NOTES

B.Sc.I
Sem-II
Zoology
Paper-II

Q- Write a note on Sex Linked Inheritance?

The body characters whose genes are located on the Sex chromosomes and follow sex during inheritance are known as Sex linked characters. The genes governing the Sex linked characters are called Sex linked genes and the mode of inheritance is Sex linked inheritance.

The Sex linked genes are of following 3 types — ① X linked Genes- Genes located on x chromosome are called X linked genes. Such genes do not have alleles on the Y chromosome In man about 300 genes are X linked.

② Y linked Genes or Holandric Genes- Genes located on Y chromosme are called Y linked or Holandric Genes. Only a few genes are present on Y chromosme of man.

③ Pseudoautosomal Genes- Some genes are found on X and Y chromosomes. These are called pseudoautosomal genes. These genes are present on the homologous part of both X and Y chromosmes. This homologous area is called pseudoautosomal area region

④ Sex limited genes- Express themselves only one of the 2 sexes never in both. Example of Sex limited characters are development of breast & milk prodution in female horse voice in male.

=o=o=

Dr. S.R. Sitre
Deptt. of Zool

NOTES :

B.Sc. I
Sem- II (CB
Paper- II
Genetics & Evolut

Q- write a note on Down's Syndrome ?

Down's Syndrome is a congenital Syndrome usually recognizable at birth by an experien physician and associated with characteristic facial features, palmprint abnormalities Severe mental retardat and markedly defective development of the central nervous System.

The face of such a patient has a spec moon like aspect, with oblique palpebral fissures, incre sepration between the eyes, and a skin fold (epicant at the inner part of the eye. The nose is flattened the ear's are malformed, the mouth is constantly open, tongue protruding out. The heart hands and feet too remain defective in a mongoloid type.

Down's Syndrome occurs once in about 750 births among European people. older mothers ha a higher incidence than younger mother and its frequency increases as the mother's age exceeds 35 yea The greater incidence among older mother's may be associated with long delay in completion of meiosis during oogenesis.

The riddle of Down's Syndrome was essentially solved when J. Lejuene and R. Turpin sha in 1959 that it is associated with an extra chromosom 21.

One of the most familiar human aneuploidy is Trisomy 21. It has been termed Mongoloid Idiocy or Mongolism because of certain facial characteristics that suggested resemblance to Oriental features. The Condition is now known as Down's Syndrome.

Paper-II- Genetics & Evolution

Notes
B.Sc.S
P-I

Lethal Genes in Man

1. Brachyphalangy
2. Sickle cell Anaemia
3. Phenylketonuric Imbecility
4. Thalassemia
5. Congenital Ichthyosis
6. Amaurotic Idiocy
7. Huntington's Disease

1/1/24
Dr. S. R. Sitre

1. Brachyphalangy - In this the fingers are short having 2 joints (phalanges). the middle bone being gre reduced and often fused with one of the bones of th finger.

2. Sickle cell anaemia - Is caused by a gene with a lethal effect in homozygous and with only a slight effect in heterozygous condition. In this disease th RBC becmes Spindle or comma shaped when plced O2 deficient media. The persons with homozygous condition die due to fatal anaemia before arriving a Sexual maturity. The heterozygotes are healthy peo sometimes showing mild signs of anaemia.

3. Phenylketonuric Imbecility — phenylketonuric imbecilit is associated with a defect in metabolism. This dise is identified by the discovery of particular reaction urine of some individuals. The urine of patients dave a temporary deep-bluish green color upon addition o drops of ferric chloride. The phenylketonuric acid is excreted by patients. These people have mental retardation. & their muscular reflex reactions are reduced. They have a characteristic posture and a have dilution of skin & hair; & have a reduced life span, i.e. they die early.

4. Thalassemia - This is a disease of abnormality of RBC's caused by a lethal gene. The gene in homozygous condition causes a fatal anaemia kno as cooley's anaemia.

5. Congenital Ichthyosis - congenital Ichthyosis occurs only when there occurs homozygous condition for its recessive lethal genes. At birth the affected child with this disease have a crusted leathery skin co a deep fissure down to subcutaneous tissue. These tissues lead to bleeding, infection and death.

6. Amaurotic Idiocy - It is caused due to recessiv lethal gene in homozygous condition in juvenile sta The patients lose their eye sight beth 4-7 years The complete blindness is followed by mental degenration and finally death.

