REPRODUCTION

Reproduction:

Production of a offspring by a sexual or asexual process

Two types of reproduction:

1) **Asexual reproduction**
2) **Sexual reproduction**

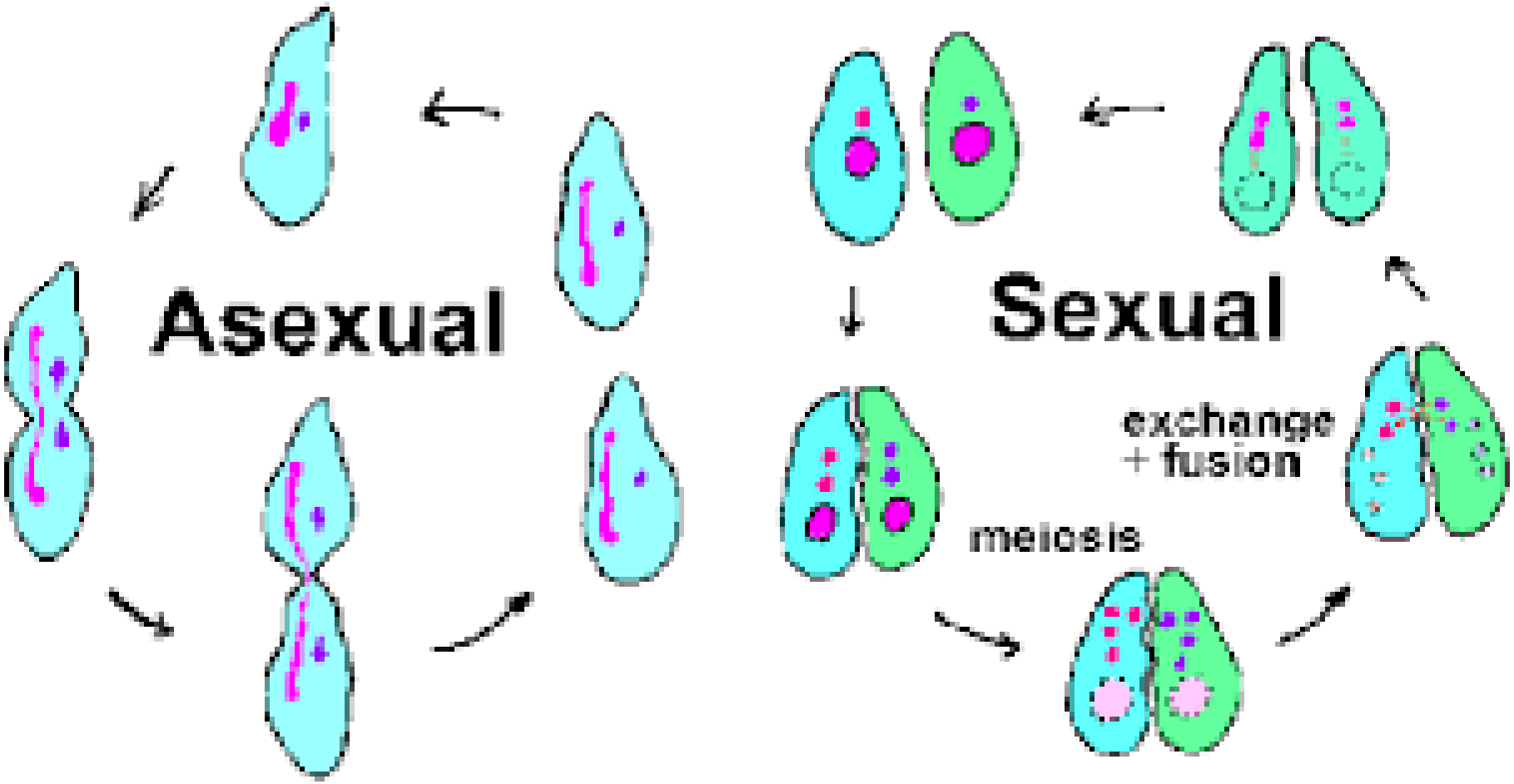


Fig. Asexual reproduction (left) and sexual reproduction (right).

Types of fertilization:

1) **External fertilization, eg., Fish, frog etc.**
2) **Internal fertilization, eg., Mammals, human etc.**

Asexual reproduction:

The process of forming a new individual/organism from a single parent.

Advantage:

1. Fast

2. No need to meet a male and a female organism

Disadvantage:

