

GCSE Biology A (Gateway)

J247/02 B4-B6 and B7 Foundation (Foundation Tier)

Question Set 15

1

Retinitis pigmentosa is a genetic condition.

It is caused by a mutation to a gene. This mutation produces a recessive allele.

If people have retinitis pigmentosa then the cells in their retina are damaged.

(a) Explain the meaning of these terms.

Mutation

Change in a gene

Gene

a length of DNA

[2]

(b) If a person has two alleles for retinitis pigmentosa, they will not be able to see properly.

(i) Why does a person need two affected alleles to have the condition?

[1]

the allele is recessive

(ii) Why does the condition affect the ability to see properly?

[1]

The retina gets damaged and doesn't function properly

(c) Two people are heterozygous for retinitis pigmentosa and are expecting a baby. Complete the genetic diagram to work out the probability that the baby will have the condition.

R is the normal allele and r is the allele for retinitis pigmentosa.

	R	r
R	RR	Rr
r	Rr	rr

Answer = 0.25

[3]

(d) (i) Scientists want to use stem cells as a treatment for this condition.

Why might stem cells be able to repair the retina?

[2]

Stem cells can still be differentiated so they can replace damaged cells.

(ii) Write down two reasons why medical treatments are tested on animals first.

[2]

To make sure it is safe and to find the correct dosage.

Total Marks for Question Set 15: 11

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