Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date of my Biology Final: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**STUDY GUIDE for 2nd Semester biology Final Exam**

By answering the following questions, you are BEGINNING to study for your final exam. You must go back over your answers MULTIPLE TIMES, though, to ensure you actually understand the material. Knowing this information will get you somewhere around a 4. You need to go above and beyond (provide examples, apply the information) to get a full 5!

***You may use a 3x5 notecard on your final exam with any information you deem important.***

***Turn in a COMPLETE study guide for an addition 0.2 on your final exam grade!***

**This is when you benefit from a neat and complete interactive notebook.** All of the following information can be found in your INB. If you are missing anything, you can go to my website [www.sciencewithburdick.weebly.com](http://www.sciencewithburdick.weebly.com) to download and print.

**Cellular Energetics (Cellular Respiration & Photosynthesis)**

1. What is cellular respiration (CR)?
2. Where does this process happen in the cell?
3. What is the chemical equation for cellular respiration and photosynthesis?
4. What are the 3 steps of cellular respiration?
5. What happens if no oxygen is present?
6. What happens if oxygen is present?
7. What are the two byproducts of fermentation?
8. Draw a diagram of the processes of CR.

**Cell Cycle/ Mitosis**

1. Describe the theory of biogenesis.
2. Vocabulary to define:
   1. Chromosomes
   2. DNA
   3. Chromatin
   4. Chromatid
   5. Centromere
   6. Cell cycle
3. What are the three phases in the cell cycle?
4. What are the phases of mitosis?
5. Draw a diagram of each phase of mitosis (how can you identify each phase?)

**Microscopes**

1. What are all of the parts and functions of a microscope?
2. What are the ways to use a microscope properly?

**Cancer**

1. Vocabulary to define:
   1. Cancer
   2. Cloning
   3. The Common Rule
   4. Biobanks
   5. Medical Informed Consent
   6. Genetic disease
   7. Biopsy
   8. Benign
   9. Malignant
   10. Localized tumor
   11. Metastases
   12. Remission
   13. Prognosis
   14. Relapse
   15. Radiotherapy
   16. Chemotherapy
   17. Gene therapy/ immunotherapy
2. Who was Henrietta Lacks and how did she impact the medical field?
3. Choose one cancer and review the following questions:
   1. What are the signs and symptoms
   2. What treatments are available?
   3. What are some side effects of the treatments?
   4. What are possible causes or risk factors of the cancer?
   5. Who typically gets this type of cancer?

**DNA Structure and Function**

1. What does DNA stand for?
2. What does DNA code for?
3. What are the subunits of DNA and what are the 3 components of them?
4. What are the 4 nitrogen bases of DNA?
5. Draw the shape of DNA. What is that shape called?
6. Who are the four scientists who discovered the structure of DNA?
7. How do the base pairs of DNA pair up?
8. Describe DNA Replication. What enzyme works to split the DNA strands?

**DNA -> RNA -> Protein Synthesis; Transcription and Translation**

1. What is protein synthesis?
2. Why are proteins important?
3. What is transcription?
4. What is translation?
5. What are the four nitrogen bases in RNA?
6. Which enzyme unzips DNA to prepare mRNA to copy?
7. What is the purpose of mRNA?
8. What are sections of 3 bases called?
9. What are the four types of mutations?
10. How do mutations occur?
11. Describe the process of DNA extraction from fruit.
12. Transcribe and translate the following strand of DNA into mRNA and tRNA:   
    DNA: TACTGGCCGTGCTATGCTAGAGATGA  
    mRNA:   
    tRNA:
13. How do you use codons to decode into amino acids and proteins?

**Eugenics**

1. What was the Eugenics movement?
2. How did science play a part in the movement?
3. How did race play a role in Eugenics?
4. How did other countries play a role in the Eugenics movement?
5. What is sterilization? Who were the typical victims of forced sterilizations?

**Genetics:**

1. Who was Gregor Mendel and why was he important?
2. How do you use Punnett squares to figure out how genes are passed on?
3. What is dominance? Give examples.
4. What is codominance? Give examples.
5. What is incomplete dominance? Give examples.
6. What are multiple alleles? Give examples.
7. What are the two sex chromosomes?
8. What are sex-linked traits? Give examples.
9. What is the multiple gene theory?
10. How do modifier genes work?
11. How could the environment affect how genes are expressed? Give examples.

**Stems:**

* Mono-
* –lys, -lyt, -lysis
* Aero-
* Pseudo-
* Mis-
* Micro-
* Nuc-
* Mito-
* Pyr-
* –ism
* Pro-
* Met-, meta-
* Telo-
* Anti-
* Amph-
* Omni-
* –gene-
* Hibern-
* Extra-
* Fract-
* –vor-
* Necr-
* Carcin-
* Onc-
* Mela-, melan-
* –osis
* Homo-
* Hetero-
* Mut-
* Arthr-
* Mes-
* Trans-
* Co-
* –ase
* –less
* –log-
* Archaeo-
* Morph-
* Pheno-
* Multi-
* –saur-
* – port
* Sol-
* Sub-
* Post-
* Pre-
* Crani-
* Stern-
* –oma