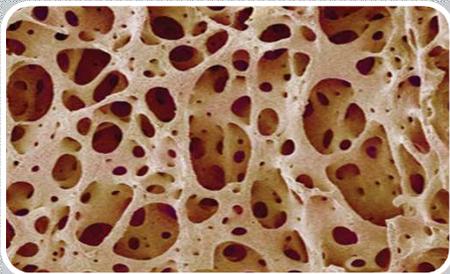


Proteins

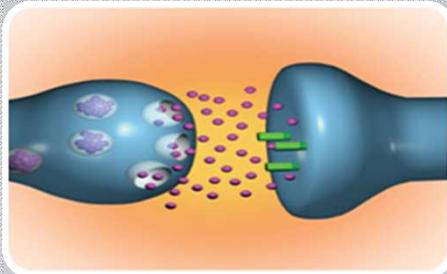


Major Types of Proteins

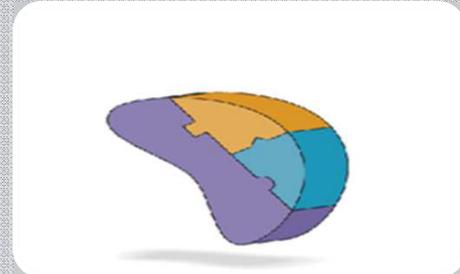
There are many types of proteins.
Most fall into the following 3 major categories:



