Answer on Question#54555 – Biology – Genetics

Question:

In a random mating population frequency of disease causing recessive allele is 80%. What would be the frequency of carrier individual in population and how?
(1) 64%
(2) 32%
(3) 16%
(4) 100%

Solution:

According to the Hardy-Weinberg principle:

$$(p+q)^2 = p^2 + 2pq + q^2 = 1;$$

P –the frequency of «A» in the population;

Q –the frequency of «a» in the population;

AA – healthy individuals;

Aa – carriers;

aa – diseased;

q=0.8

p=1 – 0.8 = 0.2

$$(p+q)^2 = p^2 + 2pq + q^2 = 1;$$

0.2*0.2+2*0.8*0.2+0.8*0.8 = 0.04 + 0.32 + 0.64 = 1;

2pq = 2*0.8*0.2=0.32

2pq = 0.32 (Aa - carriers)

Answer: (2) 32%