IMPORTANCE OF BIOMETRY FOR GENETIC ANALYSIS

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ABSTRACT

In this article we will discuss about:Importance of biometry for genetic analysis.

Keywords: *Genetics, biometry, bialogical significance of meiosis, DNA, recombination.*

АННОТАЦИЯ

В этой статье мы обсудим: Важность биометрии для генетического анализа.

Ключевые слова: *генетика, биометрия, биологическая значимость мейоза, ДНК, рекомбинация.*

INTRODUCTION

Genetics is a science that studies procreation and speciation in living organisms. It was known as early as the time of primitive society that certain characteristics of animals and plants could be passed down from generation to generation, and this knowledge was applied to livestock and agriculture by selective breeding. However, modern genetics, as a science that understands the mechanisms of procreation, began to develop only after the labors of Gregor Mendel (19th century).

Mendel discovered that genealogy is a fundamental discrete process with independent funccias. These basic units of genealogy are now called "genes". In the cells of the body, genes are located in the molecules of the body'S DNA, carrying in itself the necessary information for the construction and control of cellular components. Although genetics plays a large role in determining the appearance and behavior of an organism, the overall outcome will depend not only on genes, but also on the environment in which the organism is engulfed and born. For example, a person's height is determined not only by genes, but also by the nutrients and health he received as a child. The main task of genetics is to reveal the development and transition of the characters and characteristics of organisms to future generations by researching the structure and functions of the chromosome, genes and nucleic acids (DNA, RNA), which are considered the material foundations of heredity. Research on the emergence of hereditary variability in organisms under the influence of various physical and chemical factors and its importance in the evolution of organisms is also among the tasks of genetics. The creation of fertile varieties of cultivated plants, productive breeds and strains of animals and microorganisms; the

development of methods of their prevention and treatment based on the study of the causes of the emergence of hereditary diseases; the introduction of negative factors of the ecological environment into heredity and the genetic justification of the preservation of the gene pool represent practical problems of genetic research. Of great importance in the formation of genetics as an independent science was the opening of the laws of heredity in 1865 by the Czech scientist Gregor Mendel. Based on his experiments on peas, Mendel laid the foundation for the method of studying heredity through hybridization, which was considered the main method of genetics. She states that organisms give characters and traits to the next generation of heredity factors (hoz. conceptually genes). The laws Mendel opened were long overlooked. Only in 1900, thanks to the studies of Hugo de Vries (Netherlands), Carl Correns (Germany) and Erich von Tschermak (Austria), these krnuns were rediscovered and renamed Mendel. For this reason, 1900 is considered the year of the foundation of genetics as an independent science. However, the term genetics was coined in 1906 at the suggestion of the English scientist William Bateson. As a result of the further development of genetics, it was proved that the universality of the laws that Mendel discovered applied it to all organisms, including Man. A combined type consisting of complementarity, epistasis, polymeria, pleiotropy events, and complex uzaro effects of allele-unbranded genes in the inheritance of most of the characters in the body was later discovered, involving two or more genes. This direction of genetics, founded by Mendel, is developing even more rapidly in the current period. This direction is called classical genetics, that is, mendelism. The achievements of Cytology in proving the laws of heredity that Mendel created are also of great importance. Thanks to cytological studies, it was found that there are chromosomes that are considered the material basis of heredity, the number of which is the same for all individuals of each species. In the history of genetics, the American geneticist Thomas Hunt Morgan (1911) and his staff (K. A special place is occupied by the chromosome theory of heredity, which was founded by Brijes, Alfred Sturtevant and Gregor Meller). At the opening of this theory, the results of the study of the gender genetics of Morgan and his staff and the heredity of signs in relation to gender and in their attachment were of great importance. According to this theory, the heredity of the signs and characteristics of organisms is realized through the unit of heredity — genes; genes are located in large quantities on chromosomes and in line-by-line in the corresponding composition.

