

Genetics Exam Review Packet

Station 1: Pedigrees

Complete the following two pedigrees and associated questions in the space provided. When done see answer keys at station to check your work. Upon completion, try to create your own pedigree in your notebook following the last pedigree worksheet.

Tom has pointed teeth. It's a recessive trait. Tom's father, mother and sister all have normal teeth. Tom's brother Steve also has normal teeth as does his wife Jane. However, Steve and Jane's two sons both have pointed teeth. Jane's father and mother have normal teeth. In fact Jane's mother's family does not possess the gene at all! Tom's sister Amber is married to a man named Juan and they have a daughter with pointed teeth. Draw a pedigree showing pointed teeth for the family. Show all individuals mentioned above.

1 Do you know Tom's parents genotypes? What are they and how do you know?

2 Are there any individuals that are not shaded in at all? What does that tell us about that individual?

3 Tom's sister (normal teeth) married a man and they have a pointed toothed daughter. What could we infer about the husband and his parents?

Create a pedigree for this family tracing their cleft chins using the following clues:
Individual III 2 has three siblings: 1 brother with a cleft chin and 2 sisters who do not.
Individual III 2 has one uncle with the cleft chin and one aunt without.
Neither III 2s mother nor father have cleft chins.
Individual III 2 is a man.
Individual III 2s mother married into the family.
Individual III 2s maternal grandfather (his mother's father) does not have the cleft chin nor carry the trait.
Individual III 2s paternal grandparents (fathers parents) do not have the chin.

1 What individuals do we not have enough information to assign genotypes?

Station 2: Vocabulary and understanding

For this station, split a deck of flashcards and alternate turns quizzing your partner. When you come to a word that you struggle with, forgot, or don't know at all, add this word somewhere on your notebook vocab sheet.

Stations 3: DNA, RNA and their function

Working with your partner you will work through **step 5** in the virtual cell reproduction lab. Go to mrpowellscience.com > Science Resources > Genetics > [DNA Structure Virtual Lab](#)

OR

Go to

http://glencoe.mheducation.com/sites/0078778066/student_view0/chapter4/virtual_lab.html

Click on

[What is the role of DNA and RNA in protein synthesis](#)

Read through the information in the lab under the What is the role of DNA and RNA in protein synthesis heading on the left. Once you have completed the reading and steps 1 -5 answer the nine questions that follow.

- 1.) Describe the structure and appearance of DNA.
- 2.) What is the function of DNA?
- 3.) What is the function of mRNA?
- 4.) What is the function of tRNA?
- 5.) Describe a protein molecule.
- 6.) In what part of a cell is a protein molecule made?
- 7.) Why do you think there are equal amounts of Adenine and Thymine or Guanine and Cytosine in the DNA of a cell?
- 8.) What might happen if a base (A,U,C or G) was deleted from the mRNA code?
- 9.) Summarize how DNA directs the synthesis of a protein.

Station 4: Punnett square practice

With your partner, work through the three prompts at this station on your whiteboard. Complete first and then check your work with the key on the back of the prompt. Once you have practiced with these three prompts, create your own prompt on your packet for your partner to solve. When you are finished creating and working through your own prompts, check each other's work! Use the space provided below.

Write your problem here:

Write your problem here:
