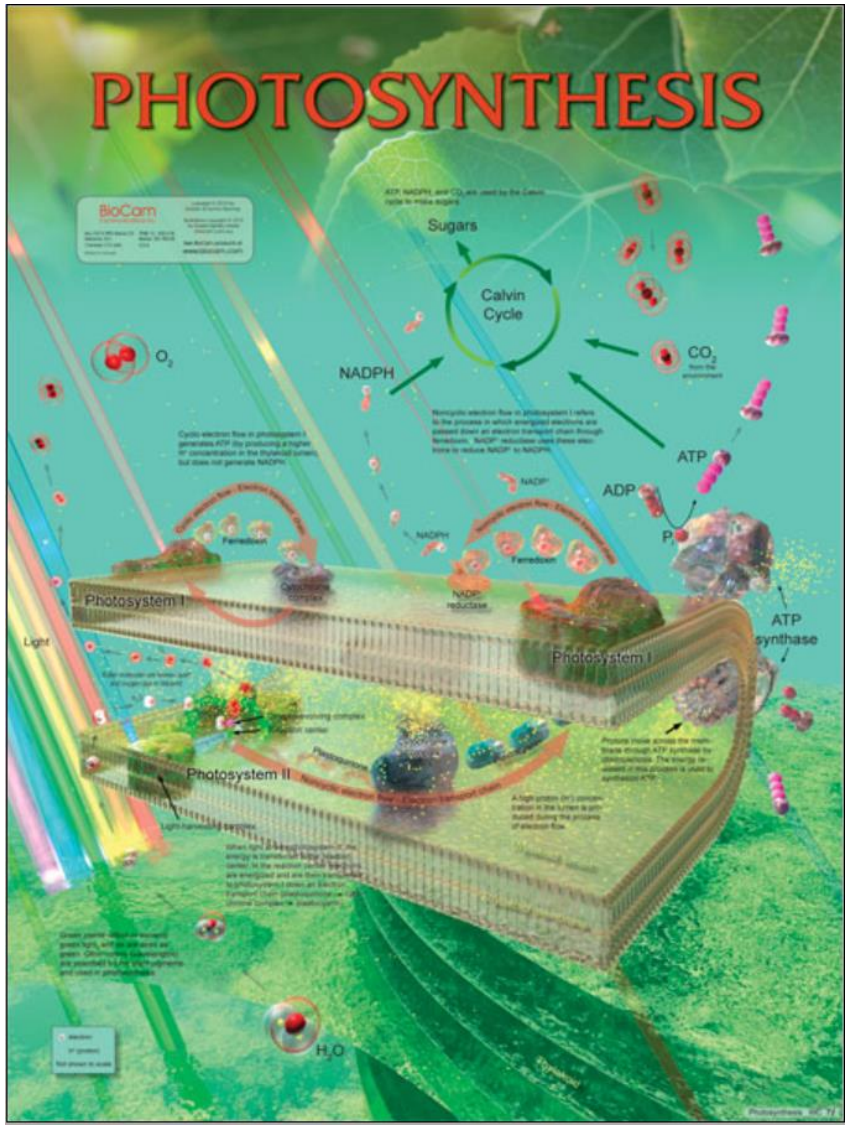

HISTOLOGY OF THE
LEAF
BioCam
MONOCOTS
DICOTS
MIDVEIN
VEIN
MESOPHYLL CELL
STOMA
EPIDERMIS
Corn Leaf 440x
Lilac Leaf 430x
Water Lily Leaf , 120x
Grass Leaf , 130x