DISCUSSION AND RESULTS

Genes located on a single chromosome are inherited together and are called coupled genes. This form of heredity is called heredity with attachment. The heredity

of the associated genes does not correspond to Mendel's third law. The law Morgan discovered about the cumulative inheritance of genes located on a single chromosome is the fourth fundamental law of genetics. However, without attachment, heredity is not absolute, in a number of cases, separation occurs in the offspring in relation to the parental signs. This phenomenon occurs as a result of the confusion of homologous chromosomes (crossover), that is, the alternation of positions of certain parts of two chromosomes. Thanks to scientific research in this area, the arrangement of genes in chromosomes was determined, that is, genetic maps of chromosomes were formed. Morgan and his staff's research laid the foundation for the emergence of cytogenetics, a branch of genetics. Research on the molecular basis of the structure and activity of genes through chemical, physical, cybernetic methods and mathematical modeling has led to the development of Molecular Genetics.

The bialogical significance of meiosis. Meiosis. (yun. meiosis-reduction) is the division of the cell nucleus that goes through a 2-fold decrease (reduction) in the number of chromosomes. Typical for sexually reproducing plants and animals (see sexual reproduction). Meiosis is the main mechanism of heredity and variability. Meiosis consists of two consecutive divisions (meiosis 1 and meiosis 2)of spermacite and oocytes, the cells that produce seeds and eggs. Each meiotic division, like mitosis, consists of 4 phases: prophase, metaphase, anaphase, telophase. In 1-meiosis prophase, homologous chromosome conjugation (mutual confusion) and crossover (gene transfer between similar parts of homologous chromosomes) occur. After that, chromosome spiraling begins, as in the mitotic prophase; the nuclear membrane and the nucleus are eroded to form the dividing Duke. In the 1-meiosis metaphor, the homologous chromosomes are separated from each other and the achromatin is entangled in the threads and spread to the opposite poles. In the 1-meiosis telophase, a spiral of chromosomes is spread; a nuclear membrane and a nucleus are formed; the cell splits to form cells with a haploid set of chromosomes.

Any of the chromosomes in cells formed after 1-meiosis cleavage will have 2 chromatids. The number of chromosomes does not increase due to the absence of interphase before cells enter meiosis 2. After a short interphase, Cell 2-meiosis division begins. Meiosis 2 also has 4 phases. In 2-meiosis telophase, the number of chromosomes is reduced by 2 contributions as DNA is evenly distributed among newly formed cells. This process, which reaches its peak with a decrease in the number of chromosomes by 2 contributions, is called reductive division. In the life cycle of organisms (see life cycle), 3 different meiosis are observed. Gametes are formed in the gamete, i.e. terminal (Terminal) meiosis, which go in the genitals of humans, all multicellular animals and some tuberous plants (see germ, ovary) (see

Gametogenesis). The formation of germ cells is called spermatogenesis, the formation of egg cells is called ovogenesis. In most fungi and algae, the fertilization of a fertilized egg and its division to form haploid zoospores is called zygote meiosis. A process consisting of the formation (sporogenesis)of haploid spores in the genital organs of tall plants is called spore meiosis, that is, intermediate meiosis. Meiosis is evenly distributed between the germ cells (see gametes) from which the chromosomes of the father or mother organism are formed. Gametes are carriers of hereditary signs of parent organisms. The diplo-id set of chromosomes is restored in the zygote produced by the addition of sex cells. In the zygote, the hereditary signs of the male and female organism will be embodied.

Biological significance of meiosis. During meiosis, 4 haploid cells from 1 diploid packed cell will be ho sil. On the basis of the meiosis process lies combinatorial variability. Base words: chromosome, chromatida, heterochromatin, euxromatin, centromera, metasentric, Submetacentric, acrocentric, amitous, mitotic cycle, mitosis, cariokinesis, cytokinesis Interphase, prophase, metaphase, anaphase, telophase, meiosis.

Recombination. (re... and lot. combination-coupling) (genetics d a) is the redistribution of genetic material in living organisms in the Nayed. R. as a result, a combinative volatility occurs, which is important for evolution switches. R. all living organisms: starting with viruses, are a universal biological mechanism characteristic of higher organisms and animals. R. in eukaryotic organisms, it occurs with the help of a sexual process, in prokaryotes, through Fusion, transformation and traneduction, and in viruses through co-infection. R. meiosis is achieved by the separation of homologous chromosomes or by the transfer of one part of DNA from one molecule to another as a result of the interaction of DNA molecules. R. From the exchange of cross-sections in the middle of DNA molecules (ritseprok R.) or that one part of the molecule passes into another molecule (R, which is no less positive.) consists of. R. observed in somatic and germ cells.

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