

Honors Biology

SECOND SEMESTER FINAL REVIEW GUIDE

Chapter 10 – DNA, RNA, and Protein Synthesis

- Summarize Griffith's, Avery's, and the Hershey-Chase experiments
- Evaluate the contributions of Franklin and Wilkins in helping Watson and Crick discover the structure of DNA
- Summarize the structure of DNA
- Explain DNA replication
- Outline the flow of genetic information in cells from DNA to protein
- Compare the structure of DNA with that of RNA
- Summarize the process of transcription
- Compare the role of mRNA, rRNA, and tRNA in translation
- Identify the importance of learning about the human genome

Chapter 12 - Inheritance Patterns and Human Genetics

- Identify the types of chromosomes in a human karyotype
- Explain how sex is determined
- Explain how pedigrees are used to study human traits
- Describe examples of the inheritance of human traits
- Explain how small changes in DNA cause genetic disorders
- Identify characteristics of human chromosomes
- Describe two sex-linked disorders and explain why they are more common in males
- Explain the process of X-Chromosome inactivation
- Summarize nondisjunction and the problems it causes
- Distinguish between chromosome mutations and gene mutations

Chapter 13 - Gene Technology

- Explain how scientists manipulate DNA
- Explain how you can tell if a transformation experiment has been successful
- Describe transgenic organisms
- Summarize DNA fingerprinting
- State the goal of the Human Genome Project
- Describe how researchers are attempting to cure genetic disorders
- Summarize the main steps in cloning

Chapter 14 – The History of Life

- Summarize the concept of half-life
- State the information that relative dating and radiometric dating provide about fossils
- Describe the production of organic compounds in the Miller-Urey apparatus
- Explain the theory of endosymbiosis

Chapter 15 - Theory of Evolution

- Describe the pattern Darwin observed among organisms of the Galapagos Islands
- State how Hutton and Lyell described geologic change
- Describe Malthus' theory of population growth
- Describe how natural variation is used in artificial selection
- Explain how natural selection is related to species' fitness
- State Darwin's theory of evolution by natural selection
- Summarize the evidence that supports evolution
- Identify important patterns of macroevolution

Chapter 16 - Population Genetics and Speciation

- Define gene pool
- Identify the main sources of inheritable variation in a population
- Explain Hardy-Weinberg genetic equilibrium

Chapter 17 - Classification

- Describe binomial nomenclature
- Explain Linnaeus' system of classification
- Explain how evolutionary relationships are important in classification
- Name the six kingdoms of life and how they are identified.
- Describe the three domain system of classification.
- Differentiate between density-dependent and density-independent limiting factors.
- Describe how the size of the human population has changed over time.
- Explain why population growth rates differ from country to country.

Chapter 23 - Bacteria

- Explain how the two groups of prokaryotes differ
- Describe the factors that are used to identify prokaryotes
- Explain why bacteria are vital to life on this planet
- Describe ways in which bacteria can cause disease in humans
- Explain how a bacterial population can develop resistance to antibiotics

Chapter 24 - Viruses

- Describe the structure of a virus
- Compare the lytic and lysogenic cycles of virus replication
- Explain the purpose of vaccination
- Identify four viral diseases that result in serious human illnesses

Chapter 25 - Protists

- Define protist
- Summarize how protists are classified
- Describe the ecological role of protists

Chapter 26 - Fungi

- Identify the defining characteristics of fungi
- Describe how fungi obtain nutrients
- Describe the structure of a typical fungus
- Explain how fungi reproduce
- Describe the ecological role of fungi

Chapter 29 – Plant Structure and Function

- Compare the structure of mono-dicot roots
- Compare the structure of mono-dicot stems
- Identify the parts of a flower and state their function

Chapter 32 - Introduction to Animals

- Identify the characteristics of animals
- Identify four features found only in chordates
- Compare invertebrates and vertebrates
- Compare proto-and deuterostomes

General questions on dissected specimens (earthworm, crayfish, grasshopper, sea star, fetal pig)

For **EACH** chapter:

- Review the **chapter highlights** at the end of chapter
- Understand vocabulary