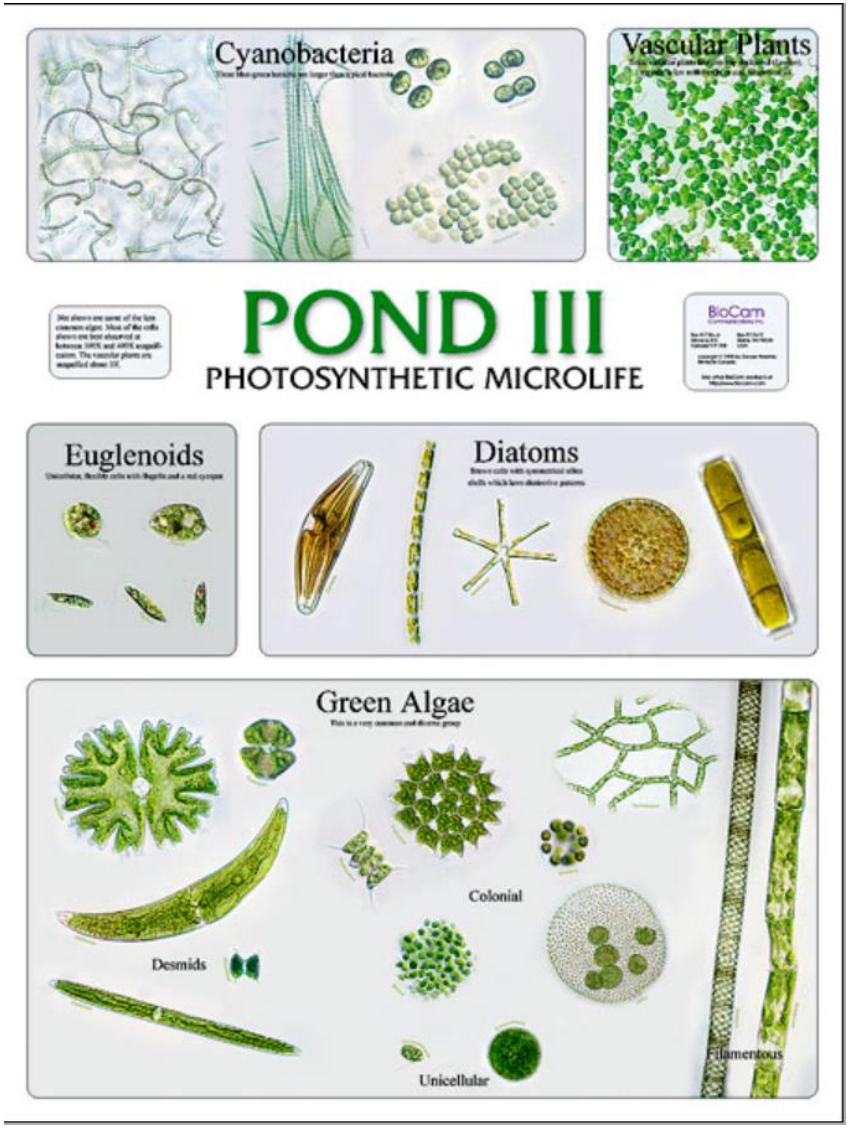

Pollen grain
5. Anther Cross Section
Ovule
3. Ovary Cross Section
BioCam
LILY
LIFE CYCLE
1. Lily flower
Anther
Filament
Stamen
Pistil
Petal
5. Ovary
4. Pollen tube
Pollen grains

