

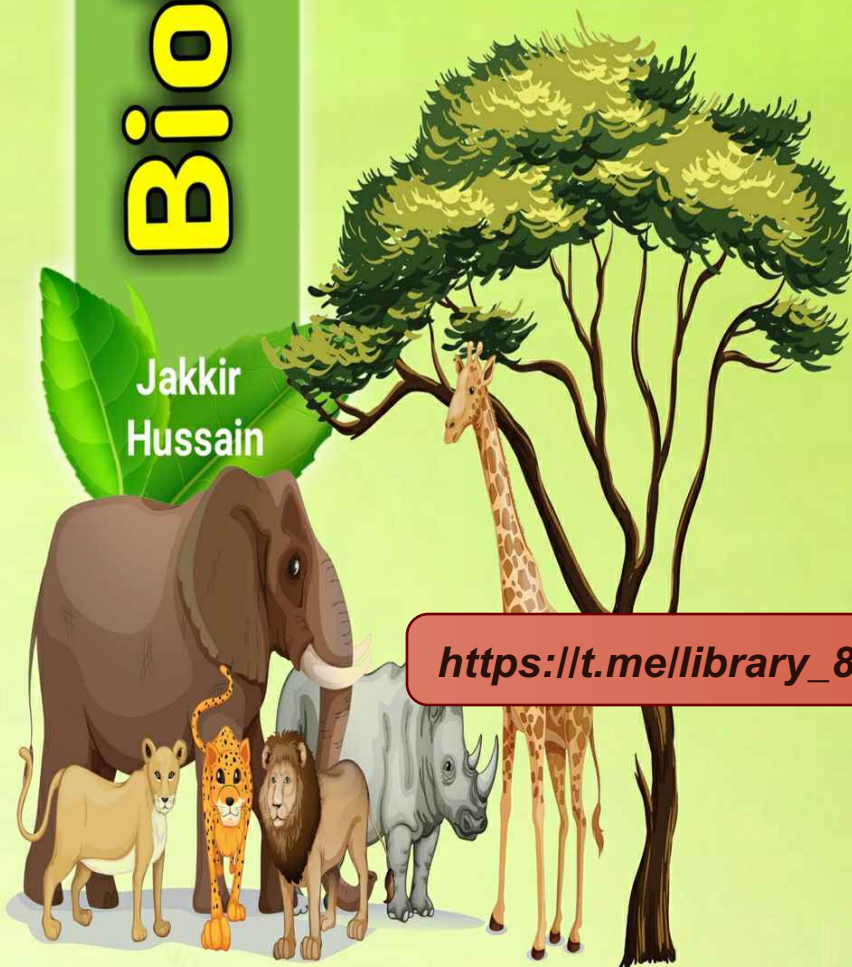


Biology

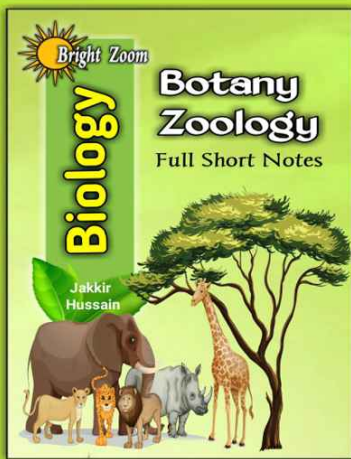
Botany Zoology

Full Short Notes

Jakkir
Hussain



https://t.me/library_84



Biology

Jakkir
Hussain

purpose:

Hello friends...!

This book biology cover to botany and Zoology important short notes and all competitive exams preparing in all Science students NEET, JEE, UPSC, exam general knowledge usage. This book refer to Indian NCERT book solution CBSE notes and TN books notes and Wikipedia short note image reference to Google.

Thankyou.. !!

By Jakkir Hussain.



Biology

Jakkir
Hussain

Content

Chapter- I

1.Important Terms of Biology

Chapter- II

2 . Classification of Organism

Chapter- III

3. Study of Cell (Cytology)

Chapter IV

4. Genetics

Chapter V

5. Organic Evolution

Biology

1. Introduction:

Biology – Branch of science in which living beings are studied.

Bios = Life & Logos = Study. Therefore study of life is called biology.

The term biology was first coined by Lamarck and Treviranus in the year 1801. Biology has two main branch.

1. Botany :

Study of different aspects of plants.

Theophrastus is known as father of Botany.

2. Zoology :

Study of various aspects of animals.

Aristotle is called father of Zoology as well as Biology.

Chapter- I

Important Terms of Biology :

1. Anatomy :

Study of internal structure of organism.

2. Agrology :

Soil science dealing specially with production of crop.

3. Agronomy :

Science of soil management and production of crop.

4. Agrostology :

Study of grass.

5. Arthrology :

Study of joints.



6. Apiculture :

Rearing of honey bee for honey.

7. Anthropology :

Study of origin, development and relationship between the culture of past and present human.



8. Anthology :

Study of flower and flowering plant.

9. Angiology :

Study of blood vascular system including arteries and veins.

10. Andrology :

Study of male reproductive organ.



11. Bryology :

Study of Bryophytes.

