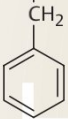

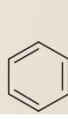
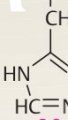
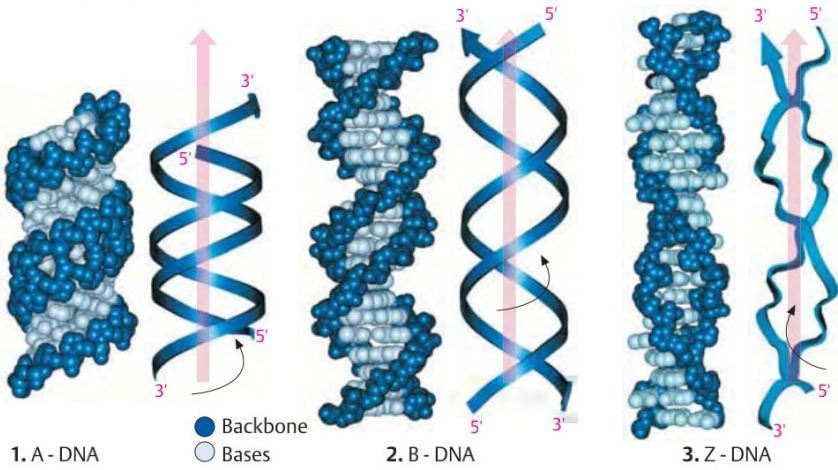


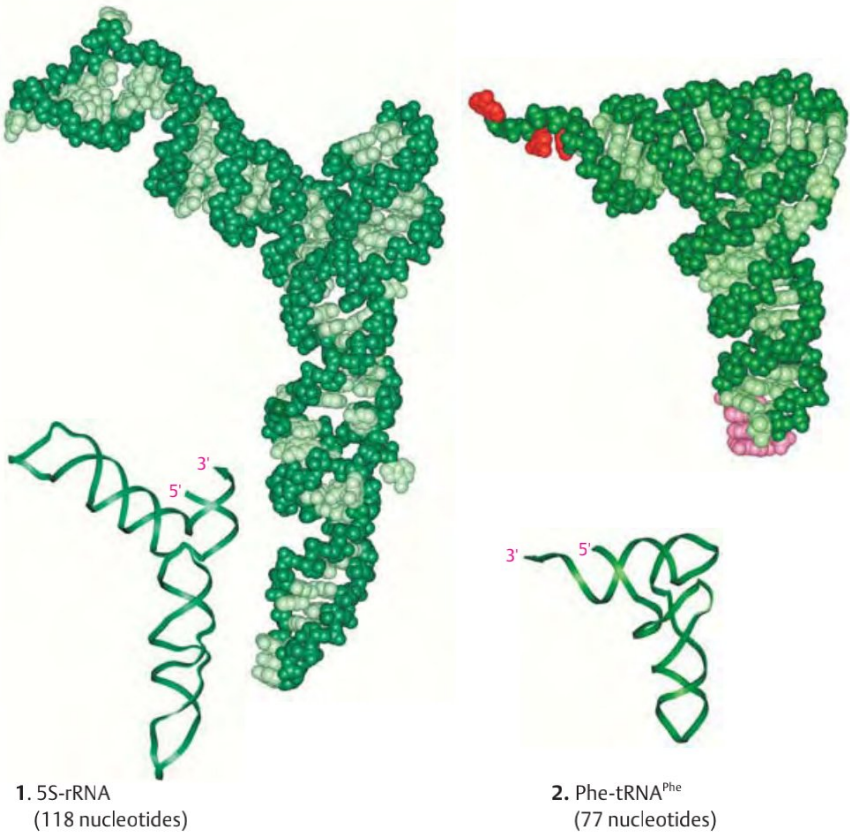
A. The proteinogenic amino acids

Aliphatic					Sulfur-containing	
Glycine (Gly, G)	Alanine (Ala, A)	Valine [✳] (Val, V)	Leucine [✳] (Leu, L)	Isoleucine [✳] (Ile, I)	Cysteine (Cys, C)	Methionine [✳] (Met, M)
H	CH ₃	H ₃ C-CH CH ₃	CH ₂ H ₃ C-CH CH ₃	H ₃ C-CH [□] -H CH ₂ CH ₃	CH ₂ SH 8.3 pK _a value	CH ₂ CH ₂ S CH ₃
-2.4	-1.9	-2.0	-2.3	-2.2	-1.2	-1.5
Aromatic			Cyclic	Neutral		
Phenylalanine [✳] (Phe, F)	Tyrosine (Tyr, Y)	Tryptophan [✳] (Trp, W)	Proline (Pro, P)	Serine (Ser, S)	Threonine [✳] (Thr, T)	
CH ₂ 	CH ₂  OH 10.1	CH ₂  Indole ring	COO [⊖] CH HN H ₂ C-CH ₂ Pyroline ring	CH ₂ OH	H ₃ C-CH [□] -H OH	
+0.8	+6.1	+5.9	+6.0	+5.1	+4.9	
✳ Essential amino acids					□ Chiral center	
Neutral		Acidic		Basic		
Asparagine (Asn, N)	Glutamine (Gln, Q)	Aspartic acid (Asp, D)	Glutamic acid (Glu, E)	Histidine (His, H)	Lysine [✳] (Lys, K)	Arginine (Arg, R)
CH ₂ CONH ₂	CH ₂ CH ₂ CONH ₂	CH ₂ COO [⊖] 4.0	CH ₂ CH ₂ COO [⊖] 4.3	CH ₂  Imidazole ring 6.0	CH ₂ CH ₂ CH ₂ CH ₂ ⊕NH ₃ 10.8	CH ₂ CH ₂ CH ₂ NH ⊕C H ₂ N NH ₂ 12.5
+9.7	+9.4	+11.0	+10.2	+10.3	+15.0	+20.0

