Parthenogenesis

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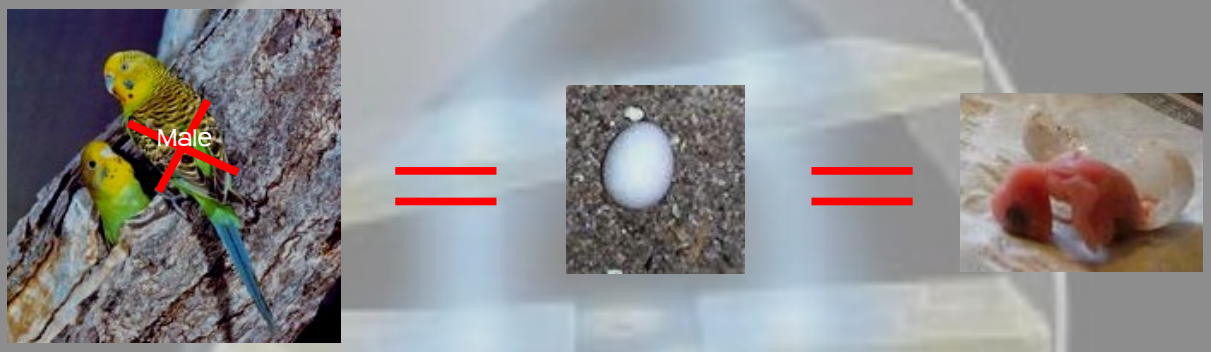

Definition :

Parthenogenesis or virgin birth is a phenomenon that has long been known. Athough he still does not understand the fine, Aristoteles described between 348 and 322 BC, that some fish and insects reproduce without mating .
Today, some people reports that parthenogenesis is possible by birds. There is a report that it occurs in Turkeys and Zebra finches.
There are stories that parthenogenesis occurs in parrots or psittacines, but the source is scientific questionable and can be atributed to non-scientific reasoning and motivation. It should be investigated on real scientific base by an university.

What is parthenogenese ?

The word ***parthenogenesis*** comes from the Greek ***parthenos*** meaning ***virgin*** and ***genesis*** meaning ***birth.***

Parthenogenesis is a form of asexual reproduction found in females, where growth and development of embryos occur without fertilization by a male.
In plants, parthenogenesis means development of an embryo from an unfertilized egg cell and is a component process of apromixis.
Parthenogenesis occurs naturally in some invertebrate and vertibale animal species. Such as fish, anphibians, reptiles, birds and mammals.
Depending on the mode of development, we distinguish different types.

Parthenogenesis is one of the 4 items that we found in asexual reproduction.

Parthenogenesis D.M.

The other 3 asexual reproductions are: * vegetative propagation
* gynogenese
* hybridogenese

Normal egg cells form after meiosis and are haploid, with half as many chromosomes as their mother's body cells. Haploid individuals are non-viable and parthenogenetic offspring usually have the diploid chomosome number. If the chromosome number of the haplois egg cell is doubled during development, the offspring is half a clone of its mother. If the egg cell was formed without meiosis it is a full clone of his mother.
The offspring produced by parthenogenesis in species that use the XY sex-determination system have two chromosomes and are female.
In species that use ZW sex-determination system they have either two Z chromosomes (males) or two W chromosomes (females or non-viable) or if clonal parthenogenesis was involved (apornixis), they could have one W and one Z chomosome (female).

Insects

Parthenogenesis are found in many insects.
Some butterflies are parthenogenetic strains, for example in the genus Psyche.
Insects store sperm after mating in order to allow later to be dosed into the oocytes.
A queen bee may decide to produce unfertilized eggs. She will do this in the spring or early summer. Out the unfertilized eggs we have only males. These have a single set of chromosomes, they are haploid (1). The fertilized eggs are workers or queens.

(1) Haploïd : Haploid organisms, in contrast to diploid organisms, have only one copy of each chromosome. This is represented by one or 1n. Also cells can be haploïd. By humans reproductive cells are haploïd.

Vegetative propagation

For vegetative propagation, there are no specialized reproductive cells involved and the entire breeding is based on mitotic cell division.
Mitosis cell division is usually involved in the growth of the animal.
The offspring resulting from vegetative propagation are therefor genetically identical to the parental organism.
Different invertebrates can reproduce by fragmentation. One example are the flatworms .

Gynogenese

By gynogenese offspring are produced in the same manner as in parthenogenesis, but the development of the egg must be stimulated by a sperm cell.

Parthenogenesis D.M.

However, the sperm contributes no genetic material to the offspring.
They blend with the egg cell, but the chromosomes of the sperm are broken .
Gynogenese occurs by salamander.

Hybridogenese

In hybridogenesis, reproduction is not completely asexual, but instead hemiclonal: half the genome is passed intact to the next generation, while the other half is discarded. It occurs in some animals that are themselves hybrids between two different species.

History / Research

Already in 1847 and 1886 respectively by Boursier and Tichomiroff, the development of an unfertilized egg was tested on the eggs of the silkworm.
Loeb(1899) American biologist and pshysiologist treated sea urchin eggs with butyric acid and found that the cortical reaction and the formation of the fertilization membrane took place.
Also the aster was formed but there was no further development.
Battalion Eugène (1864), pricked frog eggs with a needle previously dipped in frog blood.
Delage used tannins and ammonia. Dalcq chlorides of Na, Ca, Mg and K.
The above experiments are used to artificially caused parthegonesis. My argument goes about natural parthegonesis.

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