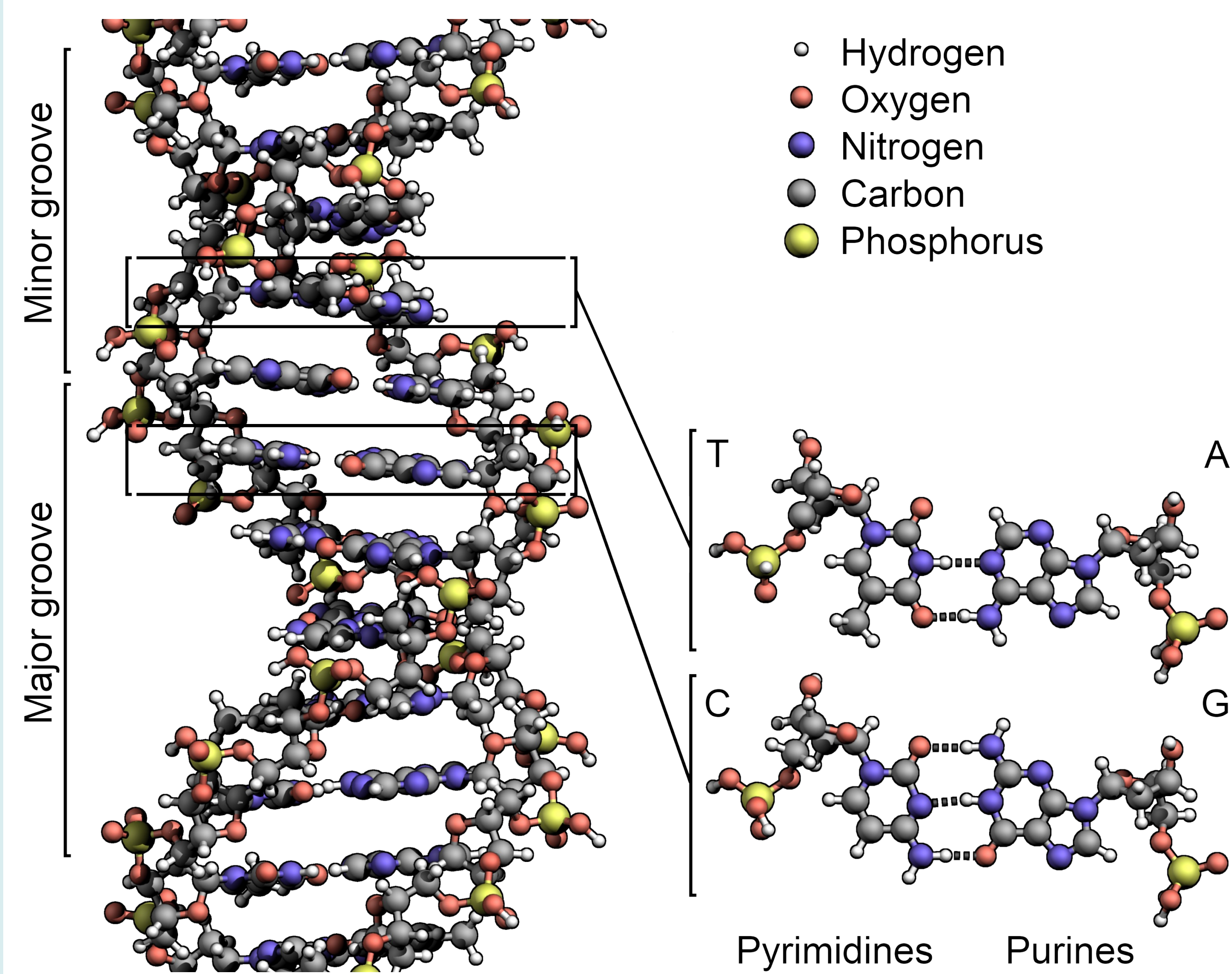


# DNA and protein



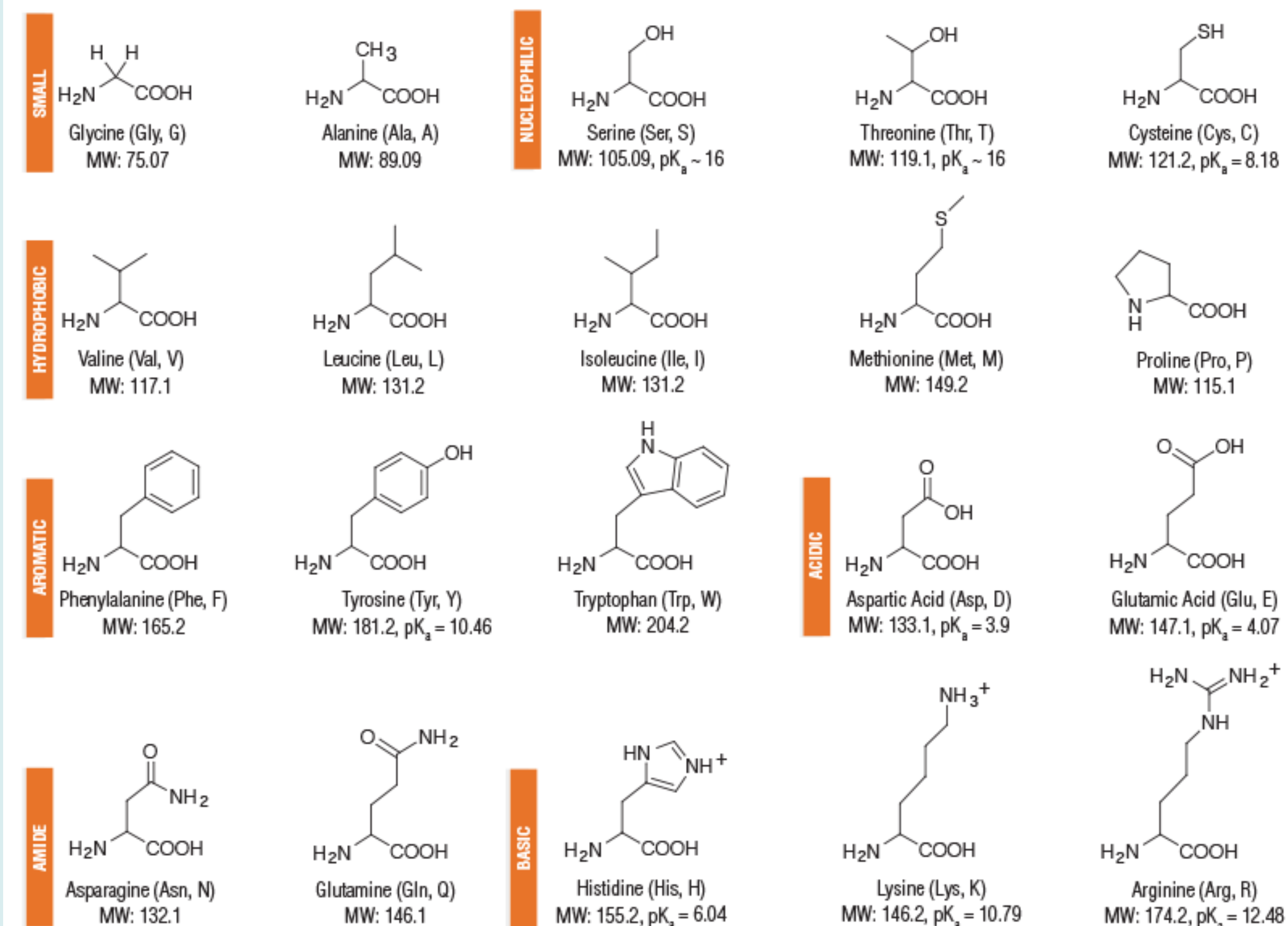
Taken from Wikipedia

## What is DNA?

- DNA is the instruction manual for cells!
- It is made of four types of chemical (bases)  
Adenine (A)  
Cytosine (C)  
Guanine (G)  
Thymine (T)
- These combine to form a structure known as a double helix: A always pairs with T, and C always pairs with G
- The sequence of bases determines the sequence of amino acids in a protein!

