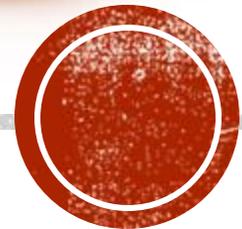


WHAT ARE PROTEINS??

By: Anna, Emma, Jack & Hannah



DEFINITION OF PROTEIN

- Any of a class of nitrogenous organic compounds that consist of large molecules composed of one or more long chains of amino acids and are an essential part of all living organisms, especially as structural components of body tissues such as muscle, hair, collagen, etc., and as enzymes and antibodies.



- Examples: Meat, eggs, fish, milk, yogurt, tuna, chicken, oats, cottage cheese, quinoa, beans, and lentils.
- Protein keeps people full and fuels us with energy to complete day to day tasks.
- Protein repairs torn muscle tissues and helps them grow.



TYPE OF FOODS CONTAINING PROTEIN



WHY ARE PROTEINS IMPORTANT

- They are the building block of life
- Help repair cells in your body
- Important for day to day activities or tasks
- Important for growth and development
- Recommended 30 grams of proteins per meal



FUNCTIONS OF PROTEINS

- Proteins control reactions
- Regulate cell functions & growth
- Form bones and muscle
- Fight disease
- Transport substances
- Major source of energy when consumed



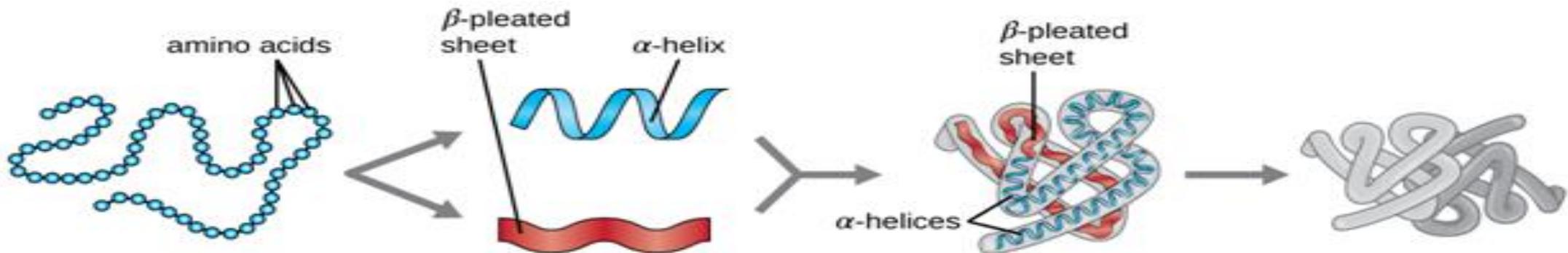
THE STRUCTURES OF PROTEINS

Structure

- Long chains of amino acids which fold to make other things/proteins. A chain is a sequence of amino acids.

4 structures

- Primary protein structure is made up of amino acids & are linked by peptide bonds.



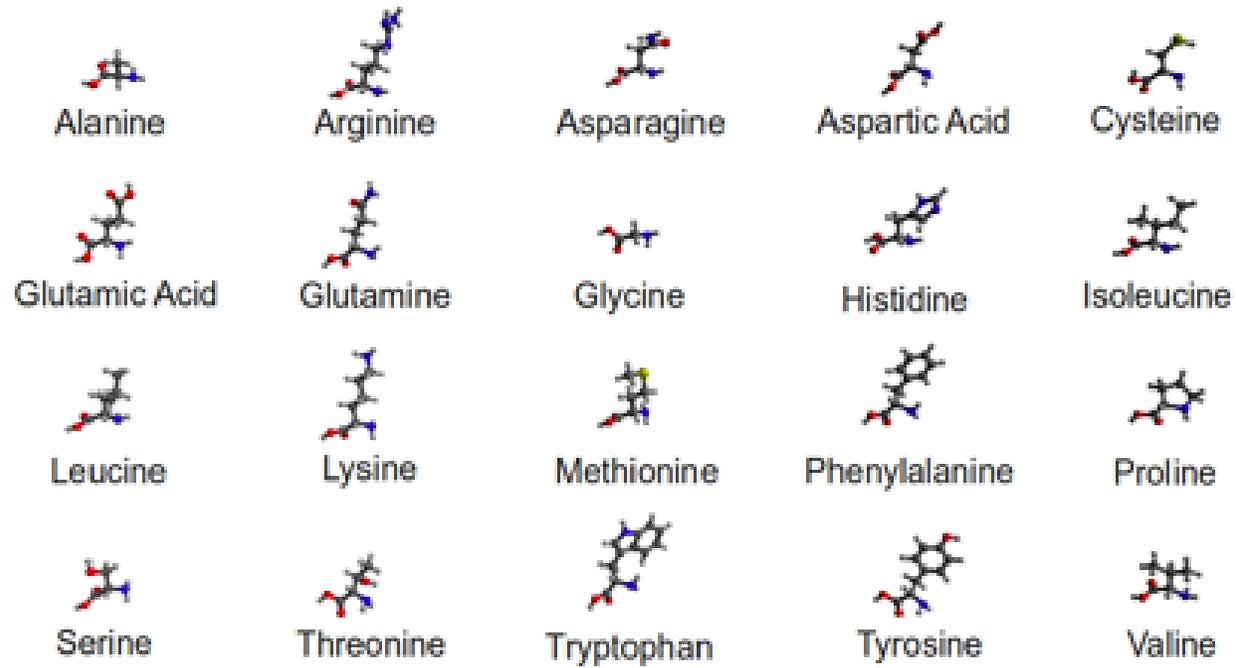
Primary Protein Structure
Sequence of a chain of amino acids

