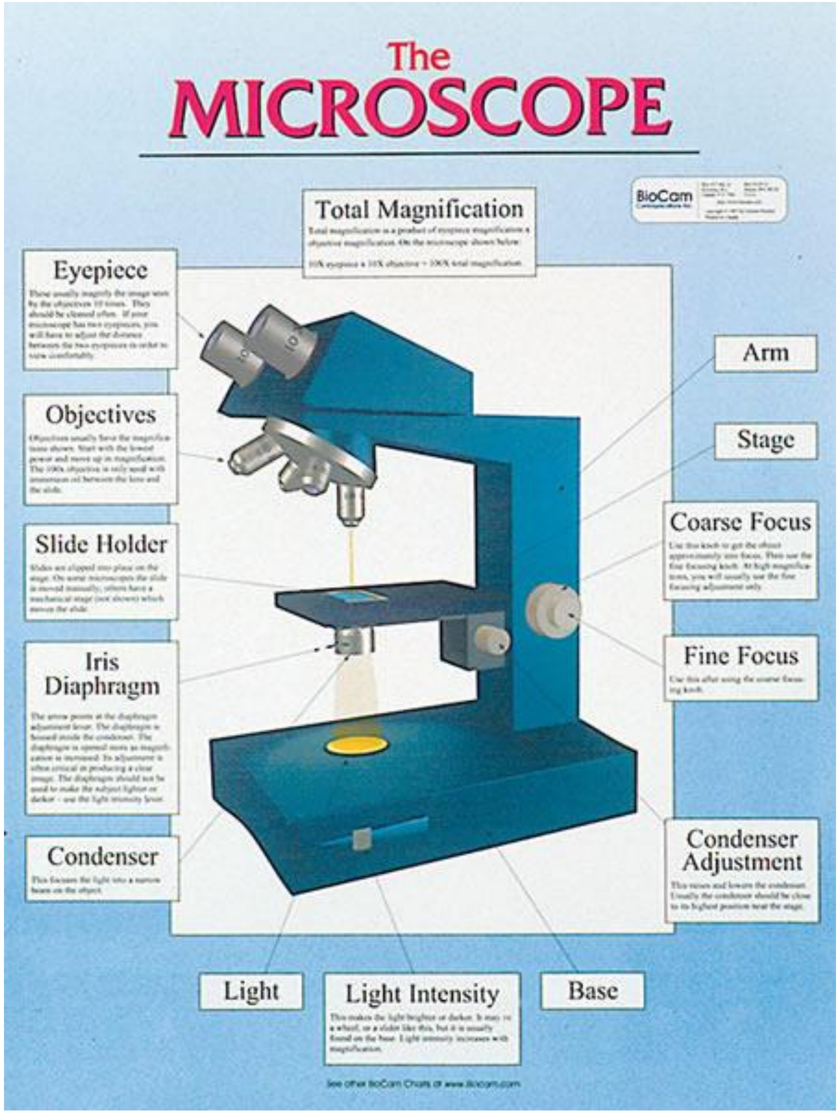
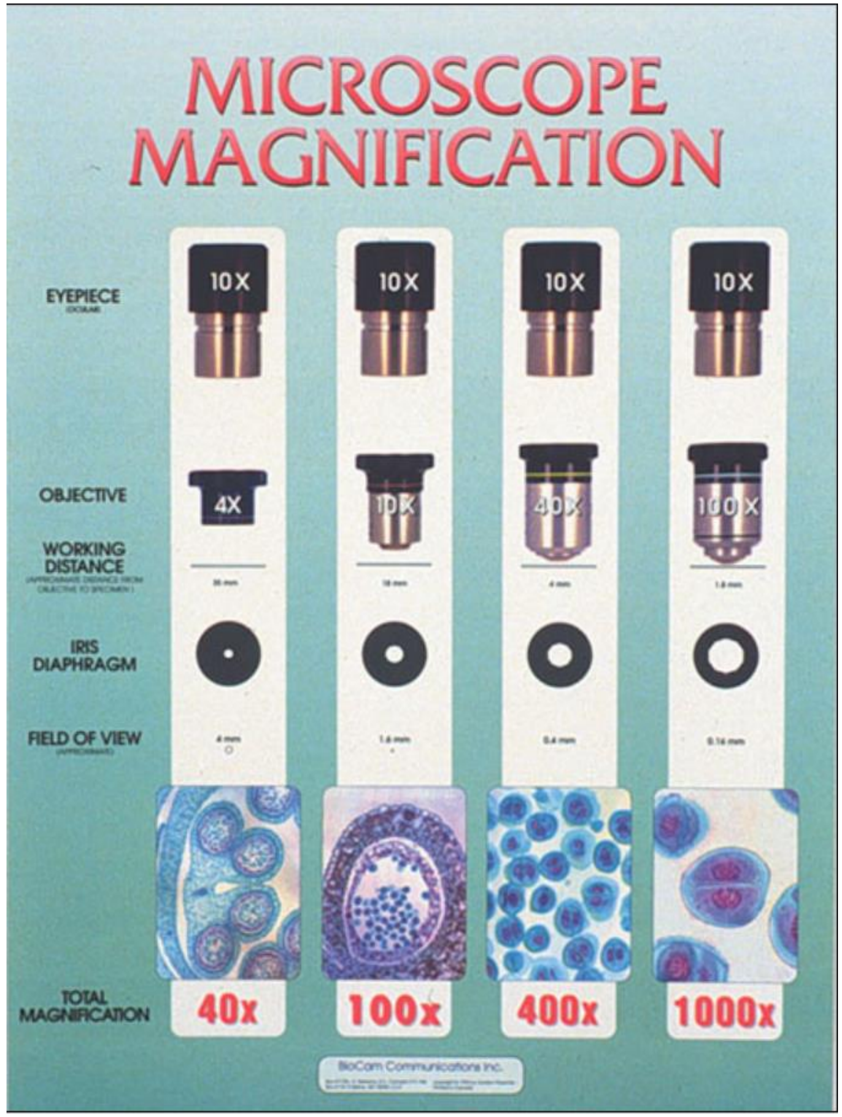
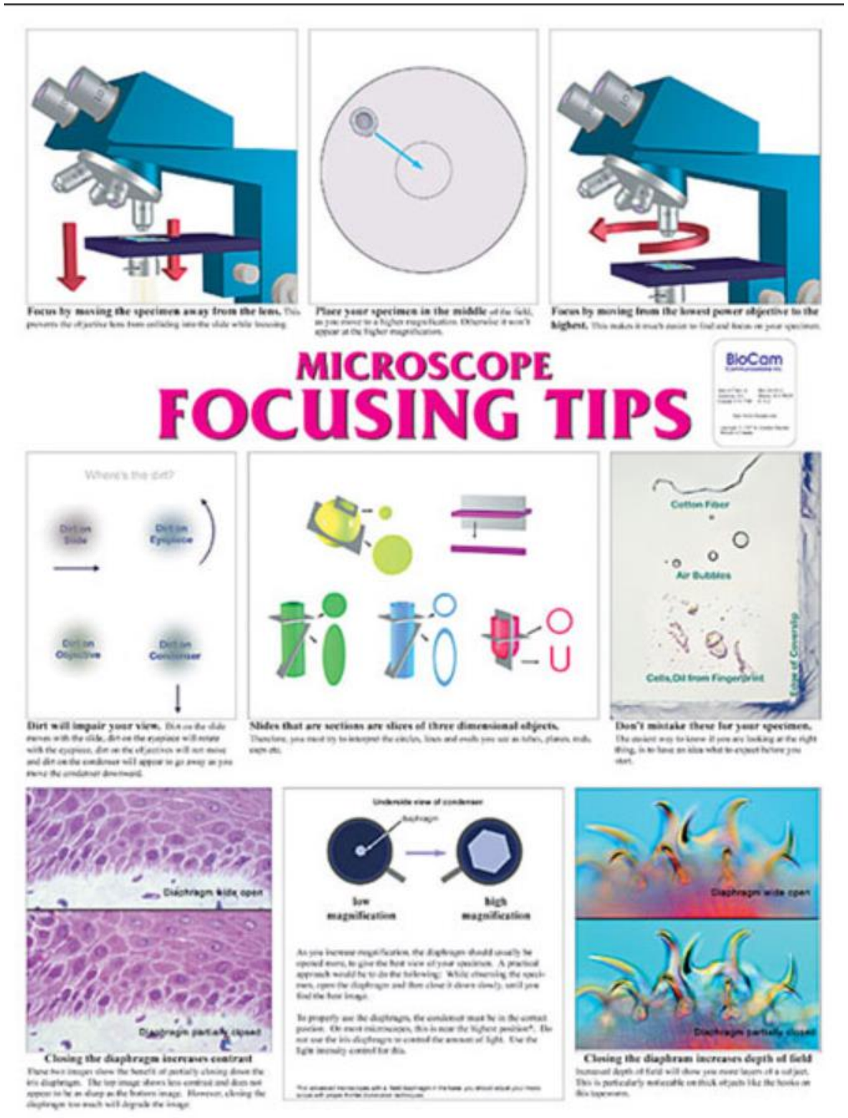
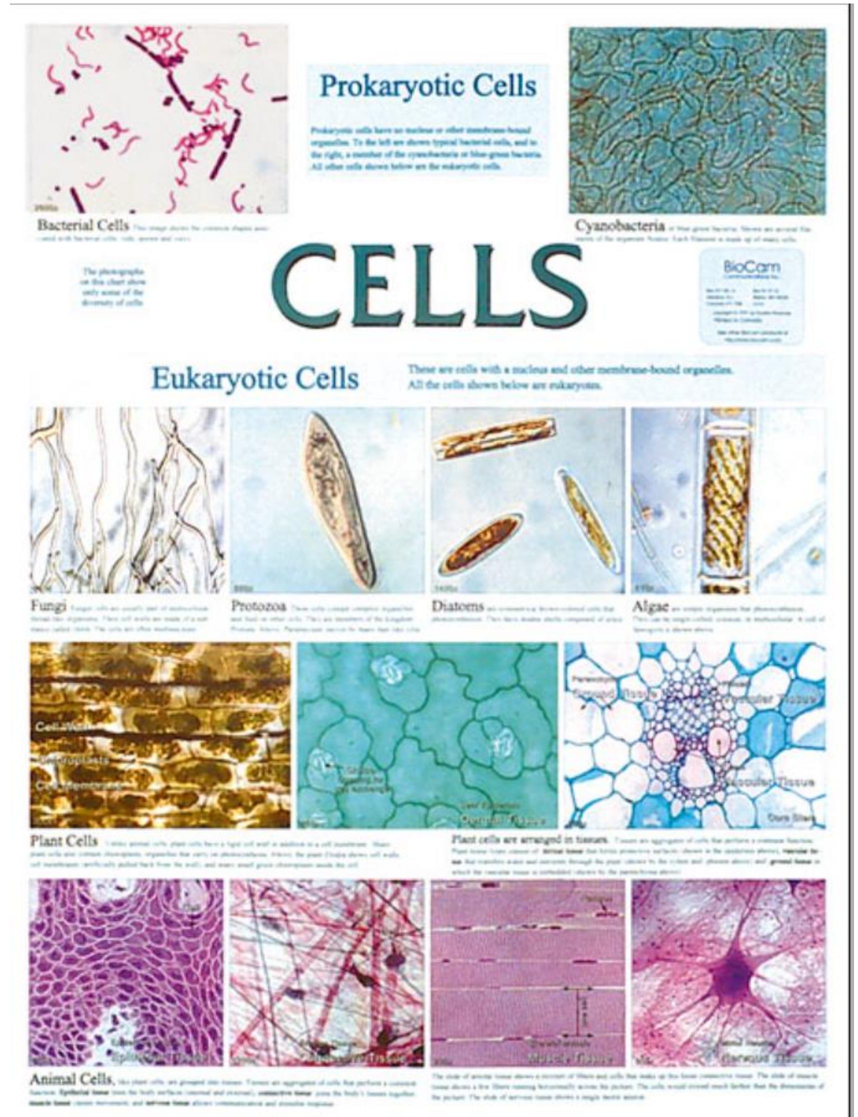
