Name: _____

Due Date: Nov 30th

Biotechnology Project: 10% of your grade

Georgia Standard:* SB2.F: *Examine the use of DNA technology in forensics, medicine and agriculture.

This project will be set up in chapters. Each chapter will concentrate on a specific area of biotechnology and its uses. Create a title page with your name, date, and class period on the cover. Attractiveness counts, feel free to add art and color. Create a table of contents page. Leave it blank until you are done with the project. Then go back and fill in the page numbers. Each chapter must begin on a new page. Number the pages of your project book.

Chapter 1

Step 1: First go to the following website and take notes: http://highered.mcgraw-hill.com/sites/dl/free/0072835125/126997/animation40.html

then go to…

http://learn.genetics.utah.edu/content/labs/gel/ .

Now that you understand what gel electrophoresis is and how it is set up in a laboratory explain it in simple terms using steps, pictures, and directions. Make them as clear and concise as possible so that anyone can understand how to set up a gel and run it.

Step 2: Explain why gel electrophoresis is important in forensics, medicine, and agriculture. Give at least one example of each.

Chapter 2

Often a crime scene or prehistoric bone fragment does not contain enough DNA for scientist to fingerprint. PCR analysis is need.

Step 3: Go to the following websites and take notes:

http://www.sumanasinc.com/webcontent/animations/content/pcr.html

http://highered.mcgraw-hill.com/olc/dl/120078/micro15.swf

http://www.dnalc.org/resources/animations/pcr.html

Step 4: Explain the following:

What does the word polymerize mean?

What does the word anneal mean?

Now that you understand what PCR analysis is and how it is set up in a laboratory explain it in simple terms using steps, pictures, and directions. Make them as clear and concise as possible so that anyone can understand how to set up a PCR Analysis and amplify DNA.

Step 5: Explain why PCR Analysis is important in forensics, medicine, and agriculture. Give at least one example of each.

Chapter 3

Step 6. In order to manipulate DNA it has to be cut into pieces called fragments by restriction enzymes. Define the following terms: Restriction enzymes, restriction site, fragment, sticky ends, and blunt ends. Please be sure to explain where sticky ends are used and where blunt ends are used.

Step 7. Go to the following websites and take notes:

http://highered.mcgraw-hill.com/olcweb/cgi/pluginpop.cgi?it=swf::535::535::/sites/dl/free/0072437316/120078/bio37.swf::Restriction%20Endonucleases

http://www.dnalc.org/resources/animations/restriction.html

Now that you understand what DNA fragments are and how they are made explain it in simple terms using steps, pictures, and directions. Make them as clear and concise as possible so that anyone can understand how DNA fragments are created.

Step 8: Explain why creating DNA fragments with restriction enzymes is important in forensics, medicine, and agriculture. Give at least one example of each.

Chapter 4

Step 9: What is recombinant DNA?

Step 10: Go to the following websites and take notes:

http://www.cleanvideosearch.com/media/action/yt/watch?videoId=aA5fyWJh5S0

http://www.dnatube.com/video/955/Restriction-Enzymes

Step 10: Explain how DNA is recombined using simple terms, steps, pictures, and directions. Make them as clear and concise as possible so that anyone can understand how to recombine DNA into segments to be used in other biotechnology applications.

Step 11: Explain why creating DNA fragments with restriction enzymes is important in forensics, medicine, and agriculture. Give at least one example of each.