

# Female

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**Female** (♀) is the sex of an organism, or a part of an organism, that produces non-mobile ova (egg cells). Most female mammals, including female humans, have two X chromosomes.

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The symbol of the Roman goddess Venus (goddess of love) is often used to represent the female sex and is the alchemical symbol for copper.

## Defining characteristics

The ova are defined as the larger gametes in a heterogamous reproduction system, while the smaller, usually motile gamete, the spermatozoon, is produced by the male. A female individual cannot reproduce sexually without access to the gametes of a male (an exception is parthenogenesis). Some organisms can reproduce both sexually and asexually.

There is no single genetic mechanism behind sex differences in different species and the existence of two sexes seems to have evolved multiple times independently in different evolutionary lineages.<sup>[1]</sup> Patterns of sexual reproduction include

- Isogamous species with two or more mating types with gametes of identical form and behavior (but different at the molecular level),
- Anisogamous species with gametes of male and female types,
- Oogamous species, which include humans in which the female gamete is very much larger than the male and has no ability to move. Oogamy is a form of anisogamy. There is an argument that this pattern was driven by the physical constraints on the mechanisms by which two gametes get together as required for sexual reproduction.<sup>[2]</sup>

Other than the defining difference in the type of gamete produced, differences between males and females in one lineage cannot always be predicted by differences in another. The concept is not limited to animals; egg cells are produced by chytrids, diatoms, water moulds and land plants, among others. In land plants, *female* and *male* designate not only the egg- and sperm-producing organisms and structures, but also the structures of the sporophytes that give rise to male and female plants.

## Etymology and usage

The word **female** comes from the Latin *femella*, the diminutive form of *femina*, meaning "woman". It is not etymologically related to the word *male*, but in the late 14th century the spelling was altered in English to parallel the spelling of *male*.<sup>[3]</sup>

## Mammalian female

A distinguishing characteristic of the class *Mammalia* is the presence of mammary glands. The mammary glands are modified sweat glands that produce milk, which is used to feed the young for some time after birth. Only mammals produce milk. Mammary glands are most obvious in humans, as the female human body stores large amounts of fatty tissue near the nipples, resulting in prominent breasts. Mammary glands are present in all mammals, although they are vestigial in the male of the species.

Most mammalian females have two copies of the X chromosome as opposed to the male which carries only one X and one smaller Y chromosome (but some mammals, such as the Platypus, have different combinations). To compensate for the difference in size, one of the female's X chromosomes is randomly inactivated in each cell of placental mammals while the paternally derived X is inactivated in marsupials. In birds and some reptiles, by contrast, it is the female which is heterozygous and carries a Z and a W chromosome whilst the male carries two Z chromosomes. Intersex conditions can also give rise to other combinations, such as XO or XXX in mammals, which are still considered as female so long as they do not contain a Y-chromosome. However, these conditions frequently result in sterility.

Mammalian females bear live young (with the rare exception of monotremes, which lay eggs). Some non-mammalian species, such as guppies, have analogous reproductive structures; and some other non-mammals, such as sharks, whose eggs hatch inside their bodies, also have the appearance of bearing live young.

## Symbol

A common symbol used to represent the female sex is ♀ (Unicode: U+2640 Alt codes: Alt+12), a circle with a small cross underneath. According to Schott,<sup>[4]</sup> the most established view is that the male and female symbols "are derived from contractions in Greek script of the Greek names of these planets, namely Thourous (Mars) and Phosphoros (Venus). These derivations have been traced by Renkama<sup>[5]</sup> who illustrated how Greek letters can be transformed into the graphic male and female symbols still recognised today." Thourous was abbreviated by θρ, and Phosphoros by Φ, both in the handwriting of alchemists so somewhat different from the Greek symbols we know. These abbreviations were contracted into the modern symbols.

## Sex determination

The sex of a particular organism may be determined by a number of factors. These may be genetic or environmental, or may naturally change during the course of an organism's life. Although most species with male and female sexes have individuals that are either male or female, hermaphroditic animals have both male and female reproductive organs.

## Genetic determination

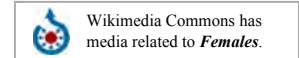
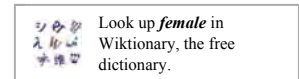
The sex of most mammals, including humans, is genetically determined by the XY sex-determination system where males have X and Y (as opposed to X and X) sex chromosomes. During reproduction, the male contributes either an X sperm or a Y sperm, while the female always contributes an X egg. A Y sperm and an X egg produce a male, while an X sperm and an X egg produce a female. The ZW sex-determination system, where males have ZZ (as opposed to ZW) sex chromosomes, is found in birds, reptiles and some insects and other organisms. Members of Hymenoptera, such as ants and bees, are determined by haplodiploidy, where most males are haploid and females and some sterile males are diploid.

## Environmental determination

The young of some species develop into one sex or the other depending on local environmental conditions, e.g. many crocodilians' sex is influenced by the temperature of their eggs. Other species (such as the goby) can transform, as adults, from one sex to the other in response to local reproductive conditions (such as a shortage of males).

## See also

- Dakini
- Feminine side
- Femininity
- Gestation
- Girl
- Lactation
- Womyn



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