12. Biometrics :

Statistical study of Biological problem.



Biology

13. Biomedical engineering :

Production and designing of spare part for overcoming various defects in man. e.g. artificial limbs, Iron lung, . Pacemaker etc.

14. Biotechnology :

Technology concerned with living beings for wilful manipulation on molecular level.

15. Bacteriology :

Study of bacteria.

16. Cytology :

Study of cell.

17. Cryobiology :

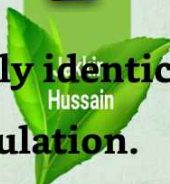
It is the study of effect of low temperature on organisms and their preservation.

18. Clone :

Clones are genetically identical individual in a population.



Biology



19. Cardiology :

Study of heart.



20 .Demography :

Study of population.

21. Diffusion :

Random movement of molecule / ion or gases from a region of higher concentration to lower concentration.



22. Dermatology :

Study of skin.

23. Dendrochronology :

Counting and analysing annual growth rings of tree to know its age.



24. Ecology :

Study of inter-relationship between living and their environment.



25. Evolution :

Biology

Study of origin of life,
variation and formation
of new species.



Biology

26. Embryology :

Study of fertilization of egg,
formation of zygote and
development of embryo.



27. Eugenics :

Study of factors connected
with the improvement of
human race.

https://t.me/library_84

28. Euthenics :

Study of environmental
condition that contribute to
the improvement of
human beings.



Biology

29. Euphenics :

Treatment of defective in
heredity through genetics
engineering.



30. Ethnology :

Study of science dealing with

different races of human.



31. Ethology :

Study of animal behaviour in their natural habitats.

32. Etiology :

Study of causative agent of disease.



33. Entomology :

Study of insects.

34. Exobiology :

Study of possibility of life in space.

35. Floriculture :

Cultivation of plant for flower.



36. Food technology

Scientific processing, preservation, storage and transportation of food.



37. Forensic science :

Application of science for identification of various

facts of civilian.



38. Fishery :

Catching, breeding, rearing and marketing of fishes

39. Forestry :

Development and management of forest



40. Fermentation :

Process of incomplete oxidation that occur in microbes and other cells in absence of oxygen, leading to the formation of ethyl alcohol.



41. Genetics :

Study of variation and transmission of hereditary character from parents to their young Ones.

42. Growth :

Permanent increase in weight, volume and size



Biology

Biology

of an organism.



43. Genetic Engineering :

Manipulation of gene in order to improve the organism.

44. Gynecology :

Study of female reproductive organ.



45. Gerontology :

Study of ageing.

46. Gastroenterology :

Study of alimentary canal or stomach, intestine and their disease.



47. Hypertonic :

When two solution have different solute concentration.

The solution which have higher concentration is called hypertonic.



48. Hypotonic :

In two solutions which have

lower solute concentration
is called hypotonic



49. Homeothermic :

Animals who have constant
body temperature are called
home thermic or
warmblooded animal.

Biology

Jakkir
Hussain

50. Histology :

Study of tissue organisation
and their internal structure
with the help of microscope.

51. Hygiene :

Science taking care
of health.

52. Hydroponics :

Study of growing plant
without soil in water
which contain nutrient



Biology

Jakkir
Hussain

53. Haematology :

Study of blood.

54. Hepatology :

Study of liver.



55. Ichthyology :

Study of fishes.

56. Immunology :

**Study of immun system
or resistance of body
to disease.**



57. Kalology :

Study of human beauty.

58. Metazoans :

**All multicellular animals
are called metazoans.**

59. Monoecious :

**Plant which have both
male and female flower**



60. Morphology :

Study of external structure.



61. Microbiology :

**Study of micro-organism
like virus, bacteria, algae,**

fungi and protozoa.



62. Molecular biology :

Study of molecule found in the body of living organism.

63. Medicine :

Study of treating disease by drug.



64. Mammography :

Branch of science which means deal test of breast cancer.

65. Mycology :

Study of fungi.



66. Nutrients :

Chemical substance taken as food which are necessary for various function, growth and health of living.



67. Neurology :

Study of nervous system.



68. Neonatology :

Study of new bom.



69. Nephrology :

Study of kidneys.

70. Osmosis :

Movement of water molecule across semipermeable membrane from the region of its higher concentration to the region of lower communication.



71. Odontology :

Study of teeth and gum.



72. Osteology :

Study of bones.

73. Oncology :

Study of cancer and tumours.



74. Obstetrics :

Science related with care of pregnant women before,



Biology

Biology

during and after child birth.



75. Ornithology :

Study of birds.

76. Ophthalmology :

Study of eyes.

77. Orthopaedics :

Diagnosis and repair of disorder of locomotory system.



78. Phytoplanktons :

Microscopic organism which passively float on the surface of water.

https://t.me/library_84

79. Parasite :

Organism which depend on other living organism for their food and shelter.



80. Poikilothermic :

Organism which change their body temperature according to surrounding.

These are also called cold



Biology

blooded animal.



81. Pigment :

A substance which absorb light of certain wavelength like chlorophyll found in green leaves.

