For the reaction $aA + bB \underset{k_2}{\overset{k_1}{\rightleftharpoons}} cC + dD$

$$K_{eq} = \frac{[C]_{eq}^{c}[D]_{eq}^{d}}{[A]_{eq}^{a}[B]_{eq}^{b}}$$

$$V = k_1[A]^a[B]^b - k_2[C]^c[D]^d$$

$$F = \frac{kQ_1Q_2}{\varepsilon r^2}$$

$$pH = pK_a + \log\left(\frac{[A^-]}{[HA]}\right)$$

$$K_a = \frac{[PL]}{[P]\cdot[L]} = \frac{k_a}{k_d}$$

$$K_d = \frac{[P]\cdot[L]}{[PL]} = \frac{k_d}{k_a}$$

$$\theta = \frac{[L]}{K_d + [L]} \quad \text{or} \quad \theta = \frac{pO_2}{P_{50} + pO_2}$$

$$V_o = \frac{V_{max}[S]}{K_m + [S]}$$

$$K_m = \frac{k_{-1} + k_2}{k_1}$$

$$V_{max} = k_{cat} \cdot [E_T]$$

$$\text{specificity constant} : \frac{k_{cat}}{K_m}$$

$R = 0.00831\ \text{kJ/mol}\cdot\text{K}$

$T(\text{in K}) = 273 + \text{temp in °C}$

$\mathcal{F} = 96.5\ \text{kJ/V}\cdot\text{mol}$

Approximate pK_a values of ionizable groups of amino acids and peptides (side chains listed unless otherwise noted):

Aspartate:	4
Glutamate:	4
Histidine:	6
Cysteine:	8.5
Tyrosine:	10.5
Lysine:	10.5
Arginine:	12.5
Serine:	13
Threonine:	13
α-carboxyl of free amino acid:	2
α-amino of free amino amino acid:	9.5
C-terminal carboxyl of peptide:	3
N-terminal amino of peptide:	8

α-helix
100° rotation per residue
3.6 residues per turn
5.4 Å rise per turn
ideal dihedral angles: ϕ = -57°, ψ = -47°

parallel β-sheet
repeat length = 6.5Å (3.25 Å/residue)
ideal dihedral angles: ϕ = -119°, ψ = +113°

antiparallel β-sheet
repeat length = 7Å (3.5 Å/residue)
ideal dihedral angles: ϕ = -139°, ψ = +135°

Fatty Acids

12:0 – lauric acid
14:0 – myristic acid
16:0 – palmitic acid
18:0 – stearic acid
18:1(Δ^9) – oleic acid
18:2($\Delta^{9,12}$) – linoleic acid
18:3($\Delta^{9,12,15}$) – α-linolenic acid
20:4($\Delta^{5,8,11,14}$) – arachidonic acid
20:5($\Delta^{5,8,11,14,17}$) – EPA
22:6($\Delta^{4,7,10,13,16,19}$) – DHA