Sexual and Asexual Reproduction

One of the most important things for the survival and evolution of a species is reproduction, through which an individual passes on its genes to the next generation. Relatively few species reproduce asexually, or in a way that does not involve male and female partners. These species have a few distinct advantages over those that rely on paired mating.

Scientists often refer to sexual reproduction as a biological tradeoff. Why? Because the genes of a sexually reproducing organism are, in a sense, diluted. Each parent passes on only half of its genes to its offspring. In contrast, every asexually reproducing organism passes on its entire set of genes to the next generation, and does this efficiently. And with no need for a sexual partner, a lone individual can establish a new population in a new territory.

Yet the mixing of genes that results from sex ensures that each generation will be different from the previous generation. This genetic variation provides perhaps the most important advantage to sexually reproducing organisms: It gives these species the ability to adapt more quickly to changing conditions in their environment.

The better-adapted individuals pass on more of their genes to the next generation. Thus, they have a greater influence on the genetic makeup of the entire species. This process is known as natural selection.

In populations with little genetic variation, such as those with asexual reproducers, no individual has much of a survival or reproductive advantage over any other individual. Evolution moves much more slowly, making these populations more vulnerable to change going on around them.
Writing Assignment

Using your notes from the lesson and updated activity chart, write a one- to two-page paper on one of the following topics:

1. In the reading, sexual reproduction is referred to as "a biological tradeoff." Why is this so? Cite specific examples to support your ideas.

2. In what ways do you think offspring born from one parent might differ from those born from two parents? Cite specific examples to support your ideas.

If you would like more information about sexual and asexual reproduction to complete your paper, check out the following Web sites:

Sexual vs. asexual reproduction: scientists find sex wins

The Advantage of Sex
http://www.pbs.org/wgbh/evolution/sex/advantage/index.html

Evolution of Sexual Reproduction

Glossary

diluted: reduced in concentration or purity  
genetic variation: genetic diversity in a species or group as a result of new gene combinations produced during reproduction  
natural selection: the survival and successful reproduction of the organisms that are best suited to their environment; the process that drives evolution  
population: a group of organisms of the same species that live in the same area or habitat