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**ANALYSIS OF THE DATA OBTAINED THROUGH THE EXPERIMENT
ON THE CHARACTERISTICS INHERITED BY INCOMPLETE DOMINANCE
AND CO-DOMINANCE**

I. MOLDEKOVA

K. Zhubanov Aktobe Regional State University, Aktobe, Kazakhstan

Аннотация. В статье рассматривается вопрос наследования признаков путем неполного доминирования и кодоминирования. Эти два процесса наследования были изучены еще Г. Менделем, который в своих экспериментах при скрещивании крупнолистного сорта гороха с мелколистным обнаружил явления неполного доминирования. Так было установлено, что при неполном доминировании у гетерозигот не проявляется признаки родителей. То есть гибриды несут среднее выражение признаков. При кодоминировании проявляются два родительских признака явный пример этого процесса наследование окраски плодов земляники.

Целью написания данной статьи является всестороннее изучение вопроса наследования признаков путем неполного доминирования и кодоминирования, проведение эксперимента и анализ полученных экспериментальных данных при проведении исследования. Актуальность данного вопроса определяется получением фактических данных при проведении эксперимента и сравнение их с теоретическим описанием, в изучении основ по генетическому анализу для проведения более сложных опытов в дальнейшем.

Ключевые слова: Кодоминирование, неполное доминирование, наследование, эксперимент, гибрид, гетерозиготы, гомозиготы, кролик, ночная красавица.

Аннотация: Мақалада кейіпкерлердің толық емес үстемдік пен кодтау арқылы мұрагерлік мәселесі қарастырылады. Тұқым қуалаудың осы екі процесін Г.Мендель зерттеген, ол өз тәжірибелерінде ірі жапырақты бұршақты ұсақ жапырақты сорттармен кесіп өткен кезде толық емес үстемдік құбылыстарын ашқан. Осылайша, толық емес басымдықпен гетерозиготаларда ата-аналардың белгілері көрінбейтіні анықталды. Яғни, будандар сипаттамалардың орташа көрінісін алады. Кодтау кезінде екі ата-аналық белгілер пайда болады, бұл процестің айқын мысалы болып құлпынай жемістерінің түсі мұра болып табылады.

Бұл мақаланың мақсаты - толық емес үстемдік пен кодтау арқылы кейіпкерлердің мұрагерлік мәселесін жан-жақты зерттеу, эксперимент жүргізу және зерттеу барысында алынған тәжірибелік деректерді талдау. Бұл мәселенің өзектілігі эксперимент барысында дәлелдемелер алу және оны теориялық сипаттамамен салыстыру, болашақта күрделі эксперименттер жүргізу үшін генетикалық анализ негіздерін зерттеумен анықталады.

Түйін сөздер: Кодтау, толық емес үстемдік, мұрагерлік, тәжірибе, гибридті, гетерозиготалар, гомозиготалар, қоян, түнгі сұлулық

Abstract: The article considers the issue of inheritance of characters by incomplete dominance and coding. These two processes of inheritance were studied by G. Mendel, who in his experiments, when crossing large-leaved peas with small-leaved varieties, discovered phenomena of incomplete dominance. So it was found that with incomplete dominance, heterozygotes do not show signs of parents. That is, hybrids carry an average expression of characteristics. When coding, two parental signs appear, a clear example of this process is the inheritance of the color of strawberry

fruits. The purpose of this article is to comprehensively study the issue of inheritance of characters through incomplete dominance and coding, conducting an experiment and analyzing the experimental data obtained during the study.

Key words: Co-dominance, incomplete dominance, inheritance, experiment, hybrid, heterozygotes, homozygotes, rabbit, night beauty.

The article considers the issue of characteristics inheritance through incomplete dominance and co-dominance. These two processes of inheritance were studied by G. Mendel, who in his experiments, when crossing large-leaved peas with small-leaved varieties, discovered phenomena of incomplete dominance. So it was found that with incomplete dominance, heterozygotes do not show signs of parents. That is, hybrids carry an average expression of characteristics.

In the case of co-dominance, two parental signs appear, a clear example of this process is the inheritance of the colour of strawberry fruits [1].

The purpose of this article is to comprehensively study the issue of characteristics inheritance through incomplete dominance and co-dominance, conducting an experiment and analysing the experimental data obtained during the study.

The relevance of this issue is determined by obtaining evidence during the experiment and comparing it with a theoretical description, in studying the basics of genetic analysis to conduct more complex experiments in the future.

The object of the study was the night beauty flowers grown on the basis of the greenhouse of Aktobe Regional State University. K. Zhubanova and rabbits grown in the courtyard of the village of Martuk.

Incomplete dominance is a type of interaction of allelic genes in which a new generation gains an intermediate value between the hereditary traits of both parents, i.e. the heterozygous phenotype differs both from the dominant homozygous phenotype and from the recessive homozygous phenotype. This process is described in the inheritance of colony perianth coloration, guinea pig coat color, etc.

Consider the data obtained from the experiment. For the experiment, two parental individuals were taken. The rabbit is black in color and homozygous for genotype AA, and the rabbit is white in color aa. See figure 1.



Figure 1. Parents

When these individuals were crossed, a first-generation hybrid was obtained that did not repeat the sign of any of the parents, the rabbits were gray in color. See figure 2.



Figure 2. The first generation

As a result, the data obtained are fully consistent with the theoretical ones, as in theory the experience with wild strawberries was described, and the experiment on crossing rabbits confirmed it. That is, when crossing homozygous individuals, red-fruited and white-fruited strawberry varieties, the entire first generation of hybrids has pink fruits. The first generation of strawberries did not have a parent sign of fruit color, but received the average value of the fruit by color. See figure 3.

