Series 11 (week 12) BIO-105 2021

Question 1

This girl presents two phenotypes:
- she has been over-weighted since she was a baby
- she has red hairs

Both her parents have dark hairs and a normal body weight.

Her 2 copies of the Mc1R gene have been sequenced: no mutation was found.

What is the next gene one should sequence to explain her phenotypes?
Explain briefly how one mutation in one gene can cause both phenotypes.

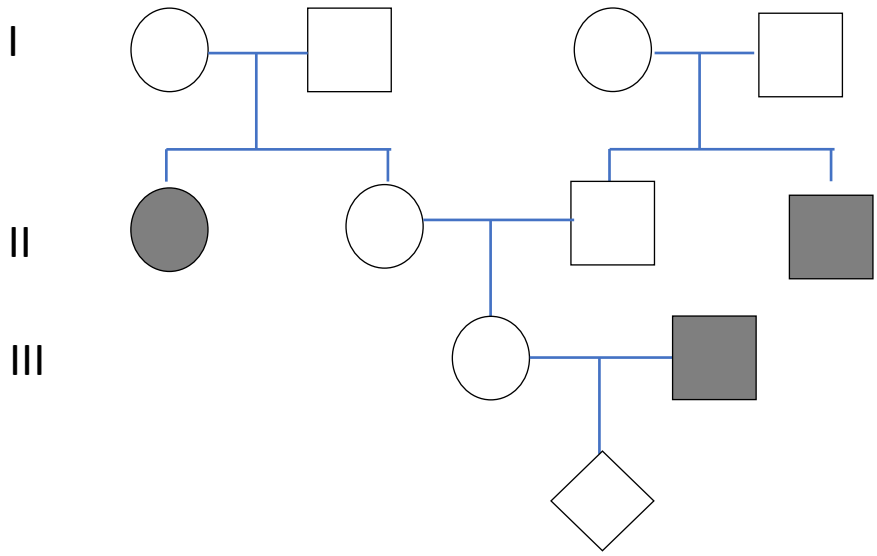
Question 2 True or false

The red hair phenotype is a classical example of incomplete dominance :
people with 2 wild-type copies of the tyrosinase gene (T/T) have dark hairs;
people heterozygous (T/t) have red hairs;
people homozygous t/t have white hairs (albinos).

A. RIGHT B. WRONG

Question 3

The woman in generation III has a maternal aunt and a paternal uncle with red hairs.
She is married to a red hair man.



3.1 What is the probability for her first child to have red hairs?
(show your calculations)

3.2 Her first child is a dark hair boy. Now what is the probability that her second child will have red hairs?
(show your calculations)