Examrace

Competitive Exams: Revision Terminology Part 9

Light $\xrightarrow{\text{Mutation in sin gle gene}}$ Dark forms (Both belong to one sp. Now as 2 forms – typical & carbonaria of B. betularia)

Hybrid breakdown – when offspring of hybrids are infertile

Cell anemia – glutamic acid is replaced by valine in the 6 Beta position of autosomal recessive lethal gene = 0.4 frequency of carrier in population of 200 individual is $p^2 + 2pq + q^2 = 1$ die due to lethal So $2pq = 2 \times 0.6 \times 0.4 = 0.48$ and $N = 200$, So freq. of carrier $= 0.48 \times 200 = 96$

Hot spots – sites which are more mutable then other sites (Benzer) e. g. smethyl Cytosine residues

More closely related sexual partners less are variations in their off springs.

Classical/forward genetics – study of phenotype, analysis & isolation of concerned genes & study of DNA sequence comprising genes.

Reverse genetics – if we start DNA Seq. study from phenotypic effect of which we do not know & then introduce in some animal to study its phenotypic effect.

Blending of inheritable chromosome is the intermingling of heredity material of both offspring's.

Mendel's success – pea easy to cultivate, naturally self-pollinated, artificially cross-pollinate.
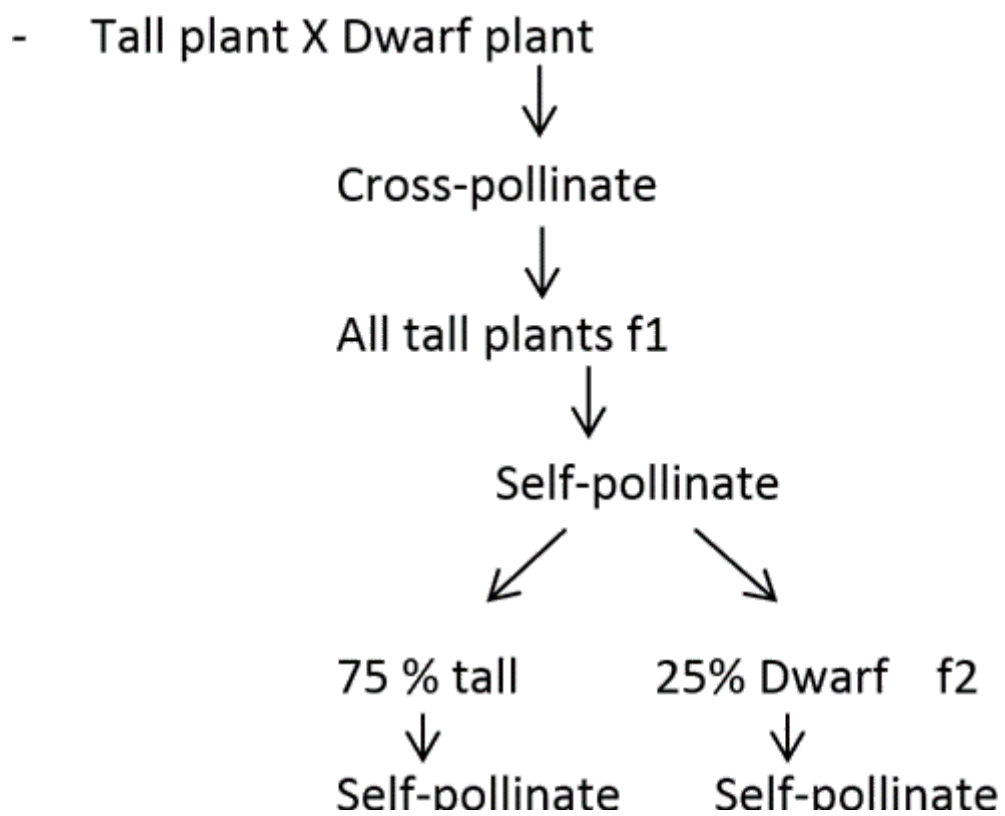
Mendel's success – sharply defined inherited differences in difference varieties, only one variable at a time
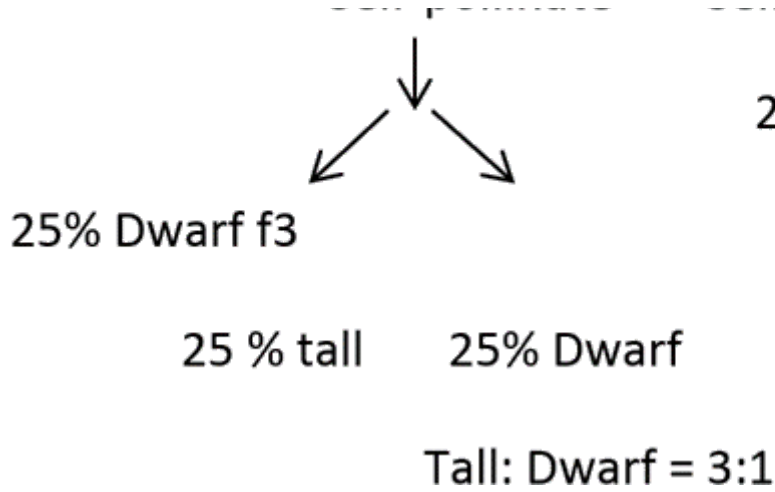
In rr seeds in small DNA Fragment interferes with SBE – 1 so starch in not formed and it accumulates as sugar – causer high osmotic pressure lead to shrinkage & wrinkling.

