How Do Organisms Reproduce

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Reproduction: is a biological process by which living organisms produces new individuals similar to themselves. It ensures continuity of life on earth and helps in evolution of species.

DNA: (Deoxyribo Nucleic Acid) is thread-like structure that carries all information about our traits and is passed from one generation to the next.

DNA Copying Process → Errors in Copying (Biochemical reactions are not fully reliable) → Variations in DNA (DNA is not identical to the original)

Extreme Variation → New cell can't function → Cell dies

Mild/Moderate Variation → No severe consequences (Cell continues to function normally

Importance of Variation:

(i) Variation helps organisms adapt to changing environments.
(ii) It provides stability to a species and supports evolution.
(iii) DNA variation leads to different forms of a species and the creation of new species.

DIFFERENCE BETWEEN THE TYPES OF REPRODUCTION

Asexual reproduction	Sexual reproduction
A single individual give rise to new individual.	Two individuals, i.e one male and one female need
Gametes are not formed	Gametes are formed.
New Individual is identical to parents	New Individual is genetically similar but not identical to parent
It is extremely useful as a means of rapid multiplication.	It is useful to generate more variations in species.
Example - Microorganisms	**Example** - plants and humans

MODES OF ASEXUAL REPRODUCTION

Fission : The parent cell divides into daughter cells.

Fragmentation : The organism breaks up into small pieces upon maturation, each piece develops into new individual. E.g spirogyra.

Regeneration: If organism is somehow cut or broken into many pieces each piece growns into a complete organism. Example - Planaria, Hydra.

Budding: A bud is formed which develops into tiny individual. It detaches from parent body upon maturation and develops into new individual. Example - Hydra

Spore formation : Spores are small bulb like structures which are covered by thick walls. Under favourable conditions, they germinate and produce new organism.

vegetative propagation: In many plants, new plants develops from vegetative parts.

Benefits of Vegetative Propagation

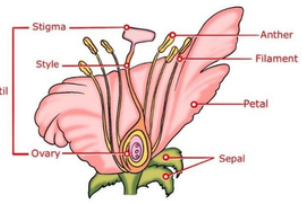
- Quick and cheap method to produce many plants.
- Disease-free plants can be produced.
- Desired traits can be introduced.
- Genetically identical plants are produced.
- Almost 100% survival rate of new plants.

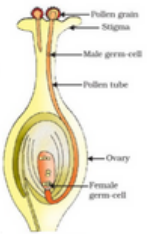
Tissue Culture

- Tissue culture: Growing new plants from small plant pieces.
- Cells from growing tip placed in artificial medium form a callus.
- Callus is moved to a hormone-rich medium for growth and development.
- Plantlets are transferred to soil to mature.
- Many disease-free plants are grown from one parent.
- Commonly used for ornamental plants.

Sexual reproduction:

When reproduction takes place as a result of the fusion of male and female gametes is called Sexual reproduction.





Reproduction in Plants

Parts	Function
Sepals	Usually green and provide protection to flower during bud stage
Petals	Brighly coloured and have strong fragrance to attract pollinators
Anther	Produces pollen grain which consists male gametes
Filament	It forms the stalk that bears anther
Stigma	Recievea pollen grain during pollination
Style	Elongated structure, connects stigma and ovary, pollen tube travel through the style to reach the ovule.
Ovary	Basal swallen part of pistil, converts into fruit after fertilization.
Ovule	Present inside ovary, consists of female gamete, site of fertilization.

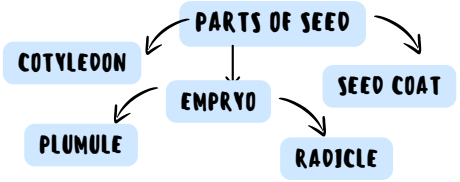
Reproduction in plants

Stamen/Male reproductive organ

BISEXUAL: Both stamen and pistil are present in a same flower. E.g., Rose, lily

Pistil/Carpel/Female reproductive organ

UNISEXUAL: either stamen or pistil is present. E.g., Papaya, Watermelon,



Reproduction in plants

Pollination The process of transferring of pollen grain from anther of a flower to the stigma.

Self pollination It is transfer of pollen to stigma of the same flower.

- It is occurs only in bisxual flower

It does not lead to genetic diversity.

Cross pollination

- It is the transfer of pollen to stigma of another flower of the same plant or another plant of same kind.
- It takes place both in unisexual and bisexual flowners
- It leads to genetic diversity.

Pollen grain containing male gamete lands on the surface of stigma after pollination → It germinates and starts forming pollen tube towards the ovule. Pollen grain discharges the male gamete. → Pollen tube reaches ovary and enters into ovule from micropyle where it finally releases gamete. They fuse → Petals, sepals, stamen. Style and stigma shrivel and fall off . Maturation of Ovules into seeds, and ovary into fruit.

Reproduction in human beings

Puberty The period of life when production of germ cells, i.e ova (female) and sperm (male) start in the body.

IN GIRLS

- Breast size begin to increase.
- Girls begin to menstruate.
- Thick hair growth in armpits and genital area.
- Skin becomes oily, may result in pimples.

These changes signs that sexual maturity is taking place.

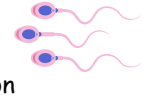
IN BOYS

- Thick hair growth on face.
- Voice begin to crack.
- Thick hair growth in armpits and genital area.
- Skin becomes oily may result in pimples.

