

Source: [KBhBIO101Macromolecules]

#ref #disorganized

1 | Overview

- Rubisco is apparently a cool protein
- Most abundant protein in the world
- Enzyme that is very slow, which is why plants make so much of it
- Rubisco in pop science

2 | Slide Intro

Proteins include a diversity of structures, resulting in a wide range of functions.

What is the function of proteins in the cellular environment?

Figure 3.16

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1. Proteins include a diversity of structures made of folded chains of amino acids, resulting in many molecules with a wide range of functions.
 - a. Proteins are made up of long, folded chains of **amino acids** held together by **peptide bonds**. Amino acids share a common structure with an **amino group**, a **carboxyl group**, a hydrogen atom, and an **R-group** around a central **α -carbon**.
 - b. R-groups have **variable chemical structures and properties**, which determines how the amino acid chain will fold, and subsequently the structure and the function of the protein.
 - c. Proteins share three levels of superimposed structure: **primary**, **secondary**, and **tertiary**. Quaternary structure arises when two or more **polypeptide chains** are bonded together.

Figure 1: Pasted image

3 | Carbon Fixation

- Turning carbon from the air into carbohydrates
- Combines carbon from CO_2 , light, and water to get carbohydrates
 - $6CO_2 + 6H_2O + \text{light} = \text{carbs}$ # Faults
- Rubisco sometimes accidentally binds oxygen to a sugar chain in a process called photorespiration
 - The cell actually has to expend more energy to fix this mistake