Biology

82. Paleontology :

Study of fossils.



83. Physiology :

Study of function of various system of organism.

84. Pathology :

Study of diseases, effects, causable agents and transmission of pathogens.



85. Pomology :

Study of fruit and fruit yielding plant.

Biology

86. Psychiatry :

Treatment of mental disease.



87. Psychology :

Study of human mind and behavior.

88. Pisciculture :

Rearing of fishes.

89. Phycology :

Study of algae.

90. Paediatrics :

Branch of medicine dealing with children.

91. Parasitology :

Study of parasites.

92. Photobiology :

Effect of light on various biological processes.

93. Phylogeny :

Evolutionary history of organism.

94. Physiotherapy :

Treatment of body defects through massage and exercise.



Biology



Biology



95. Radiology :

Science dealing with the effect of radiation on living beings.

96. Rhinology :

Study of nose and olfactory organs.

97. Sonography :

Study of ultrasound imaging.

98. Saurology :

Study of lizards.

99. Serology :

Study of serum, interaction of antigen and antibodies in the blood.

100. Sphygmology

Study of pulse and arterial pressure.

101. Taxonomy :

Study of classification, nomenclature and identification of organism.

102. Telepathy :



Biology



Biology



Communication of thoughts or ideas from one mind to another without normal use of senses. In other word this is the process of mental contact.

103. Veterinary Science :

Science of health care and treatment of domestic animals.

What is living ?

1. The word living cannot be defined.

2. There are certain characters by which can be distinguished from non living.

(i) Growth :

Increase in the number of cell or mass is called growth

(ii) Reproduction :

QLiving organism produce young ones of their same kind.

(iii) metabolism :

Chemical reaction occurring inside a living cell.

(iv) Response of stimuli :

Living have the ability to sense the condition of their surrounding and respond to these stimuli.

https://t.me/library_84

Chapter- II

2. Classification of Organism

1. There are millions of organisms.

It is impossible to study each individual

separately. Classification means to

categories organism into different

groups. Study of an individual of a group gives us the idea of rest of the member of that group.

2. Linnaeus divide all organism into two kingdoms - Plantae and Animalia in his book "System a Nature". The foundation of modern classification system was laid in the line of classification system

started by Linnaeus. Therefore Linnaeus is called 'Father of Taxonomy'.

Due to disputed position of organism like bacteria, virus, fungi and euglena, there is a need of reconsideration of system of classification.

Five Kingdom Classification

1. Five Kingdom Classification was proposed in 1969 by R.H. Whittaker.

The criteria of classifying organism into five kingdoms are its complexity of cell structure, complexity of body of organism, mode of nutrition, life style and phylogenetic relationship.

1. Monera :

It includes all prokaryotic organism like bacteria, cyanobacteria and archiobacteria. Filamentous bacteria also come under this kingdom. All organism of this kingdom are microscopic.

2. Protista :

This kingdom includes unicellular form usually found in

aquatic habitats. On the basis of mode of nutrition they are autotrophic, parasitic, and saprophytic. Diatoms flagellates and protozoa come under this kingdom. Euglena have both heterotrophic and autotrophic mode of nutrition. So, it is placed between plant and animal.

3. Fungi :

This kingdom includes non-green plants. It has saprophytic nutrition and growing on dead and decaying organic matter. The cell wall is composed of chitin.

Example :

Mushroom, Mucor, Albugo etc.

4. Plantae :

This kingdom includes all plants except some algae, diatoms, fungi and member of monera and protista.

5. Animalia :

Almost all animal comes under this kingdom except protozoan.

Binomial nomenclature :

There was the need of uniform international naming of organism. In biology every organism is given two proper names. The first name is genus name always started with capital letter and the second name is species started with small letter. For example scientific name of human is Homo sapiens. Homo is the name of genus, whose one species is sapiens.

.....

Chapter- III

Study of Cell (Cytology)

1. Cell : Cell is the basic structural and functional unit of life.

2. The word 'cell' was first coined by British scientist Robert Hook in the year 1665.

3. The smallest cell is Mycoplasma gallisepticum.

4. The longest cell is Neuron.

5. The biggest cell is egg of Ostrich.

6. Schilden and Schwan established cell theory in the year 1838-39



Biology

Main features of the cell theory :

1. All organism are composed of cell.
2. Body of every organism is made of cell.
3. Each cell arises from pre-existing cell.
4. Every organism starts its life from single cell.



Cell is of two kinds: https://t.me/library_84

1. 3. Study of Cell (Cytology)

1. Cell : Cell is the basic structural and functional unit of life.
2. The word 'cell' was first coined by British scientist Robert Hook in the year 1665.
3. The smallest cell is Mycoplasma gallisepticum.



