

# Hybrid Encyclopedia Article

## Hybrid

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# Hybrid

A hybrid is an offspring between two different **species**, or the offspring between two parents of the same species that differ in one or more heritable characteristics. An example of the first kind of hybrid is a mule, a cross between a female horse (*Equus caballus*) and a male donkey (*E. asinus*). An example of the second kind is the offspring from a cross between true-breeding red- and white-flowered garden peas (*Pisum sativum*).

Hybrids between species are often sterile because they fail to produce viable reproductive cells that is, eggs, sperm, or spores. These cells develop improperly because the chromosomes from one species do not pair correctly during **meiosis** with the chromosomes from the other species.

Despite their sterility, hybrids may thrive and expand their ranges by reproducing asexually. For example, in the eastern United States and adjacent Canada, there are hundreds of distinctive hybrids of hawthorn (*Crataegus*) and blackberry (*Rubus*) that are not inter-fertile. Yet these hybrids may be common because they are able to set seed from asexually produced embryos, a special form of propagation called apomixis (Greek *apo*, away from, and *mixis*, mix, union--referring to the lack of **fertilization**). Also, in blackberries, the first-year stems are able to root at the tip, a form of propagation called vegetative reproduction.

Some hybrids become fertile by doubling their **chromosome** number, a process called polyploidy. Hybridization followed by polyploidy has been extremely important in plant **evolution**, especially among ferns and grasses. Examples are the wheats used to make bread and pastas, and species of wood fern (*Dryopteris*) and spleenworts (*Asplenium*).

Hybrids are generally infrequent in nature. Nevertheless, once formed they may be important for evolution because of the way they combine the characteristics of their parents. Especially in changing or disturbed habitats, hybrids that contain new genetic combinations may be better adapted to the new environments than either of the parents. Thus, hybrids may be able to colonize new habitats where neither parent can grow.