Structural

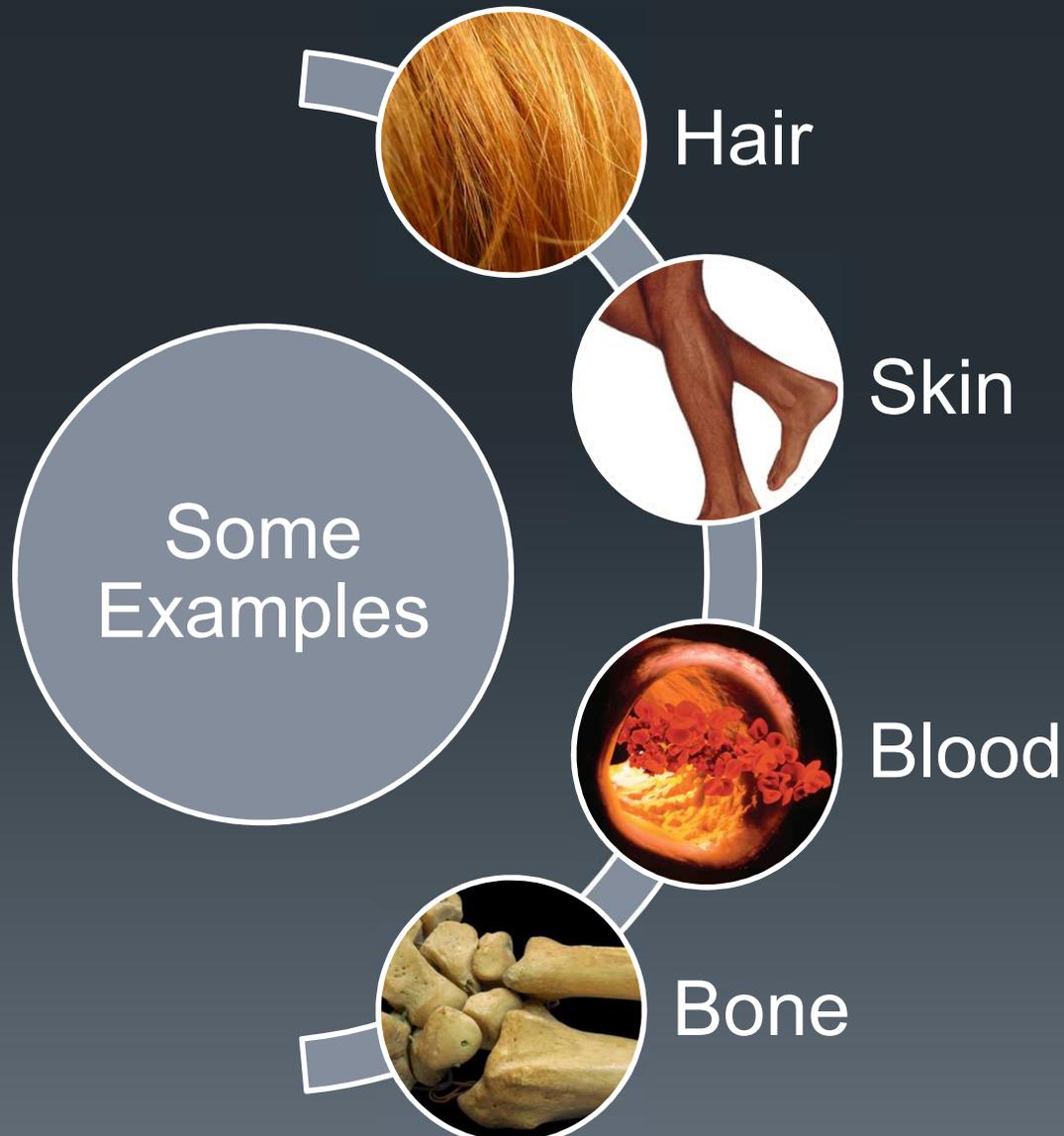


Signaling

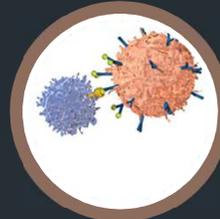


Enzymatic

Proteins contribute to body structures



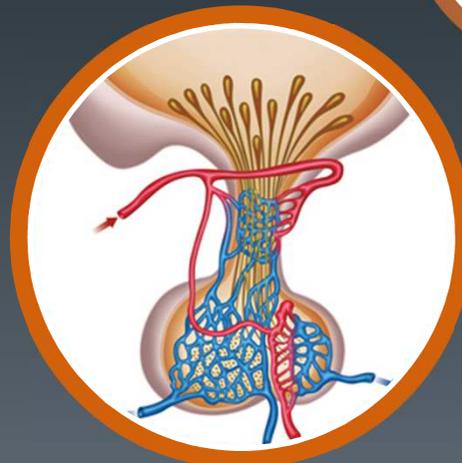
Proteins transmit signals in the body and within cells



Receptors



Inhibitors



Hormones



Neurotransmitters

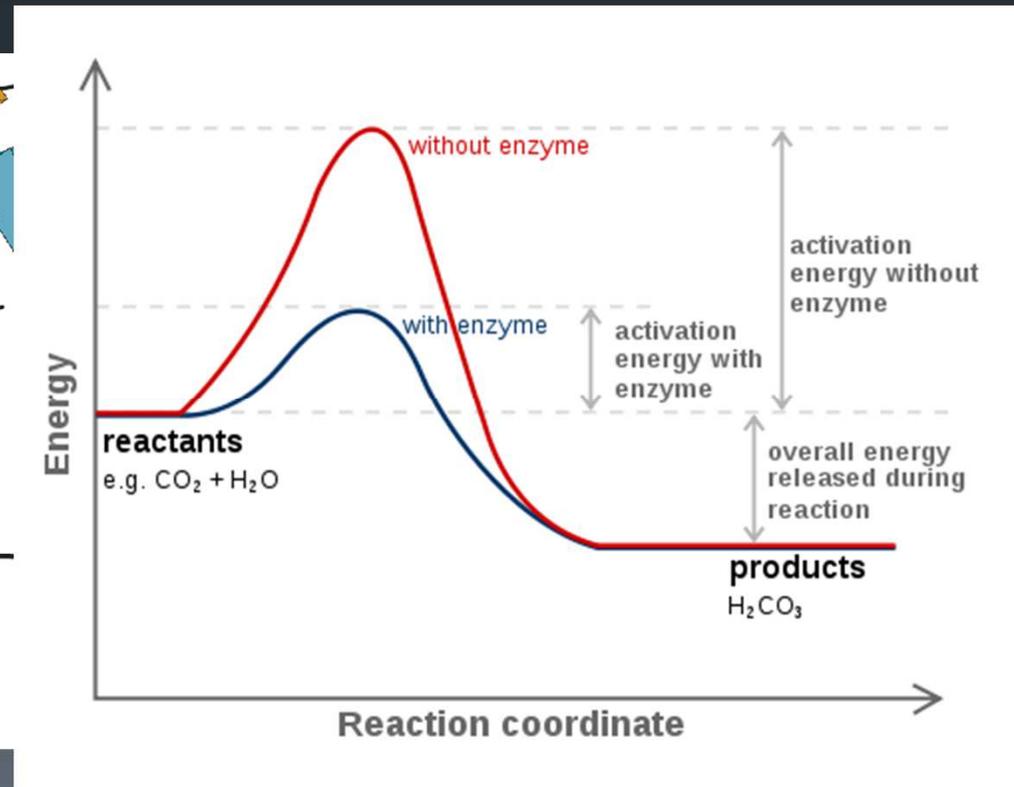
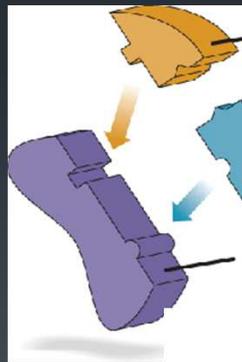
Enzymes control and initiate chemical reactions