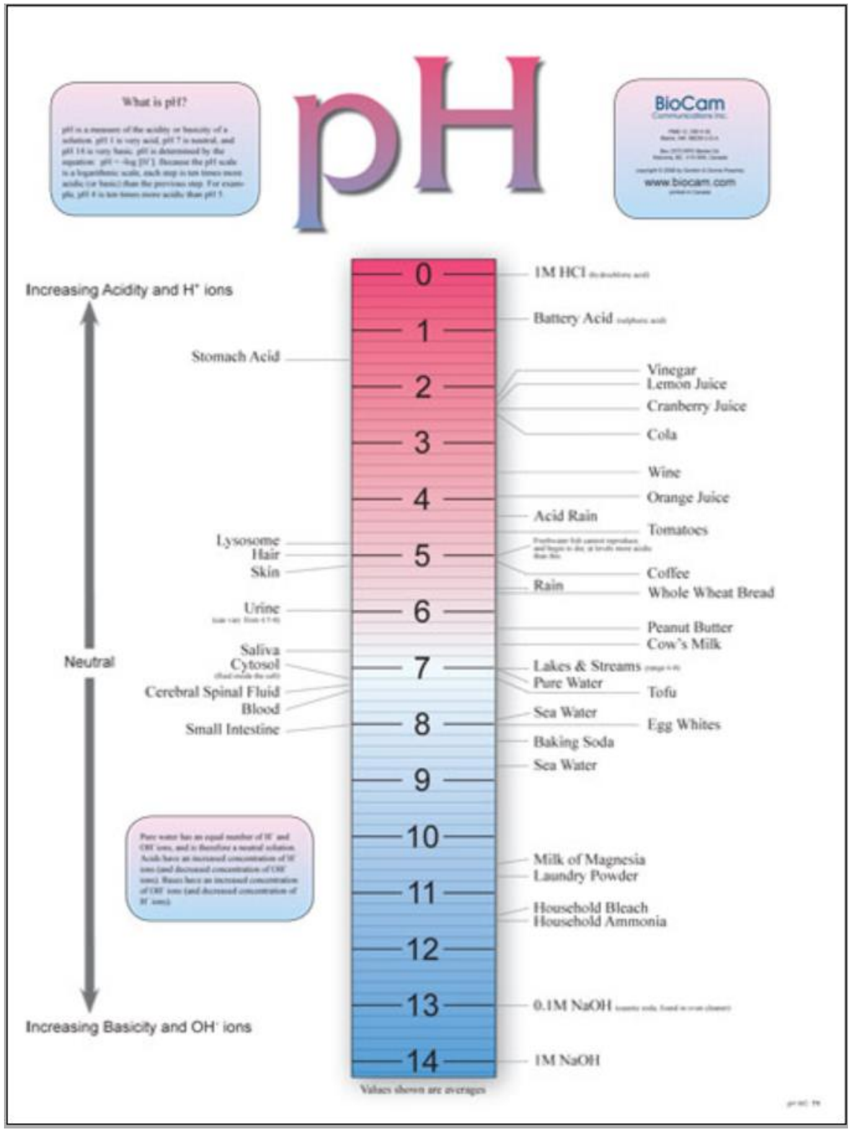
<u>BSC1005L Posters</u> - all posters courtesy of BioCam Charts. They may be accessed at:
http://www.biocam.com/Biocam_wall_charts_gallery.html





