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Level 1 Chemistry and Biology RAS 2023

92022 Demonstrate understanding of genetic variation in relation to an identified characteristic

EXEMPLAR

Achievement

TOTAL 04

Student answer**Question 1**

In this assessment I will be discussing Homo sapiens and Cystic fibrosis. You either have Cystic fibrosis or normal mucus. Cystic fibrosis is thick mucus. Cystic fibrosis is caused when you have a different allele which makes you a thick mucus characteristic. Cystic fibrosis is really bad because your mucus is so thick it clogs up your airways sometimes. You get Cystic fibrosis if you inherit 2 recessive Cystic fibrosis alleles.

Genetic variation makes a species survive because if everyone was the same and had the same genes then the species would probably get wiped out fast. Because if a disease or something kills the species then there would be nothing to counter the disease.

Genetic variation comes about sexual reproduction and mutation. Sexual reproduction is when a sperm meets an egg and then they fertilize. This makes genetic variation because the offspring inherits different genes from the mum and dad. And they get 23 chromosomes from mum and 23 chromosomes from the dad. This causes genetic variation because the mum and dad's genes mix to make a new combination of genes.

A mutation is when there is a change in the DNA sequence causing genetic variation.

Phenotype is when someone has the specific gene, and you can see that they have that gene. And a genotype is when you can't see you have the specific gene, but you have it and could be a carrier. So, the Cystic fibrosis phenotype would be that you can see someone with Cystic fibrosis. You will be able to see if they have thick mucus. While if someone has the Cystic fibrosis genotype you wouldn't be able to see if they had the Cystic fibrosis gene. They could just be a carrier of that gene.

Genetic variation is important to the population of homo sapiens because if everyone had the same genetics it wouldn't be good because if something like a disease were to spread around the Homo sapiens species we wouldn't be able to study what gene could be immune to it. And genetic variation is important to Homo sapiens because these different genes allow us to tell each other apart which makes it unique.

Question 2

I think it was important for the scientist to have genetic information on the Kakapo because the kakapo were endangered, so then they could use that information on their genetics to see how to get them to breed and create genetic variation within the endangered species so they could repopulate. I think Richard Henry had a big impact on the genetic variation since his genes were different to the Kakapo. So when he was breeding with another Kakapo him and the other Kakapo were creating an offspring with a new combination of genes.

Achievement

Subject: Chemistry and Biology

Standard: 92022

Total score: 04

Q	Grade score	Marker commentary
(a)	A4	Overall, this script sits at the Achievement level as it contains accurate definitions and descriptions. For example, the candidate has identified that genetic variation is important for survival of a population in relation to disease. The candidate has defined sexual reproduction, describing a sperm fertilising an egg, i.e. genetic material from each parent. The candidate has defined mutation.
(b)		The candidate has identified that breeding kākāpō that are as genetically different as possible is important for conservation of the species.