

I'm not a robot



These variations cause the line to grow cells and are thus inheritable for haemophilia, blood groups, colour-blindness, eye vlihihi etc Sikli sations may be due to the following reasons. As per the degree of difference produced. 2 typesMerstic = Influence the mnnlric of partsSubstantive = Inllncnc the shape, size, weight and colour.Continuous sanctions: Variation not represented by distinct classes. Individuals grade into each other and measurement data are required for analysis (cf. Discontinuous variation). Multiple genes or polygenes are usually responsible for this type of variation. (or Fluctuating variations).Discontinuous variations, Distinct classes such as red versus white, tall versus dwarf (rf. Continuous variation).Transgressive variation. The appearance in (lie F2 (or later) generation of individuals, showing n more extreme development of a trait than shown in either original parent. It is due to polygenic inheritance discovered by Punnet and Hailey, Determinate Variations (Orthogenic variation). Adaptive and selective variations of definite evolutionary lines, developing progressively generation after generation.Indeterminate variations. Variations occurring in any conceivable direction and are not governed by any law may give a distinct advantage to the possessor in its light for existence.Techniques Used To Study Lutinui GeneticsPedigree analysisPopulation geneticsHuman karyotype.Pedigree analysis: Pedigree is a record of the inheritance of certain traits for two or more generations presented in the form of a diagram family tree or symbols. Different symbols used are.The idea dial disorders are inherited has been prevailing in human society for a long. Dus was based on the heritability of certain characteristic features in families.After the rediscovery of Mendels work, the practice of analysing the inheritance patterns of traits in human living began.Since it is evident that control crosses that can be performed in plants or some other organisms, are not possible in the case of human beings, the study of the family history about inheritance of a particular trait provides an alternative.Such an analysis of traits in several of generations of a family is called the pedigree analysis. In the pedigree analysis, the inheritance of a particular trait is represented in the family tree over generations.In human genetics, pedigree study provides a strong tool, which is utilised to trace die inheritance of a specific trait, abnormality or disease.Population genetics:It is the study of the distribution of units and the frequency of genes within the total population.The formula delineating the genotypic expectations of progeny in relation to the gametic (allelic) frequencies of the gene pool was proposed by Hardy and Weinberg and is referred to as the Hardy-Weinberg principle.Principles Of Inheritance And Variation NEET NotesThis law is applicable only ifPopulation is large and panmictic (Random mating).No selecting, no imitation.Population is closed under these condicins, according to Hardy and Weinbergs Law, there should be no change in the gametic or zygotic frequencies from generation to generation.Expected genotype pic (zygotic) frequencies in generations may be summarised as (p+q)2=P2+2pq+q2=1, 0 P2 = frequency of dominant gene/alleles. q2 = frequency of recessive gene/alleles P=k=1 p2 + 2pq = frequency of dominant trait. q2 = frequency of a recessive trait.Human Karyotype: Tjo and Levan first prepared a human karyotype.It is an arrangement of chromosomes according to the length of chromosomes and the position of the centromere.A pencil sketch or photograph of a karyotype is called an idiogram.It is an asymmetrical karyotype which is considered an advanced character.Principles Of Inheritance And Variation NEET NotesClassification of chromosomes: The human metaphase chromosomes were First of all classified in a conference of cytogeneticists at Denver, Colorado in 1960.In humans 23 pairs (46) chromosomes have been numbered from 1 to 23 according to their decreasing size, Patau (1960) divided the human chromosome into the following seven groups designated A to G.Banding Technique: It is the development of risk ami light band of stains on the chlorosome when they are treated with special floourescent lives.Hits are because different parts of the chromosome show differential affinity to these stains.Chromosome handling was discovered by Caspersson et al (1970) and Paridue and Galt(1970) almost simultaneously late as different types of stains and staining techniques.Each develops a unique banding pattern which remains constant.Mendelian Inheritance NEETContinuity of life is made possible by asexual and sexual reproduction Sexual reproduction, besides creating new individuals introduces variability in the offspring by combining trials of parents.The genotypic ratio of the dihybrid cross is RRYy: RrYy: RRYy: rRYy: RrYy : rRYy: lRyy : Ryy: rryy 1:2: 2:1:4:2:1:2:1In the case of MN blood groups in humans, alleles show codominance. The red blood cells can carry two types of native antigens, M and N, and an individual can be MM, MN or NN exhibiting either one or both of themABO blood group system shows codominance, multiple alleles and dominant recessive gene interaction.Treatment with gibberellic acid only brings phenotypic changes and genes are not affected.Pleiotropy results in different expressions at the phenotypic level. For example, sickle cell anaemia and cystic fibrosis in men.Morgan is called the father of experimental genetics. Bateson is called the father of modern genetics. Nilsson-Ehle (1908) was the first scientist to prove quantitative inheritance.At the time of fertilization, the chance factor is responsible for the fusion of gametes. Infinite new combinations are produced Example 70 1012 for 23 pairs of chromosomes.Cause Of Variations Is Hidden In Sexual ReproductionMendels Laws of Inheritance:Law of paired factorsLaw or Principle of Dominance Law of Segregation.Phenotypic ratio = 3:1 Monohybrid genotypic ratio =1:2:1Law of Independent assortment Dihybrid phenotypic ratio = 9 : 3 : 3: 1 Dihybrid genotypic ratio = 1: 2 : 1: 2 : 4 : 2 : 1: 2: 1Exceptions To MendelismIncomplete Dominance = Genotypic and phenotypic ratio =1:2:1Codominance. IAIA (In the case of blood groups)HbAHbA (In case of sickle cell anaemia)Multiple alleles. 