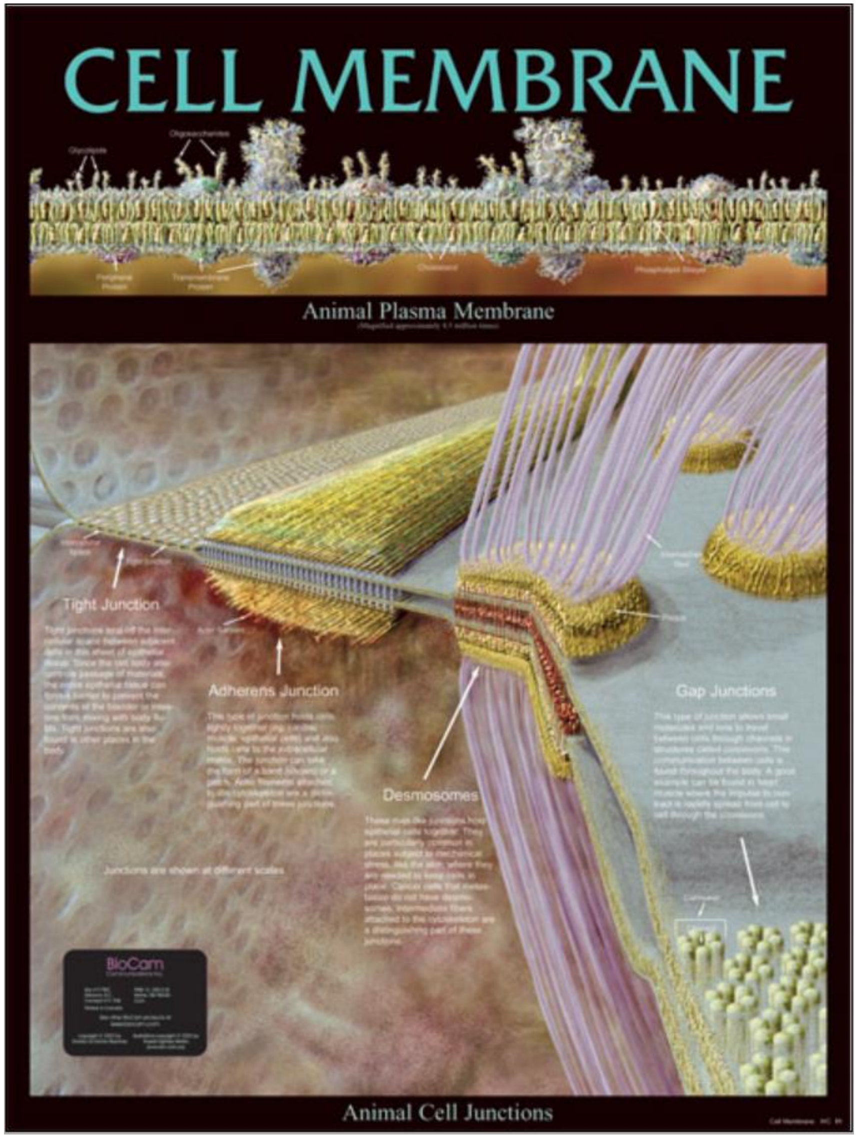

MICROSCOPE
FOCUSING TIPS
BioCam
Focus by moving the specimen away from the lens.
Place your specimen in the middle of the field,
Focus by moving from the lowest power objective to the highest.
Where's the dirt?
Dirt on Slide
Dirt on Eyepiece
Dirt on Objective
Dirt on Condenser
Cotton Fiber
Air Bubbles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

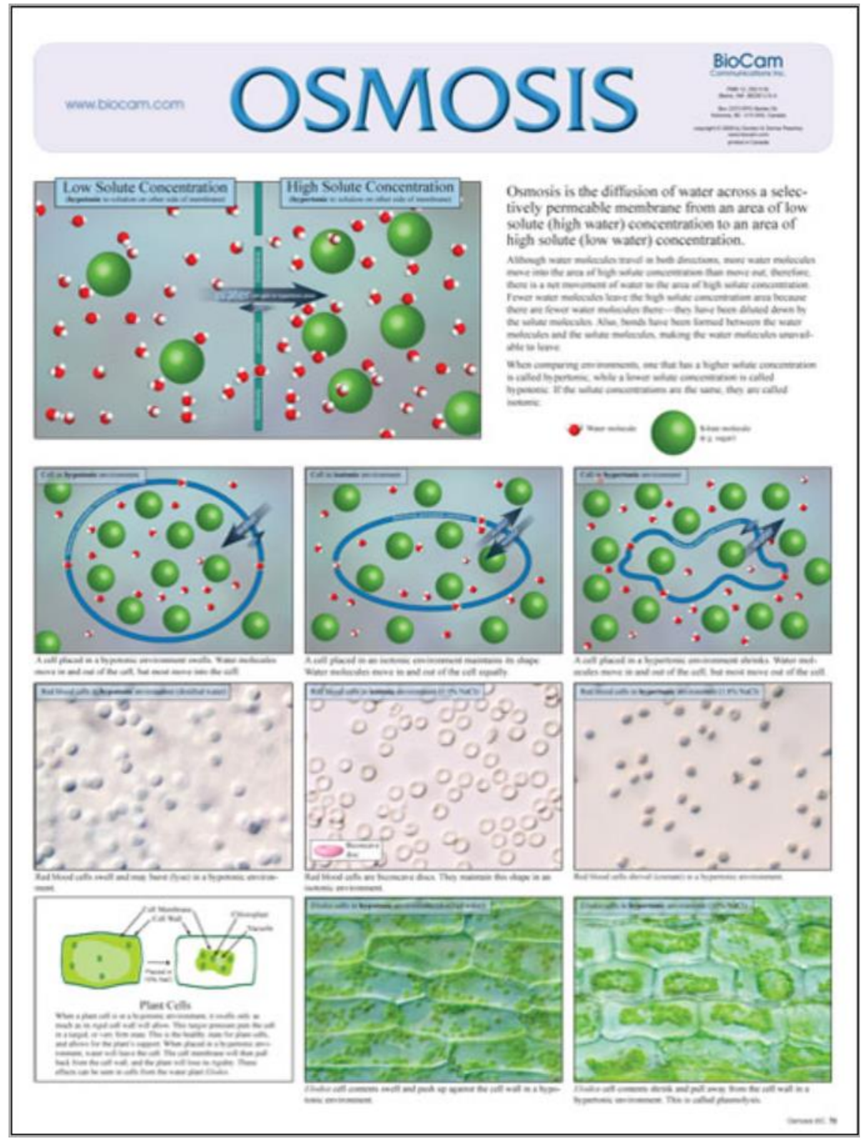

Prokaryotic Cells
Bacterial Cells
Cyanobacteria
CELLS
BioCam
Eukaryotic Cells
These are cells with a nucleus and other membrane-bound organelles.
All the cells shown below are eukaryotes.
Fungi
Protozoa
Diatoms
Algae
Plant Cells
Plant cells are arranged in tissues.
Animal Cells