1. The offspring are genetically identical to the parent.

2. No genetic diversity.

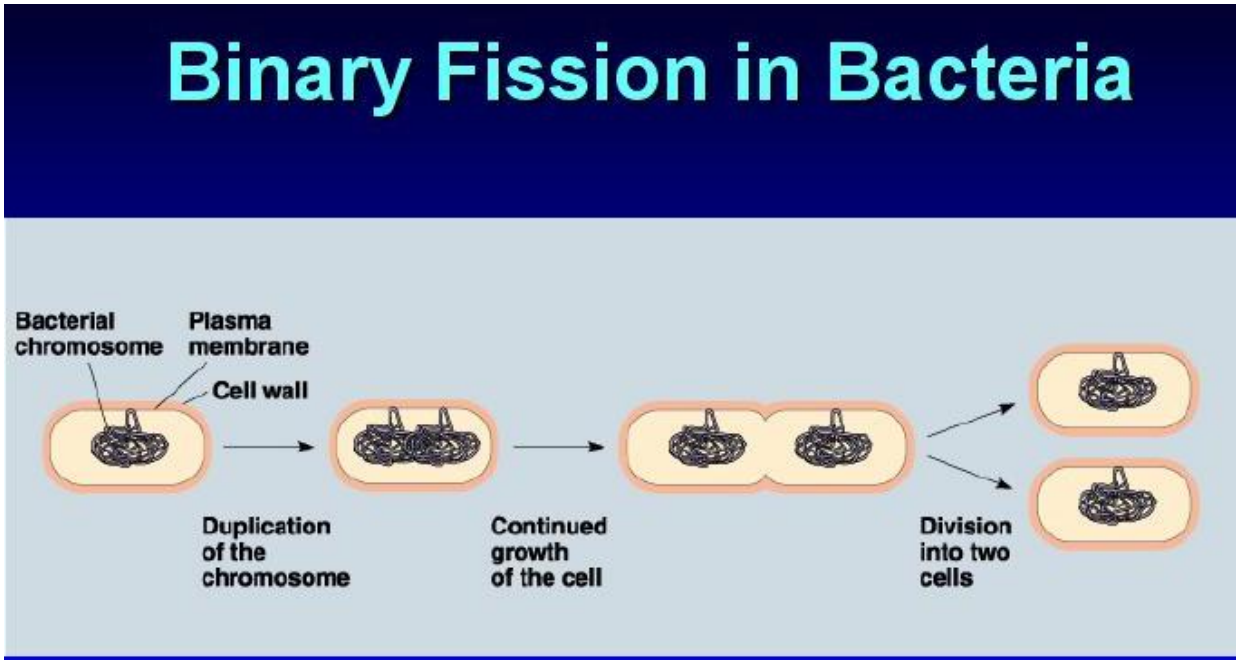
Types of asexual reproduction:

1. Binary fission
2. Budding
3. Vegetative formation
4. Regeneration

1. Binary fission:

One parent produces offspring.

The reproductive process where one organism split into 2.



2. Budding:

One parent produces offspring.

The reproductive process the offspring grows out of the parent and separates. Eg. Hydra and potato.

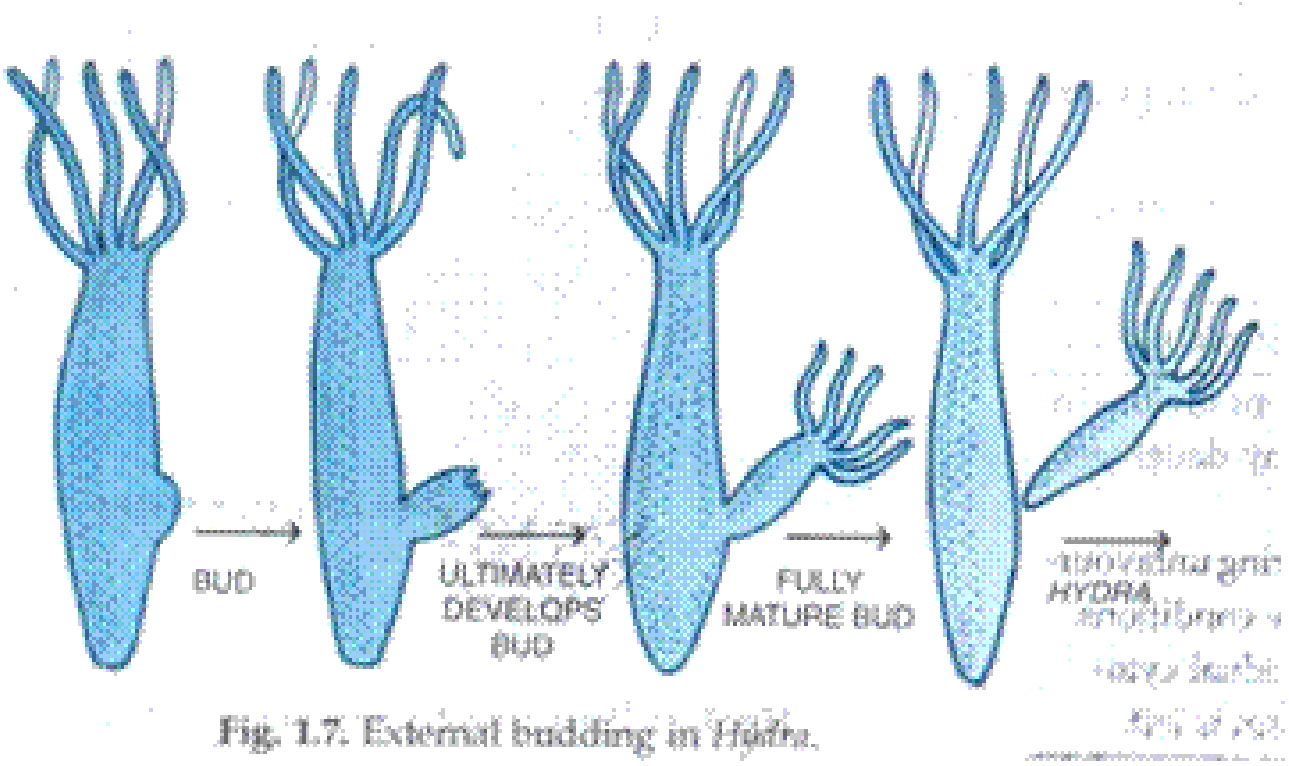


Fig. 1.7. External budding in *Hydra*.

