BIOLOGY 121 Optional worksheet

TOPIC: EVOLUTIONARY MECHANISMS

1. What are the four main evolutionary mechanisms?

A. C.

B. D.

2. What genetic and evolutionary mechanisms create the phenotypic variation that selection acts upon?

3. Imagine that major advances in space travel have allowed humans to explore outside of our solar system. A group of humans (*Homo sapiens*) is stranded on an isolated, habitable planet far from Earth. Suppose they eventually evolved into a different species (*Homo novus*) and then came back in contact with the humans remaining on Earth.

a) State and explain how possible prezygotic reproductive isolating mechanisms could separate *Homo novus* from *Homo sapiens*. List as many mechanisms as you can and describe how they would work, and which are more likely, in this scenario.

b) State and explain how possible postzygotic reproductive isolating mechanisms could separate *Homo novus* from *Homo sapiens*.

c) Would the speciation described be allopatric or sympatric? What is the difference?
d) Explain fully the steps how this might have lead to speciation.

e) How could genetic drift affect allele frequencies in the new species of *Homo novus*, because of a change in population size?

f) How could genetic drift affect allele frequencies in a population of *Homo novus,* <u>without</u> population size change?