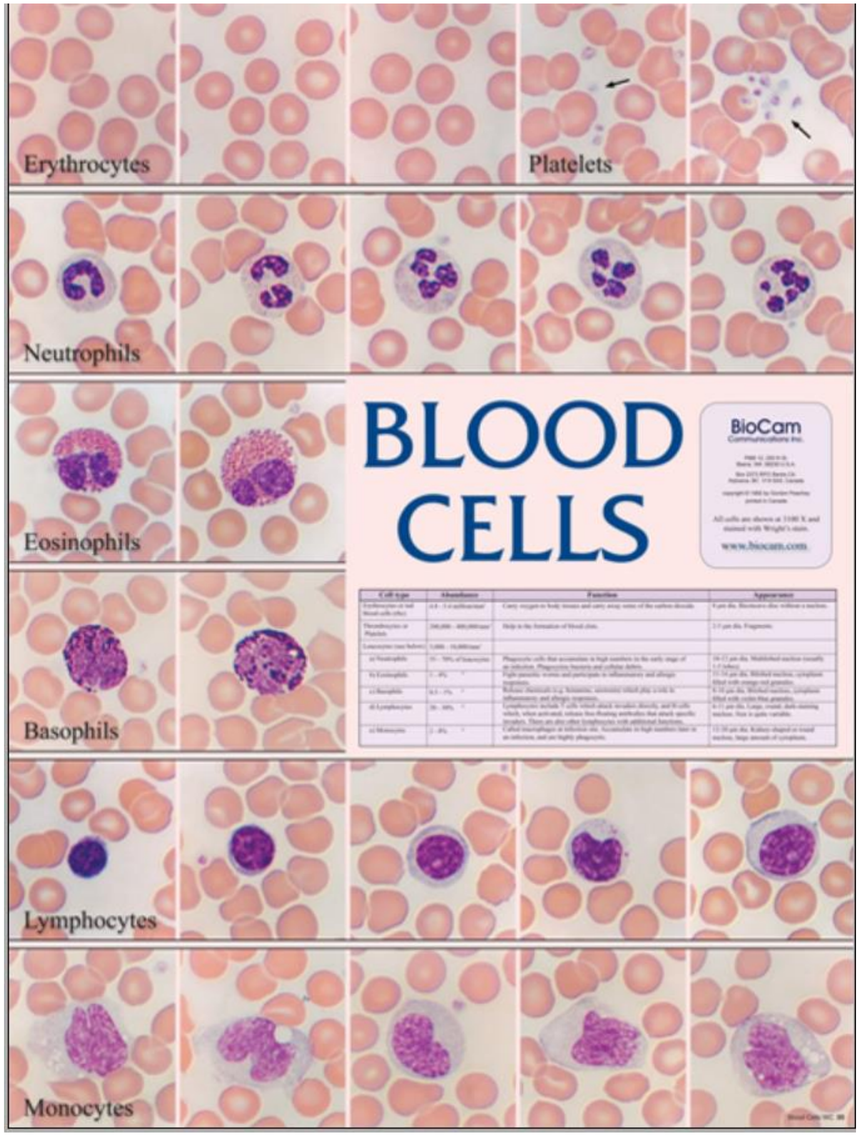


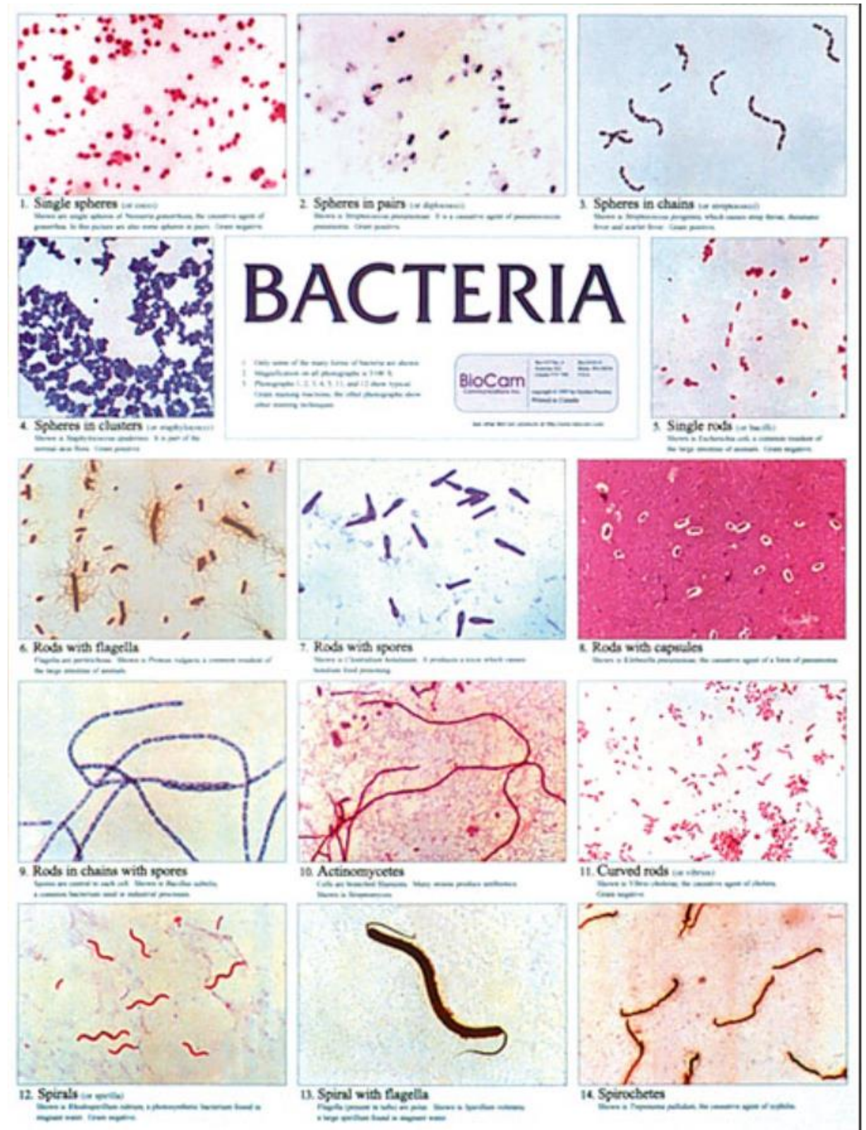
pH
What is pH?
BioCam
www.biocam.com
Increasing Acidity and H+ ions
Neutral
Increasing Basicity and OH- ions
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
Stomach Acid
Lysosome
Hair
Skin
Urine
Saliva
Cytosol
Cerebral Spinal Fluid
Blood
Small Intestine
1M HCl
Battery Acid
Vinegar
Lemon Juice
Cranberry Juice
Cola
Wine
Orange Juice
Acid Rain
Tomatoes
Coffee
Rain
Whole Wheat Bread
Peanut Butter
Cow's Milk
Lakes & Streams
Pure Water
Tofu
Sea Water
Egg Whites
Baking Soda
Sea Water
Milk of Magnesia
Laundry Powder
Household Bleach
Household Ammonia
0.1M NaOH
1M NaOH
Values shown are averages

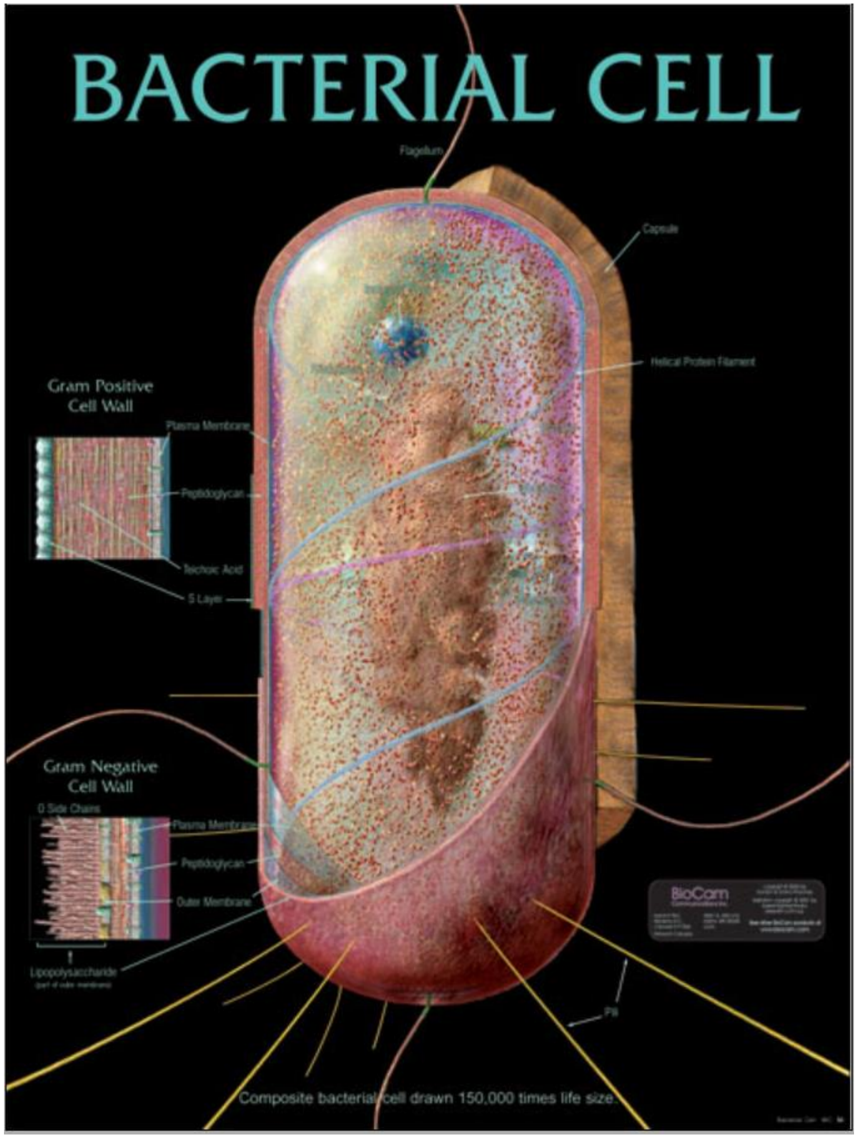
ANIMAL CELL
Cell Membrane
Microtubule
Smooth ER
Golgi Complex
Lysosome
Centrioles
Rough ER
Nucleus
Ribosomes
Nuclear Pore
Nuclear Envelope
Nucleolus
Heterochromatin
Peroxisome
Free Ribosomes
Polysome
Mitochondrion
Typical Animal Cell drawn at 50,000x life size