Enzymes initiate **synthesis reactions**

Enzyme initiated **lysis or cleavage**

Enzymes **lower activation energy** and promote rapid reactions to occur

Without enzymes, organisms would have **to heat to a lethal temp** or else life sustaining rxns would **occur too slowly**.



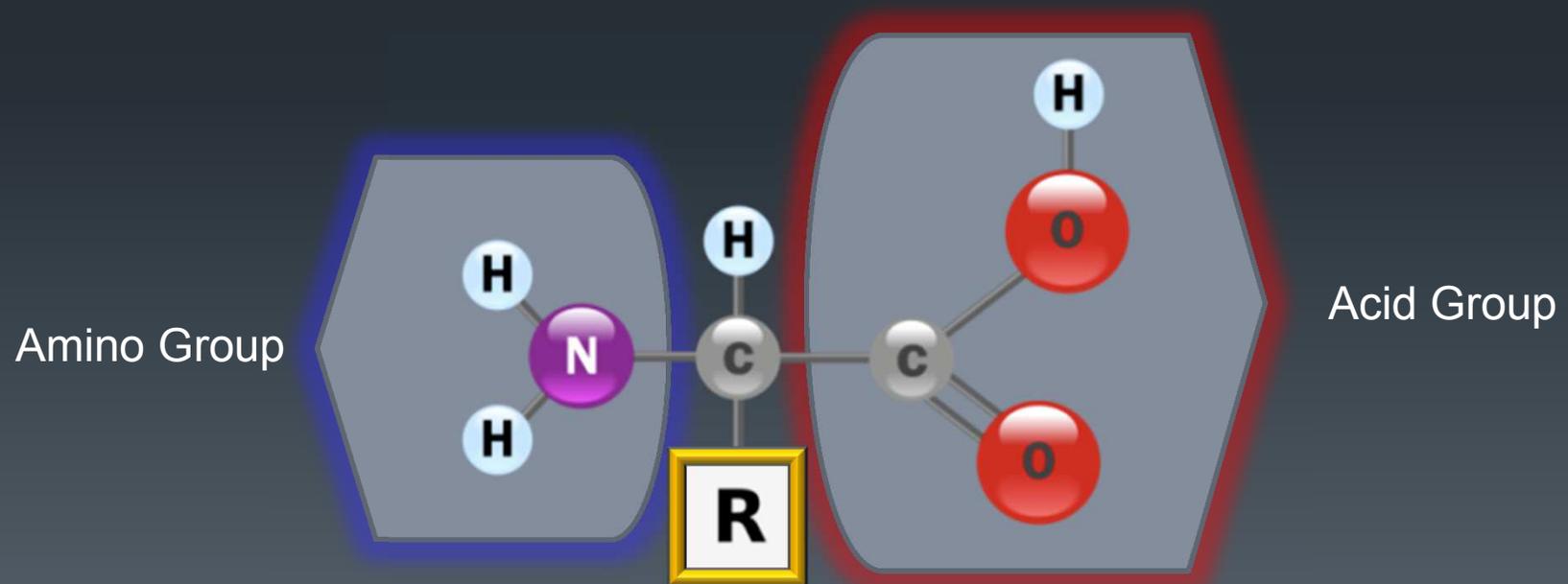
Function of Proteins

Each cell contains hundreds of different enzymes that work together to **release energy** from food molecules and to use that energy to **build new cellular materials**



A generalized amino acid:

Each amino acid has **the same basic structure**.
Only the **“R”** group changes.

