

AP BIOLOGY SUMMER ASSIGNMENT (2017-2018)

Ms. Bawa

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INSTRUCTIONS

This assignment will be due at the end of the first week of school. We will have some brief time to review before you get tested on the material. DO NOT wait until September to start this assignment. You will fall behind before the class even starts.

Textbook: Campbell, Reese, Ninth Edition-Biology

Reading Guides and textbooks should be picked up from Ms. Bawa in the Science Office

Assignments: Evolution and Animal Behavior Units

Animal Behavior Unit

- Read Chapter 51 – *Animal Behavior*
- Complete the Chapter 51 Reading Guide
- Complete Multiple Choice Questions on School Fusion

Evolution Unit

- Read Chapter 22 – *Descent with Modification*, Chapter 23 – *Evolution and Populations*, Chapter 24 – *The Origin of Species*, and Chapter 25 – *The History of Life on Earth*
- Complete the Reading Guides for **EACH** Chapter (22 – 25)
- Complete Multiple Choice Questions on School Fusion

Below is a list of the things you must know from these two units. You are responsible for this material.

ANIMAL BEHAVIOR UNIT

- How behaviors are the result of natural selection
- How innate behavior and various types of learning increase fitness
- How organisms use communication to increase fitness
- Various forms of animal communication
- The role of altruism and inclusive fitness in kin selection
- Behavior
- Instinct
- Fixed action pattern
- Learning
- Imprinting
- Critical period
- Classical conditioning
- Operant conditioning (or trial and error learning)
- Habituation
- Insight
- Reasoning
- Circadian rhythms
- Pheromones
- Social Behavior
- Cooperation
- Agonistic behavior
- Dominance hierarchy
- Territoriality
- Altruistic behavior
- Releaser
- Sign stimuli
- Scientists associated with Animal Behavior

EVOLUTION UNIT

- How Lamarck's view of the mechanism of evolution differed from Darwin's
- Several examples of evidence for evolution
- The difference between structures that are homologous and those that are analogous, and how this relates to evolution
- The role of adaptations, variation, time, reproductive success, and heritability in evolution
- How mutation and sexual reproduction each produce genetic variation
- The conditions for Hardy Weinberg equilibrium
- How to use the Hardy Weinberg equilibrium to calculate allele frequencies and to test whether a population is evolving
- The biological concept of species
- Prezygotic and postzygotic barriers that maintain reproductive isolation in natural populations
- How allopatric and sympatric speciation are similar and different
- How autopolyploid or an allopolyploid chromosomal change can lead to sympatric speciation
- How punctuated equilibrium and gradualism describe two different tempos of speciation
- A specific hypothesis about the origin of life on Earth
- The age of the Earth and when prokaryotic and eukaryotic life emerged
- Characteristics of the early planet and its atmosphere
- How Miller and Urey tested the Oparin-Haldane hypothesis and what they learned
- Methods used to date fossils and rocks and how fossil evidence contributes to our understanding of change in life on Earth
- Evidence for endosymbiosis
- How continental drift can explain the current distribution of species (biogeography)
- How extinction events open habitats that may result in adaptive radiation
- Evolution/natural selection
- Paleontology
- Flora/fauna
- Embryology
- Comparative anatomy
- Vestigial structures
- Molecular biology
- Genetic variability
- Random mutation
- Directional, stabilizing, disruptive, sexual and artificial selection
- Speciation
- Divergent, convergent, and parallel evolution, coevolution, adaptive radiation
- Reproductive, habitat, behavioral, temporal, reproductive isolation
- Polyploidy
- Allopatric and sympatric speciation
- Genetic drift – bottleneck effect and founder effect
- Gene flow
- Mutations
- Nonrandom mating
- Cladograms/Phylogenetic trees – how to read them and make them
- Inheritance of acquired characteristics/use and disuse
- Antibiotic resistance
- Sources of variation in a population: balanced polymorphism, genetic variation, sexual reproduction, outbreeding, diploidy, heterozygote advantage, frequency-dependent selection, evolutionary neutral traits
- Anaerobic heterotrophic prokaryotes
- Scientists associated with Evolution