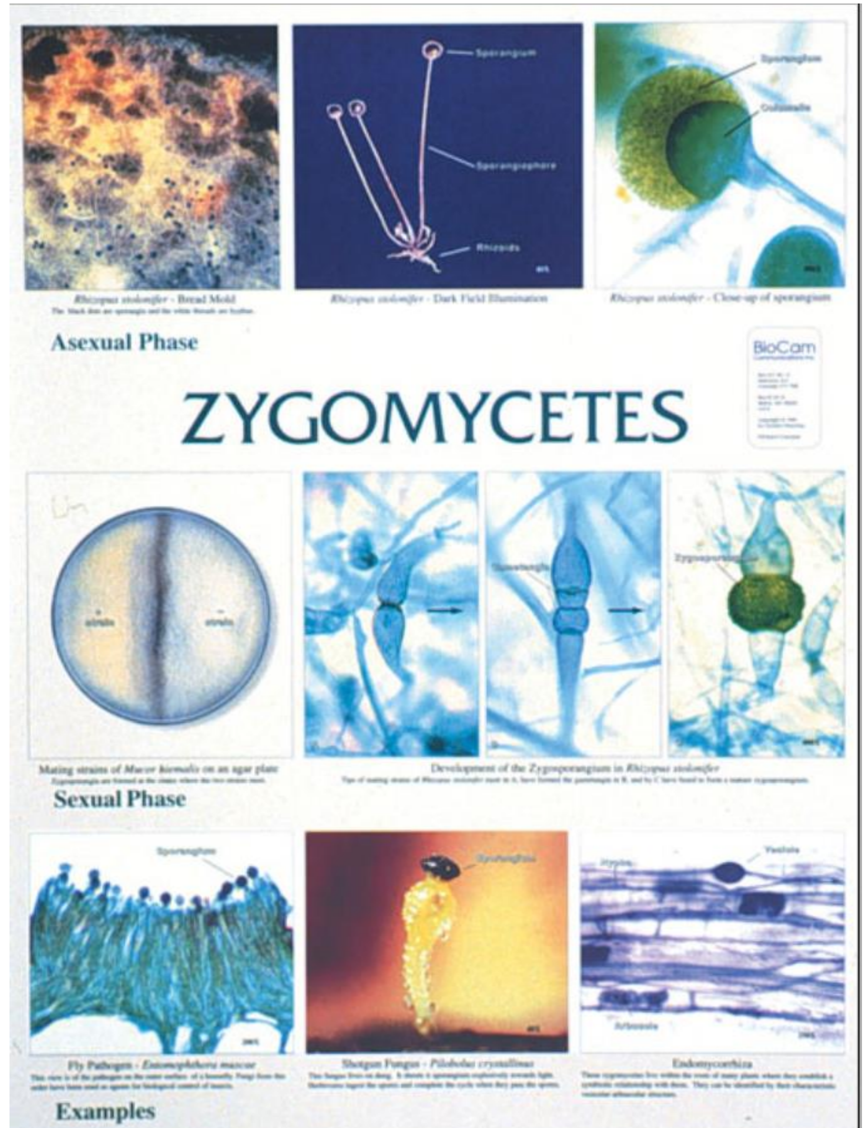

CELL MEMBRANE
Animal Plasma Membrane
Tight Junction
Adherens Junction
Desmosomes
Gap Junctions
BioCam
Animal Cell Junctions

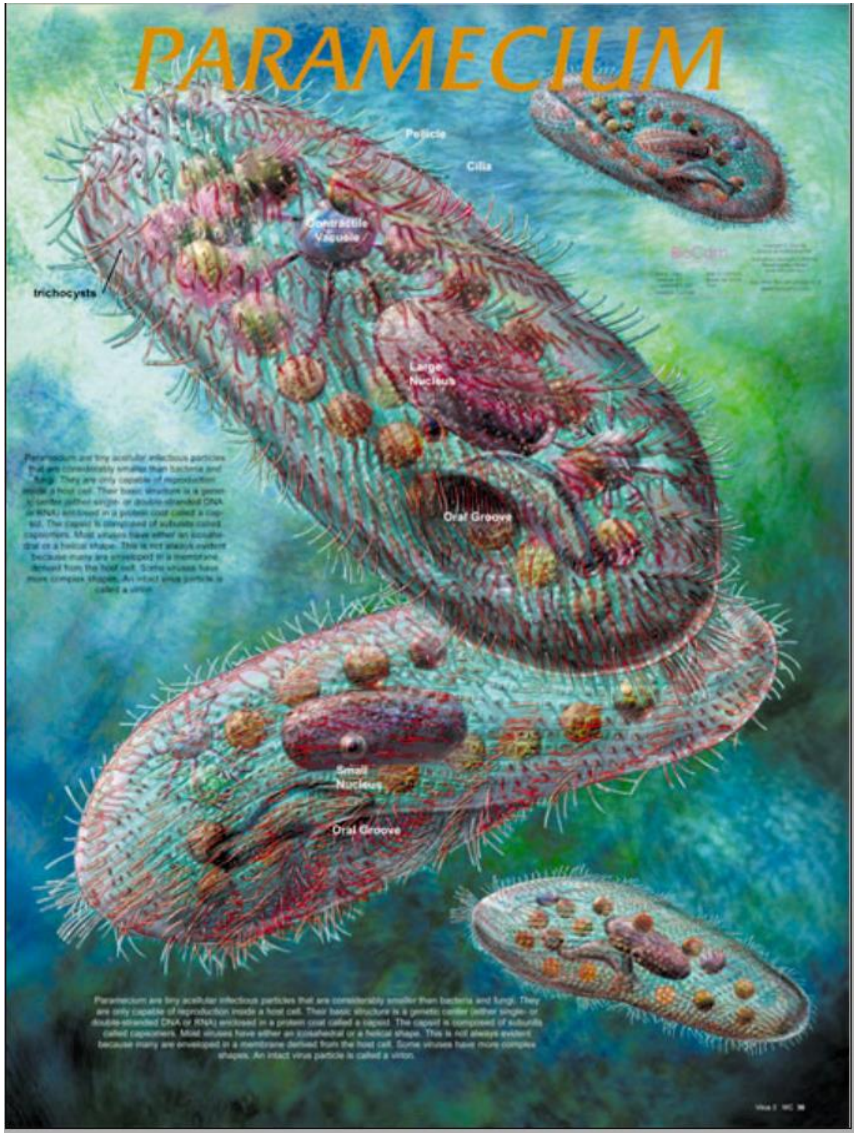

www.biocam.com
OSMOSIS
BioCam
Communications Inc.
Low Solute Concentration
High Solute Concentration
Osmosis is the diffusion of water across a selectively permeable membrane from an area of low solute (high water) concentration to an area of high solute (low water) concentration.
A cell placed in a hypotonic environment swells. Water molecules move in and out of the cell, but more move into the cell.
A cell placed in an isotonic environment maintains its shape. Water molecules move in and out of the cell equally.
A cell placed in a hypertonic environment shrinks. Water molecules move in and out of the cell, but more move out of the cell.
Plant Cells


Erythrocytes
Platelets
Neutrophils
Eosinophils
Basophils
Lymphocytes
Monocytes
BLOOD CELLS
BioCam
www.biocam.com

