Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period: \_\_\_\_\_\_\_\_\_\_\_\_

**Unit 8 Map - Gene Regulation and Biotechnology**

AP Biology

|  |  |  |  |
| --- | --- | --- | --- |
| **Topic** | **Learning Target** | **Checkpoint Score** (%) | **Test Score** (%) |
| 1. Gene Regulation and Organism Development | A. I can identify the purpose of gene regulation in prokaryotic and eukaryotic cells. |  |  |
| B. I can explain how inducible and repressible operons are regulated in prokaryotic cells. |
| C. I can compare / contrast the different levels of gene regulation in eukaryotic cells. |
| D. I can describe the role of cytoplasmic determinants and homeotic genes in pattern formation. |
| E. I can describe the role of apoptosis in morphogenesis. |
| F. I can describe the role of transcription factors, RNA interference, embryonic induction, environmental cues, etc. in cell differentiation. |
| 2. Biotechnology | G. I can describe the purpose and methods of gel electrophoresis and analyze electrophoresis results. |  |  |
| H. I can describe the purpose and methods of polymerase chain reaction (PCR). |
| I. I can describe the purpose and methods of bacterial transformation and analyze bacterial transformation results. |
| J. I can provide examples of the practical uses of biotechnology, including insulin production and cloning. |

**Unit 7 Key Vocabulary (not necessarily all words, but a good place to start)**

|  |  |
| --- | --- |
| **Topic 1: Gene Regulation & Development** | **Topic 2: Biotechnology** |
| Histones  Histone acetylation  DNA methylation  Heterochromatin  Euchromatin  Promoter Region  TATA Box  Enhancers  Activator  Repressors  Corepressor  Transponsons  Operator  Operon  Regulatory gene  Repressible operon  Inducible operon  Lac operon  Inducer  Activator  Cell differentiation  Differential gene expression  Epigenetic inheritance  Feedback inhibition  Proteasomes  Oncogenes  Micro-RNA (miRNA)  Morphogenesis  Apical meristems  Blastula  Gastrula  Totipotent cells  Stem cells  Embryonic stem cells  Pluripotent cells  Homeotic genes  Cell lineage  Homeobox  Hox genes | Recombinant DNA  Genetic engineering  Biotechnology  Gene cloning  Restriction site  Restriction fragments  Sticky ends  Cloning vector  DNA denaturation  Polymerase chain reaction (PCR)  Gel electrophoresis  Southern blotting  Restriction length polymorphisms (RFLP’s)  Human Genome Project  DNA microarray assays  Gene therapy  DNA fingerprint  Genetically modified organisms (GMO’s)  pGLO  Plasmid Mapping |