20 Amino Acids for the MCAT

20 cards

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TERM	DEFINITION
Glycine	Gly, G Nonpolar aliphatic. Side chain is just H, so it is the only achiral amino acid.
Alanine	Ala, A Nonpolar aliphatic. Side chain is a methyl group.
Valine	Val, V Nonpolar aliphatic. Branched side chain with three carbons.
Leucine	Leu, L Nonpolar aliphatic. Branched side chain with four carbons, an isomer of isoleucine.
Isoleucine	Ile, I Nonpolar aliphatic. Isomer of leucine, with a stereocenter in its side chain.
Proline	Pro, P Nonpolar aliphatic. Side chain loops back to the nitrogen to form a ring; it kinks chains and breaks α helices.
Methionine	Met, M Nonpolar aliphatic, with a thioether sulfur. Encoded by AUG, the start codon.
Phenylalanine	Phe, F Aromatic and hydrophobic. Side chain is a benzyl group (a benzene ring on a CH_2).

TERM	DEFINITION
Tryptophan	Trp, W Aromatic and hydrophobic. The largest side chain, with a double-ring indole.
Tyrosine	Tyr, Y Aromatic. Phenylalanine with a hydroxyl on the ring; the OH can be phosphorylated.
Serine	Ser, S Polar uncharged. Side chain is CH_2OH, a hydroxyl that can be phosphorylated.
Threonine	Thr, T Polar uncharged. Hydroxyl on a secondary carbon, and a second stereocenter; also phosphorylated.
Cysteine	Cys, C Polar uncharged, with a thiol (SH). Two Cys can oxidize into a disulfide bond, forming cystine.
Asparagine	Asn, N Polar uncharged. Amide version of aspartate: the side chain ends in $CONH_2$.
Glutamine	Gln, Q Polar uncharged. Amide version of glutamate, one CH_2 longer than asparagine.
Aspartate (aspartic acid)	Asp, D Acidic. Carboxylate side chain, negatively charged at physiological pH.
Glutamate (glutamic acid)	Glu, E Acidic. Carboxylate side chain, one CH_2 longer than aspartate; also negative at physiological pH.

TERM	DEFINITION
Lysine	Lys, K Basic. Side chain ends in a primary amine, positively charged at physiological pH.
Arginine	Arg, R Basic. Guanidinium side chain, the most basic of the 20 and positive at physiological pH.
Histidine	His, H Basic. Imidazole side chain with a pKa near 6, so it can be charged or neutral at physiological pH.