3. Vegetative formation:

One parent produces offspring.

A process by which new organisms arise without production of seeds and spores. Eg., Plants reproduce in this manner-strawberry pants. ferns etc..



Fig. Vegetative formation in plant.

4. Regeneration:

One parent produces offspring.

Regrowth from a damaged organism

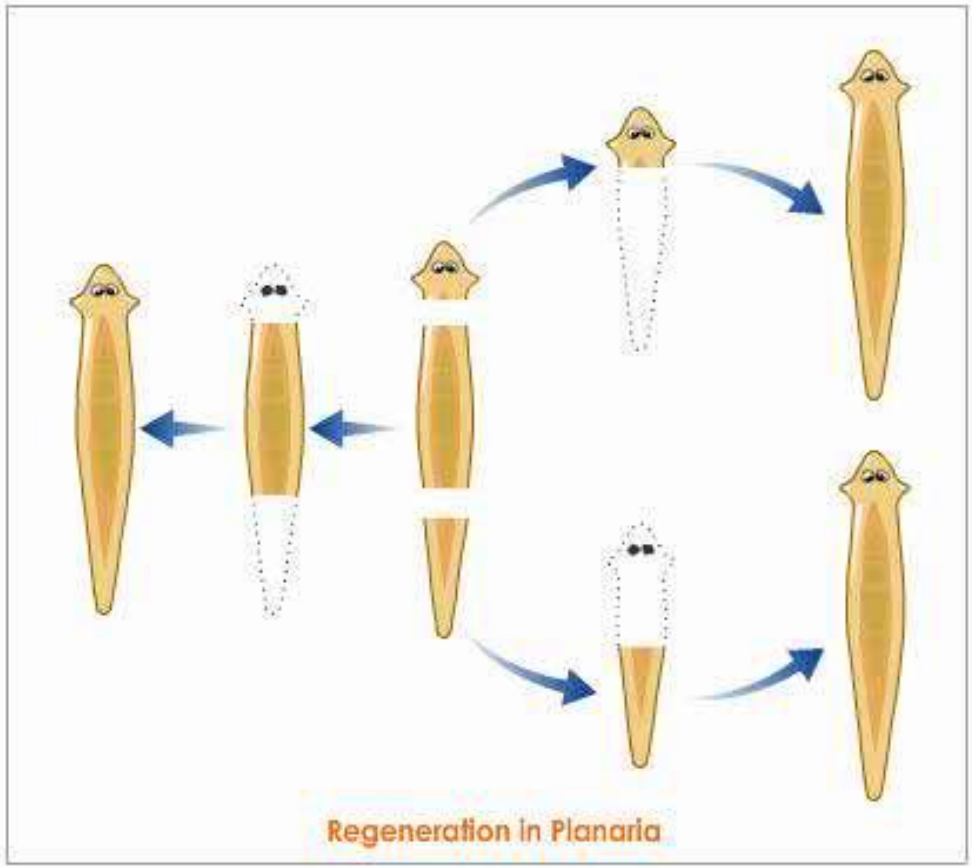


Fig. Regeneration in Planaria (flatworm).

Sexual reproduction:

The process of forming a new organism from two parents: a male and a female.

Advantage:

1. Genetic diversity

Disadvantage:

