CHAPTER NO.1

REPRODUCTION IN ORGANISMS

INTRODUCTION

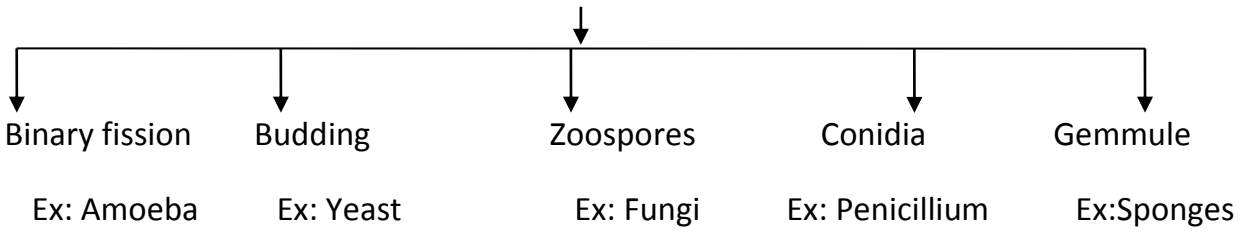
- The period from birth to the natural death of an organism represent, its life span.
- Reproduction is a biological process in which an organism gives rise to young ones. It enables the continuities of the species.

Reproduction

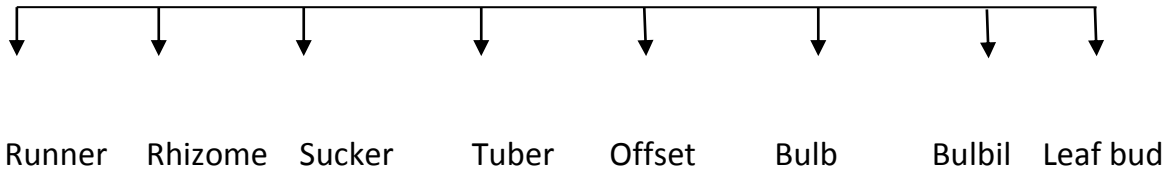
a) Asexual
b) Sexual

ASEXUAL REPRODUCTION	SEXUAL REPRODUCTION
1) Without involvement of gametes.	1)With involvement of gametes
2)Single individual	2)One or two parents
3)Progeny is morphologically and genetically identical	3) Differ from each other

ASEXUAL REPRODUCTION



PLANTS – VEGETATIVE PART



SEXUAL REPRODUCTION

Juvenile Phase in Animals

Vegetative Phase in Plants

Plants – Reproductive phase (Flowering)

Annual and biennial – Vegetative and Reproductive phases are distinct.

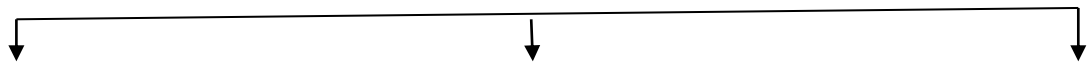
Animals - Reproductive phase

Egg laying animals - Birds

Placental animals - Non-primates- OestrousCycle(Seasonal Breeders)

Primates- Menstrual cycle(Continuous Breeders)

EVENTS IN SEXUAL REPRODUCTION

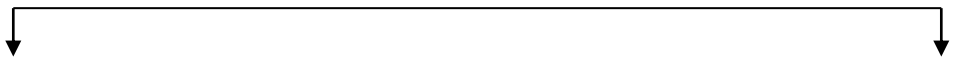


Pre- Fertilization Fertilization Post - fertilization

1) Gametogenesis

2) Gamete Transfer

FORMATION OF GAMETES



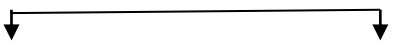
Homogametes (Isogametes)

Similar Gametes

Ex: Cladophora

Heterogametes

Dissimilar Gametes



Male Female

Antherozoid or sperm Egg or ova

PLANTS

Bisexual

Sex organs on the same Plant

Homothallic or Monoecious

Unisexual

Sex organs on different plants

Heterothallic or Dioecious

FLOWERS

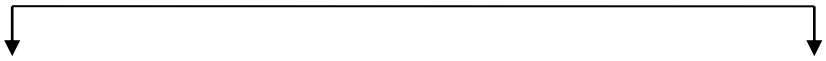
Male flowers

Staminate

Female flowers

Pistillate

ANIMALS



Bisexual (hermaphrodites)

