**BIOLOGY 2022-23 January 18, 2023**

**Today’s Agenda (Day 90)**

1. HOUSEKEEPING ITEMS

🡪

1. Homework Check:

🡪

🡪

1. Class Activity:

🡪 Day 8: Science Fair

\*Finalize Experimental Design – identify variables (controls, independent, dependent), outline materials needed and procedures (step-by-step); OR Sketch of Prototype Design --include materials needed and timeline of how prototype will be constructed

\*Prepare to have materials ready to begin experimental study/prototype construction for MONDAY!

\*Discuss SF with teacher – finalize details for start of experiment

🡪Day 3: Chapter 12 PPT Review

1. **Section 12.1 – DNA: The Genetic Material**
2. **Section 12.2 – Replication of DNA**
3. Section 12.3 – DNA, RNA, and Protein
4. Section 12.4 – Gene Regulation and Protein

HOMEWORK:

* READ: Chapter 12 – Molecular Genetics
* COMPLETE: Chapter 12 Vocabulary and Reading Guide Questions
* **STUDY**: Chapter 12 Vocabulary Quiz and Test

REMINDERS:

* **QUIZ: Ch 12 Vocabulary 🡪 Jan. 19**
* **TEST: Ch 12🡪 Tuesday, Jan. 24**

**CHAPTER 12 VOCABULARY**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Codon | DNA polymerase | Double helix | Gene regulation | Intron |
| Exon | Messenger RNA | Mutagen | Mutation | Nucleosome |
| Okazaki fragment | Operon | Ribosomal RNA | RNA | RNA polymerase |
| Semiconservative replication | Transcription | Transfer RNA | translation |  |

**CHAPTER 13 VOCABULARY**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Bioinformatics | Cloning | DNA fingerprinting | DNA ligase | DNA microarray |
| Gel electrophoresis | Gene therapy | Genetic engineering | Genome | Genomics |
| Haplotype | Inbreeding | Pharmacogenomics | Plasmid | Polymerase chain reaction |
| Proteomics | Recombinant DNA | Restriction enzyme | Selective breeding | Single nucleotide polymorphism |
| Test cross | Transformation | Transgenic organism |  |  |

Chapter 14 – The History of Life

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Cambrian explosion | Endosymbiont theory | Eon | Epoch | Era | Fossil |
| Geologic time scale | Half-life | K-T boundary | Law of superposition | Paleontologist | Period |
| Plate tectonics | Radiometric dating | Relative dating | Spontaneous generation | Theory of biogenesis |  |

Chapter 15 – Evolution

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Adaptive radiation | Allopatric speciation | Analogous structure | Ancestral trait | Artificial selection | Biogeography |
| Bottleneck | Camouflage | Derived trait | Directional selection | Disruptive selection | Embryo |
| Evolution | Fitness | Founder effect | Genetic drift | Gradualism | Hardy-Weinberg principle |
| Homologous structure | Mimicry | Natural selection | Post-zygotic isolating mechanism | Pre-zygotic isolating mechanism | Punctuated equilibrium |
| Sexual selection | Stabilizing selection | Sympatric speciation | Vestigial structure |  |  |

**BIOLOGY 2022-23 READING GUIDE**

**Chapter 12 Molecular Genetics Reading Guide**

DIRECTIONS: Refer to your textbook to respond to the following questions.

1. Describe Frederick Griffith’s experiment shown below.



1. How did Oswald Avery identify the molecule that transformed the R strain of bacteria into the S strain?
2. Describe how Hershey and Chase definitively proved DNA was the transforming factor.
3. List the three parts of a DNA nucleotide.
4. Label the parts of the nucleotide below.



1. Name and draw DNA’s two purines.
2. Name and draw DNA’s two pyrimidines.
3. What is the most obvious difference between your drawings in number 6 and 7 above?
4. List three important features of Watson and Crick’s proposed DNA molecule.
5. Draw a DNA double helix and label the sugar, phosphate, and nitrogen bases.
6. Describe the orientation (direction) of the two strands in a DNA molecule.
7. How do nucleosomes form?
8. What is semiconservative replication?  What are the three main stages of this type of replication?
9. Describe the 3 main events during the unwinding stage of replication.
10. What is the role of DNA polymerase in replication?
11. Explain why DNA replication is more complex in eukaryotes than bacteria.
12. Describe the function of each of the following in protein synthesis: rRNA, mRNA, and tRNA
13. What happens during transcription?
14. Why is mRNA so much shorter than the DNA it is made from?
15. Differentiate between codons and anticodons.
16. What happens during translation?
17. Why has Beadle and Tatum’s “one gene, one enzyme” hypothesis been modified since they presented it in the 1940s.
18. What are the three parts of an operon?
19. Describe AND give an example of three types of DNA mutations.
20. Why do you think most mutations in eukaryotes are recessive?