1. Purpose: To transcribe DNA to mRNA to determine the amino acid chain created by the codons and how various mutations will impact the polypeptide.
2. Procedure:
   1. Transcribe the following DNA strand to mRNA:

CCC TAC GAC ATG GAG CGG TTA TAC CAC TTT AGC AGC CGA AGT ACT

mRNA= GGG AUG CUG UAC CUC GCC AAU AUG GUG AAA UCG UCG GCU UCA UGA

Polypeptide= Gly Met Leu Tyr Leu Ala Asn Met Val Lys Ser Ser Ala Ser STOP

1. Analysis:
   1. Below is a mutated strain of mRNA, what type of mutation has occurred and how has it impacted the polypeptide?

CCC TAC GAC ATG GCG CGG TTA TAC CAC TTT AGC AGC CGA AGT ACT

mRNA= GGG AUG CUG UAC CGC GCC AAU AUG GUG AAA UCG UCG GCU UCA UGA

Polypeptide= Gly Met Leu Tyr Arg Ala Asn Met Val Lys Ser Ser Ala Ser STOP

A point shift mutation has occurred which changes the fifth amino acid. It impacts the polypeptide by changing the protein that is created.

* 1. Below is a mutated strain of mRNA, what type of mutation has occurred and how has it impacted the polypeptide?

CCC TAC CGA CAT GGA GCG GTT ATA CCA CTT TAG CAG CCG AAG TAC T

mRNA= GGG AUG GCU GUA CCU CGC CAA UAU GGU GAA AUC GUC GGC UUC AUG A

Polypeptide= Gly Met Ala Val Pro Arg Gin Tyr Gly Glu Ile Val Ala Phe Met . . .

An insertion has happened and it impacts the polypeptide by adding a new amino acid that changes the sequence of the protein.

* 1. Below is a mutated strain of mRNA what type of mutation has occurred and how has it impacted the polypeptide? (Use the highlighted letter as a reference point.)

CCC TAC GAC ATT TCA CCA TAT TGG CGA GGT AGC AGC CGA AGT ACT

mRNA= GGG AUG CUG UAA AGU GGU AUA ACC GCU CCA UCG UCG GCU UCA UGA

Polypeptide= Gly Met Leu STOP

An inversion has occurred which rotates the nucleotide 180o. This mutation impacts the polypeptide by changing the DNA sequence and creating the wrong protein.

* 1. What possible outcomes could result from these types of mutation for the organism impacted by them?

These types of mutations are more than likely to change the DNA sequencing of the amino acid. This amino acid will build up to create the wrong protein. In most cases the wrong protein being made is lethal or can have a great impact on your offspring or yourself.

1. Conclusion: (Explain the issues that may result from mutations and how it may impact the organism. Which type of mutation is least likely to result in a change to the polypeptide? What could result from the change in a protein if it isn’t harmful to the organism? Add more information to what you learned as well.)

Issues resulting from the change in a protein can be physical or internal. Internally processes in the body may be stopped or slowed down. For example, one may not be able to produce stomach acid. Physical changes that may occur will occur in places such as the liver, brain, or even effect physical attributes of the organism. Mutations that occur in the reproductive system will affect the offspring of the mutated and not their physical being. Point mutation is the least likely form of mutation to change the sequencing of a polypeptide, because more than one nitrogenous base can make the same amino acid. There are only twenty amino acids. If an organism is mutated in anyway shape or form, it will more than likely result in death. In few cases it can only affect the organism’s offspring. In even fewer cases will the mutation be a positive change known as evolution. Mutations can occur for a number of reasons. The organism’s cells may be tampered with due to environmental factors such as the food a person eats, the chemicals and gases they inhale, and their own personal routine.