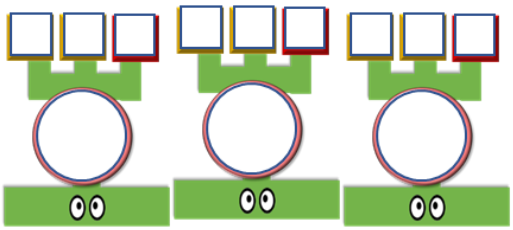
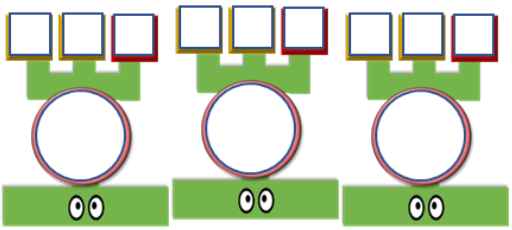
Examining the Expression of Sickle Cell Disease During Transcription & Translation

Sickle Cell Disease affects 100,000 Americans each year. Healthy red blood cells are round and they move through small blood vessels to carry oxygen to all parts of the body by a protein called hemoglobin. In someone who has SCD, the red blood cells become hard and sticky and look like a C-shaped farm tool called a "sickle". Sickle Cell Disease affects thousands of people throughout the world but is most common among those whose ancestors come from sub-Saharan Africa.

Use your knowledge of base pairing to complete the mRNA strand that would be TRANSCRIBED from the two DNA strands above.

Use your knowledge of base pairing to complete the tRNA ANTICODONS and the AMINO ACIDS that would be TRANSLATED from the mRNA codons above.





Rewrite the two Amino Acid sequences below in separate boxes

AMINO ACID SEQUENCE A

AMINO ACID SEQUENCE B

RESEARCH. Which amino acid sequence above causes Sickle Cell Anemia?

ANALYZE. What is the only difference between the two Amino Acid sequences?

EXPLAIN how the STRUCTURE of DNA led to the EXPRESSION of this disease. Must use the terms: DNA, bases, Adenine, Cytosine, Thymine, Guanine, Transcription, Amino Acid, Protein, Translation

PREDICT. What may have caused this change in DNA structure?