Some things you ought to know for your EOC.

Biomolecules

Know the 4 organic compounds:

1. Nucleic acids (DNA & RNA) BB (building block)=nucleotides

2. Proteins BB=amino acids

3. Lipids BB=fatty acids

4. Carbohydrates includes sugars and starches (can be tested for with iodine)

What is used to test for these substances?

Nutrient lab…

Sugar-benedicts solution

Starch- Iodine

Protein-biuret solution

Lipid-sudan III, brown paper, floats on water

Cells

Know the major organelles

\*\*major differences between plant and animal cells, prokaryotic and eukaryotic cells, etc=plants have cell walls and chloroplast (the site for photosynthesis-how plants make their food), central vacuole, etc. Animal cells have lysosomes and centrioles.

Cell transport

1. Diffusion=movement of molecules from an area of greater concentration to low concentration—ex. Food coloring in water, smell of a match—particles spread
2. Osmosis= just like diffusion but involves a membrane and water (remember our egg lab! Membrane is selectively permeable
3. Passive transport= diffusion or osmosis, facilitated diffusion no energy required
4. Active transport=requires energy - movement does not have to follow the concentration gradient. Key words to look for: pumped, energy, etc. examples: endocytosis, exocytosis, sodium potassium pump, etc.

Photosynthesis and respiration

Know the formulas for each. The products and reactants…

Photosynthesis=in chloroplast--plants requires sunlight, CO2, and water to produce oxygen and glucose

Respiration=in mitochondria --animals have the reverse reaction. All organisms undergo respiration (plants when they lose their leaves and at night, bacteria in their cell walls, etc.)

Don’t forget, we breathe oxygen! And eat food which is broken down in the form of glucose.

Respiration:

2 kinds

1. aerobic requires oxygen(more efficient and makes a lot more ATP or energy) and

2. anaerobic does not require oxygen- usually fermentation (alcoholic or lactic acid)

Steps of aerobic respiration:

1. glycolysis
2. krebs cycle
3. electron transport chain--\*\*produces the most ATP!!

Mitosis and Meiosis

Know the difference between the two:

|  |  |
| --- | --- |
| Mitosis (the puzzle) | Meiosis (our flip book) |
| 1 division  4 stages  Body cells  Daughter cells have equal # chromosomes  Produces Diploid (2n) cells  Identical cells | 2 divisions  8 stages  Gametes—egg and sperm  Daughter cells have half the chromosomes  Produces Haploid (n) cells  Crossing over occurs to provide variation…unique cells |

Stages:

IPMAT --- you may be given diagrams to put in order

\*\*Know that meiosis is the cause of variation within populations.

Understand the basic concepts of stem cells

Genetics

Know how to work out a punnett square

Know dominance, recessive, homozygous and heterozygous, phenotype and genotyope

Codominance=both traits are dominant or show up (roan coat)

incomplete dominance=neither trait are dominant neither show up, but they blend (red x white=pink)

sex-linked traits

Be able to read a pedigree

“ “ “ “ a DNA fingerprint

Recognize a karyotype

Know the structure of DNA and RNA

Know how DNA replicates

Know how proteins are made

Know mutations

Know what a lac operon is and how genes are regulated

Evolution

Know what natural selection is

Homologous, analogous, and vestigial structures

Fossil record

Types of selection

Classification

Don’t forget, the scientific name consists of *Genus species*

Know how to use a taxonomic (dichotomous) key

Ecology

Abiotic vs biotic

Know your interactions

Know behaviors (innate, learned , conditioning, imprinting)

Recognize the biomes

Know how to interpret a food web, understand trophic levels and the flow of energy

Other

Alternation of generations (plants only) vs. metamorphosis (insects only)

Alternation of generations=half of a plant’s life is haploid, the other half is diploid

Complete metamorphosis=distinct stages in the development of an insect from egg to adult (usually 4 stages)

Incomplete metamorphosis=stages not distinct, usually includes a nymph (immature adult)

Bilateral vs. radial symmetry

Scientific method

Steps in an experiment

Experimental design

Graphs and tables

Engineering HOP

Use common sense

The following site has several practice tests

<https://www.tn.gov/education/topic/high-school-end-of-course>

Also, Google Biology practice EOC and you will find dozens more.