1. Time consuming

2. Require a male and a female

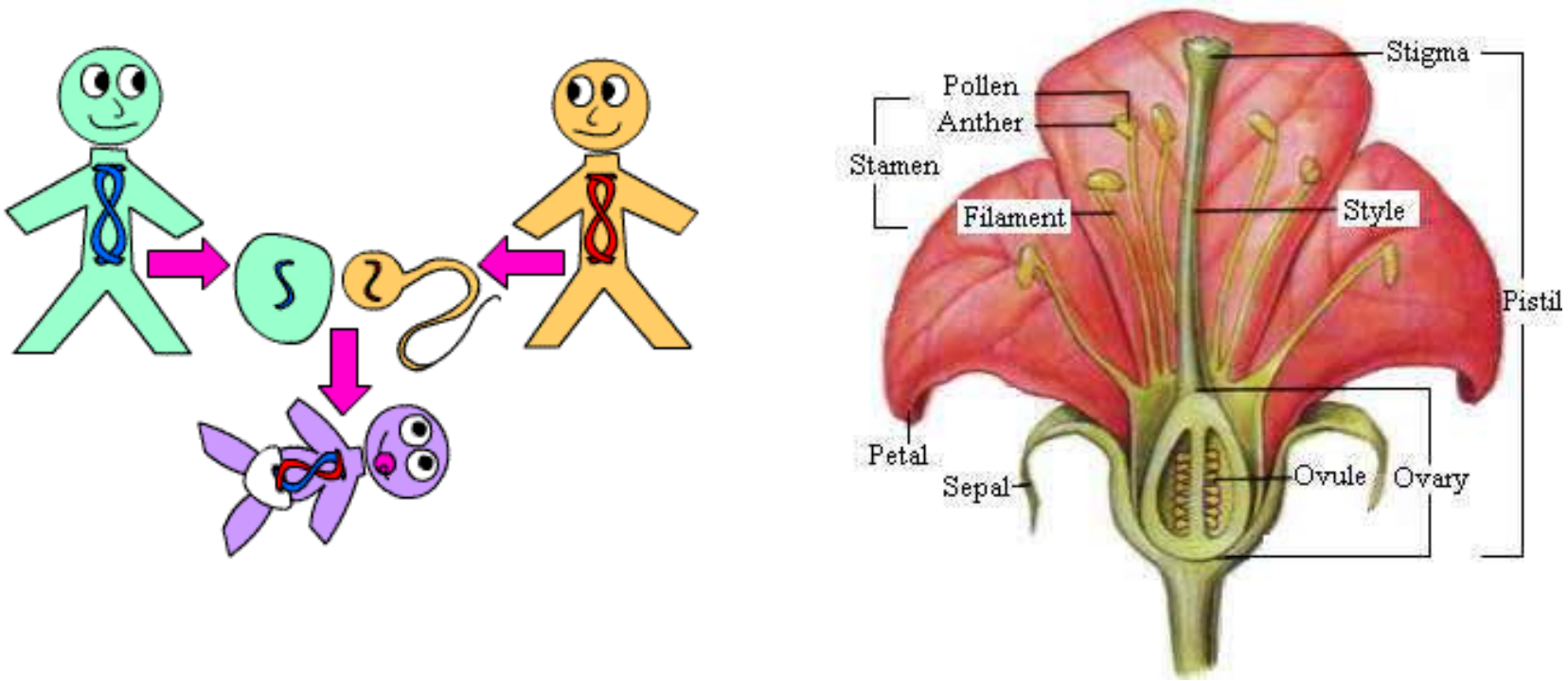


Fig. Sexual reproduction of animal (left) and plant (right).

Types of sexual reproduction:

A. Syngamy

A. Syngamy:

A method of reproduction in which two gametes are united permanently.

a. Autogamy:

The union of nuclei within and arising from a single cell. Eg., Few protozoa and fungi.

b. Exogamy: The fusion of two gametes.

c. Hologamy: If the entire mature organisms start to act as gametes and the fusion of these organisms referred as hologamy. Eg. Lower animals.

d. Paedogamy: Sexual union of young individuals produced immediately after the division of the adult parent cell by mitosis.

e. Merogamy:

The fusion of smaller sized and morphologically different gametes take place.

f. Isogamy: refers to form of sexual reproduction involving gametes of the same size.

g. Anisogamy/heterogamy: Refers to form of sexual reproduction involving gametes of different sizes.

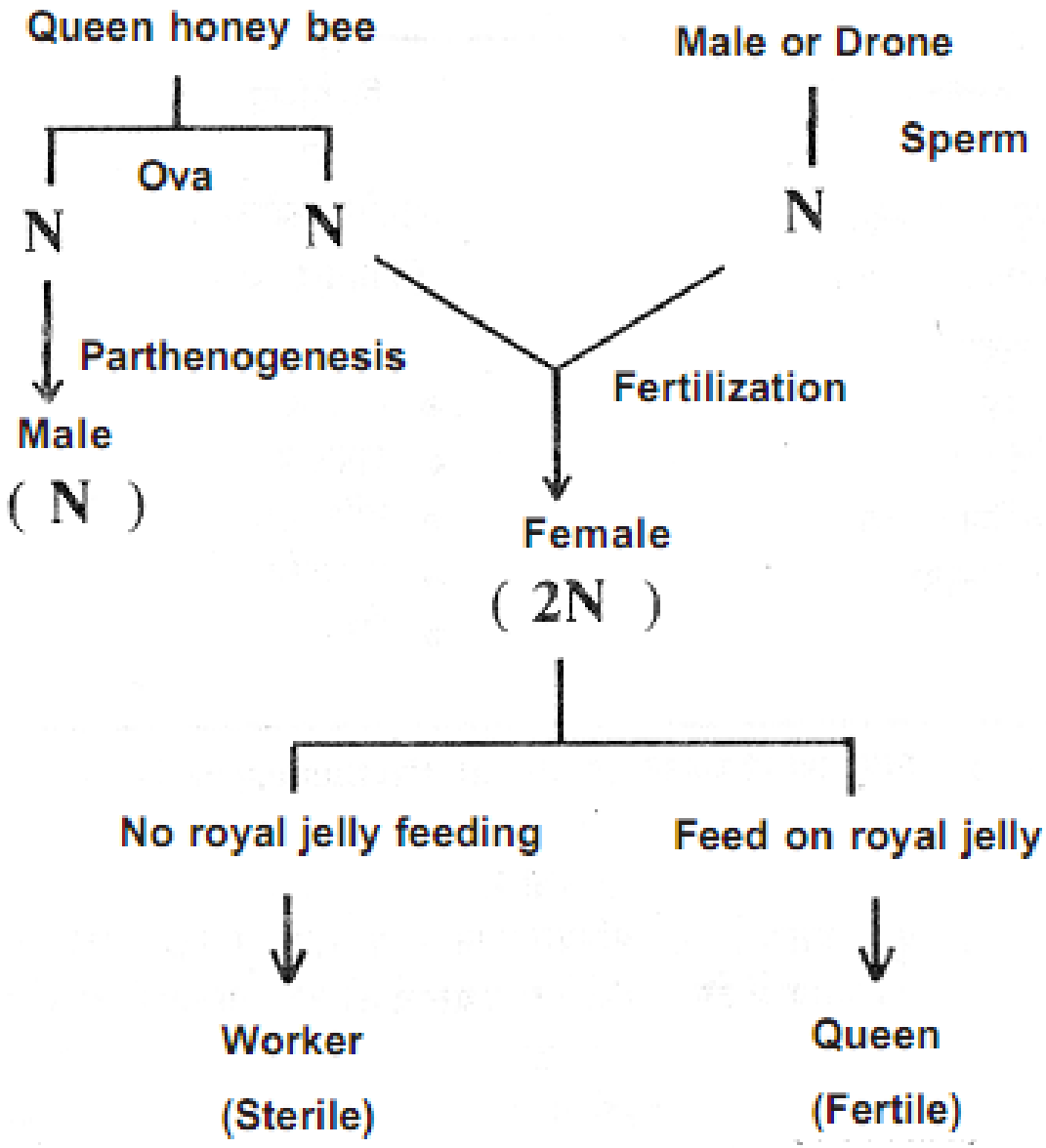
h. Macrogamy: Fusion of large gametes known as Macrogamy.