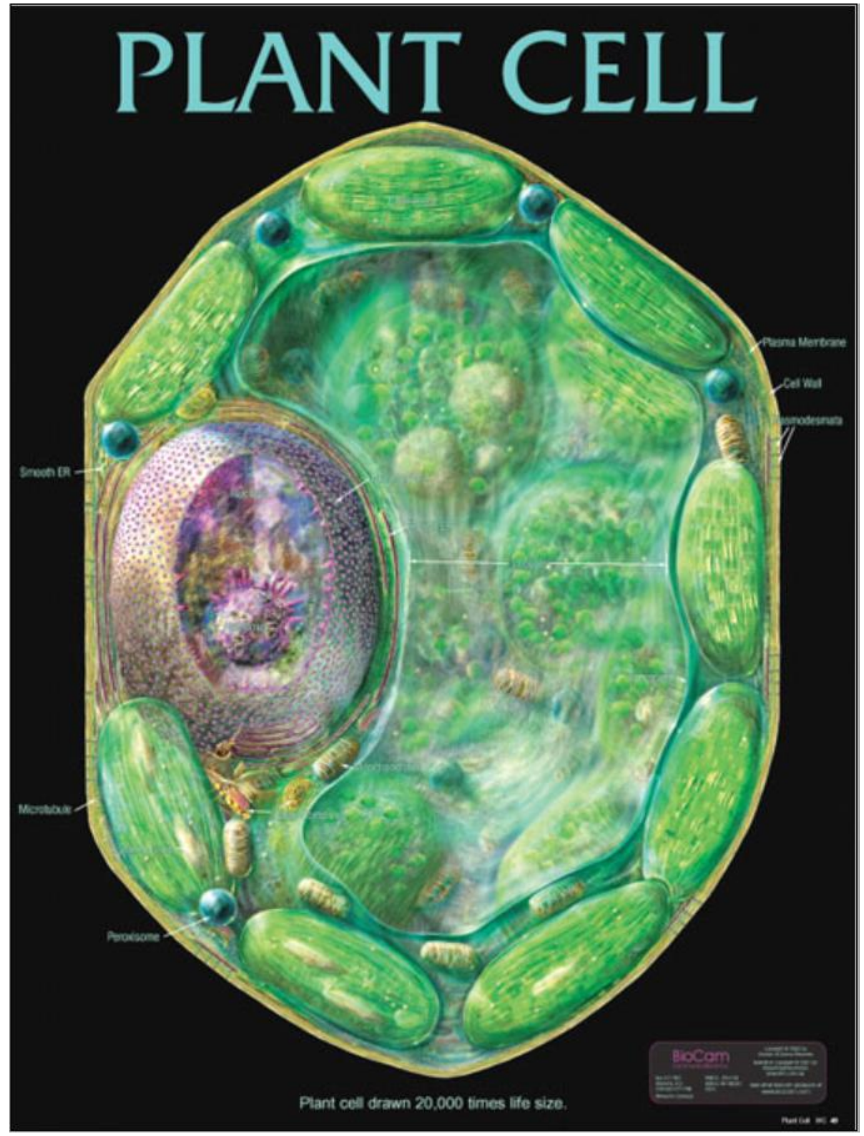

BACTERIA
BioCam
1. Single spheres
2. Spheres in pairs
3. Spheres in chains
4. Spheres in clusters
5. Single rods
6. Rods with flagella
7. Rods with spores
8. Rods with capsules
9. Rods in chains with spores
10. Actinomycetes
11. Curved rods
12. Spirals
13. Spiral with flagella
14. Spirochetes


BACTERIAL CELL
Flagellum
Capsule
Helical Protein Filament
Gram Positive Cell Wall
Plasma Membrane
Peptidoglycan
Teichoic Acid
S Layer
Gram Negative Cell Wall
O Side Chains
Plasma Membrane
Peptidoglycan
Outer Membrane
Lipopolysaccharide
Pili
BioCam
Composite bacterial cell drawn 150,000 times life size.

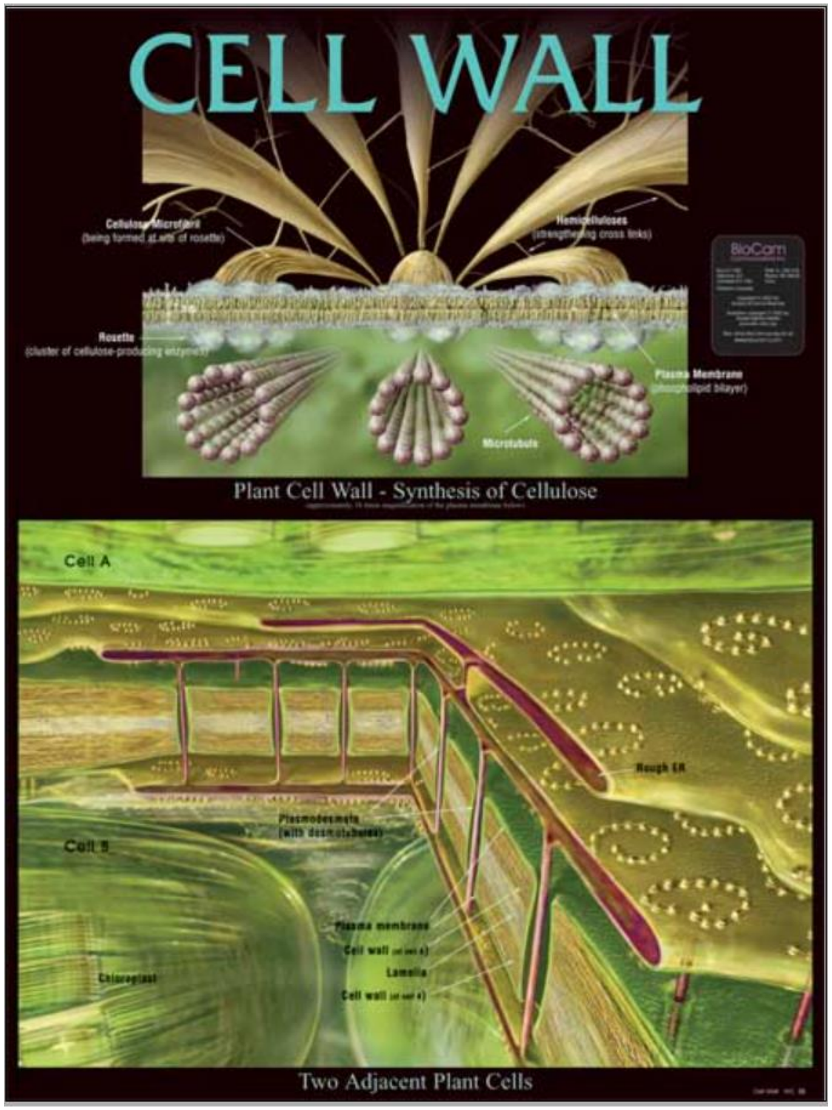

Sporangium
Sporangiophore
Rhizoids
Columella
Rhizopus stolonifer - Bread Mold
Rhizopus stolonifer - Dark Field Illumination
Rhizopus stolonifer - Close-up of sporangium
Asexual Phase
BioCam
ZYGOMYCETES
Mating strains of Mucor hiemalis on an agar plate
Development of the Zygosporangium in Rhizopus stolonifer
Sexual Phase
Sporangium
Vesicle
Hypha
Arbuscule
Fly Pathogen - Entomophthora muscae
Shotgun Fungus - Pilobolus crystallinus
Endomycorrhiza
Examples