Biology



4. The longest cell is Neuron.

5. The biggest cell is egg of Ostrich.

6. Schilden and Schwan established cell theory in the year 1838-39.

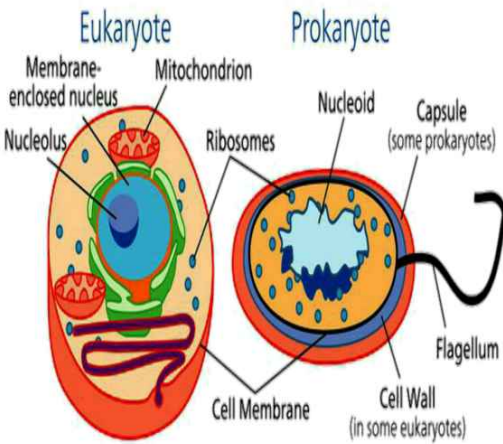
Main features of the cell theory :

1. All organism are composed of cell.
2. Body of every organism is made of cell.
3. Each cell arises from pre-existing cell.
4. Every organism starts its life from single cell.

Cell is of two kinds

1. Prokaryotic cell

These are primitive cell having three basic structure of typical cell but lack nuclear membrane. Nuclear material is present in a region of cytoplasm called nucleoid. Other membrane bound organelles are absent such as mitochondria, ribosome, golgi bodies etc. Ex.-Virus, bacteria and cynobacteria are Prokaryotes.



2. Eukaryotic cell

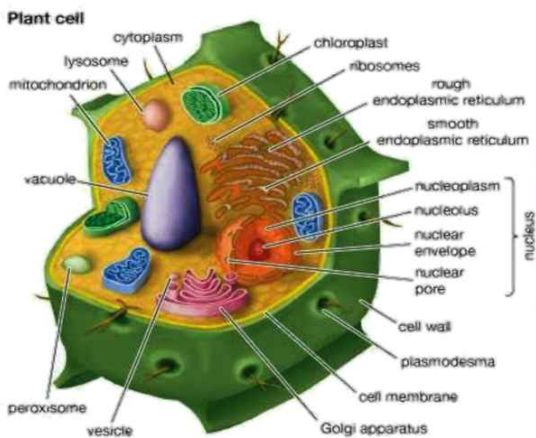
These are complete cell which contain membrane bound organelles and nucleus. Unicellular and multicellular plant and animal have Eukaryotic cell.

Biology

Structure of typical cell :

A cell have following structure.

Jakir Hussain



1. Cell wall :

In plant cell there is a rigid cell wall which is non living and freely permeable. It is made up of cellulose and chitin. It provide shape and rigidity to the cell.



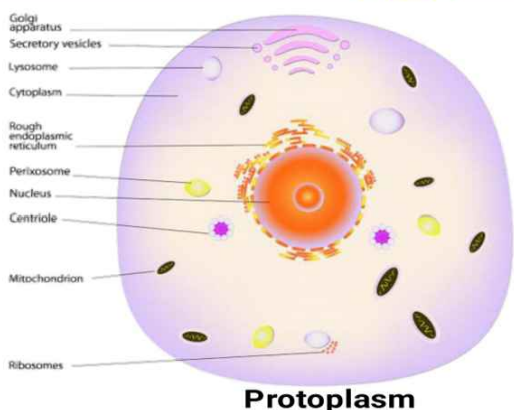
2. Cell membrane : It is also known as plasma membrane which form the outer covering of animal cell. In plant cell it is found within cell wall. It is thin, elastic, living, double layer, permeable membrane. It is made up of phospholipid molecules.



Function : It regulates movement of molecules inside and outside of the cell.

3. Protoplasm :

The whole fluid present inside plasma-membrane is protoplasm.



The name protoplasm is given by Purkenje in 1839. Protoplasm is made up of various chemical substances like water, ions, salt and organic molecule. It is the living part of cell. Protoplasm is divided into two parts.

A. Cytoplasm :

The fluid found outside the nuclear membrane.



B. Nucleoplasm :

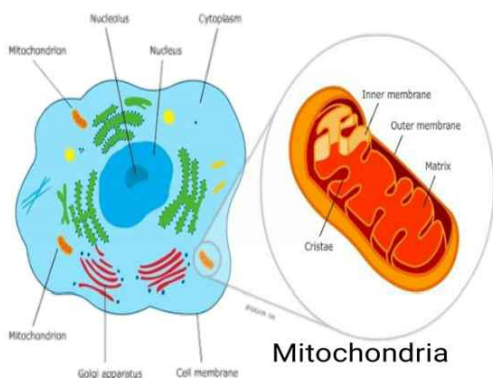
The fluid found inside the nuclear membrane.

4. Mitochondria :

Discovered by Altman in the year 1886.



Biology



These are cylindrical, rod shaped or spherical structure found in cytoplasm.

It is surrounded by double layered membrane. Inner membrane has many fold called cristae. The fluid present



Biology

inside mitochondria is called matrix, which contain many enzyme and co-enzyme.

Function :

Mitochondria is the respiratory site of cellular respiration. Mitochondria synthesize energy rich compound.

ATP. It is also known as "Power House" of the cell.

5. Golgi bodies :

Discovered by scientist Camilo Golgi. Golgi bodies are made up of group of tubes, vesicles and vacuoles. In plant it is more in number and here it is known as dictyosomes.

Function :

It work as storage, processing and packaging of material. It also involved in the synthesis of cell wall, plasma membrane and lysosomes.