i. Microgamy: fusion of small size gametes.

B. Parthenogenesis:

Parthenogenesis (Greek word “parthenos” means "virgin", + “genesis” means "creation").

It is a natural form of asexual reproduction in which growth and development of embryos occur without fertilization.


Queen honey bee
Ova
N
N
Parthenogenesis
Male
(N)
Male or Drone
Sperm
N
Fertilization
Female
(2N)
No royal jelly feeding
Feed on royal jelly
Worker
(Sterile)
Queen
(Fertile)

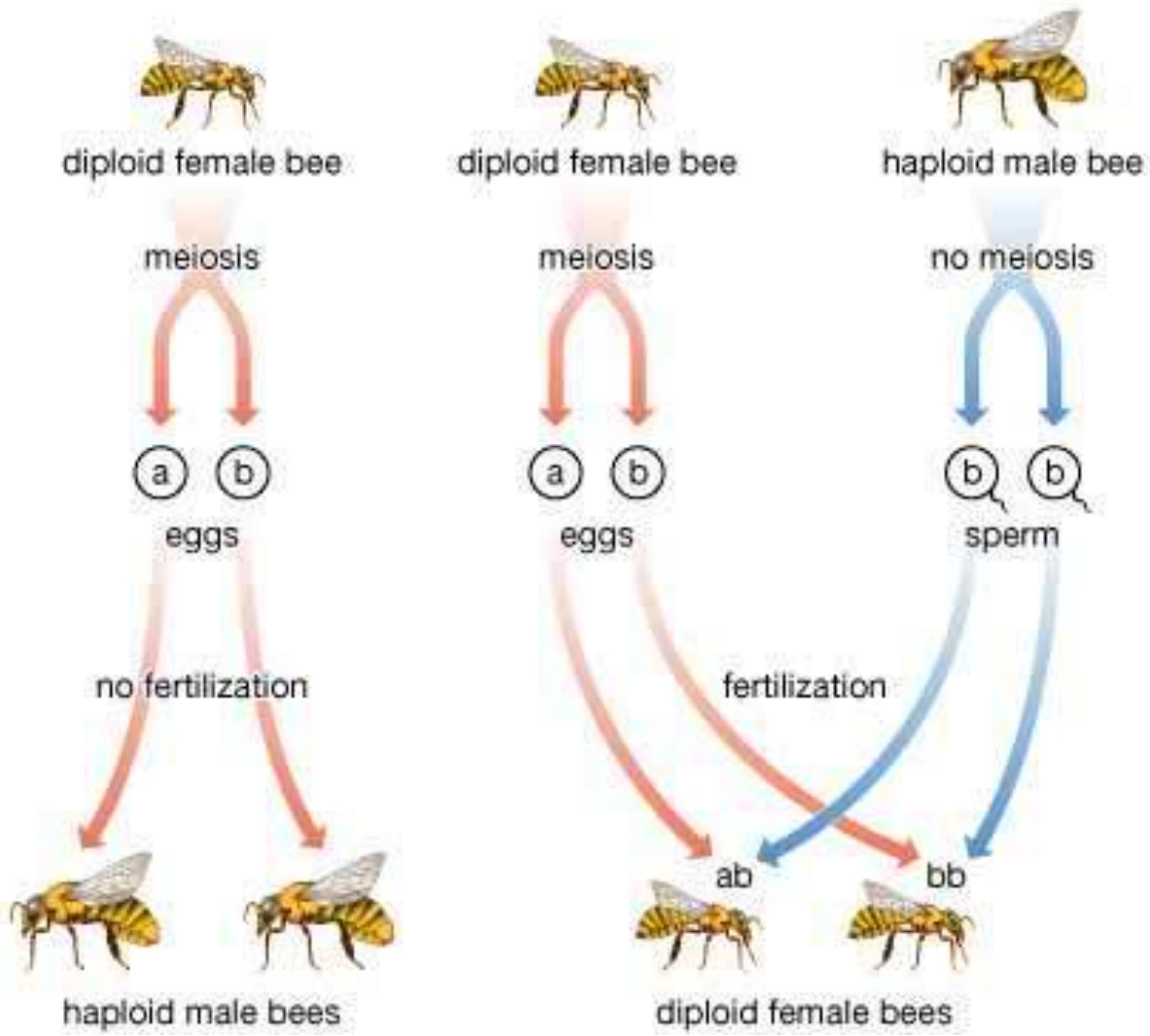
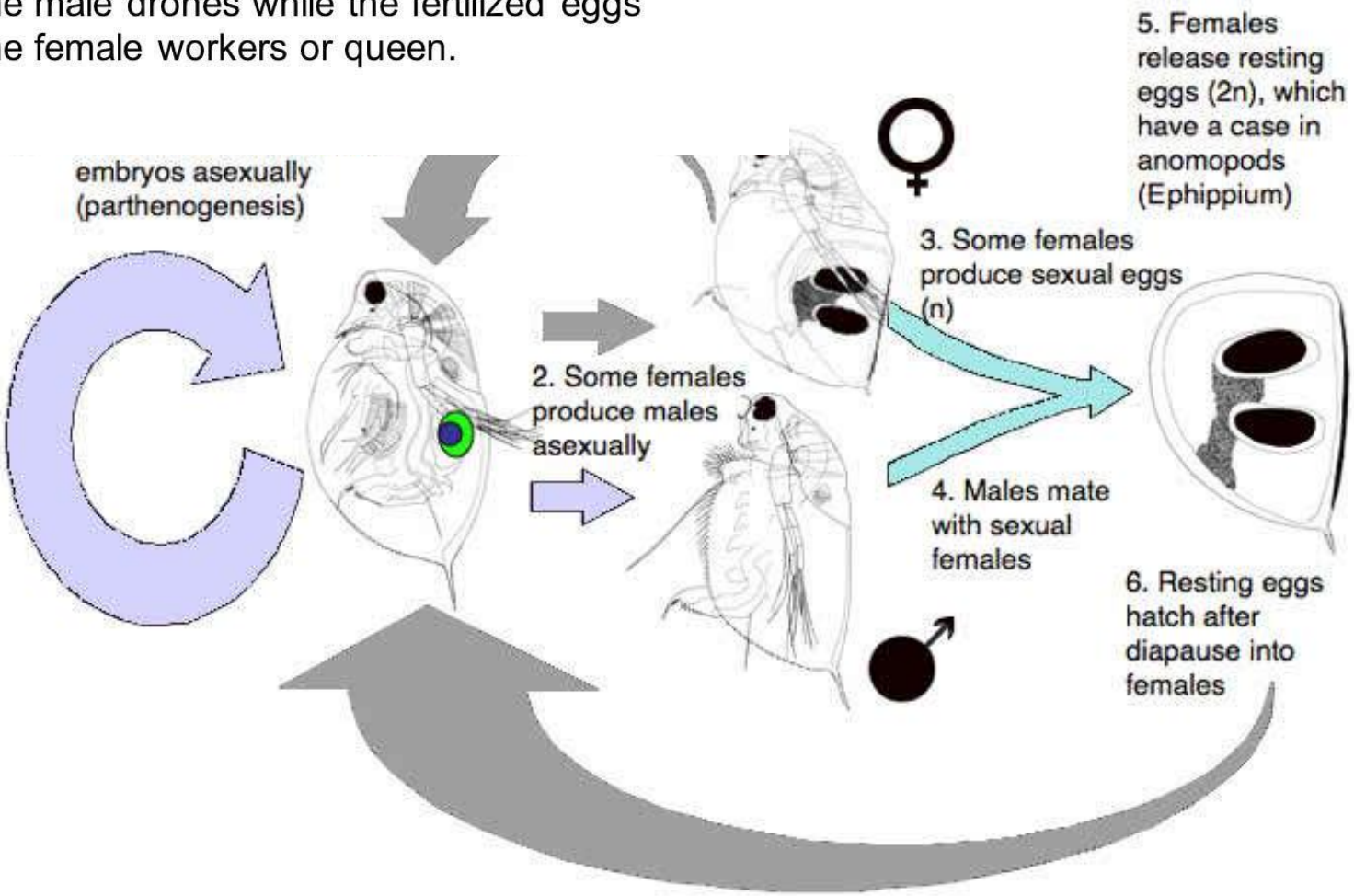


Fig. Process of parthenogenesis in bee

bees, wasps and certain ants.

- For example, in bees, the queen bee mates only once. She can then produce either unfertilized eggs or fertilized eggs. The unfertilized eggs become male drones while the fertilized eggs become female workers or queen.