7. Huntington's Disease - This is due to dominant allele which behaves differently. Homozygous never survives. Affected people have gradual nervous and motor degenration & they die bet 20 & 50 years. In this disease involentary jerking of body occurs & gradual mental & phy retardation occurs.

—x—x—

B.Sc.I-S-II
Zoology P-

NOTES

Multiple Alleles

Dr. S.R. Sitre

Mendel used term "allele" or allelomorph to denote the alternative form of the normal gene It means the genes for tall & dwarf characters pea plant are alleles. The former is normal allele or wild & later mutant allele. A gene can muta several times producing several alternative expressions. When these or more alleles are found for any particu gene these are called multiple alleles. These occupy the same locus in homologous chromosmes.

Multiple alleles are defind as genes that are members of the same gene pair & are located the same locus. All of them control the same chara but each of the allele effects that character so what diffrently than others. The multiple alleles and their mode of inheritance is called multiple all

Characters of Multiple Alleles -

* They occupy the same locus within the homologous chromosomes.
* Since only two chromosomes of each type are present in each diploid cell, only two genes of a multiple series are found in a cell and also in given individual.
* The gametes contain only one chromosmes of each type. therefore only one allele of the multiple series in each gamete.
* Crossing over does not occur in multiple allele.
* Multiple alleles control the same character, but each of them is characterized by diffrent manifestations.
* The multiple alleles of a series are more often related as dominant & recessive.

NOTES : B.Sc. I - Sem - II - CBCS
Paper II - Genetics & Evolution

Fossils - "Sir charles Lyell"

Fossil can be defind as "Any body or traces of bod animal or plant buried and preserved by natural cause".

It means fossil may be an entire organism which got buried in the snow in the remote past, a mold cast of the entire organism or its parts or unchanged parts or their replica, footprints or even the imprint of leaf on a stone.

Types - 11 types of Fossils.

1. Body fossils - The fossils of hard parts of an organi Such as shell, tooth or bone are called body fossils. These provide details of shape & functions of actual orgnisim. These occur in all shapes & sizes & rang from microscopic sea dwellers to huge terrestrial dinosaurs.

2. Subfossils - These are remains of animals & plants preserved in rocks less than 10000 yrs. These also inclu remains of bison trapped in frozen ice, in peat bogs o of ancient man mummified in caves. Subfossils were formed during Holocene epoch.

3. Microfossils - These are the fossil remains of microsco animals and plants which are usually less than 0.5m in size. However the skeletal deposits of these organi may assume a diameter of 10 cm. or so.

4. Macrofossils - These fossils are larger than 1 cm. in size. These include fossils of more advanced plants & animals such as clams, corals or skeleton of vertebra

5. Unusual fossils - These are formed by the combinati of events and conditions which result in all of the organisms getting preserved in rock

The famous deposits of Solenhofen Limestone of Souther Germany and Burgess Shales of Canada contain unusual fossils of- i) Mammoths dug from Siberian waste
ii) Remains of archeopteryx - from Solenhofen in Bavaria Germany.

6) Trace Fossils - These are fossils of foot prints and tr left in mud by the organisms that lived in past- e.g. Dinosaurs foot prints, worm trails and clam burrows a all trace fossils. It means trace fossils are formed a result of day to day activities of the organisms such as walking, crawling, burrowing or feeding.

7) Corpulites - These are trace fossils. These are fossils of droppings of animals or faecal matter. These may vary in Si from tiny faecal pellets of Sea snail to large coprolites crocodile-dinosaur or mammals. These are found in association of the animal fossils who made them. The study of fossil excreta may provide valuable information pertaining the food habits of the fossil form.

8) Bioclast - These are fossils or fragments of fossils enclosed in Sediments. Here thin sections of fossils under microscope.

9) Burrows and Boring - Some animals live in the burrows, tubes and holes in the ground, wood or rocks for shelter or in Search of food. The burrows ma be later filled with Sediments and preserved. They ar also regarded as fossils. Several fossil shells & wood have borings made by some or othe organisms. Such borings are also considered fossils.

10. Gastroliths –

These are found in abundance in body cavities of certain reptiles. These structures are believed to have been of some use in grinding the stomach contents of extinct reptiles.

11. Pseudofossils –

Many objects of inorganic origin closely resemble the forms of organic origin & are found in the sedimentary rocks. These are pseudofossils.

—x—x—