6. Endoplasmic reticulum :

Membranous network of tubules like structure found in cytoplasm is called endoplasmic reticulum. It is attached

with the nucleus on one side and on other side it is joined with plasma membrane.

Function :

Endoplasmic reticulum helps in the distribution of material. It forms supporting framework of cell.

7. Ribosome :

Discovered by Palade. Small granules like structure found attached to the endoplasmic reticulum or in free state. It is made up of ribonucleic acid. (RNA)

Function :

https://t.me/library_84

Take part in protein synthesis.

8. Lysosome :

Discovered by De Duve. These are sac like structure bounded by single membrane and contain hydrolytic enzyme.

Function :

It helps in intracellular digestion.

The enzyme found in lysosome may digest the entire cell. So it is also known as suicidal bag.

9. Centrosome :

Discovered by Boveri. It is only found in animal cell taking part in cell division. It is not bounded by membrane consist of two centriole.

Function : Help in the formation of spindle fibre during cell division.

10. Plastid :

Only found in plant cell. It is of three type :

- (a) Chloroplast
- (b) Chromoplast
- (c) Leucoplast.

(a)Chloroplasts :

These are green pigment found in green plant involve in photosynthesis. So, it is known as 'Kitchen of the cell'. Chloroplast is bounded by two unit membrane having grana and stroma. Grana are membrane bounded sac like structure found in stacks containing chlorophyll molecule. Stroma is the matrix present inside the chloroplast which contain photosynthetic enzymes and starch grain. Granum is the site of light reaction during

photosynthesis while stroma is the site of dark reaction.



Function :

Chloroplast provides green colour to plant & take part in photosynthesis.

(b) Chromoplast provides various colours to the plant.

Jakkir Hussain

(c) Leucoplast is colourless. It stores the food in the form of starch, fat & protein.

11. Vacuole :

These are fluid filled single membrane bounded, dead organelles of cell. In plant cell it is larger in size but in animal it is smaller in size.

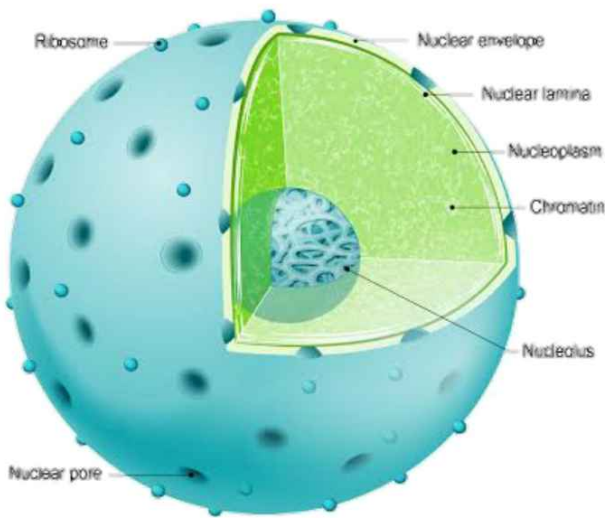


Function : It helps in osmoregulation. It stores toxic metabolic waste.

12. Nucleus :

The nucleus is a spherical, centrally located is a major structure found in the cell. In plant cell it is shifted towards

Jakkir Hussain



Cell Nucleus

periphery.



It is bounded by double layered nuclear membrane having pore. Within nucleoplasm nucleolus and chromatin material is present. Nucleolus is rich in protein and RNA. Chromatin material is my thin thread like structure forming network. This is made up of genetic substance DNA (deoxyribo nucleic acid)

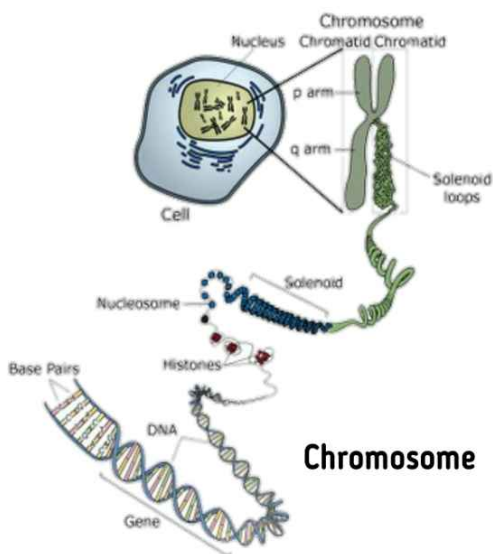


and histone protein. During cell division chromatin breaks into pieces and forms chromosome.

Function : It controls all the activity of cells. So it is also known as “control room” of cell. Chromatin transmits hereditary characters from parents to their offspring.

Chromosome

1. Chromosome is thread like structure found in the nucleus. It becomes visible during cell division. Each chromosome is



made up of two chromatids joined together at a point centromere. **Bead** like structure found on chromosome is called gene. Genes are made up of DNA (deoxyribo nucleic acid) which is the carrier of genetic information from generation to generation. In some viruses RNA is the genetic material called rietrovirus. In prokaryotes there is only one chromosome, like bacteria and viruses.