Planktonic Rotifer Life Cycle

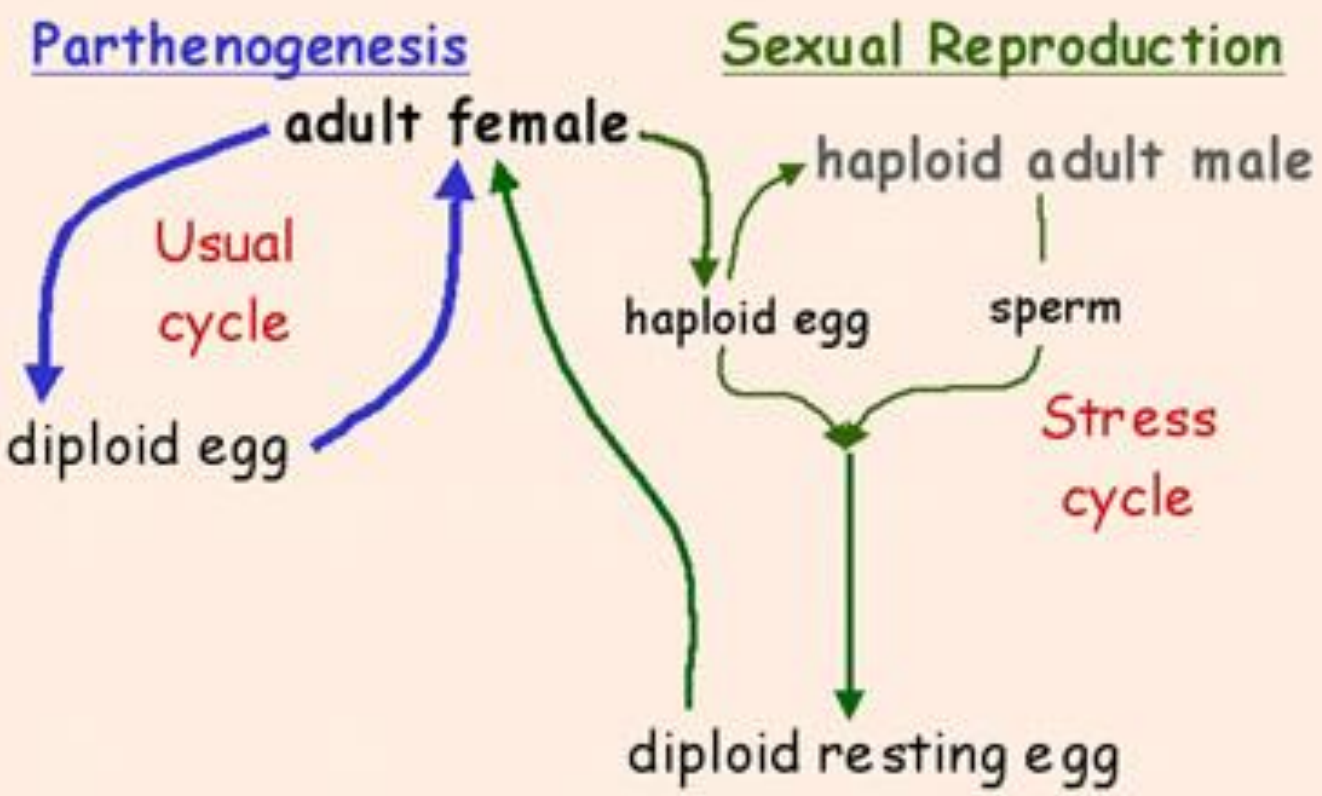




Fig. The asexual, all-female whiptail species *Cnemidophorus neomexicanus* (center), which reproduces via parthenogenesis, is shown flanked by two sexual species having males *C. inornatus* (left) and *C. tigris* (right), which hybridized naturally to form the *C. neomexicanus* species.

Pictured here with her mother:

'MY BABY BORN WITHOUT A MAN'



THE least surprised woman in Britain this morning is thirty-year-old Mrs. Emmmarie Jacobs.

Her quiet confidence, during the six dramatic months of the great Virgin Birth investigation never ceased to amaze doctors.

SHE NEVER wavered in her story. SHE NEVER faltered when faced with new and complicated medical tests.

WHAT THE DOCTORS SAY ... IS IN PAGE 11

Audrey Whiting

REPORTS THE HUMAN DRAMA OF THE RESEARCH

THE WORD

PROBLEM

SHE WROTE

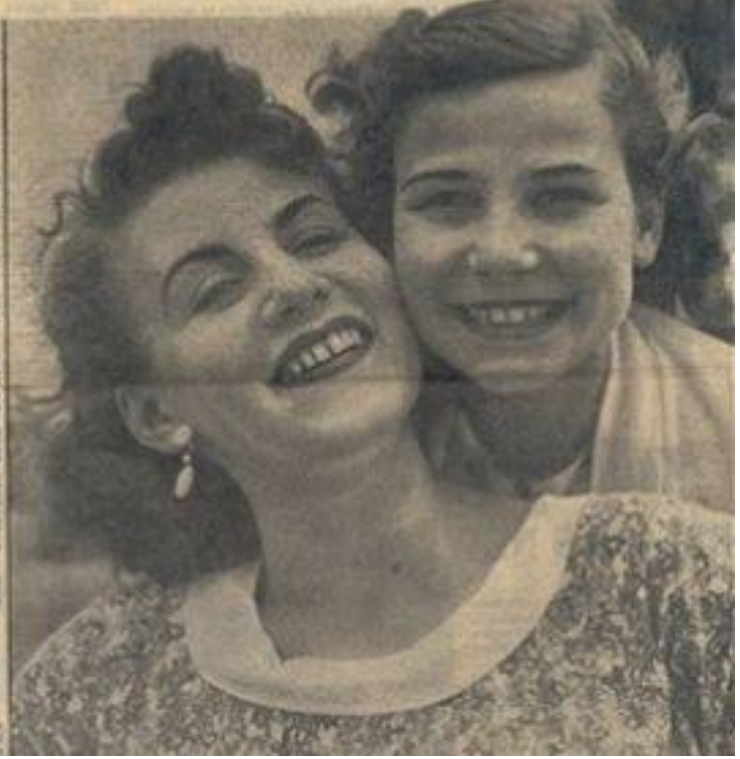
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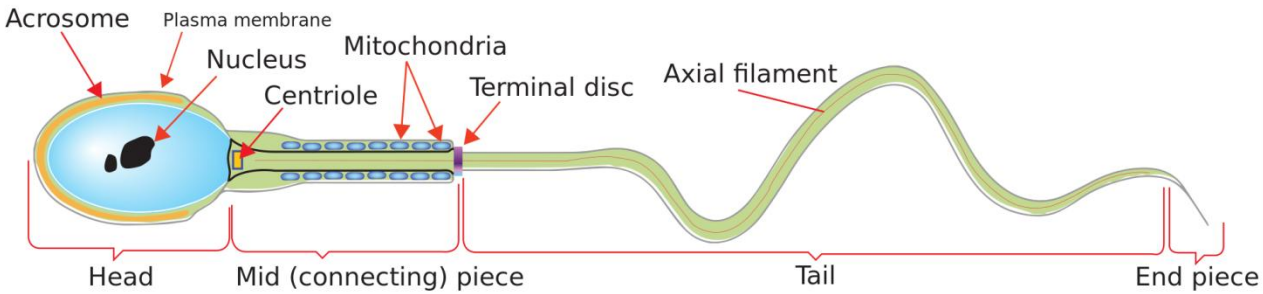
SIX MONTHS

