Reproduction & Survival

*All species must **reproduce** to survive. Organisms cannot live forever, so they must reproduce to allow their species to continue to live on.*

Reproduction is nature's way of allowing a species to survive. A male and a female of a species mate in order to pass their genetic information on to their offspring. Those offspring will then mate and pass on their own genetic information. This process continues on unless the species becomes extinct, meaning that all of the members of the species die before they can reproduce again.

It is especially important for members of an **endangered species** to reproduce. An endangered species is a species of which there are very few organisms still alive. If the species does not produce enough offspring, it will eventually become extinct.

Giant pandas are an endangered species.

The more a species reproduces, the larger its population becomes. The larger a species' population, the more the species can reproduce to build an even larger population. A large population gives a species a better chance of survival.

Sexual & Asexual Reproduction

Reproduction *is the process through which organisms create offspring that contain all or part of the parents' genetic material. The ability to reproduce is necessary for the survival of a species.*

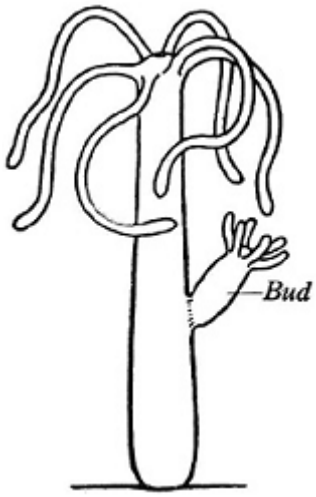
Asexual Reproduction

During asexual reproduction, a single organism creates an offspring that contains the same genes as its parent. Therefore, all of the offspring are genetically identical to the parent. Not including reproduction in bacteria, all other forms of asexual reproduction involve **mitosis**. Mitosis is a form of cell division that produces daughter cells that are identical to the parent cell.

There are several different types of asexual reproduction:

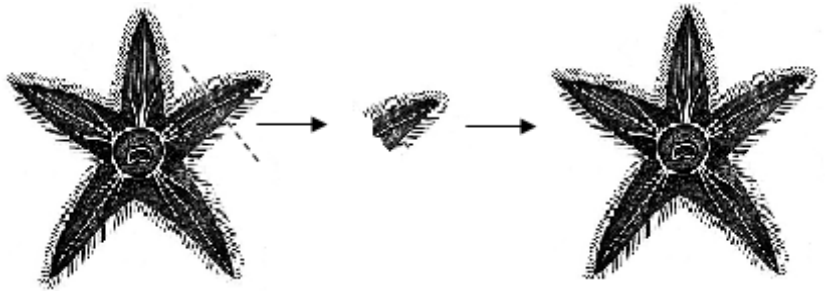
Budding

Budding occurs when an offspring grows out of the body of the parent organism. Hydra reproduce by budding.



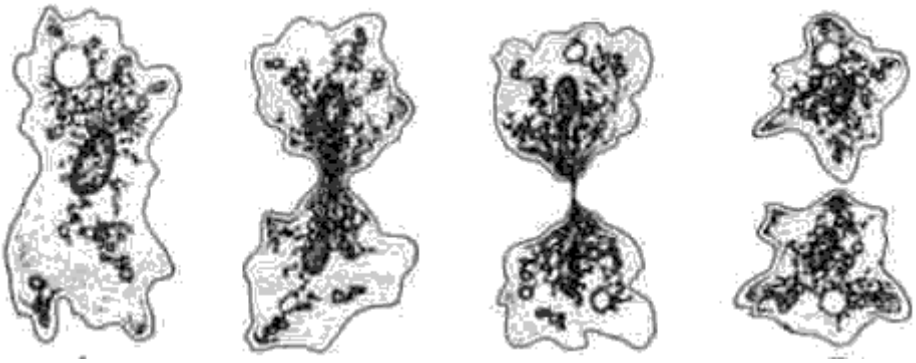
Fragmentation

Fragmentation occurs when parts of an organism break off. The organism fragments regrow their missing parts through regeneration and develop into new individuals. Sea stars (starfish) reproduce through fragmentation and regeneration.



Binary Fission

Binary fission occurs when single-celled organisms divide to create two new organisms. Amoeba and bacteria reproduce by binary fission.



Runners

Strawberries and some types of grass produce runners that grow along the ground before they sprout into new plants, called *plantlets*.

Runner of a strawberry plant

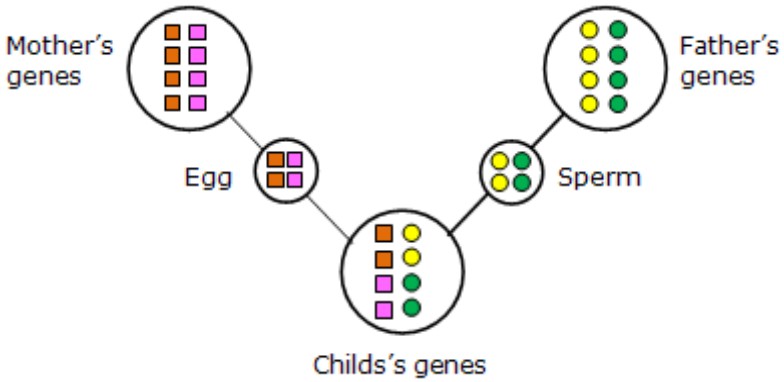
Tubers

Radishes and potatoes are able to grow new plants from the roots themselves or storage areas on the roots, called *tubers*. (The potatoes we eat are the tubers).

Sexual Reproduction

Sexual reproduction is used by most complex organisms, such as humans. A sexually-reproducing organism produces unique sex cells called *gametes*. Gametes are created from a process known as **meiosis**. During meiosis, the amount of genetic material is cut in half.

Female gametes are called **eggs**, and male gametes are called **sperm**. Eggs and sperm contain only *half* of an organism's genetic material.



Sexual reproduction usually requires two parents. During fertilization, an egg cell from the mother combines with a sperm cell from the father to produce a unique offspring. Since the offspring receives half of its genes from each parent, the offspring is not identical to either parent. In this way, sexual reproduction produces more genetic diversity throughout a species than asexual reproduction.