Dihydric cross - inheritance of seed color is independent of seed shape.

Homozygous - condition in which only one allele is present of a pair

Mendel used element for factor → gene

-    Tall plant X Dwarf plant

↓

Cross-pollinate

↓

All tall plants f1

↓

Self-pollinate

↙   ↘

75 % tall   25% Dwarf   f2

↓   ↓

Self-pollinate   Self-pollinate

25% Dwarf f3

2

25 % tall   25% Dwarf

Tall: Dwarf = 3:1

Genotype exhibiting difference phenotype under difference environmental conditions – Individual norm of reaction

Same environment & genotype but phenotype differ due to difference in internal environment = Developmental noise

2 different genotype produce same phenotype due to different environment & have difference genotype = phenocopies of each other

If a dwarf plant introduced tall by gibberellin acid then too it would behave as dwarf genetically.

In haploid organism – chromosome are governed only by one allele then law of dominance & Segregation do not apply.

Locus = position of allele on chromosome

Back cross Tt X any parent

Test cross Tt X recessive (tt) Phenotype = 1: 1: 1: 1

Hugo – de Vries (Dutch) cosrrens (Germany) Tschermark (Austrian) → Mendel's work as principles & coined term factor

Bateson – 1st announced Mendel's work in England (poultry, rabbit, sweet pea)

Bateson coined homozygous, heterozygous, allomorphs – "Mendel's principle of heredity"

Nageli advised Mendel to work on Hieracium (But he failed) seeds produced without pollination

Mendel = 1st genetic surgeon

No Of gene pair	Phenotype	Genotype
1	2	3
2	4	9

3	8	27
Genotype and Phenotype		

Genetic markers ⇒ Alleles.

Albinism = autosomal recessive mutation. If 1st child of a normal pair in albino what is the is the probability of 2nd child for albino = 25 % (due to recessive chromosome so only homozygous condition will show albinism)

Tt x Tt → tt (25 %) = answer

1st child is independent of the 2nd child

What would be proportion of Tt Yy Ss Dd Ee from a cross

Tt Yy Ss Dd Ee X Tt Yy Ss Cc Dd Ee

Answer: $\dfrac{1}{4}$ of progeny will be

$$TT, \frac{1}{4}YY, \frac{1}{2}Ss, \frac{1}{4}Cc, \frac{1}{4}dd, \frac{1}{2}Ee$$

$$\frac{1}{4} \times \frac{1}{4} \times \frac{1}{2} \times \frac{1}{4} \times \frac{1}{4} \times \frac{1}{2} = \frac{1}{1024} \text{ answer}$$

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