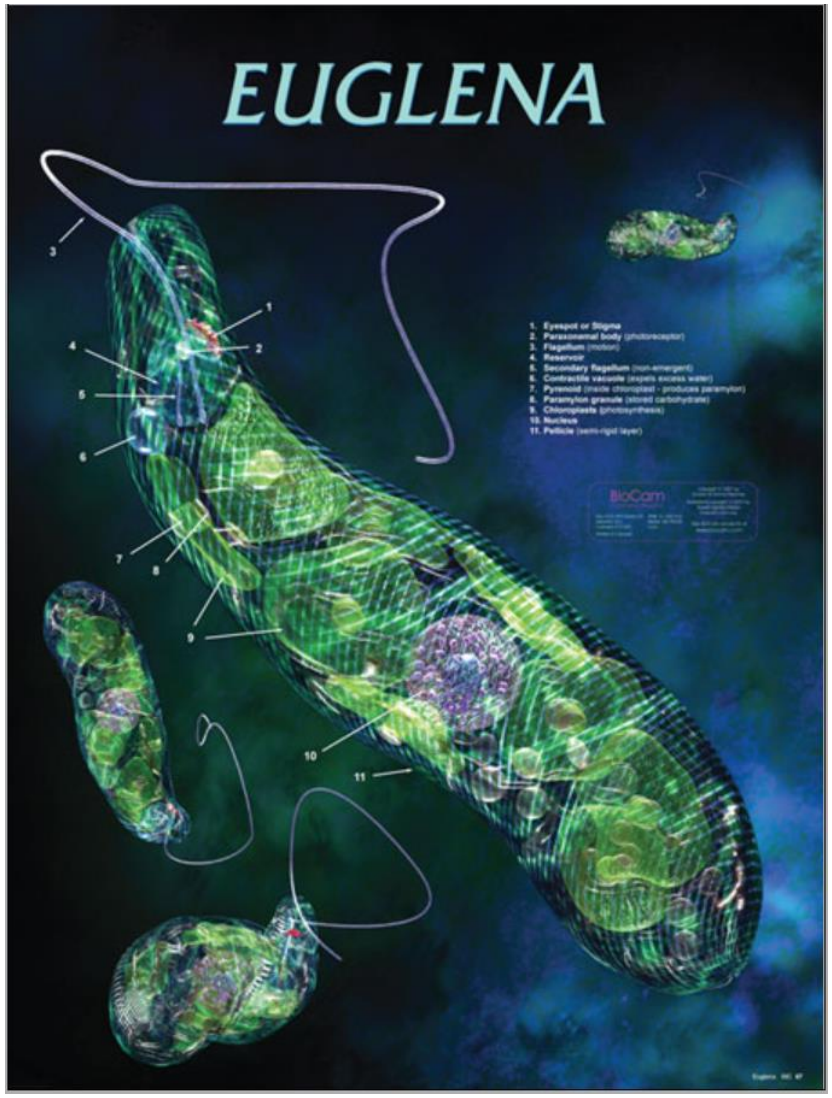

Berry
Hesperidium
FLESHY FRUITS
BioCam
Pepo
Drupe
Pome
Aggregate
Accessory
Multiple

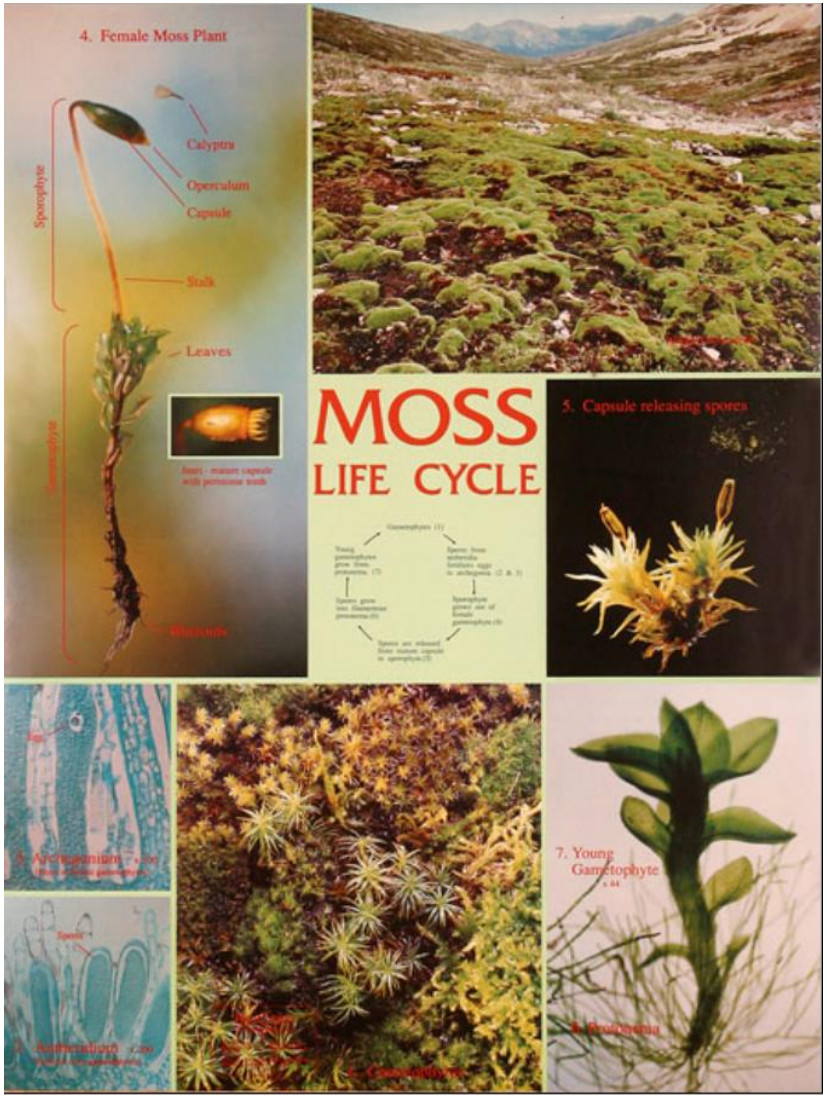

Achene
Samara
Caryopsis
Nut
Schizocarp
DRY FRUITS
Follicle
Legume
Loment
Capsule
Silicle
Silique


www.biocam.com
OSMOSIS
BioCam
Low Solute Concentration
High Solute Concentration
Osmosis is the diffusion of water across a selectively permeable membrane from an area of low solute (high water) concentration to an area of high solute (low water) concentration.
Plant Cells