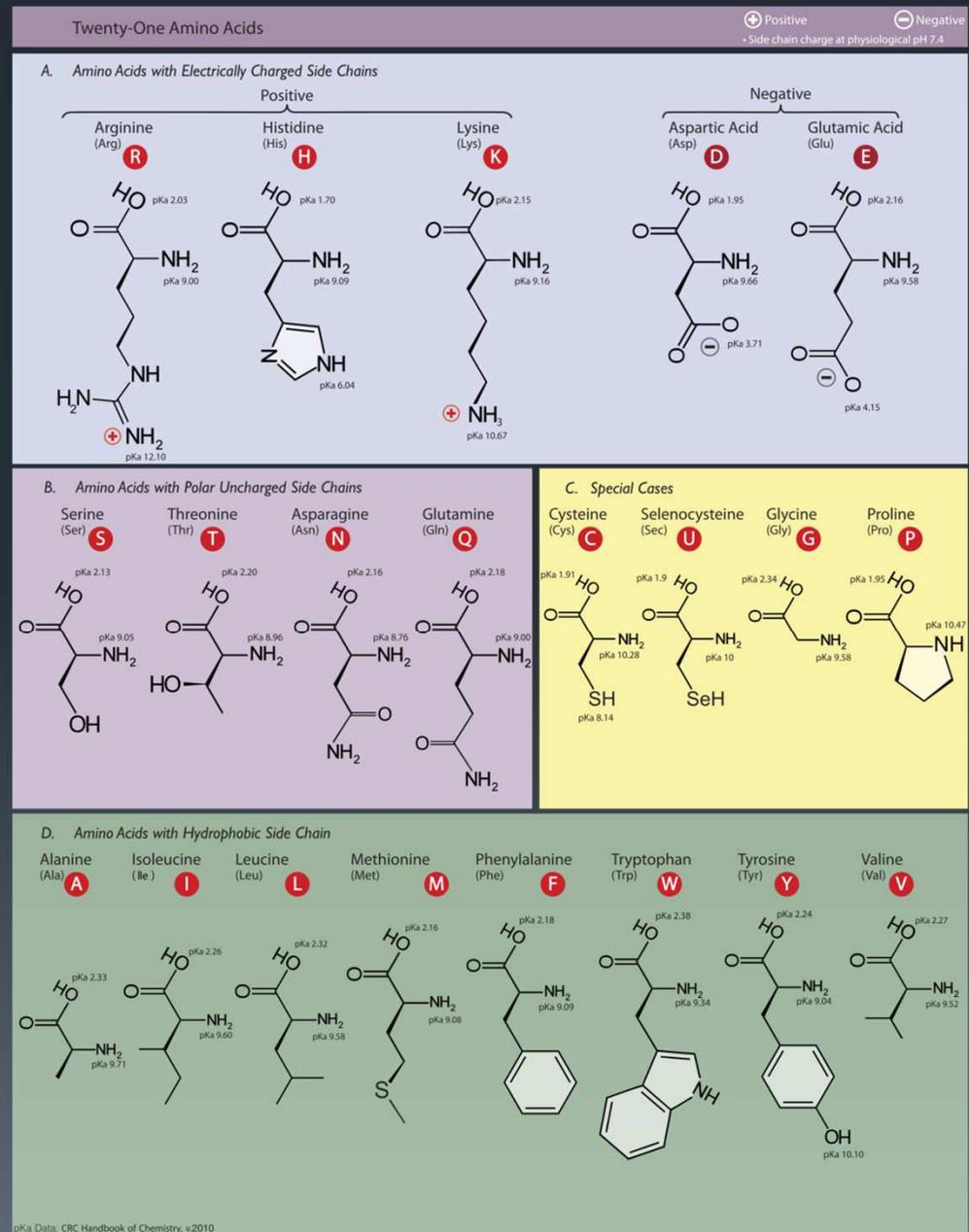


What is an amino acid?

