

Semester 1 AP Bio Review – Keep this until May!!

Chemistry

1. What are the levels of organism, from: atoms -- to -- whole organisms
2. Know the differences between ions, isotopes, isomers (geometric & structural), radioactivity
3. What are the different types of bonds within organic molecules
4. Make a molar solution (ie...how do you make a 0.5 M solution of glucose?)
5. What is pH? Buffers? How is it measured? What ions are involved? What is the difference between pH 8 and 9?
6. What makes water the molecule of life?
7. What are the major functional groups and their properties?
8. What is catabolic? Anabolic? Exergonic? Endergonic? ΔG ? Enzymes and the factors that affect them? Free energy?

Parts of the Cell:

9. Know the parts of the cell and their functions, locations, components.
10. Cell membranes: different components found there, functions, diffusion across membranes with different substances.

Energy: Respirations and Photosynthesis:

11. 3 ½ steps of respiration (overview of each, what are the reactants and products of each step), about how much ATP?
12. Aerobic, anaerobic respirations. What is the importance of following the electrons through the steps?
13. Pigments in plants, light reactions and Calvin cycle (reactants and products)

Cell Division:

14. Steps of mitosis, meiosis, parts of the cell involved? When and where each process happens? Haploid, diploid
15. Cell cycle (G1, S, G2, interphase...) chromosome and chromatid numbers in each step, chiasma, tetrads

Genetics and DNA:

16. Monohybrid, dihybrid crosses, multiple alleles, polygenic inheritance, sex linkage, co-dominance, incomplete dominance, epistasis, pleiotropy, linked genes, pedigrees, karyotypes, barr bodies, nondisjunction, transposons
17. DNA: replication, composition of DNA, transcription, translation, RNA, introns, exons
18. Transduction, conjugation, AP Lab 6: Gel electrophoresis, transformation
19. Transcription factors, what causes difference genes to turn on and off at different times in Eukaryotes (ie: transcription factors, cascade effects with hormones, etc.) and also in prokaryotes (ie: operons)
20. Viruses, prions
21. Differentiation, morphogenesis, homeobox

Evolution:

22. Darwin vs. Lamarck: examples
23. What are the main ideas of Natural Selection and how do they apply?
24. What is the mechanism of evolutionary change? Why do they change?
25. What was Linnaeus' contribution to science?
26. Hardy-Weinberg's equilibrium: what is it for? What five things cannot occur for there to be an equilibrium in the population's allele frequency? What is the H-W formula? Ex. Problems: What if the frequency of the *b* allele is 0.22? What if there are 78 *ff*'s in a population out of 241? See Lab 8.
27. What are the different types of isolating mechanisms?
28. What are: allopolyploid, sympatry, allopatry, introgression, taxonomy

AP Labs 1-8, not 5 (only the parts we have done)—see the lab final review sheet: there will be an AP lab final exam on Jan. 23-25