Secondary Protein Structure
Local folding of the polypeptide chain into helices or sheets

Tertiary Protein Structure
three-dimensional folding pattern of a protein due to side chain interactions

Quaternary Protein Structure
protein consisting of more than one amino acid chain





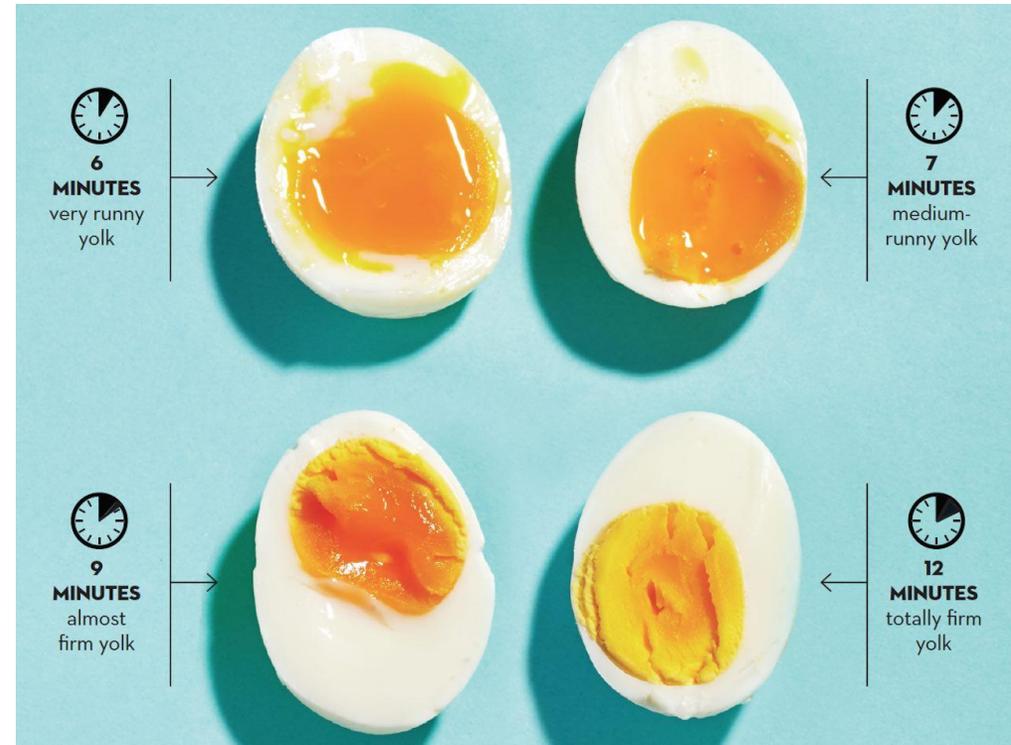
- DNA provides the instructions for how the amino acids will be linked to form the proteins in your body.
- People need all the amino acids to make the proteins your body needs for good health

AMINO ACIDS



PROTEIN

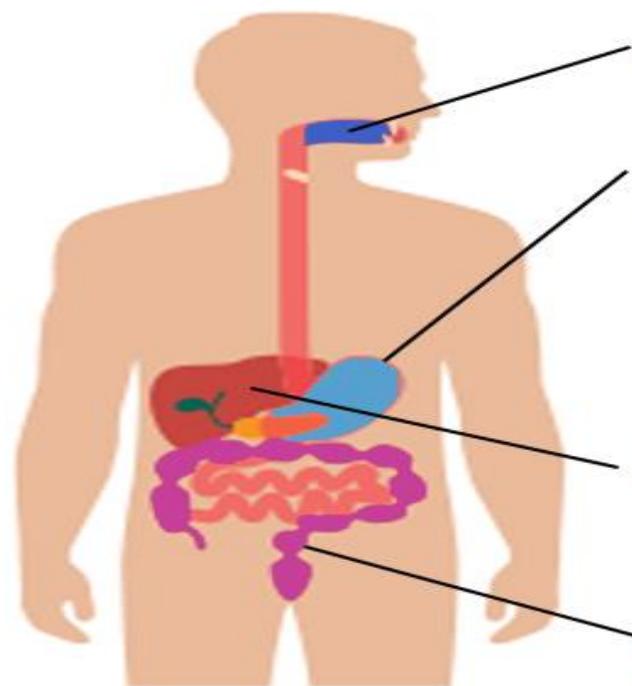
- Denaturation-Protein when cooked or changed cannot turn back into its previous state
- Example: When someone cooks an egg the amount of protein in the egg is not lost but the shape of the protein molecules in the egg changed from runny to hard boiled.