15 alleles for eye colour in Drosophila, 3 alleles for blood groups in humans (IA, IA and 1 for four types of blood groups (A, B, AB and O.)Chromosomal theory of inheritance proposed by Sutton and Boveri (1902)Experimental verification by Morgan with his experiments on Drosophila melanogaster.Linkage. Physical association of two genes on a chromosome.Recombination. Generation of non-parental gene combination.Sex Determination.Genetic Disorders And Variation NEETHuman : Autosomes + XY Male, Autosomes + XX FemaleMost of the insects (Male heterogamy).Grasshopper AA + XO MaleAA + XX FemaleBirds AA + ZW FemaleAA + ZZ MaleMutationChromosomal mutationPoint mutation Sickle cell anaemiaFrameshift mutation.MutagenPhysical agents which cause mutation: UV radiation and Chemical Mutagen.Pedigree Analysis Male and Female Analysis of Traits.Marriage between close relatives 0=ONEET Biology Principles Of Inheritance And Variation Study MaterialNEET Biology Principles Of Inheritance And Variation Elements Of Heredity And Variations ConclusionIn sickle cell anemia, glutamic acid is substituted by valine at the sixth position in the -chain of haemoglobin.In thalassaemia, a genetic blood condition characterized by anemia, the -chain of haemoglobin is altered due to a frameshift mutation. Bone marrow is absent.Either the mother must be Rh positive, or both the mother and the husband must be Rh negative; otherwise, the second kid may suffer erythroblastosis fetalis.Rh positive is genetically prevalent in humans.The back cross is a genetic cross formulated by Mendel in which the F1 generation is mated with an individual possessing the same genotype as one of the parental organisms.The colouration of sweet pea flowers is attributed to a substance known as anthocyanin. It is released by a sequence of metabolic processes involving distinct enzymes.The formation of each enzyme is determined by separate genes the mutant white tigers now seen in Indian zoos, a defective pleiotropic gene influences both fur colouration and the connection between the eye and brain during development.The trihybrid ratio shows the same pattern of inheritance as the dihybrid. The phenotype ratio will be 27: 9 : 9 : 3 : 3 : 3: 1.When the heterozygotes have a more extreme phenotype than either of the corresponding homozygotes, then it is usually called over-dominance, super-dominance and hetero-dominance.Parasexual hybridisation. It is defined as the technique of hybridisation through protoplast fission. The protoplast fusion opens up the possibility of overcoming the sexual barriers and of mixing and reassorting the genetic element of sexually isolated organismsMendel used the word unit factor or pair factors for controlling units by various traits because he was unaware of the word gene.Epistasis is a Greek word which means the act of stopping or inhibiting.Non-allelic genes are those present in different loci.Genealogy: The history of descent of a person or its family is termed genealogy.Modifier Genes: Genes that alter or modify the expression of other non-allelic genes. Modifier genes produce a variety of crests on pigeons heads.Know about Physics WallahPhysics Wallah is an Indian edtech platform that provides accessible & comprehensive learning experiences to students from Class 6th to postgraduate level. We also provide extensive NCERT solutions, sample paper, NEET, JEE Mains, BITSAT previous year papers & more such resources to students. Physics Wallah also caters to over 3.5 million registered students and over 78 lakh+ Youtube subscribers with 4.8 rating on its app.We Stand Out becauseWe provide students with intensive courses with Indias qualified & experienced faculties & mentors. PW strives to make the learning experience comprehensive and accessible for students of all sections of society. We believe in empowering every single student who couldn't dream of a good career in engineering and medical field earlier.Our Key Focus AreasPhysics Wallah's main focus is to make the learning experience as economical as possible for all students. With our affordable courses like Lakshya, Udaan and Arjuna and many others, we have been able to provide a platform for lakhs of aspirants. From providing Chemistry, Maths, Physics formula to giving e-books of eminent authors like RD Sharma, RS Aggarwal and Lakhmir Singh, PW focuses on every single student's need for preparation.What Makes Us DifferentPhysics Wallah strives to develop a comprehensive pedagogical structure for students, where they get a state-of-the-art learning experience with study material and resources. Apart from catering students preparing for JEE Mains and NEET, PW also provides study material for each state board like Uttar Pradesh, Bihar, and others

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