

Class 12 subject - biology

Chapter 1 Reproduction in organism

### 1. JUVENILE PHASE

It is a period of growth and maturity of an organism before it can reproduce sexually.

### 2. REPRODUCTIVE PHASE

Period in which organism is capable of reproducing sexually

- Easily seen in higher plants when they come to flower.
- Some plants flower seasonally & some through out the year
- Few plants exhibit unusual flowering phenomenon

For e.g.. 1. Bamboo species flower only once in their lifetime. 2. *Srobilanthus kunthiana* (neelakurinji) found in hilly areas of Kerala, Karnataka & Tamil Nadu flower once in 12 years the latest being in September 2006.

- In animals sexual reproduction is usually seasonal
- In placental mammals there is occurrence of cyclical changes in the activities of ovaries & accessory ducts as well as hormones.
- In non primate mammals like dogs, rats etc these cyclical changes during reproduction is called oestrus cycle – no bleeding occurs.
- In primate mammals like apes & humans, these cycles are called menstrual cycles.

### 3. SENESCENT PHASE

- It is the end of reproductive phase.
- Old age ultimately leads to death

### EVENTS IN SEXUAL REPRODUCTION:

#### 1. PRE-FERTILIZATION EVENTS:

##### a) GAMETOGENESIS

- The gametes are usually haploid
- Gametes called homogametes / isogametes when both have same appearance.
- When gametes are different, they are called heterogametes; male gamete known as antherozoid /sperm, female is called ovum / egg.
- Bisexual organisms called as homothallic / monoecious whereas unisexual organisms called heterothallic / dioecious.

##### b)GAMETE TRANSFER

- In most of the organisms, male gametes are motile & female gametes are stationary.
- In algae, bryophytes & pteridophytes water is the medium for gamete transfer.
- Pollination is the method of gamete transfer in higher plants as pollen grains are carriers of male gametes.

#### 2. SYNGAMY / FERTILIZATION:

- Syngamy results in formation of a diploid zygote.

- In certain animals, female gamete develops into the adult organism without fertilization; such a process is called parthenogenesis - seen in rotifers, lizards turkeys etc.
- Fertilisation may be external or internal

#### EXTERNAL FERTILIZATION

Syngamy occurs outside the body of the organism

Large numbers of gametes are released in the surrounding medium.

Ex. Bony fishes and Amphibians. INTERNAL FERTILIZATION

Syngamy occurs inside the body of the organism

Numbers of ova produced are less, but large numbers of male gametes are released and they travel towards the ovum.

Ex. Birds and Mammals.

#### 3. POST FERTILIZATION:

- Events in sexual reproduction after the formation of zygote
- Zygote – vital link that ensures continuity of species between organisms of one generation and the next.
- Development of zygote depends on
  - the type of life cycle of the organisms.
  - the environment it is exposed to.
- Zygote develops into embryo.

Embryogenesis involves:

- cell division to increase the number of cells

- cell differentiation for the formation of different kinds of tissues

- Based on whether the development of zygote occurs inside or outside the body of the female parent, animals are categorized into oviparous and viviparous.

#### OVIPAROUS

These animals lay eggs.

The fertilized eggs have a calcareous shell to protect them from harsh environment.

#### VIVIPAROUS

These animals give birth to young ones

Embryo protected inside the mother's body.

- In flowering plants the zygote formed inside the ovule; zygote develops into embryo after which the ovule becomes the seed and ovary becomes the fruit.

Ques1. Define Juvenile phase , Reproductive phase, Senescent phase

Ques 2. Differentiate between a Zoospores and Zygote.

Ques 3. Differentiate between Gametogenesis and Embryogenesis.