

Biology II Unit 6 Study Guide

BioIIU6SG (Biological Evolution)

Web resources: www.tufts.edu/as/wright_center/cosmic_evolution
<http://evolution.berkeley.edu/evolibrary/home.php>
<http://www.agiweb.org/news/evolution/foreword.html>

Study Objectives:

- Describe how species change over time and the evidence that supports this. 299, 302-307
 - What does the phrase "descent with modification" **mean**?
 - List** and **describe** the different lines of evidence that support evolutionary thinking.
- Use the principles of natural selection to explain the differential survival of groups of organisms. 300-301
 - What are the **four main parts** of the theory of Natural Selection
 - Describe** an **example** in nature of natural selection at work.
 - What is meant by the term "**fitness**"?
- How can we apply the Hardy-Weinberg equation to a population to show evidence of a change in gene/allele frequency? 317-320
 - How do traits **vary** within populations?
 - What are some **causes of variation** within a population?
 - What **five things** must not be happening for evolution to not occur?
- Describe how genetic variation between populations is due to different **selective pressures** acting on each population and which can lead to new species. 321-325
Describe how each changes a population's gene pool over time:
 - Mutation
 - Gene flow
 - Genetic drift
 - Nonrandom mating
 - Natural selection
- Use biological evolution to explain the diversity of species. 326-330
 - How do we **define species**?
 - Describe** several ways in which species may form?
 - List** and **describe** the two dominant thoughts on the **rate of speciation**.

Assignments:

- Reading from:
 - Chapters 15 and 16
 - Article: "Applied Evolution"
- Notebook to include: **10pts** **Your Notebook Score: /10**
 - ✓ _____ 2-Column Notes on Study Objectives 1-5 (individual)
 - ✓ _____ Case Study: "As the Worm Turns" (group/moodle submission)
 - ✓ _____ Case Study: "White Clover" (group/moodle submission)
 - ✓ _____ Cladograms Activity (individual)
 - ✓ _____ Hardy-Weinberg Problem Set (individual)
- Labs:
 - ✓ _____ "The Same but Different - measuring variation" (partner/moodle submission) **10pts**
- Vocabulary **Quiz 15pts**
- Test 20pts**

Vocabulary: [biological evolution interactive crossword](#) (must have java enabled in your browser)

adaptation fitness adaptive radiation homologous structure vestigial structure analogous structure
phylogeny natural selection gene pool genetic equilibrium genetic drift radiometric dating
microevolution macroevolution punctuated equilibrium gradualism divergent evolution coevolution
species

Puzzling issues: propose testable hypothesis, or evidence, for each of the questions below.

Add two of your own testable questions below.

- Why are there basic features common to all life, yet there is a wide diversity of life forms?
- Why are some organisms difficult to classify?
- Why did diverse major life forms first emerge in different time frames?
- Why have so many major groups gone extinct over time?
- Why do so many species exhibit imperfect adaptations, or features derived from others but used for different purposes?
- Why are there series of human-like fossils suggesting gradual changes accumulating over time, looking increasingly modern?
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