Sexual vs. Asexual Reproduction

All living things must make more living things. Reproduction is the process of producing new living things. In fact, all living things came from reproduction. Parents produce new living things called offspring. The ability to make offspring keeps a species alive. Reproduction doesn't keep an *individual* organism alive but it keeps a species alive.

There are two main types of reproduction. The types of reproduction depend on the number of parents involved in the process. The two types of reproduction are asexual and sexual. Asexual reproduction involves only one parent. Sexual reproduction involves two parents. Most organisms reproduce by only one method. However, there are some organisms that can reproduce by asexual OR sexual reproduction.

Offspring must grow and develop to become mature adults. Only mature adults can reproduce. Growth is the process of becoming larger or increasing in size. Development is the process of transforming and maturing. An organism cannot grow properly without developing too. An organism must develop into a full grown adult. It is important for an organism to develop into a full grown adult. Only full grown and mature adults can reproduce.

There are some similarities between asexual and sexual reproduction. Both types of reproduction produce offspring. In order to produce the offspring, at least one parent is involved. Asexual and sexual reproduction occur for the same purpose. The purpose of reproduction is to produce offspring in order to continue survival of a species.

There are many differences between asexual and sexual reproduction. Asexual reproduction requires one parent. All of the offspring are genetically identical to the parent. In other words, the offspring are clones of the parent. Sexual reproduction requires two parents. The offspring are genetically different from the parents. In other words, the offspring have a unique combination of genetic traits. Some traits came from the female parent and other traits came from the male parent.

There are advantages to both types of reproduction. Asexual reproduction occurs quickly. It requires less energy. There is no need for a partner to produce offspring. Sexual reproduction takes longer. It requires more energy and it requires two organisms.

Sexual reproduction has a major advantage. Sexual reproduction increases variation in a species. Variation is differences between organisms in a species. Variation is an advantage because it increases a species survival. Offspring may have a better combination of traits than their parents. This will increase the chance of the offspring's survival. Organisms that reproduce asexually do not have variation in offspring. Offspring are genetically identical to the parent. This is disadvantageous. If the parent has a genetic disease, the offspring will have it as well. Also, if a disease spreads among an asexually reproducing species, all of the organisms will be affected. In sexually reproducing species, variation protects the organisms. Some organisms in the species may have a trait that prevents them from becoming affected by a disease. Therefore, there will be some organisms that will not be affected and will survive the disease. Variation is important to evolution as well. Evolution is change in species over time.

Asexual reproduction usually occurs in less complex organisms. Asexual reproduction uses mitosis to produce offspring. Mitosis is a form of cell division. Most unicellular (single-celled) organisms reproduce asexually. Bacteria and protists (unicellular animal cell organisms) reproduce asexually. Some plants and fungi and many insects, such as ants and bees, can reproduce asexually too.

Honors Biology
Unit 5: Patterns of Inheritance

Sexual reproduction occurs in more complex organisms. Sexual reproduction uses meiosis and mitosis to produce offspring. Meiosis is a special form of cell division that produces gametes. You will learn more about gametes in another activity. In sexual reproduction, each parent contributes DNA to the offspring through a gamete. A gamete is a special cell. It contains half of the amount of DNA as normal cells in the parent. Gametes are produced through a special type of cell division called meiosis. Females produce gametes called eggs. Males produce gametes called sperm. An egg and sperm fuse during sexual reproduction. This is called fertilization. Fertilization forms a cell called a zygote. The zygote contains a full set of genetic material – half from the female parent and half from the male parent.

The zygote divides by mitosis to form two cells. These two cells divide by mitosis to form four cells. The cells continue to divide to form a cluster of cells called an embryo. The cells of the embryo differentiate and specialize. In other words, the cells develop into all the different and special cells of the organism. These cells form tissues and organs of the organism. The embryo develops into an offspring. The offspring has a combination of traits from both of its parents.

Fertilization and development in sexual reproduction occurs differently in organisms. Fertilization and development can take place internally or externally. In other words, sperm can fertilize an egg inside the body of the female or sperm can fertilize an egg outside the body of the female. Also, the embryo can grow and develop inside the female body or outside the female body.