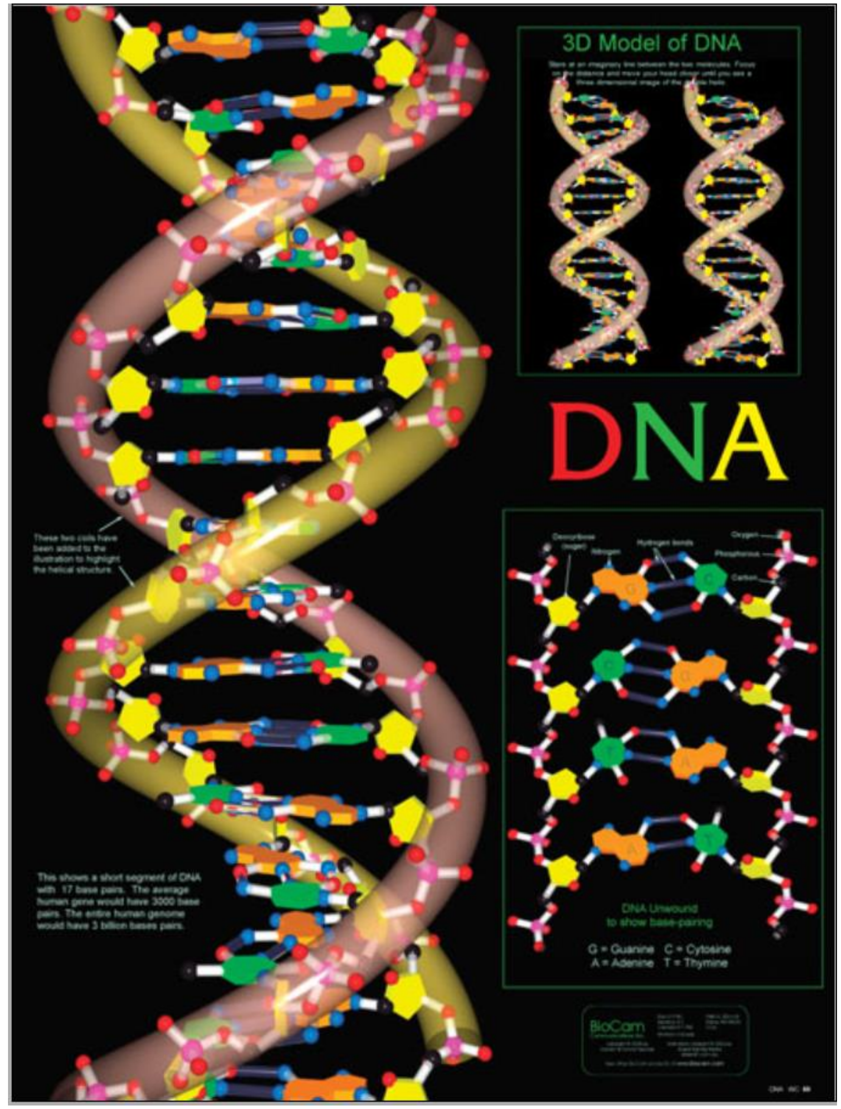


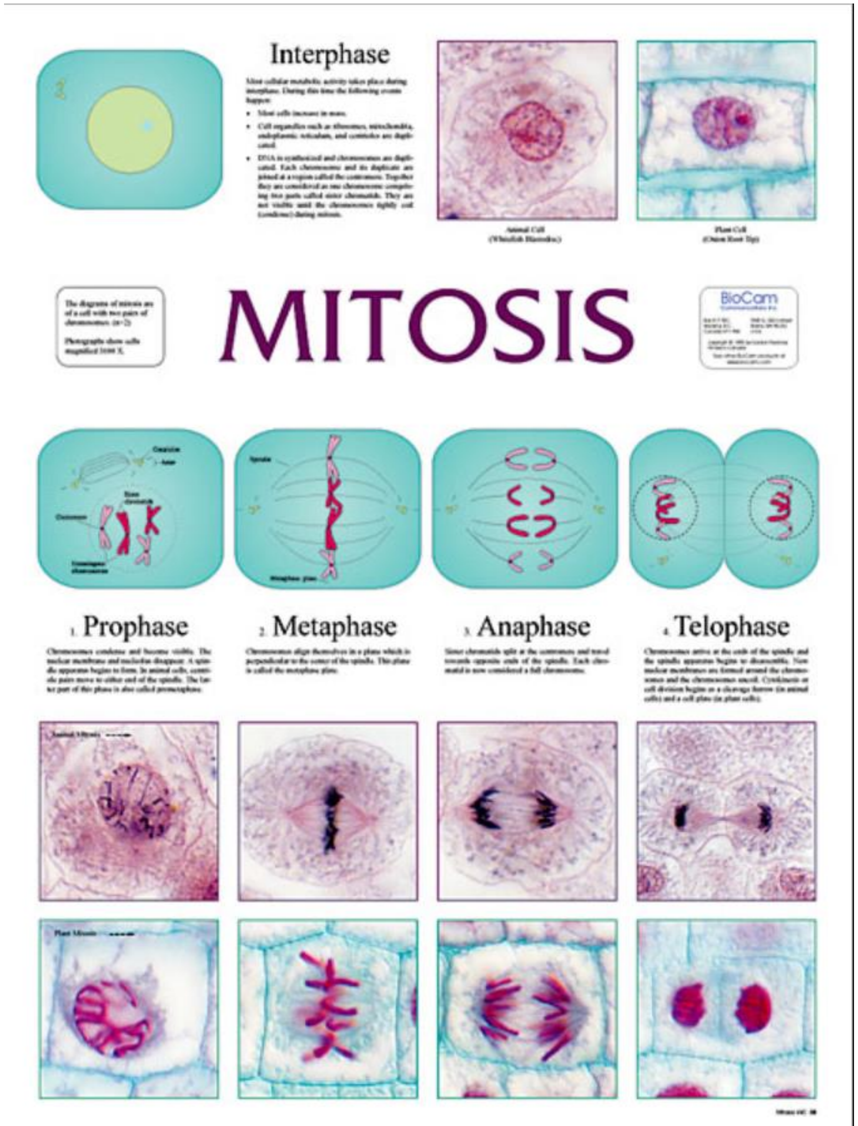
PARAMECIUM
Pellicle
Cilia
Contractile Vacuole
trichocysts
Large Nucleus
Oral Groove
Small Nucleus
Oral Groove

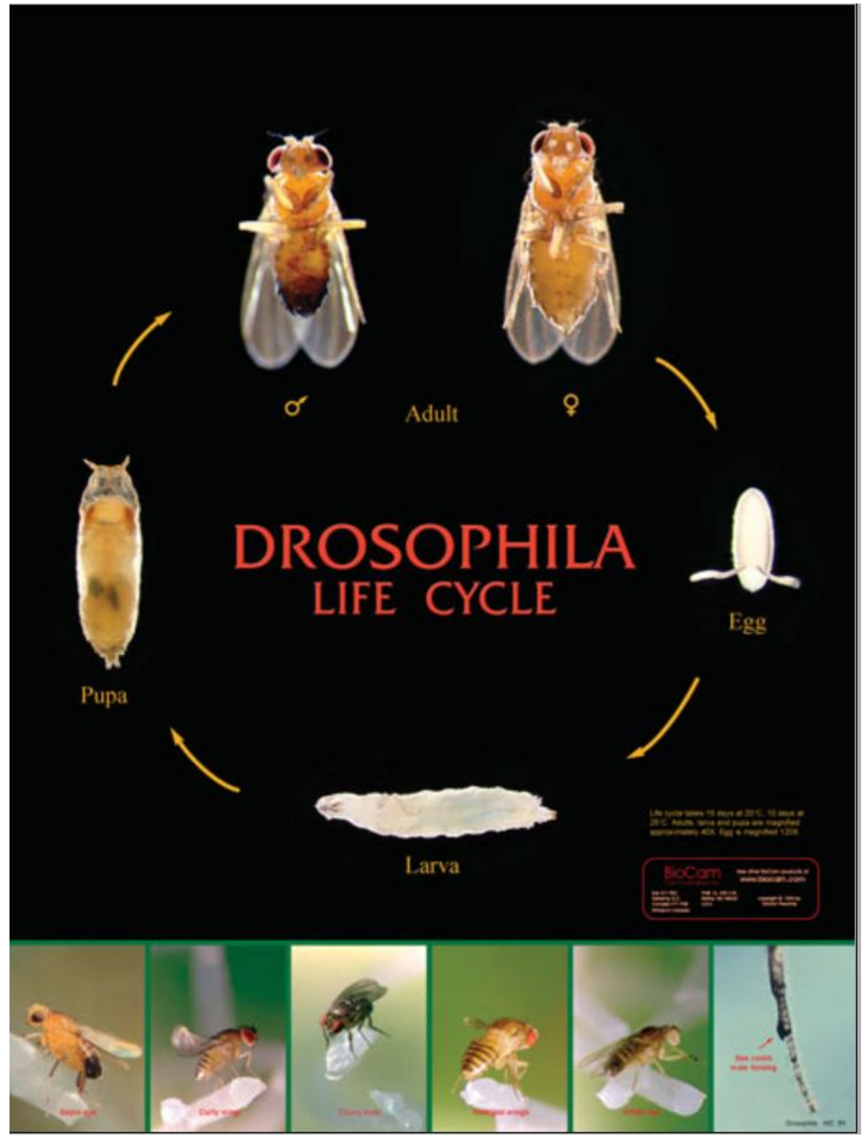


PLANT CELL
Plasma Membrane
Cell Wall
Smooth ER
Microtubule
Peroxisome
BioCam
Plant cell drawn 20,000 times life size.