## What are proteins?

- Proteins are the building blocks of cells, and have many different functions!
- Proteins are made of chains of amino acids (a bit like beads on a necklace!)
- There are 20 different amino acids found in nature, each with different properties



Taken from the New England BioLabs website  
www.international.neb.com

- The order of amino acids determines the structure and function of the protein!
- Each amino acid is coded for by three bases

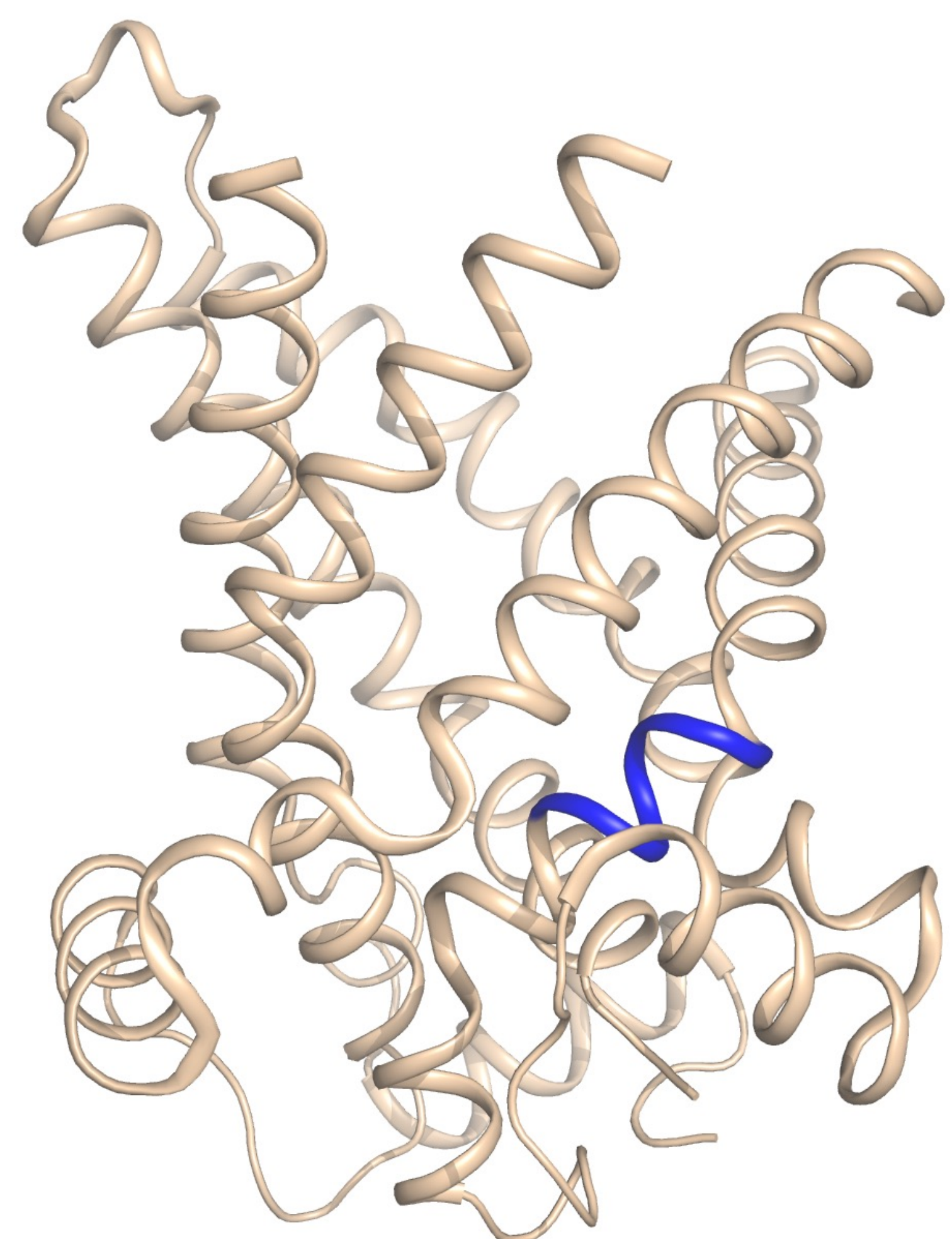
## DNA sequence:

...CCCATCGAAAGAGTTAAA...

## Amino acid sequence:

CCC	ATC	GAA	AGA	GTT	AAA
↓	↓	↓	↓	↓	↓
PRO	ILE	GLU	ARG	VAL	LYS

## Protein structure:



- This is a protein involved in energy metabolism in mitochondria
- The blue section corresponds to the amino acid sequence shown above