

| IUPAC nucleotide code | Base |
|-----------------------|---------------------|
| A | Adenine |
| C | Cytosine |
| G | Guanine |
| T (or U) | Thymine (or Uracil) |
| R | A or G |
| Y | C or T |
| S | G or C |
| W | A or T |
| K | G or T |
| M | A or C |
| B | C or G or T |
| D | A or G or T |
| H | A or C or T |
| V | A or C or G |
| N | any base |
| . or - | gap |

| IUPAC amino acid code | Three letter code | Amino acid |
|-----------------------|-------------------|---------------|
| A | Ala | Alanine |
| C | Cys | Cysteine |
| D | Asp | Aspartic Acid |
| E | Glu | Glutamic Acid |
| F | Phe | Phenylalanine |
| G | Gly | Glycine |
| H | His | Histidine |
| I | Ile | Isoleucine |
| K | Lys | Lysine |
| L | Leu | Leucine |
| M | Met | Methionine |
| N | Asn | Asparagine |
| P | Pro | Proline |
| Q | Gln | Glutamine |
| R | Arg | Arginine |
| S | Ser | Serine |
| T | Thr | Threonine |
| V | Val | Valine |
| W | Trp | Tryptophan |
| Y | Tyr | Tyrosine |