Findings of the Mendel's first generalization

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DESCRIPTION

Before Mendel, several scientists had been worked on artificial or controlled hybridization between diverse, selected genotypes to create new and more desirable combinations among the existing genes to developed higher potential genotypes i.e., Babylonians and Assyrians pollinated date palm artificially as early as 700 B.C., 17th century heading lettuce cultivars were developed through hybridization in France [1,2]. In 1717 Thomas Fairchild produced first systematic hybrid Fairchild' Mule through the crossing between carnation with sweet William [3]. Around 1800 Knight produced several hybrids in fruit or ornamental crops through controlled hybridization. Kölreuter, Gärtner, Herbert, Lecoq, Wichura and others had also worked on hybridization programme but no generally applicable law governing the formation and development of hybrids had been successfully formulated [4-6].

SELECTION OF THE EXPERIMENTAL PLANTS

The value and utility of any experiment are determined by the fitness of the material. Therefore, that experimental plant must necessarily:-

- Possess contrasting characteristics so that easily possible to differentiate.
- The plant must be protected from foreign pollens otherwise lead to entirely erroneous conclusions.
- The hybrids and their offspring should complete fertility in the successive generations.

Therefore, he selected leguminosae family species, especially Pisum genus having specific floral structure 'keel'. Thirty-four more or less distinct varieties of peas were selected from seedsman and subjected to two-year trial so that able to select the look like plants. Majority of the pea varieties belong to the species Pisum sativum and some as independent species, such as P. quadratum, P. saccharatum and P. umbellatum. Mendel selected peas because of its specific features i.e. short growth period, self-pollinated, contrasting traits, easily recognizable and produced complete fertile progenies [7].

CHARACTERISTICS THAT WERE SELECTED FOR EXPERIMENT

Mendel was select seven characters that was presented in Table 1. Mendel chosen the Pisum spp. for his experiment and basic steps were followed.

TABLE 1

Intraoperative factors related to multiple attempts of hydration

Factors	Group A	Group B	P value(Fischer Exact test)
Wound burn	0	5	0.00001
No wound burn	93	2	
Poor wound arcitecture	0	2	0.0002
Normal wound arcitecture	93	5	

Hybrid form

Transitional or intermediate forms were not observed in any experiment.

- Mendel already known about the previous workers findings like hybrid never show intermediate effects between both of the parental plants. Therefore he concluded that, in the hybrid form, for the single trait, those form expressed called as 'dominant form' and another latent by expressed trait called as 'recessive form'.
- Variations in hybrids either due to the infestation by Beetle Buchus pisi because it affected the floral parts and chance to increase the pollination through foreign pollens or other environmental factors [8].

First generation after the hybrid form

- In this generation there are reappear of dominant with recessive form for single trait in the specific ratio as 3:1.
- Some extreme type of case also detected i.e. for seed shape trait 43 round with 1 wrinkled seed or 14 round with 15 wrinkled are observed that is describe the small population size also matters otherwise it will be gave biased results.
- The dominant character can have here a double signification-viz. that of a parental character or a hybrid-character.

Second generation from the hybrid form

- Those forms in first generation gave recessive form give same form in the second generation constantly.
- From the first generation, those have dominant form, of these two-thirds yield offspring that display the dominant and recessive characters in the proportion of 3:1 and thereby show exactly the same ratio as the hybrid forms, while one-third remains with the dominant character constant.
- It is now clear that ultimately it give the ratio as 2:1:1 it means the hybrids form seeds having one or other of the two differentiating characters, and of these one-half develops again the hybrid form, while the other half yield plants that remain constant and receive the dominant or the recessive characters in equal numbers.

Subsequent generation from the hybrids

If an average equality of fertility in all plants in all generations were assumed it always, show similar ratio as 3:1 or 2:1:1 means two will be hybrid-characters, one will be dominant constant and one will be recessive constant [9,10].

CONCLUSION

Through this experiment, Mendel concluded that single trait govern by a factor later called as 'Gene' having two forms in hybrid-character (now called as allele/allelomorph) one is dominant which will be expressed another will be hidden by dominant form called recessive. These forms present in egg cell and pollen cell, during hybrid-character (later known as Heterozygous) by the fertilization between egg cell and pollen cell, both dominant and recessive forms (alleles) fused on equal numbers and again during the formation of egg cell and pollen cell from this hybrid both the forms separate without

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contaminate to each other. This was the first generalization or hypothesis of Mendel's findings after the rediscovery it is called as Law of Segregation or Law of the Purity of Gametes. All the findings were based on mathematical studies.

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