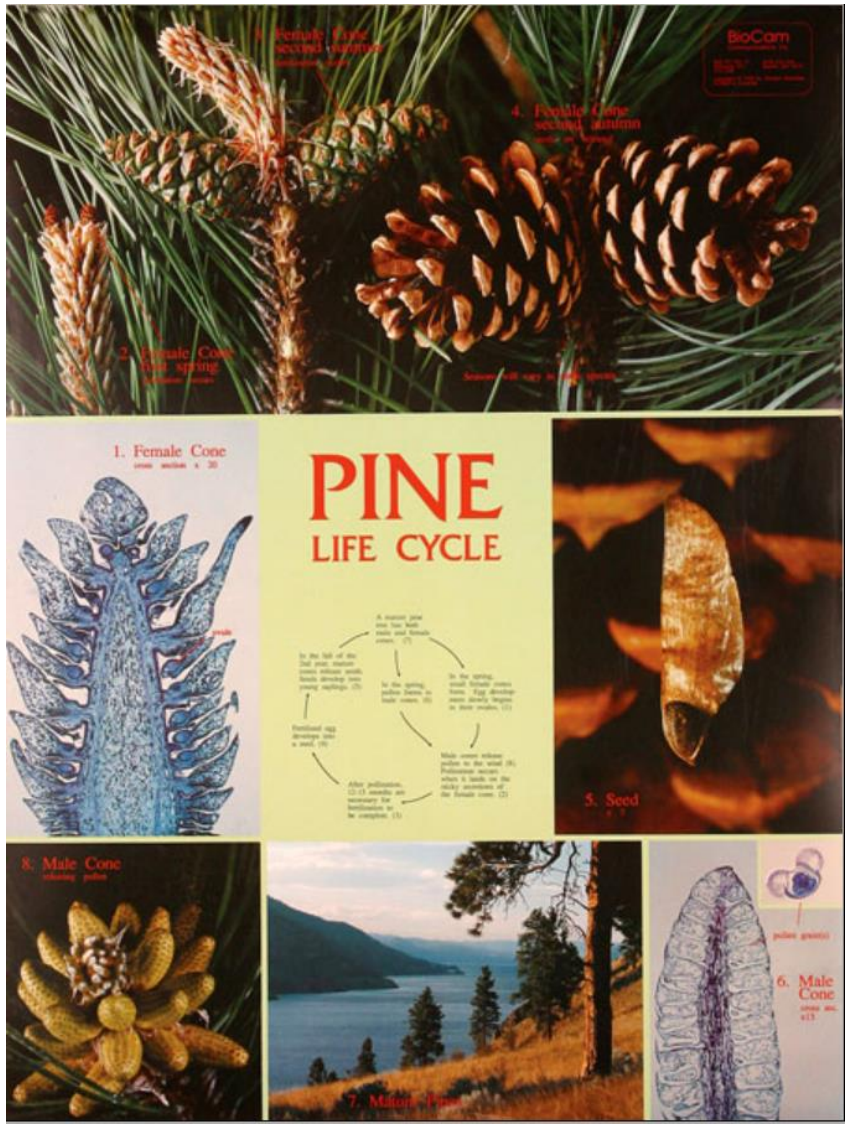

PHOTOSYNTHESIS
BioCam
Sugars
Calvin Cycle
NADPH
O_2
CO_2
ATP
ADP
P
NADP+
NADPH
Ferredoxin
Ferredoxin
NADP+ reductase
Photosystem I
Photosystem I
Photosystem II
Light
ATP synthase
H_2O