2. Eukaryotic cell posses many chromosome. A particular kind of species have definite number of chromosome in their cell, which are in pair known as diploid. The set of impaired chromosome is called haploid. Gametes have haploid set of chromosome.

Nucleic Acid : Nucleic acid is complex organic compound found in cell. It contains special genetic instruction in coded form. Nucleic acids are of two kinds.

A. Deoxyribo nucleic Acid (DNA) :

Frederic Meischer was the first who

isolated DNA from the nucleus of pus cells. DNA is a macromolecule in which large number of nucleotides are present. Chemically a nucleotide has three components.

- (1) Nitrogen base
- (2) Sugar
- (3) Phosphate group.

Nitrogen base are of two type—Purines & Pyrimidines. Purines contain two nitrogen base—Adinine and Guanine. Pyrimidine nitrogen base are Thymine and Cytosine. Thus there are four kinds of nucleotides present in DNA. Watson and Crick give the structural model of DNA —

1. DNA molecule is consists of two polynucleotide strand forming a double helix. Each strand has a backbone of sugar and phosphate. Nitrogen base is attached to the sugar.

2. Nitrogenous base of the two strands of a double helix form a pair with the help of hydrogen bonds. Adenine pairs with thymine where as guanine pairs with cytosine. Adenine and thymine are

complementary to each other and cytosine is complementary to guanine. Hydrogen bonding between nitrogenous base holds the two strands together. This structure can be compared with the steps of spiral staircase.

Function :

1. It contains genetic information in coded form.
2. DNA synthesises RNA.

Note :

DNA is mainly found in nucleus. In small amount it is also found in mitochondria and chloroplast.

Gene : Gene is hereditary unit which is made by a segment of DNA found on the chromosome.

B. Ribonucleic Acid (RNA) :

RNA is single stranded nucleic acid made up of phosphate, ribose sugar and nitrogen base uracil, adenine, guanine and cytosine. It is found in nucleus as well as cytoplasm.

RNA is of three kind.



1. Messenger RNA (mRNA) :

It brings the message from DNA found in the nucleus to cytoplasm in the coded form.

2. Ribosomal RNA (rRNA) :

Present in ribosome which is the site of protein synthesis.



3. Transfer RNA (tRNA) :

It is the carrier of amino acid and transfer it to the ribosome.

Function : Synthesis of protein.

Difference between RNA and DNA

Cell cycle :

It is the sequence of events in which cell duplicates its genetic material, synthesise the other constituents of cell and ultimately divide into two daughter cell.



Cell Division :

The process in which cell increase in their number is cell division. It is needed for growth, development and repair of body. There are mainly two kind of cell division.



A. Mitosis :

Mitosis cell division occur in somatic cell which take part in growth, repair and development. In unicellular organism asexual reproduction takes place by this type of cell division.

Significance of Mitosis :

1. After Mitosis cell division one cell divided into two daughter cell in which number of chromosome is equal to the parent cell.
2. Uncontrolled Mitosis may cause tumor or cancerous growth.

B. Meiosis : 1. Meiosis cell division occur in reproductive cell. This type of division takes place during the formation of haploid gamete. i.e. ova & sperm.

2. It is also known as reduction division during which each daughter cell have haploid number of chromosome.

3. Four daughter cells are produced from one meiotic cell division.

Terms related to Cytology :



1. **Karyokinesis** : Division of nucleus during cell division called Karyokinesis.

2. **Cytokinesis** : Division of cytoplasm called cytokinesis.



3. **Diploid** : Two complete set of chromosome is called diploid, found in somatic cell.

4. **Haploid** : Single set of chromosome in cell is called haploid found in gametes.

5. **Crossing over** : Exchange of genetic material between two non sister chromatids takes place during meiosis cell division is called crossing over.



6. **Homologous chromosome** :
A pair of chromosome having same size and shape bearing corresponding gene.



7. **Phenotype** : The character of organism which can be seen directly.

8. **Genotype** : Genetic constitution of organism is called genotype.

9. **Tonoplast** :

The membrane surrounding the vacuole.

10. **Unit membrane** :

The basic trilaminar structure of cell membrane.

.....
Chapter IV

https://t.mellibrary_84

4. Genetics

The process of transfer of hereditary character from one generation to next generation is called Genetics. Johan

Mendel is known as father of genetics.

Mendel experiments were based on cross breeding of two pea plant having

contrasting characters for same

featur i.e. tall and dwarf character of

plant are for height of plant. He extended

his work by two or three pair of contrasting characters called dihybrid and trihybrid

cross. He concludes some result on

the basis of his experiment called Mendel's law.



1. Law of paired unit Mendel proposed that when two dissimilar unit factors are present in an individual only one is able to express. One that expresses itself is dominant unit factor while other which fails to express is recessive unit factor. For example tallness is dominant over dwarfness.



2. Law of dominance : Offspring of cross breed parent only show dominant characters in F1 generation.

3. Law of segregation :

In F2 generation both the character which is governed by gene is separated.



4. Law of independent assortment :

During dihybrid and trihybrid cross two or three pair of characters are taken. These characters segregate separately without depending on other in F2 generation.



