

Spring 2007 Biology 111 In-Class Exam #2 – Classical Genetics

The in-class portion of this exam is designed so that you can complete it in 20 minutes, but you may use the full 50 minutes. There are 3 pages for this exam, including this cover sheet. You are not allowed to use your notes, old tests, the internet, or any books, nor are you allowed to discuss the test with anyone until the in-class exam is completed at 11:30 am on Friday March 2. You may use a calculator and/or ruler for both portions of the exam. The **answers to the in-class exam must be hand written very neatly. If I cannot read your writing, then you will lose points because I cannot determine whether you have the right answer or not.**

-3 pts if you do not follow this direction.

Please do not write or type your name on any page other than this cover page.

Staple all your pages (INCLUDING THE TEST PAGES) together when finished with the exam.

Name (please print):

Write out the pledge and sign:

Lab Question:

3 pts.

1) If the basic PCR product with zero repeats is 222 bp and the VNTR consists of the repeated sequence GAATTC, how many copies of this repeated sequence are in a PCR product of 300 bp? Write your answer in the box, and to get full credit, show your work here:

Answer

Lecture Questions:

6 pts.

2) List the mechanisms used in meiosis that result in diversity for the F1 generation.

4 pts.

3) a. List the components needed to produce an RFLP?

b. Which component is the hardest one to acquire and why?

4 pts.

4) In one sentence, what does the spliceosome do?

4 pts.

5) How many nucleotides are consumed to produce a mature mRNA derived from 5 exons (100 bases each) and 4 introns (40 bases each)? To get full credit, you must show your work of how you reached your numerical answer.

3 pts.

6) Why is the mutated glutamic acid #6 of β hemoglobin the sixth amino acid if it is encoded by the 7th codon?

4 pts.

7) Draw a picture of the data produced by Sato and Sato that was key to discovering the molecular basis for cystic fibrosis.

3 pts.

8) In two sentences or less, what is the difference between an enhancer and a promoter?

3 pts.

9) A pair of white bunnies mate. The female has a brown nose and the male has a brown tail. All their babies are white with brown tails and brown noses. All their grandchildren (all 100 of them) have either only brown noses or only brown tails, with both sexes showing equal frequency of the two distinct coloration patterns. Are these two loci link? How can you know?