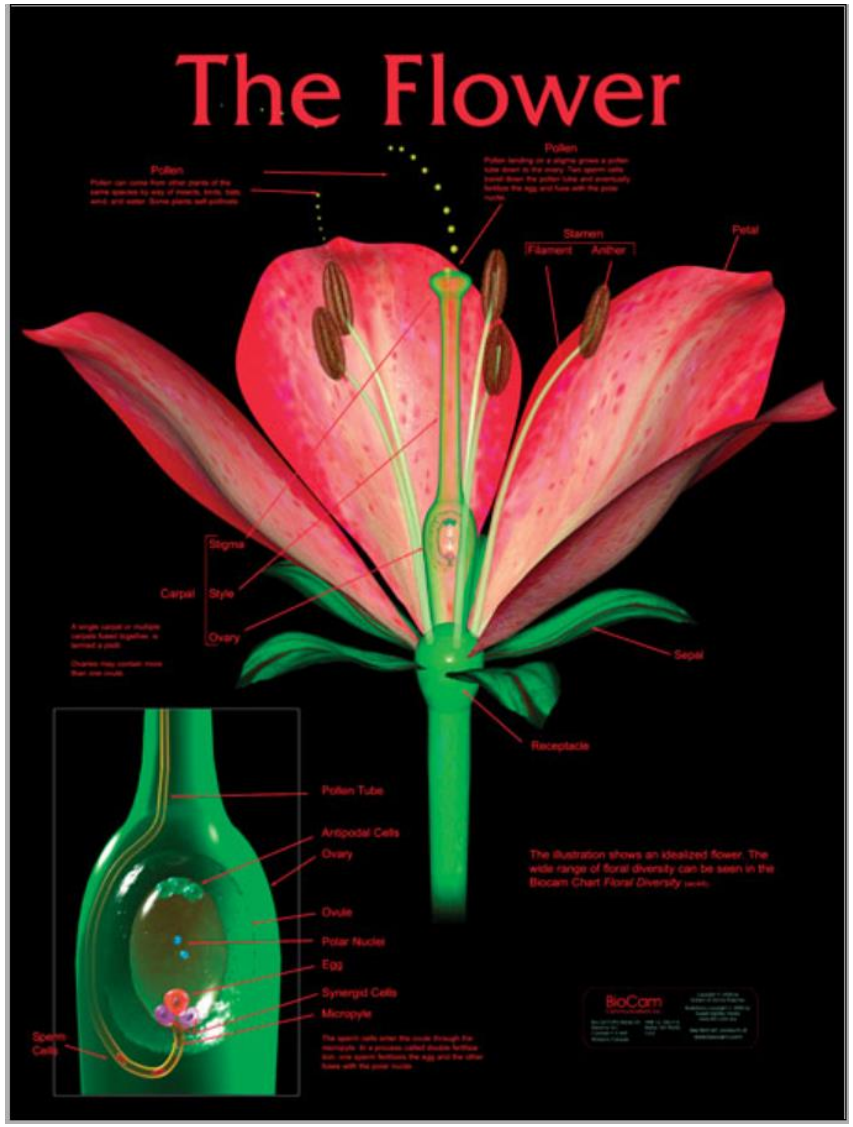

Cyanobacteria
Vascular Plants
POND III
PHOTOSYNTHETIC MICROLIFE
BioCam
Euglenoids
Diatoms
Green Algae
Colonial
Desmids
Unicellular
Filamentous


EUGLENA
1. Eyespot or Stigma
2. Paraxonemal body (photoreceptor)
3. Flagellum (motion)
4. Reservoir
5. Secondary flagellum (non-emergent)
6. Contractile vacuole (expels excess water)
7. Pyrenoid (inside chloroplast - produces paramylon)
8. Paramylon granule (stored carbohydrate)
9. Chloroplasts (photosynthesis)
10. Nucleus
11. Pellicle (semi-rigid layer)
BioCam


4. Female Moss Plant
Sporophyte
Calyptra
Operculum
Capsule
Stalk
Leaves
Gametophyte
Rhizoids
MOSS
LIFE CYCLE
5. Capsule releasing spores
7. Young
Gametophyte


1. Mature Sporophyte
2. Frond with Sori
7. Fiddleheads
FERN LIFE CYCLE
3. Prothallus
BioCam
Prothallus
Primary root
6. Young sporophyte
5. Antheridium


BioCam
4. Female Cone second autumn
2. Female Cone first spring
1. Female Cone
PINE LIFE CYCLE
5. Seed
8. Male Cone
6. Male Cone


The Flower
Pollen
Pollen
Stamen
Filament
Anther
Petal
Stigma
Carpel
Style
Ovary
Sepal
Receptacle
Pollen Tube
Antipodal Cells
Ovary
Ovule
Polar Nuclei
Egg
Synergid Cells
Micropyle
Sperm Cells
The illustration shows an idealized flower. The wide range of floral diversity can be seen in the Biocam Chart Floral Diversity
BioCam


Imperfect Flowers
Complete Flower
Lily
FLORAL DIVERSITY
Flowers are the reproductive part of angiosperms. A complete flower has sepals, petals, stamens and carpels. Flowers can be as small as 2 mm, or as large as 1 m across. There are more than 250,000 species of flowering plants in the world. This chart shows only a small part of the variation.
BioCam
Orchids
Composites
Spadix
Catkin
Poinsettia
Grasses
Corn