Term related to genetics :



1. Linkage :

Linkage is an exception of Mendel law. When two different gene are present on the same chromosome their effects take place together instead of independently. This phenomenon is known as Linkage. The word linkage first coined by Morgan.



2. Mutation :

A sudden change in the gene which is heritable from one generation to other. The term Mutation was first coined by meHugo de Vries.

3. Variation :

When characters are transmitted from one generation to next generation there is some change. Change in characters by recombination of gene in offspring takes place they look different from their parents. This phenomenon is known as Variation.



4. Chromosomal aberrations :

Any change in chromosomal structure is known as Chromosomal aberrations.

5. Cloning :

It is a process of producing many identical organism from a single cell having same genetic character as his mother.

Ex : Sheep Dolly was produced from single cell.

6. Totipotency :

It is the potential ability of a plant cell to grow into a complete plant.

7. Pluripotency :

It is the potential ability of a cell to develop any kind of the cell of animal body.

8. Genetically modified organism (GMO) :

Manipulation of gene by cutting or joining the segment of DNA to get desired varieties of organism is called genetically modified organism. This is also known as genetic engineering.

9. Autosomes :

Chromosomes found in cell which are responsible for characters other than sex are called autosomes.

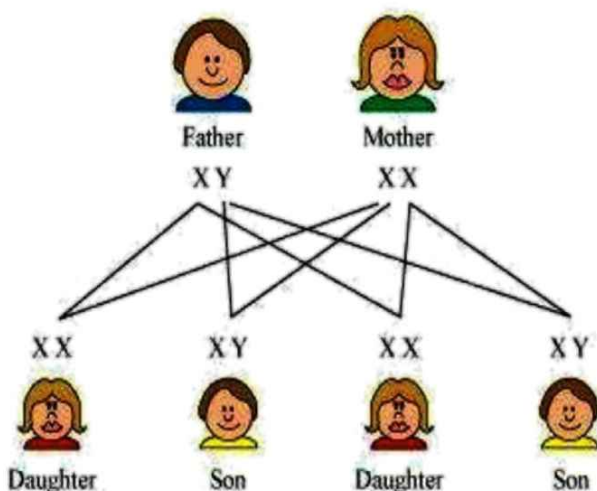
The pair of chromosome which determine the sex of organism is called sex-chromosome. Human have 23 pair of chromosome in which 22 pair are autosome and 1 pair is sex chromosome.

11. Genome :

All gene present in a haploid cell is called genome.

Sex

Determination



Sex determination in humans

in

Hum

Hussain

In human male sex chromosome is 'XY',

where as in female sex chromosome is XX.

During gamete formation in male half of the sperm contain 'X' chromosome while other half contain 'Y' Chromosome.

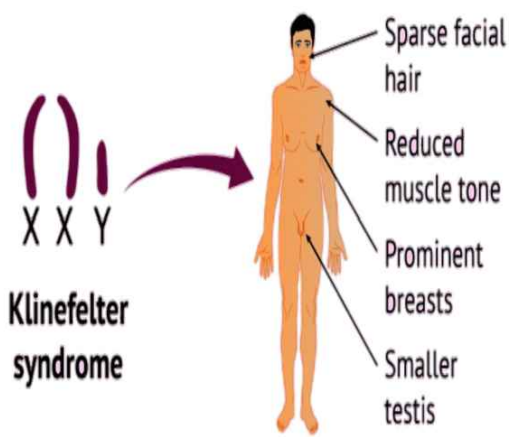
In female all gametes contain only one type of chromosome that is 'X'. Thus when a male gamete i.e. sperm carrying 'X' chromosome fertilize an ova, the zygote develop into female. When a sperm carrying 'Y' chromosome fertilizes an egg, zygote develops into male.

Sometime sex determination is regulated by environmental factor.

In some reptiles temperature determine the sex at which the fertilized egg is incubated.

In human each cell contains 46 chromosomes. Any addition or removal in the number of sex chromosome or autosome cause genetic disorder.

1. Klinefelter Syndrome :



Jakkir
Hussain

When a male have an extra X or Y chromosome in sex chromosome then the condition will be XXY or XYY instead of XY. The individual with this syndrome have masculine development but feminine development is not completely suppressed and the individual became sterile.

In female when extra X chromosome is present instead of XX they show normal development but limited fertility. Mental retardness is also seen in this type of syndrome. Number of chromosome

Jakkir
Hussain

became 47 instead of 46.

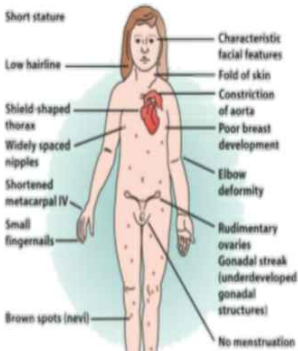


2. Turner's Syndrome :

When female has single sex chromosome (X0) their ovaries are rudimentary, lack of secondary sexual character.

KidzBiDi

Turner Syndrome Only one fully functional X



.. And now we find out there are females who lack sex-determining chromosome..

3. Down's Syndrome :

When an extra chromosome is added to 21st autosomal chromosomes this leads to develop Down's syndrome.

