

Amino Acid Sidechains have Different Chemical Characteristics

There are 20 amino acids that are the building blocks of all protein structures within our cells. Each amino acid has same backbone (NH_2 -CHR-COOH). It is the R group that makes the amino acids different from one another.

1. Organize the 19 amino acid sidechains into groups.
 - a. What groupings do you have?
 - b. Justify your groupings.

There are several different ways to categorize the amino acids. We typically use the following:

Hydrophobic(Non Polar): Alanine, Valine, Leucine, Isoleucine, Phenylalanine

Hydrophilic (Polar): Glutamine, Asparagine, Serine, Threonine, Glycine, Tryptophan, Tyrosine

Positively Charged: Lysine, Arginine, Histidine

Negatively Charged: Glutamic Acid, Aspartic Acid

Sulfur-Containing Group: Cysteine, Methionine

2. Bonus Question: Why is proline not included in the kit?

The R group in proline forms a ring by bonding to the amino acid backbone. This disrupts the α -helix or β -sheet by altering the phi-psi angle.