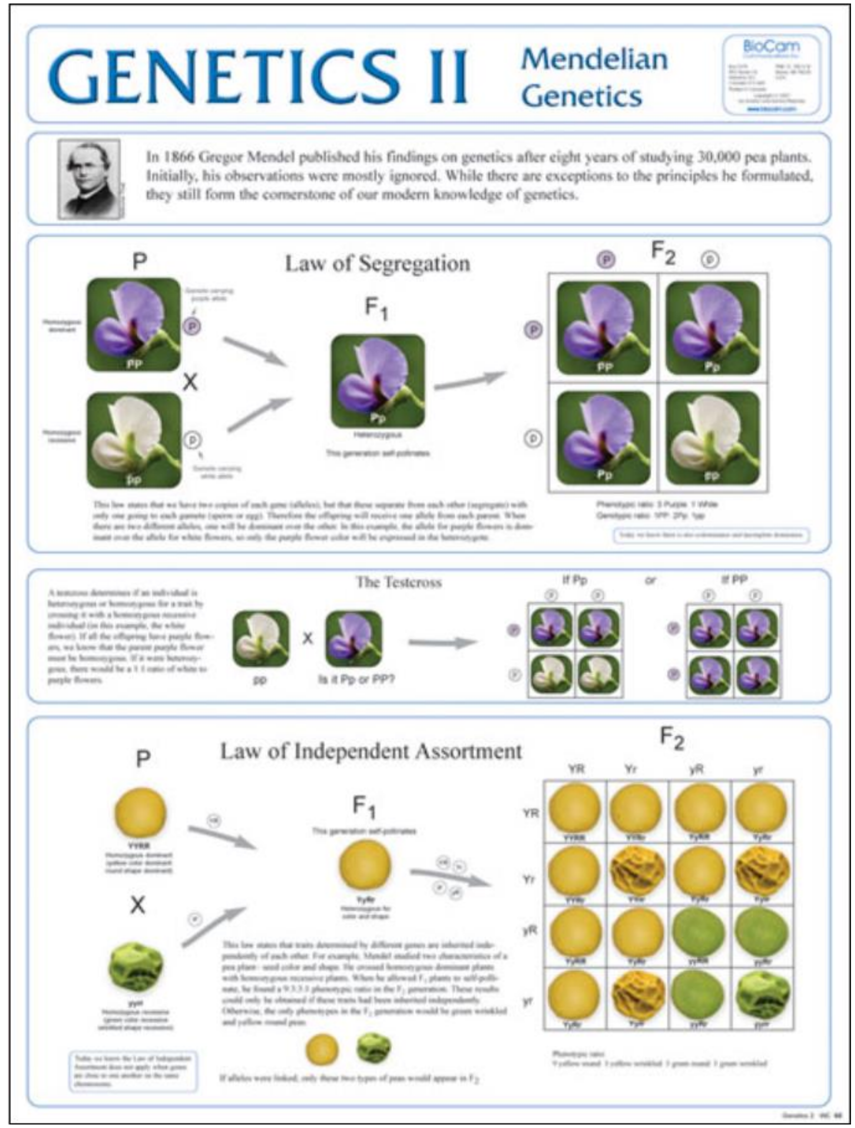

CELL WALL
Cellulose Microfibril
(being formed at site of rosette)
Hemicelluloses
(strengthening cross links)
BioCam
Rosette
(cluster of cellulose-producing enzymes)
Plasma Membrane
(phospholipid bilayer)
Microtubule
Plant Cell Wall - Synthesis of Cellulose
Cell A
Rough ER
Plasmodesmata
(with desmotubules)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

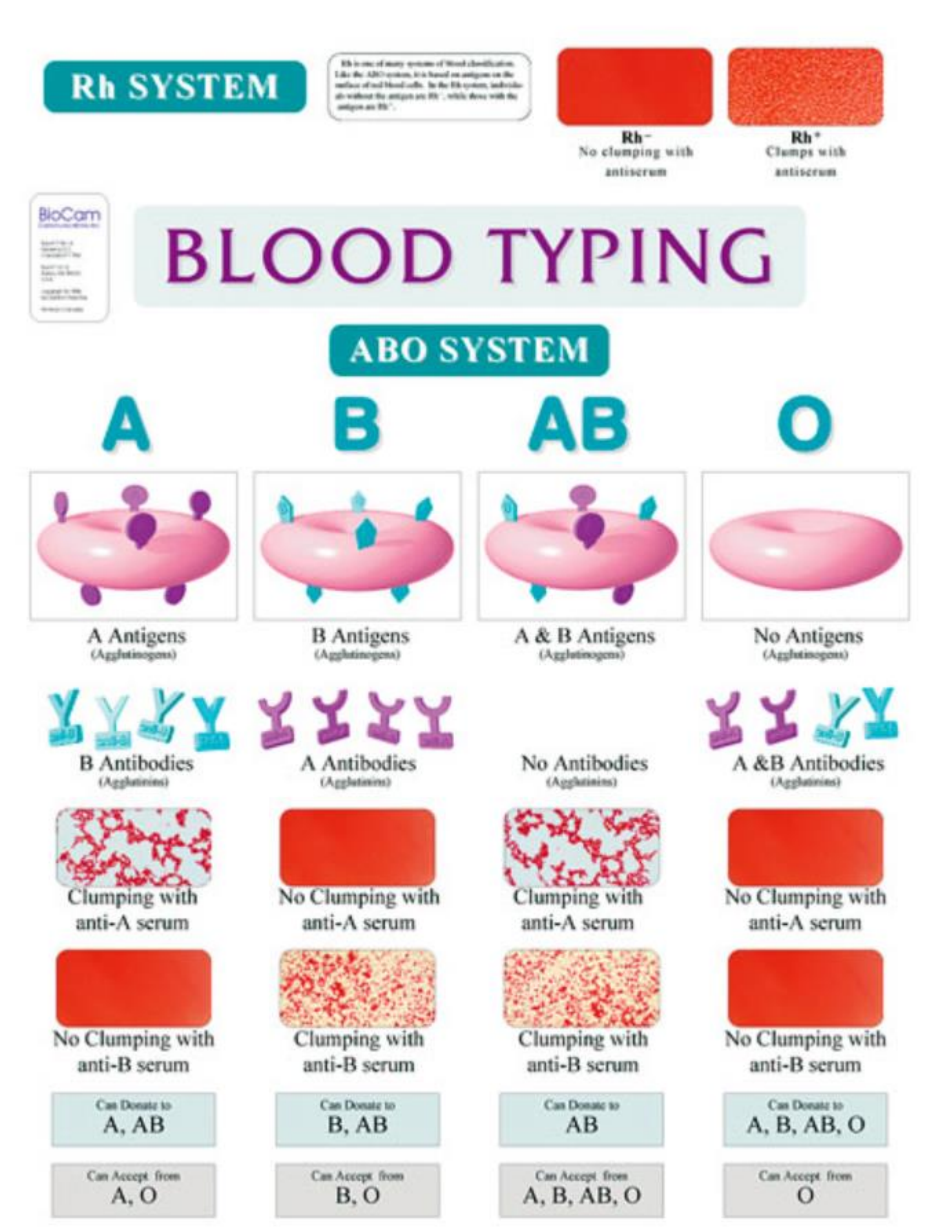

3D Model of DNA
DNA
These two coils have been added to the illustration to highlight the helical structure.
This shows a short segment of DNA with 17 base pairs. The average human gene would have 3000 base pairs. The entire human genome would have 3 billion bases pairs.
Deoxyribose (sugar)
Nitrogen
Hydrogen bonds
Oxygen
Phosphorous
Carbon
DNA Unwound to show base-pairing
G = Guanine C = Cytosine
A = Adenine T = Thymine
BioCam


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


♂
Adult
♀
DROSOPHILA
LIFE CYCLE
Egg
Larva
Pupa
BioCam


GENETICS I
Essential Terminology
BioCam
Gene, Allele, and Locus
Heterozygous and Homozygous
Genotype and Phenotype
Dominant and Recessive
Genome
Chromosome, Chromatid, Centromere, Homologue
Mitosis/Meiosis
Haploid and Diploid
Monohybrid and Dihybrid Crosses
P, F1 and F2 Generations
Replication, Transcription, and Translation
Exon and Intron
Gene Expression
Crossing Over
DNA and RNA
Sister chromatids
Centromere
Meiosis
Mitosis
DNA
Replication
DNA
Transcription
RNA
Translation
PROTEIN


GENETICS II
Mendelian Genetics
BioCam
In 1866 Gregor Mendel published his findings on genetics after eight years of studying 30,000 pea plants. Initially, his observations were mostly ignored. While there are exceptions to the principles he formulated, they still form the cornerstone of our modern knowledge of genetics.
Law of Segregation
P
F1
F2
X
The Testcross
If Pp
or
If PP
pp
Is it Pp or PP?
Law of Independent Assortment
P
F1
F2
X
YR
Yr
yR
yr


Rh SYSTEM
Rh⁻ No clumping with antiserum
Rh⁺ Clumps with antiserum
BioCam
BLOOD TYPING
ABO SYSTEM
A
B
AB
O
A Antigens (Agglutinogens)
B Antigens (Agglutinogens)
A & B Antigens (Agglutinogens)
No Antigens (Agglutinogens)
B Antibodies (Agglutinins)
A Antibodies (Agglutinins)
No Antibodies (Agglutinins)
A &B Antibodies (Agglutinins)
Clumping with anti-A serum
No Clumping with anti-A serum
Clumping with anti-A serum
No Clumping with anti-A serum
No Clumping with anti-B serum
Clumping with anti-B serum
Clumping with anti-B serum
No Clumping with anti-B serum
Can Donate to A, AB
Can Donate to B, AB
Can Donate to AB
Can Donate to A, B, AB, O
Can Accept from A, O
Can Accept from B, O
Can Accept from A, B, AB, O
Can Accept from O