Both the sex organs in the same animal

Ex: Earth worms, sponges,

Tape worm, leeches

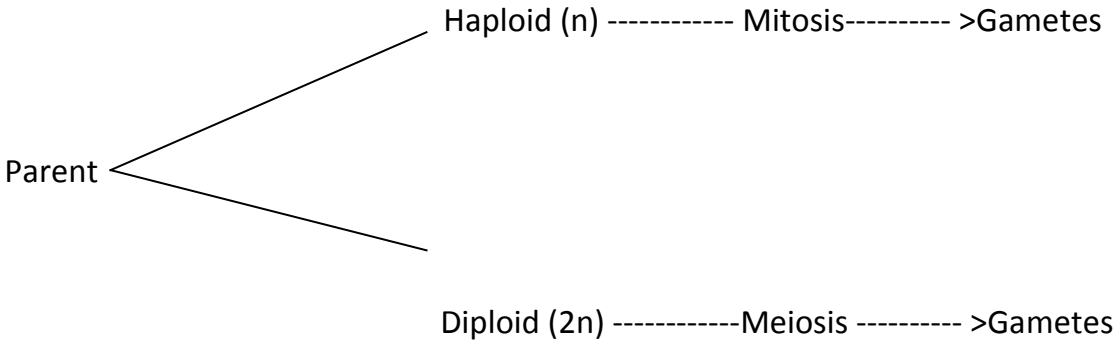
Unisexual

Male or female

Ex: Cockroach

Cell division during gamete formation

Gametes -always Haploid

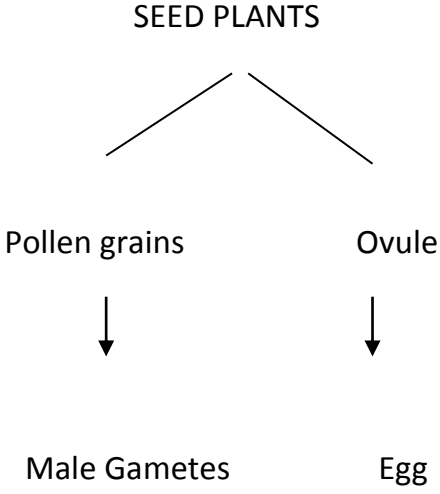


Gametes Transfer

Fungi, algae – Both are motile

Algae, Bryophytes,Pteridophytes – Water is the medium for transfer

Number of male gametes are more than female gametes to compensate loss during transfer



Bisexual – self Pollination

Ex: Pea

Unisexual – Cross Pollination

Pollen ⟶ Stigma ⟶ Pollen tube formation ⟶ Discharge of male gametes

Fertilization

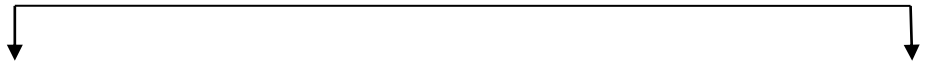
Male gametes (n) + female gametes (n) ⟶ Syngamy ⟶ Zygote

Parthenogenesis

Female gametes develop into an organism without fertilization.

Ex: Rotifers, honey bees, some lizards and birds (turkey)

FERTILISATION



External fertilization	Internal fertilization
External medium	inside the body
Large no. of offspring produced	
Vulnerable to predators	

Post- fertilization events

Zygote (2n) – First cell of the organism

Universal in all sexually reproducing organisms

Zygote------- > Meiosis ----------> Haploid organism

Zygote -------->Mitosis ---------->Diploid organism

Embryogenesis

Zygote ---------- Mitotic division ----------->Cell differentiation
increase in number of cells specialized tissue and organs

ANIMALS

Viviparous	Oviparous
Zygote	Zygote- calcareous shell cover
↓	↓
Inside the body(young ones delivered out)	Young ones hatched

Chances of survival is greater in viviparous because of proper embryonic care and protection provided to the young ones.

POST FERTILISATION EVENTS IN PLANTS

Sepals, petals, stamens ---------- -wither and fall off
Zygote ---------- embryo
Ovule----------seeds
Ovary---------- fruit ----------Pericarp (wall- protective in function)