Amino acids are **organic molecules**

They come in **20** different types that are all slightly **different from one another**

These structural differences **give rise to their different properties**



Where do amino acids come from?

Some amino acids humans can **make for themselves**

Others cannot be **synthesized** and must be obtained through **consumption**

These are commonly referred to as **essential amino acids**

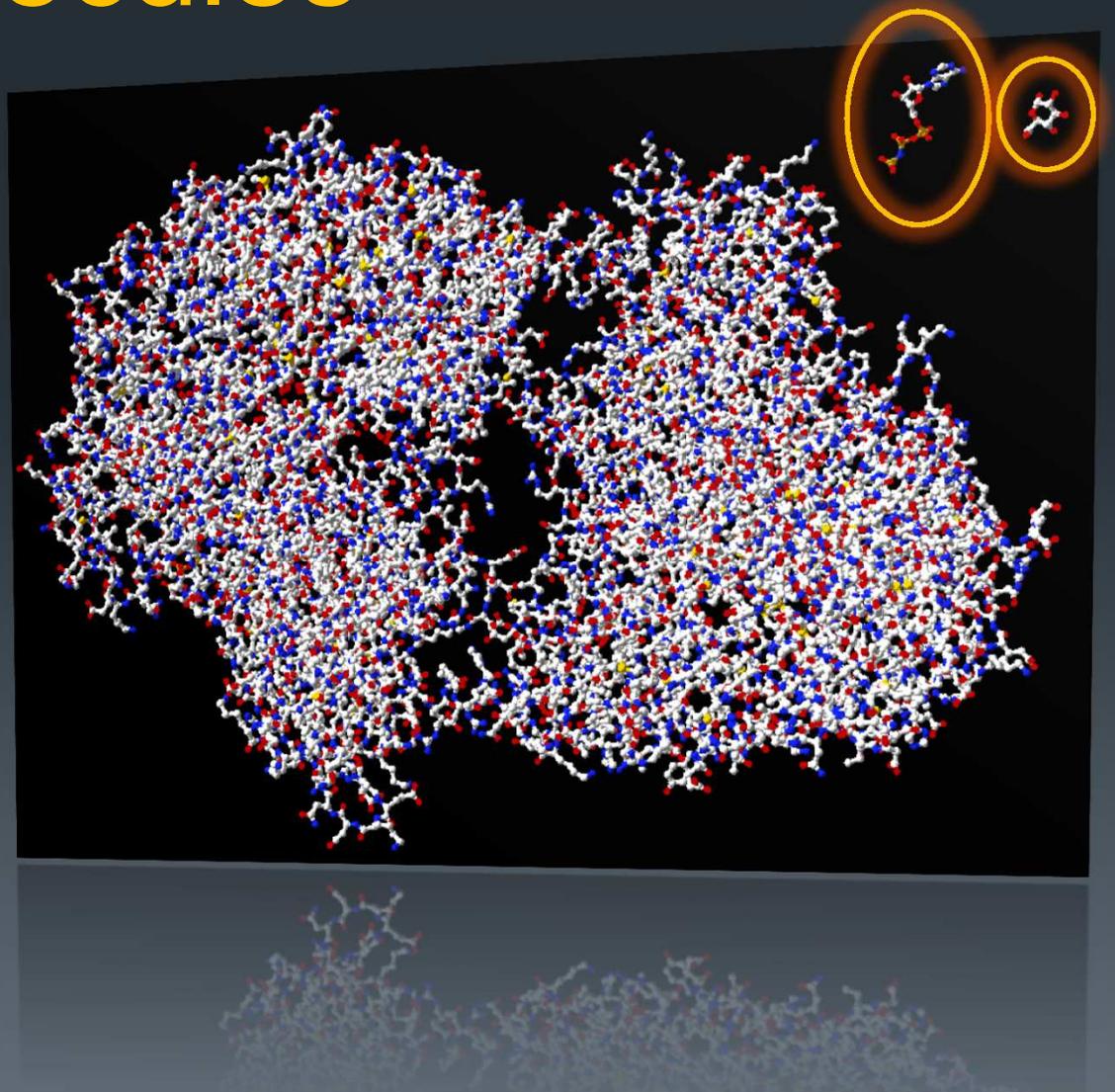


Proteins are organic macromolecules

A protein might contain **many hundreds of** amino acids.

