

## 13-1 Changing the Living World

### What is the purpose of selective breeding?

- **Selective breeding** allows only those organisms with desired characteristics to produce the next generation.
- Nearly all domestic animals and most crop plants have been produced by selective breeding.

Humans use selective breeding to pass desired traits on to the next generation of organisms.

### Hybridization

**Hybridization** is the crossing of dissimilar individuals to bring together the best of both organisms.

Hybrids, the individuals produced by such crosses, are often hardier than either of the parents.

### Inbreeding

**Inbreeding** is the continued breeding of individuals with similar characteristics.

Inbreeding helps to ensure that the characteristics that make each breed unique will be preserved.

Serious genetic problems can result from excessive inbreeding.

### Increasing Variation

#### Why might breeders try to induce mutations?

Breeders increase the genetic variation in a population by inducing mutations.

Mutations occur spontaneously, but breeders can increase the mutation rate by using radiation and chemicals.

A few mutants have desirable characteristics that are not found in the original population.

### Producing New Kinds of Bacteria

Introducing mutations has allowed scientists to develop hundreds of useful bacterial strains, including bacteria that can clean up oil spills.

### Producing New Kinds of Plants

Mutations in some plant cells produce cells that have double or triple the normal number of chromosomes.

This condition, known as polyploidy, produces new species of plants that are often larger and stronger than their diploid relatives.

Polyploidy in animals is usually fatal.