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SCIENCE OF GENETICS AND A BRIEF HISTORY OF ITS CREATION. THE CREATION OF THE LAWS OF HEREDITY.

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Abstract:

The article considers the study of science of genetics and a brief history of its creation and the creation of the laws of heredity.

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The word "genetics" is derived from the Greek word "genesis", which means "origin", "congenital". Genetics is the study of the laws of heredity and variability, a characteristic of all living organisms. Heredity is the ability of an organism to pass on its traits and developmental characteristics to future generations. Because of heredity, individuals within a species become similar. Variability is the property of organisms to discover new traits in the process of individual development. Because of the variability, individuals within a species are different. So, heredity and variability are contradictory but inextricably linked. As long as the species remains homogeneous due to heredity, variability ensures its diversity. Differences between individuals of the same species are due to changes in the material basis of the heredity of the organism. Variability is also determined by environmental conditions. Variability creates the diversity of living things and provides material for selection, while heredity maintains the most adaptable of these diversities, reinforcing the results of variability. These two seemingly contradictory features of life: heredity (conservative) and variability (progressive) form the basis of the evolution of the organic universe. Genetics also studies the ways of managing heredity and variability, and uses its results to serve humanity. That is why the science of genetics is one of the leading biological sciences. From time immemorial, people have noticed the similarities in the characteristics of parents and children, the differences between them, and the possibility that children may have distant ancestral traits. Humans have spontaneously used hereditary traits for practical purposes to improve the varieties and breeds of cultivated plants and domestic animals. The first ideas about the mechanisms of heredity can be found in the works of ancient scholars - Democritus, Hippocrates, Plato, Aristotle. For example, Hippocrates wrote, "... the seed forms the whole body, the healthy seed produces healthy parts of the body, and the diseased seed produces diseased parts. From a bald head, from a blue-eyed child, from a blue-eyed child, from a blue-eyed child, from an ovoid-headed child. " Anaxagoras and Aristotle's views on heredity and gender formation are also noteworthy. In his book Politics, Plato explains how to choose a couple and raise children in order to have physically and mentally healthy children. The information about heredity was also known to our great compatriot Ibn Sina. Ibn Sina's writings contain valuable insights into the role of human traits in the formation of human nature (in modern terms - phenotype), intrinsic nature (genetic information of an organism - genotype) and the relationship of elements (genes). During the Renaissance, the knowledge of nature was widely developed, various scientific data were collected and experiments were conducted. At that time, the Spanish judge Mercado created a work called "Hereditary Diseases", which later published the results of research on the genetics of Moperty, Adams and Nassel. Moperty identified the prevalence of polydactyly in the family (1752). Adams showed the inclusion of children with hereditary pathologies, the genetic predisposition to the disease, the importance of inbreeding and the environment, and the heterogeneity (diversity) of hereditary diseases. Nasse described the principles of heredity of hemophilia and compiled a complete genealogy of it. However, this period is not yet a real scientific period of genetics, and in the works of researchers of that period, real, accurate data were mixed with completely misconceptions, because the theoretical foundations of human genetics had not yet been established. In the 1980s, A. Weissman first proposed the idea that the material basis of heredity lies in the chromosome. The science of genetics is believed to have been created in the 1900s. But the laws of heredity were discovered in 1865 by the Czech scientist G. Mendel.

For 35 years, contemporaries did not understand G. Mendel's discovery. Although G. Mendel's contemporaries were also skilled experimenters, they made mistakes in the implementation of their experiments and in the analysis of their results. 6 Genetics only in 1900 were the laws of heredity first discovered by G. De Friese (Netherlands), K. Correns (Germany), and E. Chermak (Austria). G. Mendel was recognized as the founder of the science of genetics. In 1906, the English scientist W. Betson proposed to call the new science "genetics." In 1909, the Danish scientist W. Johansen introduced the concepts of gene, genotype and phenotype into science. In 1901, G. De Friese discovered the theory of mutagenesis. Between 1910 and 1925, the American scientist T. G. Morgan, in

collaboration with his colleagues A. Stertevant, G. Meller, and K. Bridges, developed the chromosome theory of heredity. In the 1920s and 1930s, it was discovered that ionizing radiation (G.A. Nadson, G. S. Fillipov, G. Meller, I. Ya. Stadler) and chemicals (M. Ye. Lobashov, V. V. Sakharov) were mutating agents. In 1928, Russian geneticist N. K. Kolsov suggested that a protein molecule inside a chromosome could be the material basis of heredity. In the 1930s, the theory of microevolution (SS Chetverikov, NV Timofeyev - Resovsky, etc.) and the theory of synthesis of evolution were developed. In those years, human genetics and medical genetics began to develop in the Soviet Union (S. G. Levit, A. A. Prokofieva - Belgovskaya, V. P. Efroimson and others). In the 1940s, G. Beadle, E. Tatum laid the foundations for microbial genetics and biochemical genetics. The sciences of molecular biology and molecular genetics were formed in collaboration with the sciences of genetics, microbiology, biochemistry, and physics. In the 1950s, M. Wilkins, E. Chargaff, Dj. In collaboration with Watson and F. Crick, specific data on the structure of D N K were obtained. In the second half of the twentieth century, molecular genetics developed rapidly, with great advances in genetic code, genetic activity management, genetic engineering, and biotechnology. In 1971, for the first time in the Central Asian republics, the Department of Medical Genetics was opened at the Tashkent Medical Institute under the leadership of JH Khamidov and AT Akilov to prevent the spread of hereditary diseases. Currently, in order to further develop the science of genetics, especially medical genetics, to use its achievements in the interests of man, medical genetics departments or courses have been opened at medical institutes to increase the knowledge of future doctors in medical genetics. In 1999, at the initiative of the Healthy Generation Charitable Foundation and the decision of the Cabinet of Ministers, the Republican Screening Center was established in Tashkent to detect, treat and prevent inherited and congenital diseases, improve public health, The achievements of genetics are widely used in quoting.

It is natural to ask why the laws of heredity were created by G. Mendel, even though the method of artificial hybridization was used long before G. Mendel's discovery. G. Mendel took a new approach to the study of heredity, improved the method of hybridological analysis, and this method became the main method of genetics. Hybridology is a method of mixing organisms with very different (alternative) traits and analyzing the occurrence of these traits in future generations. The specifics of the hybridological method are as follows: 1. Analysis of the inheritance of individual traits (usually 1 or 2 pairs of alternative traits). 2. Use pure lines or homozygotes for hybridization. 3. Separate analysis of the generation from each individual. 4. Distinguish one or more mutually exclusive characters from too many characters and make a precise quantitative analysis of their occurrence in several successive generations. G. Mendel conducted experiments on peas. The pea plant is self-pollinating and has many alternative characteristics (for example, grain shape, smooth or rough, yellow-green color, etc.). G. Mendel created pure lines as a result of repeated spontaneous mixing of peas. He analyzed the inheritance of traits in future generations by cross-breeding. G. Mendel began his study of the laws of heredity by mono-hybridization, that is, hybridization of parents with only one pair of traits.

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