

Supplementary table 2: The properties of the amino acids.

| Name | Size | Charge | Polarity | Ring | AtomType |
|---------------|--------|-----------------|-----------|-----------|-------------|
| Alanine | tiny | neutral | non_polar | no | hydrocarbon |
| Arginine | large | basic_positive | polar | no | amine |
| Asparagine | small | neutral | polar | no | amide |
| Aspartic acid | small | acidic_negative | polar | no | carboxyl |
| Cysteine | tiny | neutral | polar | no | thiol |
| Glutamic acid | large | acidic_negative | polar | no | carboxyl |
| Glutamine | large | neutral | polar | no | amide |
| Glycine | tiny | neutral | non_polar | no | hydrogen |
| Histidine | large | basic_positive | polar | imidazole | amine |
| Isoleucine | medium | neutral | non_polar | no | hydrocarbon |
| Leucine | medium | neutral | non_polar | no | hydrocarbon |
| Lysine | large | basic_positive | polar | no | amine |
| Methionine | large | neutral | non_polar | no | thiol |
| Phenylalanine | large | neutral | non_polar | aromatic | hydrocarbon |
| Proline | small | neutral | non_polar | no | hydrocarbon |
| Serine | tiny | neutral | polar | no | alcohol |
| Threonine | tiny | neutral | polar | no | alcohol |
| Tryptophane | large | neutral | non_polar | aromatic | amine |
| Tyrosine | large | neutral | polar | aromatic | alcohol |
| Valine | small | neutral | non_polar | no | hydrocarbon |