In this syndrome person becomes Mongolism. The person is mentally retarded, eyes protrude and an irregular physical structure is present.

4. Patau's Syndrome :

This type of syndrome is developed by an addition of autosomal chromosome in 13th chromosome. There is a cleft mark in the lip and person is mentally retarded. Disease due to change in genetic constituent of chromosome.

1. Sickle Cell Anaemia :

In this disorder erythrocytes are destroyed more rapidly than normal leading to anaemia. These occur due to change in 11th autosomal chromosome.

2. Phenylketonuria :

It is an inborn error of metabolism which results in mental retardation caused due to change in 12th autosomal chromosomes.

3. Haemophilia :

Gene responsible for this disorder is linked with sex chromosomes. This disease leads to failure of blood clotting.

4. Colour blindness :

This disorder leads to failure to distinguish red & green colour.

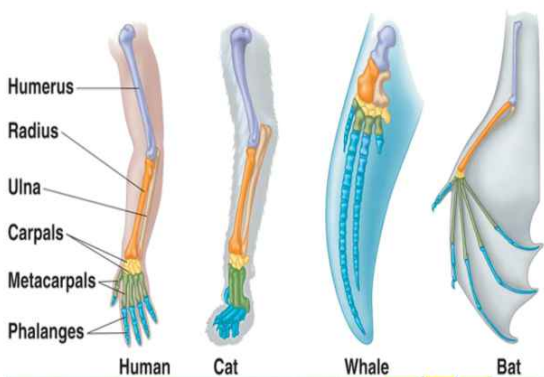
The gene responsible for this disease is situated on sex chromosomes.

.....

Chapter - V

5. Organic Evolution

More and more creation of organism by gradual changes from low categories animal to higher animal is called organic evolution. There are several evidences regarding organic evolution.



Bi

Jakkir
Hussain

1. Homologous organ :

Organ which are seen different due to use in various function but its structure and embryonic development are similar.

Ex – Flipper of whale, feather of bat, forelimb of horse, Paw of cat, and hands of human.



2. Analogous organ :

Organ which looks similar due to be used in similar function but their internal structure and embryonic development are

Bi

Jakkir
Hussain

different. Ex – Feather of butterfly, bats and birds all looks similar but their internal structure and origin are different.

3. Vestigial organ:

These are organs which appear functionless in an organism but functional in their ancestor. For example vermiform appendix of large intestine and nictitating membrane of human. Vermiform appendix is functional in herbivorous mammal even now.

4. Fossils – Fossils are the remains of ancient plant or animal which provide evidences for evolution.

Example–Archaeoptery.

5. Archaeopteryx:

It is a fossils look like bird but bear a number of features

found in reptiles. So, it is a connecting link between aves and reptile.



Biology

Theories of evolution:

1. Carolus Linnaeus

(1707 – 1778)

contribution to classification
provide an evolutionary



relationship among the organism.

He was also supported an idea that no species is new. Each and every species originates from some pre-existing species.

2. Jean Baptist Lamarck

(1744 – 1829) tried to explain the evolutionary process in his book *Philosophic zoologique*.



The theory proposed by Lamarck is known as theory of inheritance of acquired characters.

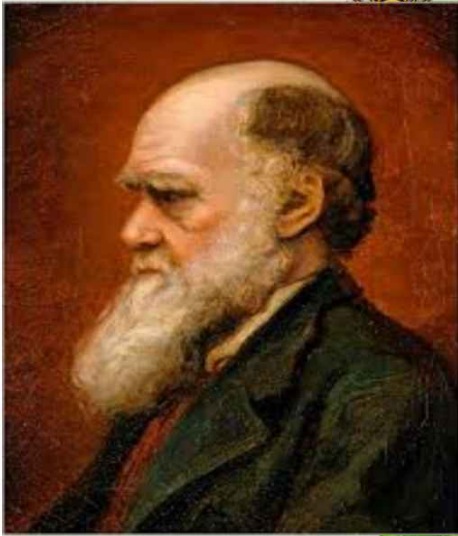
According to this theory use and disuse of an organ lead to acquiring change in the features of that organ. These changes are also inherited to offspring.

The favourable changes after long period of time result in evolution of new species.

But Lamarckism was very strongly criticised by August Weismann.

3. Charles Robert Darwin

(1809 – 1882) explain the evolutionary principle in his book 'The origin of species'. The theory



proposed by him is popularly known as 'Theory of natural selection' or Darwinism. Darwin explained that despite having the enormous potential of fertility, the population of organism remains within a limit. It is due to struggle between members of same species and

different species for food, space and mate. Struggle eliminates the unfit individual. The fit organism possess some variations which are favourable and they can leave the progeny to continue the favourable variation. The variation when accumulated for long time give rise to origin of new species with progress in genetics, the sources of variation were explained and Darwin's theory was modified. Now the most excepted theory of evolution is Modem synthetic theory, in which origin of species is based on the interaction of genetic variation and natural selection.



Bright Zoom

Biology

Jakkir
Hussain

Botany Zoology

Full Short Notes

