

**Abbreviations of amino acids**

<b>Amino acid</b>	<b>Three-letter abbreviation</b>	<b>One-letter symbol</b>
Lysine	Lys	K
Histidine	His	H
Arginine	Arg	R
Asparagine	Asn	N
Aspartic acid	Asp	D
Asn/Asp	Asx	B
Threonine	Thr	T
Serine	Ser	S
Glutamine	Gln	Q
Glutamic acid	Glu	E
Gln/Glu	Glx	Z
Proline	Pro	P
Glycine	Gly	G
Alanine	Ala	A
Valine	Val	V
Methionine	Met	M
Isoleucine	Ile	I
Leucine	Leu	L
Tyrosine	Tyr	Y
Phenyl-alanine	Phe	F
Cysteine	Cys	C
Trptophane	Trp	W

**Amino acids classifications**

Physiochemistry	Amino acids
Hydrophobic aliphatic R groups	G A V L I M* C* P
Hydrophobic aromatic R groups	F Y W
Polar charged R group	R** K** H D*** E***
Polar uncharged R group	S T N Q

\* = Sulphur R groups, \*\* = Acidic R groups and \*\*\* = Basic R groups

**IUB codes**

A = adenine

S = G or C (Strong-3H bonds)

C = cytosine

W = A or T (Weak-2H bonds)

G = guanosine

Y = C or T (pYrimidine)

T = thymidine

B = C, G or T

U = uracil

D = A, G or T

K = G or T (Keto)

H = A, C or T

M = A or C (aMino)

V = A, C or G

R = A or G (puRine)

N = any base

**Calculation of copy number**

$$\begin{aligned}
 1 \text{ bp} &= 660 \text{ Da} \\
 &= 1.66 \times 10^{-24} \text{ g (Avogadro number)} \\
 \text{Thus 1 bp} &= 660 \times 1.66 \times 10^{-24} \text{ g} \\
 &= 1.09 \times 10^{-21} \text{ g} \\
 \\ 
 \text{Total size (bp)} &= \text{insert size} + \text{plasmid size} \quad (\text{bp}) \\
 &= \text{Total size} \times 1.09 \times 10^{-21} \text{ g} \\
 \\ 
 \text{Copy number} &= \frac{\text{Concentration of plasmid (g/ml)}}{\text{Weight of total size (g)}}
 \end{aligned}$$

### Calculation of amino acid composition (% Mole)

Elution profile

(250 pmoles/4  $\mu$ l standard = 62.5 pmoles/ $\mu$ l )

- RF (Response Factor)
  - = Area of peak standard/concentration of component
  
- Observe picomoles sample
  - = Concentration of each amino acid
  - = Area of peak sample/RF of standard.
  
- Estimate composition
  - = 
$$\frac{\text{Observe picomoles of each amino acid}}{\text{Minimum observe picomoles}}$$
  
- Picomole/residue
  - = 
$$\frac{\text{Summary of observe picomoles}}{\text{Summary of estimate composition}}$$
  
- Calculate composition
  - = 
$$\frac{\text{Observe picomoles of each amino acid}}{(\text{picomole/residue})}$$
  
- % Mole
  - = 
$$\frac{\text{Calculate composition of each amino acid}}{\text{Summary calculate composition}} \times 100$$