**Use the following table to explain how some people have cystic fibrosis and some people don’t.**

DNA Template Strand Sequence for Person without Cystic Fibrosis: ACG CCT TAG GCA TAG   
DNA Template Strand Sequence for Person with Cystic Fibrosis: ACG CCT TAG CCA TAG

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Normal trait:** ACG CCT TAG GCA TAG | | | | | | | |
| **Diagram of the DNA** | **Diagram of the RNA** | **Diagram of the Amino Acid Sequence** | **Diagram of the Whole Protein** | **Protein Shape/ Function** | | **Phenotype/Trait** | |
| *Show the order of bases in the sense strand. Circle the base that is different in the two cells* | *Show the order of bases in the mRNA transcript in the nucleus. Circle the base that is different in the two cells.* | *Show the mRNA at the ribosome with the last two tRNAs attached and all amino acids. Circle the amino acid that is different in the two cells.* | *Draw the two proteins using different shapes.* | *Indicate whether or not protein produced is working* | | *Describe how this protein would influence or express a trait.* | |
| *Nucleus* | | |  |  | |  | |
| **CYSTIC FIBROSIS:** ACG CCT TAG CCA TAG | | | | | | |
| **Diagram of the DNA** | **Diagram of the RNA** | **Diagram of the Amino Acid Sequence** | **Diagram of the Whole Protein** | **Proteins Expressed** | **Phenotype/Trait** | | |
| *Show the order of bases in the sense strand. Circle the base that is different in the two cells* | *Show the order of bases in the mRNA transcript in the nucleus. Circle the base that is different in the two cells.* | *Show the mRNA at the ribosome with the last two tRNAs attached and all amino acids. Circle the amino acid that is different in the two cells.* | *Draw the two proteins using different shapes.* | *Indicate whether or not protein produced is working* | *Describe how this protein would influence or express a trait.* | | |
| *Nucleus* | | |  |  |  | | |