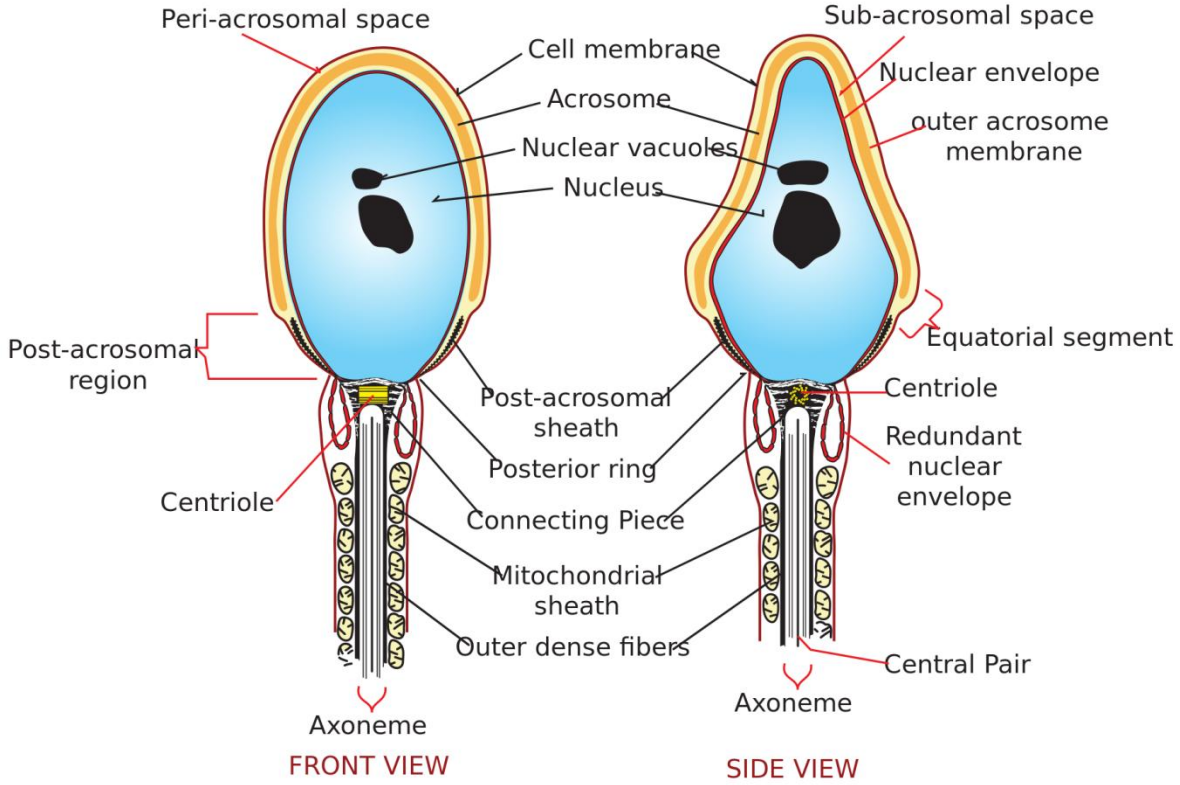
RELIEF



THE TESTS




Acrosome
Plasma membrane
Nucleus
Mitochondria
Centriole
Terminal disc
Axial filament
Head
Mid (connecting) piece
Tail
End piece


Peri-acrosomal space
Cell membrane
Acrosome
Nuclear vacuoles
Nucleus
Post-acrosomal region
Post-acrosomal sheath
Posterior ring
Centriole
Connecting Piece
Mitochondrial sheath
Outer dense fibers
Axoneme
FRONT VIEW
Sub-acrosomal space
Nuclear envelope
outer acrosome membrane
Equatorial segment
Centriole
Redundant nuclear envelope
Central Pair
Axoneme
SIDE VIEW