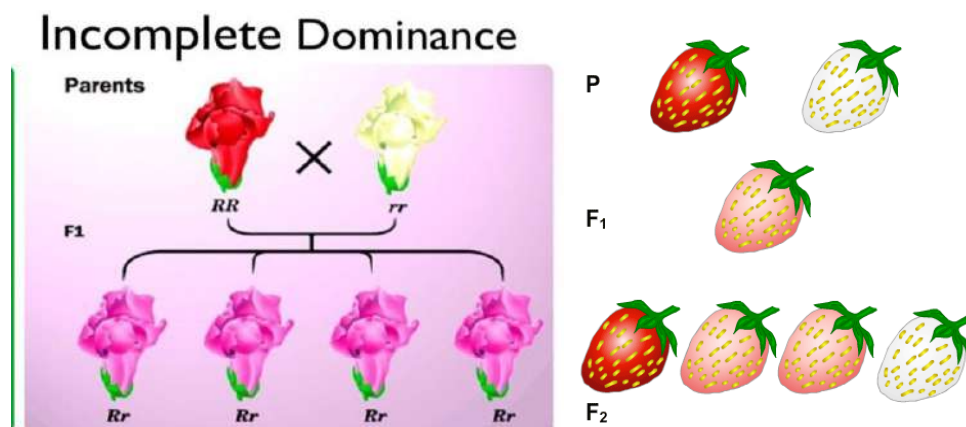


Figure 3. Incomplete dominance of wild strawberries

Figure 3 shows that with further hybridization of these hybrids with each other, we obtain splitting according to the phenotype - 1/4 red-fruited, 2/4 pink-fruited and 1/4 white-fruited plants, according to the genotype - 1/4 AA, 1/2 Aa, 1 / 4 aa, which corresponds to a ratio of 1: 2: 1 in phenotype and genotype. The correspondence of genotype cleavage to phenotype cleavage is characteristic for incomplete dominance, since heterozygotes are phenotypically different from homozygotes.

The next experiment was aimed at carrying out inheritance by type of coding. This is a type of interaction of alleles in which both alleles fully exert their effect. As a result, both parental traits are manifested, the phenotypic hybrid does not receive an averaged variant of two parental traits, but a new variant that differs from the traits of both homozygotes. So for the experiment, the flowers of the night beauty were taken with a red and yellow color of the corolla.

See figure 4.



Figure 4. Objects before crossing

The figure shows the flowers of the night beauty differing in the color of the corolla when conducting cross-pollination, we were able to obtain several varieties of the color of the flower from the next generation, see Figure 5.



Figure 5. Experiment Results

As Figure 5 shows, both parental traits appear in the color of the corolla of the flower. This plant can serve as a vivid example of intermediate inheritance as it gives a great variety of manifestation of hereditary traits. We consider the interaction mechanism in theory (see Figure 6). In the classic example, during the experiment, flowers of a night beauty were taken with a white and pink color, see the figure below [7].

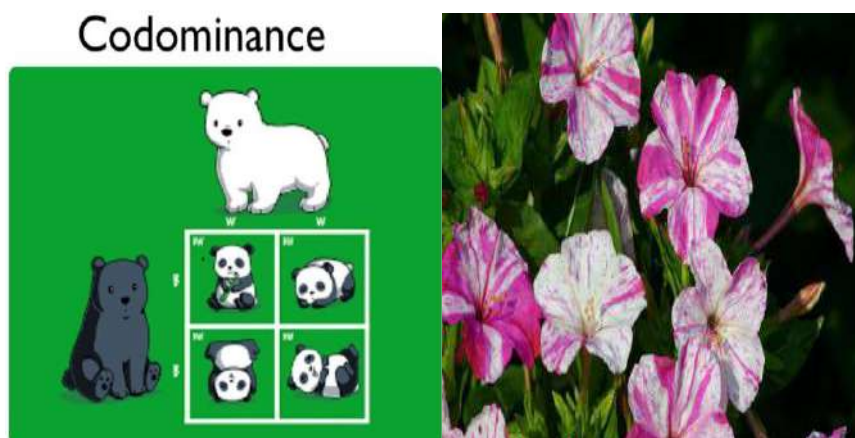


Figure 6. The mechanism of interaction during coding

In conclusion, we can draw conclusions on a comparative analysis of coding and incomplete dominance, theoretical data and the results obtained experimentally. To make statements that these two types of inheritance are difficult to distinguish and distinguish from each other. So, in some sources, coding is considered as the absence of dominant recessive relations, that is, it represents an intermediate inheritance.

So, in some sources, coding is considered as the absence of dominant recessive relations, that is, it represents an intermediate inheritance. Sometimes when conducting experiments with crossing plants, it is difficult to determine the mechanisms of manifestation of the trait, so when pink flowers appear in F1 hybrids from crossing red-flowered and white-flowered parent plants, this interaction can be considered as coding and intermediate inheritance. The reason for the confusion is that in all three cases, hybrids of the first generation have an intermediate version of the trait [3].

Co-dominance and incomplete dominance, despite the phenotypic similarity, have different mechanisms of appearance. Codominance encodes two alleles of the same gene for different protein products. Co-dominance is a full-fledged manifestation of two alleles, that is, heterozygotes exhibit full expression of both alleles and the formation of two different protein products [4]. Incomplete dominance occurs when the dominant allele does not completely suppress the recessive one, that is, in heterozygotes the dominant allele is weaker than in homozygotes for this allele. The indicated genotypes with incomplete dominance differ in the severity of the trait, its intensity of expression, or the expressiveness of a possible variant of inheritance [11].

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