

Sexual Reproduction Encyclopedia Article

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Contents

Sexual Reproduction Encyclopedia Article.....	1
Contents.....	2
Sexual Reproduction.....	3

Sexual Reproduction

Sexual reproduction is the process through which two parents produce offspring that are genetically different from themselves and have new combinations of their characteristics. During sexual reproduction, each parent contributes one haploid gamete (a sex cell with half the normal number of **chromosomes**). The two sex cells fuse during **fertilization** and form a diploid zygote containing the normal number of chromosomes.

Mutation and recombination (the production of variations in gene combinations), also bring together new combinations of alleles (a form of a gene located on a chromosome). In addition, crossing-over, the exchange of pieces of chromosomes by two homologous chromosomes, brings about genetic variation during the formation of gametes.

Sexual reproduction is advantageous because it generates variations in characters that can adapt a species over time and improve its chances of survival. There are also a number of strong cultural and religious influences on human behaviors associated with sexual reproduction, especially strong are influences on mate selection.

Physiologists have long studied the hormonal changes that facilitate and influence mating behavior and reproductive readiness. These influences, the coordination and control of reproduction by **hormones** are, in humans, also heavily influenced by societal factors so that **sperm** and egg are brought together at the appropriate time. During human sexual reproduction, a haploid sperm deposited by the male in the vagina of the female makes its way through the cervix, uterus, and the fallopian tube carrying the unfertilized ovum (egg). Sperm are provided with a fluid (**semen**) that provides an aquatic medium for the sperm to swim when inside the male's body. Of the millions of sperm cells deposited, only a small percentage make it to the unfertilized ovum.

Under normal circumstances, only one haploid sperm cell may ultimately penetrate the haploid ovum to produce fertilization and to form a diploid zygote. If development is to proceed, the fertilized egg implants in the uterus, where the growth and differentiation of the embryo occur. The zygote divides mitotically and differentiates into an embryo. Embryonic **nutrition** and respiration occur by diffusion from the maternal bloodstream through the **placenta**. The embryo grows and matures. When development is complete, the birth process takes place. After birth, the normal human matures and develops into an adult capable of producing haploid sex cells (gametes) and repeating the sexual reproduction process.