

Chapter 23. The Evolution of Populations

Definitions, Explanations or Lists (not to be submitted)

Microevolution
Particulate model of inheritance
Population
Gene pool
5 conditions for a Hardy-Weinberg Equilibrium
Mutation
Sexual recombination
Genetic drift, bottleneck effect and founder effect
Gene flow
Relative fitness
3 modes of natural selection

Assigned Questions (SUBMIT)

- 1) What is the ultimate source of new alleles and genes?***
- 2) Does sexual recombination: (a) produce new alleles, (b) re-arrange alleles?***
- 3) Does non-random mating affect: (a) allele frequencies, (b) genotype frequencies?***
- 4) Explain why drug cocktails are the most effective treatment of AIDS.***

Review Exercises (not to be submitted)

Try the self-quiz.

- 1) Natural selection acts on individuals, but populations evolve. Explain.
- 2) Is natural selection synonymous with evolution?
- 3) Natural selection can't cause evolution because it acts on phenotypes not genotypes. True or false?
Justify your answer.
- 4) Does evolution make perfect organisms?
- 5) Distinguish between quantitative and discrete characters.
- 6) Why does sexual selection often lead to sexual dimorphism? Why are males usually the sex that exhibits exaggerated characteristics?
- 7) What are the two processes producing the variation in gene pools that contributes to differences among individuals?

Chapter 24. The Origin of Species

Definitions, explanations, lists (not to be handed in)

Speciation

Macroevolution

Biological species concept

5 prezygotic barriers

3 postzygotic barriers

Morphological species concept

Reproductive isolation

Allopatric speciation

Sympatric speciation

Autopolyploid

Allopolyploid

Punctuated equilibrium

Assigned Questions (SUBMIT)

1) When does the biological species concept not work?

2) Distinguish between the gradual and punctuated schools of speciation.

Review Exercises (not to be handed in)

Try the self-quiz.

- 1) Which species concepts(s) could you apply to both asexual and sexual species?
- 2) Which species concepts(s) would be most useful for identifying species in the field? Explain
- 3) Is there progress in evolution? Explain
- 4) How might an imperfect fossil record give the impression of ‘punctuated speciation’?
- 5) Why is polyploidy more common in plants than in animals?
- 6) Why are small, peripheral populations more likely to form new species than large, central populations?
- 7) Explain how isolation and divergence are occurring in soapberry bugs (p. 494). Of the four evolutionary processes (mutation, gene flow, drift, and selection), which two are most important in causing this event?