Primary sex organs

Males

- Sperm cell
- Male sex hormon

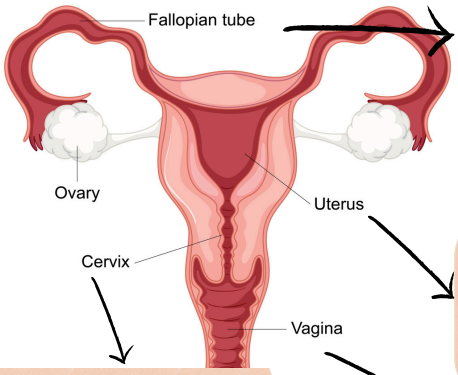


Females

- Egg cell
- Female Sex hormone

Human female reproductive system

- Ovaries: A pair located on both sides of the abdomen.
- Function: Produce female germ cells (eggs).
- At birth, thousands of immature eggs are present.
- At puberty, some eggs start maturing.
- One egg is released monthly from one ovary.



Receives the egg produced by the ovary and transfer it to the uterus. Fertilisation i.e, fusion of gametes takes place here.

It is a bag like structure where development of the offspring takes place.

Ring of muscles that is nearby the lower end of the uterus.

Gathers sperm deposited by the penis, act as birth channel for a child.

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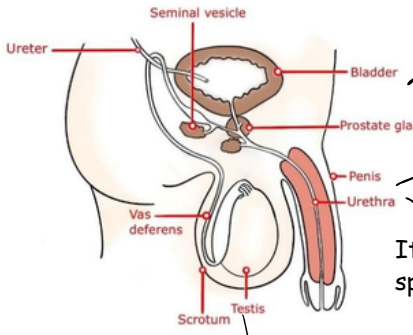
ail.

Human male reproductive system

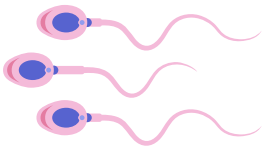


Stores urine

Deposits sperm inside the vagina; furthermore disposes of urine

It is a common passage for both sperms and urine

Testes are in the scrotum outside the abdomen as sperm formation needs lower temperature than body temperature



Seminal vesicles: and prostate gland add their secretion to the sperms. This fluid provide nourishment to sperms and make their transport easy.

Testis: Location: In the scrotum, outside the abdomen.

- Function: Produce sperms and release testosterone.
- (i) Regulates sperm production.
- (ii) Causes puberty changes like voice deepening and body hair

- Vas defernce It passes sperms from testis upto urethra

Reproduction in human beings

After copulation, millions of sperms are released during ejaculation.

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Sperms swim towards female gamete, with the help of tail.

↓

Only one sperm will fertilizes the egg . The fertilized egg will move towards the uterus.

↓

Zygote develops into an embryo, and after about 8 weeks of development, the embryo becomes a fetus.

Implantation

Attachment of growing embryo to endometrium.

Placenta

- The embryo grows inside the mother's womb and gets nourishment from mother's blood through tissue called placenta.
- Villi on placenta provide a large surface area of glucose and oxygen to develop embryo.

Reproduction in human beings

Female ovary

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Produces egg ova once a month

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uterus wall become thick

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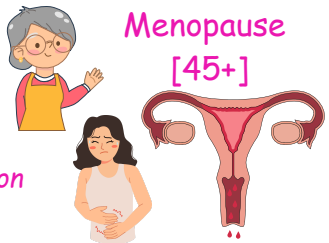
Fertilized by sperm
Pregnancy

Not fertilized
Menstruation

Menarche [11-12]

Menopause [45+]



Menstrual cycle

- The uterus prepare itself every month to receive fertilized egg.
- The lining of the uterus becomes thick and spongy, required to support the embryo.
- When fertilization had not taken place, this lining is not needed any longer.
- The lining breaks and comes out through vagina as blood and mucus. This cycle takes around 28 days every month called menstruation.

REPRODUCTIVE HEALTH

Reproductive health is a condition of overall physical, mental and social prosperity, and not just the nonattendance of reproductive disease or ailment

Sexually Transmitted disease (STDs)

Diseases transmitted to healthy person because of matting with contaminated person

Bacterial
Gonorrhoea Inflammation of the mucous membrane of urogenital tract, rectum, victims feels burning and pain during urination.

Syphillis Is caused by bacterium, which affects the mucous membrane of genital, rectal area.

Viral

AIDS Is caused by HIV virus. It is fast spreading incurable disease, which weakens the body's immune system.

Wards A small bump on the genitas caused by a common st infection.

Some common contraceptive devices

Methods and techniques to prevent pregnancy

Mechanical method

- Condom
- Cervical cap

Chemical methods

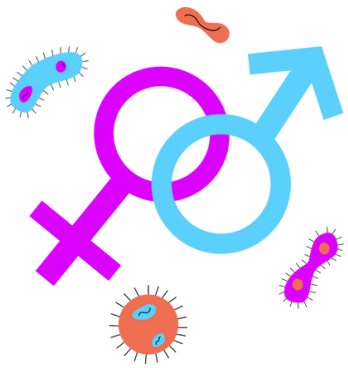
- PILLS

IUCD

- Loop
- Copper T

Surgical method

- Vasectomy
- Tubectomy



Chapter ka KAZAANA:

- **Asexual Reproduction**
- **Budding (Diagram)**
- **Vegetative Propagation**
- **Fertilization in plants (Diagram + Functions)**
- **Reproduction (diagram) - Male & female**
- **STDs (MCQs)**