Name:_____ Date:_____ Per:_____

Chapter 20 Review (DNA Technology) and Chapter 21 Review (Genetic Basis of Development)

Chapter 20

1. Draw and explain the process of gene cloning with bacterial plasmid.
2. Draw and explain how scientists use restriction enzymes to make recombinant DNA. Be sure to mention restriction sites, restriction fragments, sticky ends, and DNA ligase.
3. In 6-8 sentences of your own words, describe what is going on in Figure 20.4.
4. What are nucleic acid hybridization and nucleic acid probes and what do they have to do with identifying genes? Be sure to explain Figure 20.5 in your answer.
5. Why might a scientist construct a genomic library vs. a cDNA library? What material would they need to use for each? DNA or RNA?
6. Draw and explain PCR and review it's uses.
7. Draw and explain how restriction fragment analysis detects DNA differences (this is our lab!) Explain how in Figure 20.9 the gel reveals whether a person has sickle cell or not. How do restriction fragment lengths serve as genetic markers?
8. What is the difference between gel electrophoresis and Southern blotting?
9. What is the Human Genome Project? Explain the three-stage approach to mapping an entire genome.

Chapter 21

10. Briefly explain animal development vs. plant development (Figure 21.4).
11. Explain the evidence given in section 21.2 that supports the assertion that differences in gene expression arise during development as genes are turned on and off. Consider using totipotency, differentiated cells, Figure 21.5, nuclear transplantation, cloning (Dolly!), stem cells, determination, and cytoplasmic determinants in your explanation.