

Chapter 11 Human Heredity Section 3 Applied Genetics

Mutation In biology, a mutation is an alteration in the nucleic acid sequence of the genome of an organism, virus, or extrachromosomal DNA. A chapter in the series: How microbes "jeopardize" the modern synthesis". doi:10. Mutations result from errors during DNA or viral replication, mitosis, or meiosis or other types of damage to DNA (such as pyrimidine dimers caused by exposure to ultraviolet radiation), which then may undergo error-prone repair (especially microhomology-mediated end joining), cause an error during other forms of repair, or cause an error during replication (translesion synthesis). Viral genomes contain either DNA or RNA. "What is mutation. PLOS Genetics. Mutations may also result from substitution, insertion or deletion of segments of DNA due to mobile genetic elements. 15 (4): e1007995. (April 2019) 11f4728419

Heritability The concept of heritability can be expressed in the form of the following question: "What is the proportion of the variation in a given trait within a population that is not explained by the environment or random chance. "Estimating Trait Heritability" Heritability is a statistic used in the fields of breeding and genetics that estimates the degree of variation in a phenotypic trait in a population that is due to genetic variation between individuals in that population. Behavioral genetics Heredity Heritability of IQ Wray N, Visscher P (2008). ". however, heritability is a concept widely applicable 11f4728419

Ronald Fisher For his work in statistics, he has been described as "a genius who almost single-handedly created the foundations for modern statistical science" and "the single most important figure in 20th century statistics". 1934, he became editor of the Annals of Eugenics (now called Annals of Human Genetics). In genetics, Fisher was the one to most comprehensively combine the ideas of Gregor Mendel and Charles Darwin, as his work used mathematics to combine Mendelian genetics and natural selection; this contributed to the revival of Darwinism in the early 20th-century revision of the theory of evolution known as the modern synthesis. In 1935, he published The Design of Experiments, which was "also fundamental Sir Ronald Aylmer Fisher (17 February 1890 – 29 July 1962) was a British polymath who was active as a mathematician, statistician, biologist, geneticist, and academic. For his contributions to biology, Richard Dawkins declared Fisher to be the greatest of 11f4728419

Eugenics Historically, eugenicists have attempted to alter the frequency of various human phenotypes by inhibiting the fertility of those considered inferior, or promoting that of those considered superior. research bodies such as the Kaiser Wilhelm Institute of Anthropology, Human Heredity, and Eugenics, the Cold Spring Harbor Carnegie Institution for Experimental Eugenics is a set of largely discredited beliefs and practices that aim to improve the genetic quality of a human population 11f4728419

Humans are highly social, with individual humans tending to belong to a multi-layered network of distinct social groups – from families and peer groups to corporations and political states. As such, social interactions between humans have established a wide variety of values, social norms, languages, and traditions (collectively termed institutions), each of which bolsters human society. Humans are also highly curious:... 11f4728419 In 1940, Lysenko became director of the Institute of Genetics of the Soviet Academy of Sciences, and he used his political influence and power to suppress dissenting opinions and discredit, marginalize, and imprison his critics, elevating his anti-Mendelian theories to state-sanctioned doctrine.

11f4728419 Historically, the idea of eugenics has been used to argue for a broad array of practices ranging from prenatal care for mothers deemed genetically desirable to the forced sterilization and murder of those... 11f4728419

Trofim Lysenko He was a proponent of Lamarckism, and rejected Mendelian genetics in favour of his own idiosyncratic, pseudoscientific ideas later termed Lysenkoism. variability and the chromosomal theory of heredity were sharply criticized. The scientific discussion on genetics in the Soviet Union was transformed into Trofim Denisovich Lysenko (Russian: Трофѣм Дени́сович Лысѣнко; Ukrainian: Трохі́м Дени́сович Лисѣнко, romanized: Trokhym Denysovych Lysenko, IPA: [troˈxim deˈnʲisowɪtʃ lʲɪˈsɛnko]; 29 September [O. 17 September] 1898 – 20 November 1976) was a Soviet agronomist and scientist. S 11f4728419

Mutations may or may not produce detectable changes in the observable characteristics (phenotype) of an organism. Mutations play... 11f4728419 The term orthogenesis was introduced by Wilhelm Haacke in 1893 and popularized by Theodor Eimer five years later. Proponents of orthogenesis had rejected the theory of natural selection as the organizing... 11f4728419

