

Exercise 6 (Module 3.11)Web/CD Activity 3G *Protein Functions*

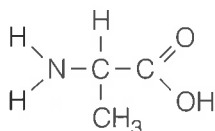
Everything a cell does involves proteins. Seven classes of proteins are discussed in Module 3.11. Match each of the classes with one of the descriptions below.

- _____ 1. Hemoglobin carries oxygen in the blood.
- _____ 2. A protein in muscle cells enables them to move.
- _____ 3. Antibodies fight disease-causing bacteria.
- _____ 4. Collagen gives bone strength and flexibility.
- _____ 5. Insulin signals cells to take in and use sugar.
- _____ 6. Proteins in seeds provide food for plant embryos.
- _____ 7. A protein called sucrase promotes the chemical conversion of sucrose into monosaccharides.

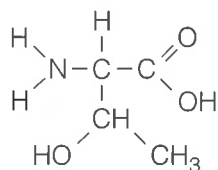
Exercise 7 (Modules 3.12 – 3.13)Web/CD Activity 3H *Protein Structure*

Three amino acids not shown in the modules are diagrammed below.

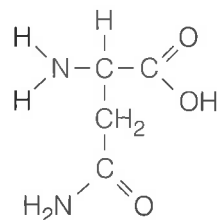
1. Draw a box around the unique R group of each, and label it **R group**.
2. Draw a red circle around the amino group of each, and label it **amino group**.
3. Draw a blue triangle around the acid group of each, and label it **acid group**.



Alanine



Threonine



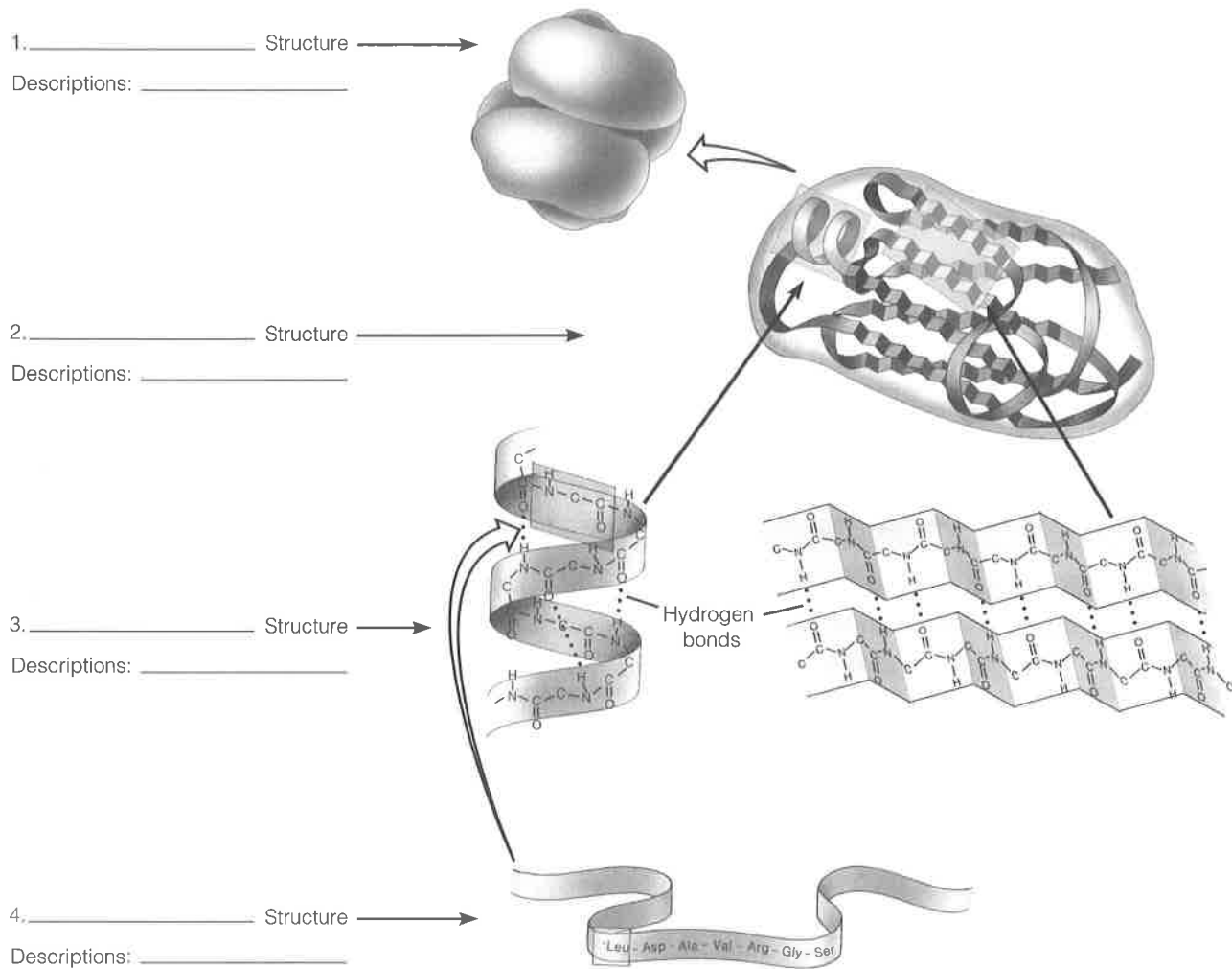
Asparagine

4. In the space below, sketch the three amino acids to show how they would join to form a tripeptide. What is this chemical reaction called? How many molecules of water would be formed? Show where the water would come from.

Exercise 8 (Modules 3.14 – 3.18)

Web/CD Activity 3H Protein Structure

Identify each of the levels of protein structure in the diagrams. Then choose the descriptions from the list below that go with each of the levels.



Choose from these descriptions:

- A. Overall three-dimensional shape
- B. Amino acid sequence
- C. Even a slight change in this can alter tertiary structure.
- D. This level occurs in proteins with more than one polypeptide subunit.
- E. Coiling and folding produced by hydrogen bonds between —NH and C=O groups
- F. Not present in all proteins
- G. Level of structure that is held together by peptide bonds
- H. Alpha helix and pleated sheet
- I. Stabilized by clustering of hydrophobic R groups, hydrogen bonds, and ionic bonds
- J. “Globular” or “fibrous” might describe this level of structure.