

Investigating Phenylketonuria

Phenylketonuria (PKU) is a recessive disorder that is characterized by high levels of phenylalanine in the blood. Phenylalanine is an amino acid that is normally broken down into components for the body to use. In people with PKU, the phenylalanine is not broken down and the amino acid accumulates in the blood. What causes the inability to break down phenylalanine in people suffering from PKU, and how does this change impact human health?

1. ASK A QUESTION

With your team, define a set of questions to be answered. Identify all the factors you will research to answer these questions. Outline the characteristics a complete answer should have.

2. CONDUCT RESEARCH

Investigate phenylketonuria. Use library and Internet resources to explore the cause and effect relationship between DNA structure, protein structure, and symptoms of the disease. As you do research, be sure to make notes about the sources of your evidence so you can correctly cite the sources and share them with others.

3. DEVELOP A MODEL

Use evidence from your research to develop a model of phenylketonuria. Include DNA, proteins, and symptoms in your model. You could draw a conceptual model or build a physical model out of common materials.

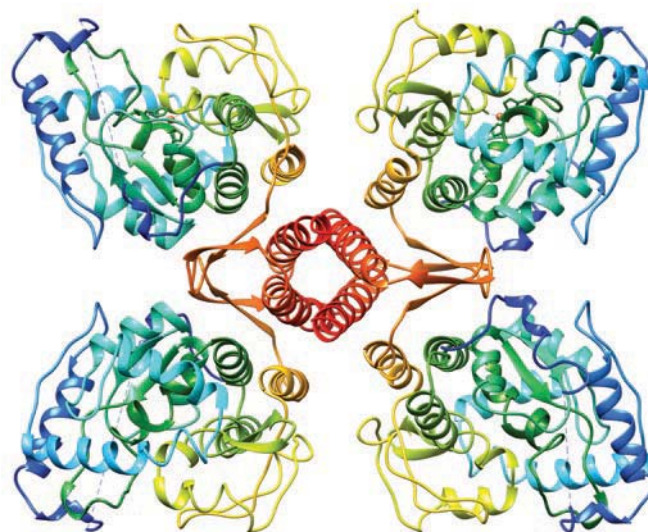
4. CONSTRUCT AN EXPLANATION

Use your answers to your questions to construct an explanation about the cause and effect relationship between DNA structure, protein structure, and symptoms of phenylketonuria.

5. COMMUNICATE

Present your findings as a poster that describes phenylketonuria, the enzyme involved, why it malfunctions, and possible avenues for addressing the issue. Your presentation should include images and data to support your claims.

FIGURE 5: A special enzyme is responsible for breaking down the amino acid phenylalanine.



CHECK YOUR WORK

A complete presentation should include the following information:

- guiding questions that are answered in the final presentation
- a model that shows the cause and effect relationship between DNA structure, protein structure, and phenylketonuria symptoms
- an explanation about how the structure of DNA determines the structure of the proteins involved and ultimately the traits associated with phenylketonuria