Race (human categorization) 1093/oxfordjournals Race is a categorization of humans based on shared physical or social qualities into groups generally viewed as distinct within a given society. Journal of Heredity. Modern science regards race as a social construct, an identity which is assigned based on rules made by society. By the 17th century, the term began to refer to physical (phenotypical) traits, and then later to national affiliations. doi:10. Ashley (1941). 32 (8): 243–248. The concept of race is foundational to racism, the belief that humans can be divided based on the superiority of one race over another. The term came into common usage during the 16th century, when it was used to refer to groups of various kinds, including those characterized by close kinship relations. "The Concept of Race in the Human Species in the Light of Genetics". While partly based on physical similarities within groups, race does not have an inherent physical or biological meaning 11f4728419

Orthogenesis pp. ISBN 978-0-674-00613-3. Evolutionary Theory. Chapter 7, section "Synthesis as Restriction". Genetics, Paleontology, and Macroevolution Orthogenesis, also known as orthogenetic evolution, progressive evolution, evolutionary progress, or progressionism, is an obsolete biological hypothesis that organisms have an innate tendency to evolve in a definite direction towards some goal (teleology) due to some internal mechanism or "driving force". Prominent historical figures who have championed some form of evolutionary progress include Jean-Baptiste Lamarck, Pierre Teilhard de Chardin, and Henri Bergson. (2001). According to the theory, the largest-scale trends in evolution have an absolute

goal such as increasing biological complexity. Levinton, Jeffrey S 11f4728419

Other causes of measured variation in a trait are characterized as environmental factors, including observational error. In human studies of heritability these are often apportioned into factors from "shared environment" and "non-shared environment" based on whether they tend to result in persons brought up in the same household being more or less similar... 11f4728419

Human 283H. "Population genetics of malaria resistance in humans";. 107. Bibcode:2011Hered. Humans have large brains, enabling more advanced cognitive skills that facilitate successful adaptation to varied environments, development of sophisticated tools, and formation of complex social structures and civilizations. Hedrick PW (October 2011). S2CID 20415396. doi:10 Humans (Homo sapiens) or modern humans belong to the biological family of great apes, characterized by hairlessness, bipedality, and high intelligence. 107 (4): 283–304. Heredity 11f4728419

On the Origin of Species Darwin's book introduced the scientific theory that populations evolve over the course of generations through a process of natural selection, although Lamarckism was also included as a mechanism of lesser importance. Darwin included evidence that he had collected on the Beagle expedition in the 1830s and his subsequent findings from research, correspondence. The book presented a body of evidence that the diversity of life arose by common descent through a branching pattern of evolution. It was published on 24 November 1859. In Darwin's time there was no agreed-upon model of heredity; in Chapter I Darwin admitted, "The laws governing inheritance are quite unknown On the Origin of Species (or, more completely, On the Origin of Species by Means of Natural Selection, or the Preservation of Favoured Races in the Struggle for Life) is a work of scientific literature by Charles Darwin that is considered to be the foundation of evolutionary biology. ramifications"; 11f4728419

Behavioural genetics Behavioural genetics, also referred to as behaviour genetics, is a field of scientific research that uses genetic methods to investigate the nature and Behavioural genetics, also referred to as behaviour genetics, is a field of scientific research that uses genetic methods to investigate the nature and origins of individual differences in behaviour. While the name "behavioural genetics" connotes a focus on genetic influences, the field broadly investigates the extent to which genetic and environmental factors influence individual differences, and the development of research designs that can remove the confounding of genes and environment 11f4728419

Soviet scientists who refused to renounce genetics were dismissed from their... 11f4728419 Behavioural genetics was founded as a scientific discipline by Francis Galton in the late 19th century, only to be discredited through association with eugenics movements before and during World War II. In the latter half of the 20th century, the field saw renewed prominence with research on inheritance of... 11f4728419 The contemporary history of eugenics began in the late 19th century, when a popular eugenics movement emerged in the United Kingdom, and then spread to many countries, including the United States, Canada, Australia, and most European countries (e.g., Sweden and Germany). 11f4728419

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