

## Worksheet DNA 3<sup>th</sup> form – Proteins and mutations

1. Below you see one DNA strand (which is half of a complete DNA molecule). Write the RNA strand below the DNA strand. Replace the T's by the U's. Look for the start codon and add the letters of the corresponding amino acids in the correct order below the RNA strand by translating the code found in RNA to amino acids. Go from left to right.

DNA: **GACATTACGTATGTACATCGGACTAGCATAACAGATAGTCGATATC**

RNA:

Protein:

2. Below you see the same DNA strand as question 1. Add a base between the C and the G below the arrow. You can choose which one (does it matter?). Write down the RNA strand and the protein. Read this strand from left to right only.



DNA: **GACATTACGTATGTACATCGGACTAGCATAACAGATAGTCGATATC**

RNA:

Protein:

3. What differences arose after the mutations of questions 2? Write down the differences between the proteins of question 1 and question 2.
4. Explain the effect of adding a base to a DNA strand like in question 2.
5. Will the effect be as big as removing a base compared to adding a base? Explain.
6. Will the effect be bigger, smaller or the same when you change one base instead of removing or adding a base (for example a change from C to G)?
7. Explain the difference between adding/removing a base and changing a base.
8. Below you see the same DNA strand as question 1. The G below the arrow is changed to a C. Find out what the effect will be. Read this strand from left to right only.



DNA: **GACATTACGTATGTACATCGGACTAGCATAACAGATAGTCGATATC**

RNA:

Protein:

9. Explain the effect of the mutation of question 8.
10. Give a short summary of all different mutations.
11. Read and do 3.23 up to and including page 221 of your textbook.