Ex: the enzyme hexokinase. To scale in the corner its substrates: **ATP** and **glucose**.

If just one of these amino acids is changed, the **function** of the protein might **change drastically**

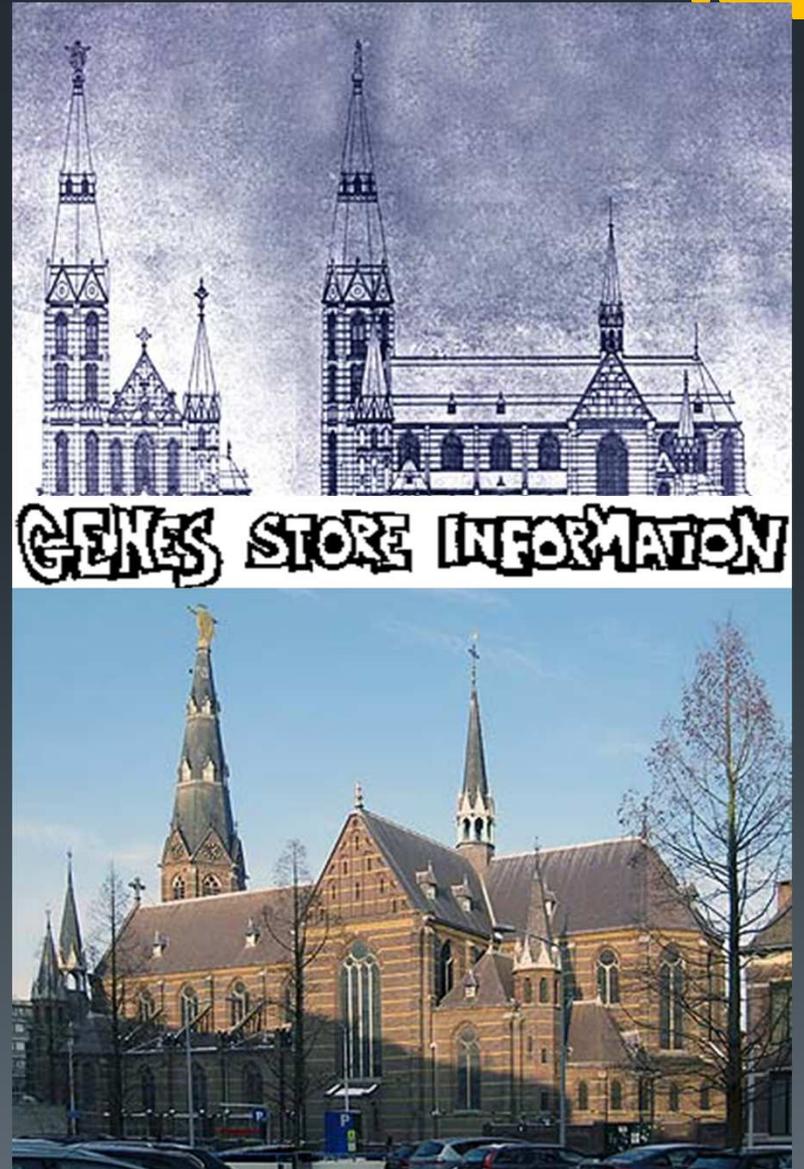


**These next
three slides
match the
Proteins
Synthesis –
Transcription
first three
slides...**



DNA codes for Proteins

- **Enzymes** do the nitty-gritty jobs of every living cell.
- The importance of **DNA** is that it contains the information that is used to make all of the proteins on which life depends.
- DNA is the **blueprint**
- Proteins are **the product**



But how do we get from DNA to
proteins? (2:53)



The Central Dogma

The central dogma states that information flows in **one direction** from **DNA to RNA to proteins**.

