Review Guide for Labs (second half of semester), Biol-1, C. Briggs, revised Spring 2017

For the following labs, be able to:

Lab 8
1. name the source of DNA for our extraction.
2. describe the appearance of DNA you extracted.
3. describe what makes your DNA unique.
4. interpret results of gel electrophoresis.
5. describe how DNA fingerprinting works (including restriction enzymes, gel electrophoresis).
6. explain how transcription and translation work to produce proteins.
7. describe the patterns you observed in the irradiated seedlings.
8. distinguish between the consequences of somatic vs. sex cell mutations.
9. answer all the assignment questions at the end of the lab.

Lab 9
1. solve for absolute values; for example: $|-54| = ?$
2. calculate % deviation, given the formula and coin flip data.
3. describe how the number of tests is usually related to the % deviation.
4. calculate the likelihood of particular events; for example, 3 flips of a coin coming up tails, or four boys born in a row, or two sixes rolled on a die.
5. assemble and interpret a karyotype (i.e., notice any extra or missing chromosomes).
6. distinguish between homozygous and heterozygous.
7. distinguish between genotype and phenotype.
8. label a pedigree with P, F1, and F2 generations.
9. distinguish between phenotypic and genotypic ratios.
10. use a Punnett square to show the expected ratios of offspring from a particular cross; for example: Aa x Aa.
11. distinguish between dominant and recessive alleles.
12. describe how a test cross works.
13. use blood types to identify the parents of a baby.
14. complete a Punnett square for a dihybrid cross; for example: AaFf x AaFf.
15. predict outcomes from crosses involving X-linked traits; for example: $X^n Y \times X^N X^n$.
16. complete a pedigree with the most likely genotypes.
17. explain which parent's gamete determines the sex of a child.
18. answer all the assignment questions at the end of the lab.

Lab 10
1. label all the bones we discussed on the human skeleton.
2. interpret the position of the foramen magnum, in relation to body posture.
3. interpret ridges of bone, in terms of muscle strength.
4. interpret mandible articulation, in terms of strength and flexibility.
5. interpret eye orientation, in terms of field of view.
6. answer all the assignment questions at the end of the lab.

Lab 11
1. contrast biotic and abiotic factors, and give examples of each.
2. contrast microevolution and macroevolution.
3. contrast producers and consumers.
4. draw a food web for a given situation.
5. suggest what might happen if a particular organism were removed from a food web.
6. describe the results of your natural selection simulation:
   - Which organisms disappeared?
   - What would likely happen to the predators in the future?
   - What might be a wise long-term strategy for the predators?
7. answer all the assignment questions at the end of the lab.

Lab 12
1. draw a graph of population size vs. time, showing the biotic potential, carrying capacity, and environmental resistance.
2. define natality, mortality, immigration, and emigration.
3. draw a general graph of human global population over time.
4. describe the results of our STI transmission activity.
5. answer all the assignment questions at the end of the lab.

Lab 13

1. describe the stained visual appearance, commonness, and relative size of white blood cells (leukocytes) and red blood cells (erythrocytes).
2. measure pulse rate and blood pressure.
3. distinguish between systolic and diastolic pressure.
4. describe how chambers of the heart are arranged and connected, with words and a diagram.
5. describe the heart:
   - left vs. right side of the heart (size, muscle thickness)
   - atrium vs. ventricle (size, muscle thickness)
   - valves (materials, size, arrangement)
   - strength of chordae tendinae
   - qualities of vessels (size, thickness, rigidity)
   - coronary arteries
   - auricles.
6. measure and calculate % cells and % plasma from a hematocrit.
7. describe how to measure breath volume.
8. describe maximum apnea time before and after hyperventilation.
9. describe an experiment to determine whether your breath contains carbon dioxide.
10. answer all the assignment questions at the end of the lab.

Lab 14

1. label an eye diagram with the sclera, cornea, choroid, iris, pupil, retina, optic nerve, fovea centralis, lens, suspensory ligaments, aqueous humor, and vitreous humor.
2. interpret two-point discrimination data.
3. describe why our eyes each have a blind spot.
4. describe the cause of astigmatism.
5. answer all the assignment questions at the end of the lab.