Answer on Question #54554 – Biology – Genetics

Question:

Albinism in human is controlled by a recessive gene 'a'. If both parents were known to carrier (Aa) for albinism. What is the chances of 1 normal and 3 albino in family of four and how?
(1) 12/256
(2) 81/256
(3) 108/256
(4) 54/256

Answer:

For two heterozygote parents (Aa), $\frac{1}{4}$ of all offspring would be expected

to show the recessive trait of albinism.

The chance of a child of these parents having normal skin color is $\frac{3}{4}$.

The chance that one child will be normal and three albino is:

$$p = C_4^1 \times \frac{3}{4} \times \left(\frac{1}{4}\right)^3 = 4 \times \frac{3}{4} \times \frac{1}{64} = \frac{3}{64} = \frac{12}{256}$$