Biology Unit Schedule: Weeks 25-27

Unit	Chapter(s)	Essential Questions:
Cell Division, Mendelian Genetics, DNA, Protein Synthesis	10,11,12	-Why are the processes of cell division, genetic recombination, and protein synthesis important to organisms? -What are the steps present in each of the processes? -How are these processes important in sustaining life on earth?

Timeline:

Date	In Class	Activities	Homework
Week 25	Correct ?'s #1-5 p. 243, 1-6 p.249, 1-5 p.252 Chapter 10 Pretest Discuss Chapter 10	Do ?'s #1-25 p. 257 Read Lab: "Observing the Phases of the Cell Cycle" p. 254-255 in textbook and write procedure	Do ?'s #1-25 p. 257 Read Lab: "Observing the Phases of the Cell Cycle" p. 254-255 in textbook and write procedure
Week 26	Lab: "Observing the Phases of the Cell Cycle" p. 254-255		H.W: Lab report due next class Study for Chapter 10 Test
Week 27	Chapter 10 Test Correct ?'s #1-5 p. 266, 1-5 p. 269, 1-5 p. 274, 1-5 p. 278, 1-4 p. 280 Chapter 11 Pretest Discuss Chapter 11	Genetics Family Heredity Lab Biology Drosophila Virtual Fly Lab	Read Chapter 11 and take notes Do ?'s #1-5 p. 266, 1-5 p. 269, 1-5 p. 274, 1-5 p. 278, 1-4 p. 280 Chapter 11 Pretest
Week 28	Chapter 11 Test Chapter 12 Pretest Discuss Chapter 12	Genetics Lab: Using "Genetics Concepts Kit"" Exploration: "Modeling Meiosis" p. 281 in textbook	Study for Chapter 11 Test Read Chapter 12 and take notes Do ?'s #1-5 p. 294, 1-6 p. 299, 1-5 p. 306, 1-5 p. 308, 1-5 p. 312

Genetics Family Heredity Lab

1. Make a Punnett Square for the possible genotypes for each of the following traits. Write the phenotypes that would be expressed for each genotype. (5pts)

- PTC taste recognition (Dominant gene T)
- Tongue rolling (Dominant gene R)
- Widow's peak (Dominant gene W, overriden by baldness gene)
- Attached earlobes (homozygous recessive ee)
- Thumb placement when fingers are interlocked (left over right dominant F, right over left ff)

2. Test yourself and your family members for these traits. Make a family inheritance chart for each trait. (5pts)

3. From your family inheritance chart, determine your genotype for each trait. (5pts)

4. From your family inheritance chart, determine the ratios of different phenotypes for each trait found in your family. (5pts)

Extra Credit: From your family inheritance chart, determine the ratios of different genotypes for each trait found in your family. (Up to 3 pts.)

Genetics Lab

Use "Genetics Concepts Kit"

1. Make Punnett Squares for the following crosses:
- YY and YY
- YY and Yy
- Yy and Yy
- YY and yy

2. Pick "Gametodiscs" for each cross
- Do 10 crosses of each and record your results

3. Make a Punnett Square for the cross of TtYy and TtYy.
- Do 100 crosses and record your results

Questions:

How did the results of your crosses compare to your Punnett squares for:
1. YY and YY
2. YY and Yy
3. Yy and Yy
4. YY and yy
5. How did the probability of different phenotypes predicted in your Punnett square for TtYy and TtYy compare to the results of your crosses?
6. How did the probability of different genotypes predicted in your Punnett square for TtYy and TtYy compare to the results of your crosses?
7. What does probability mean? How does it relate to predicted results? How does sample size affect this?

BIOLOGY
DROSOPHILA VIRTUAL FLY LAB

STUDENT WORKSHEET

This exercise will provide you with Mendelian genetics problems to solve using the Virtual Fly Lab (VF). You design matings between female and male fruit flies carrying on one or more genetic mutations. After selecting the mutations for the two parent flies and clicking the "Mate" button, you will be returned to a document containing the images of the parent and offspring flies. Virtual Fly Lab will apply the correct rules of genetic inheritance to these mutations to obtain the offspring. It is you job to determine these rules base on the "experimental" results.

The Virtual Fly Lab will enable you to perform genetic crosses with a variety of mutant fruit flies, as well as the wild type. You may access the Virtual Fly Lab from the following locations located on the Internet:

http://vearthquake.calstatela.edu/
http://cdl-flylab.sonoma.edu/
http://vquake.calstatela.edu/
http://vflylab.angis.org.au/
http://vflylab.calstatela.edu/

INSTRUCTIONS

Traits are organized into groups such as "bristles" and "body colors". within each group a trait can be specified for either the male or the female. If one of the parents has a mutation, then the other parent must be the wild type. Virtual FlyLab restricts you to selecting one mutation from each group.

There are two steps:

1. Use the radio buttons to choose a combination of genetic traits for the parent flies. Wild type is the default, which represents a normal fly.

2. Click the button labeled "Mate GFlies" to perform the cross.

** IMPORTANT** You need to know the following rules to analyze your crosses.

* If no mutation within a group is selected, both flies will be homozygous for the wild type alleles for all the mutation within that group.

* If you select a mutation and the mutation is not lethal, the male or female fly is made homozygous for the selected mutation. All the other traits within that group will be homozygous for the wild type allele.

* If you select a mutation within a group and the mutation is lethal, the fly is made heterozygous for that mutation (A homozygous fly would be dead!)

* If you select tow lethal mutations which are in the same linkage group, then the mutant alleles will be placed on different homologous chromosomes; this is called the "trans" arrangement.

* If you select three o more lethal mutations in the same linkage group, Virtual FlyLab will divide the alleles as evenly as possible between the two homologous chromosomes.

It is best to focus on one or two traits at a time, otherwise things get very complicated. In fact, if you choose too many traits at the same time, you may get an error message. This is because the number of different offspring combinations that would be produced could be very large and it would be impractical to return that many flies.

This table will provide you information about the following aspects of the genes in the Virtual Fly Lab Problems.