**Activity 41: Structure–Function Relationships in Proteins**

***Learning Objective***

*Appreciate the structure–function relationship in several sample proteins*

**Estimated Completion Time** 30 Minutes

**Instructor Information**

Activity could be supplemented with extra information about the structure and function of the protein examples.

**ANSWERS TO QUESTIONS**

1.

|  |  |  |
| --- | --- | --- |
| Protein | Structure | Function |
| Hemoglobin | Globular protein with polar amino acids on the exterior | Transport oxygen through the bloodstream to the tissues |
| Collagen | Fibrous protein consisting of a rope-like triple helix | Found in connective tissue where strength is needed |
| Na+ / K+ ATPase | Membrane protein with nonpolar amino acids on the exterior portion facing the phospholipid tails and polar amino acids facing the interior channel | Pump Na+ and K+ ions through the cell membrane maintaining cellular concentrations of both ions |

2. Glu is polar charged and Val is nonpolar. The change introduces a nonpolar residue that changes the protein shape.

3. The amino acid sequence and structure of a protein dictate the protein’s function.

**Activity 41: Skill Development**

1. The amino acid side chains facing the cell membrane interior must have nonpolar residues present.

2. Keratin is fibrous and forms a strong rope-like structure that can cover and keep the skin warm.