WHERE IS PROTEIN FOUND IN YOUR BODY

PROTEINS

HOW THEY FLOW THROUGH THE BODY



1

Protein is ingested.

2

Protein goes to the stomach and intestines where the enzyme pepsin breaks it down into smaller proteins called peptides (groups of 2-50 amino acids), and then individual amino acids

3

The liver then builds proteins from the amino acids. 90% of amino acids are recycled.

4

The remainder are broken down into urea and excreted as urine or used to make other important molecules.





HOW MUCH IS TOO MUCH PROTEIN

- The amount of protein each person needs varies on their body, age, gender and height
- People who should consume more protein is teens as their muscles and bodies are growing and reproducing rapidly.
- Over consumption is bad in general, with the common misconception that athletes need more protein. Athletes need more carbs due to the fact that carbs produce energy in the body.



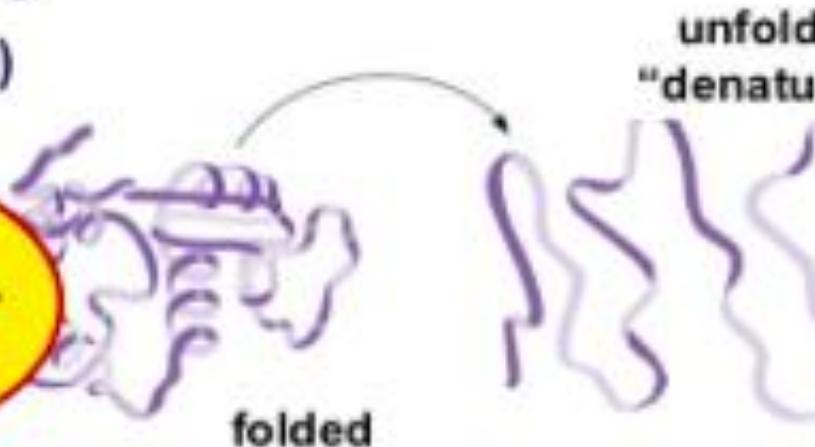
It's **SHAPE** that matters!

- Proteins do their jobs, because of their shape
- **Unfolding a protein destroys its shape**
 - ◆ wrong shape = can't do its job
 - ◆ unfolding proteins = "denature"
 - temperature
 - pH (acidity)



biology

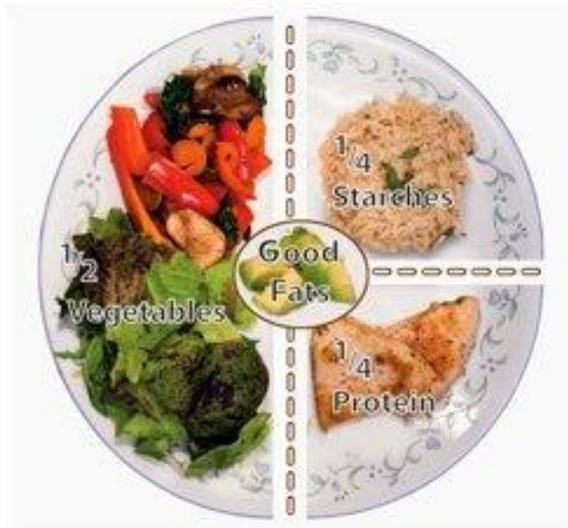
In Biology,
it's not the size,
it's the **SHAPE**
that matters!



SHAPE OF PROTEINS

- Different shapes=different jobs
- Proteins fold and twist into different 3D shapes





HEALTH & FITNESS

- Protein + carbs = muscle gains
- Protein + fat=matience
- Protein + veggies=fat loss
- Studies show working out and exercising is more effective when paired with a higher protein diet
- People who eat a higher protein diet feel more satisfied which prevents them from over eating



INCOMPLETE PROTEINS

- Incomplete proteins are proteins that contain a low amount of protein or only a few of the key amino acids.
- An example of an incomplete protein is vegetables as it lacks one or more of the nine amino acids.





STEAK-ANA'S FAVE PROTEIN

My favorite protein food is steak that is seasoned, and delicious, and full of proteins.