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Q1(d)

Lethal and sublethal genes

UPSC Civil Services Mains 2024 · Anthropology GS 1 · 10 marks · Mendelian genetics in man-family study, single factor, multifactor, lethal, sub-lethal and polygenic inheritance in man.

9.2 Mendelian genetics in man-family study, single factor, multifactor, lethal, sub-lethal and polygenic inheritance in man.

Facts & figures for this PYQ only.

Numbers move. Confirm the latest Budget, Economic Survey or census round. This sheet is for revision, not a substitute for the model answer.

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Achondroplasia

An FGFR3 variant is dominant for achondroplasia in heterozygotes; homozygosity usually causes lethal skeletal dysplasia.

Tay-Sachs

Biallelic HEXA variants cause progressive neurodegeneration. The classic infantile form was historically fatal in early childhood.

Modified ratio

Loss of one homozygous class from an $Aa \times Aa$ cross can leave two heterozygotes for every one normal homozygote among survivors.

A. C. Allison

Linked sickle-cell trait to protection from severe falciparum malaria, a classic human example of balancing selection.

Population context

Consanguinity increases the chance that two copies of a rare recessive allele meet; it does not create the mutation.

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