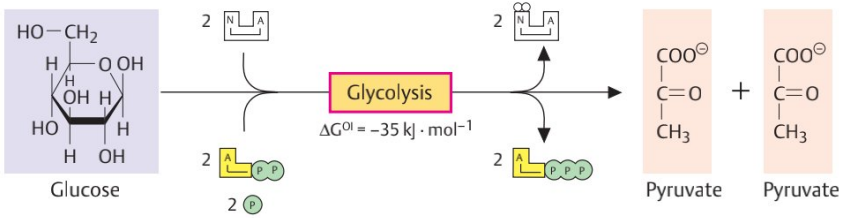
A. DNA: conformation



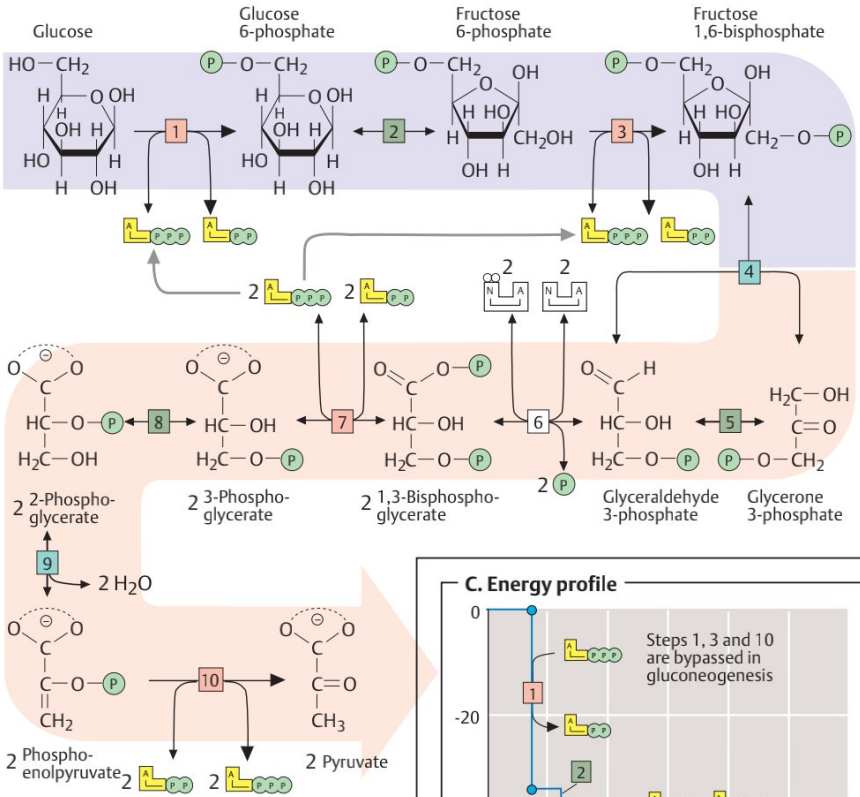
B. RNA



A. Glycolysis: balance

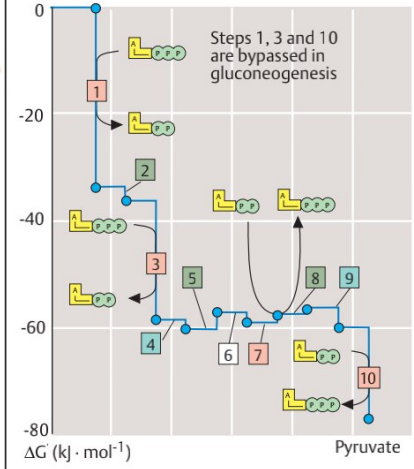


B. Reactions



- | | |
|--------------------------------------------------|------------------------------------------------------------|
| 1 Hexokinase 2.7.1.1 | 6 Glyceraldehyde-3-phosphate dehydrogenase 1.2.1.12 |
| 2 Glucose 6-phosphate isomerase 5.3.1.9 | 7 Phosphoglycerate kinase 2.7.2.3 |
| 3 6-Phosphofruktokinase 2.7.1.11 | 8 Phosphoglycerate mutase 5.4.2.1 |
| 4 Fructose bisphosphate aldolase 4.1.2.13 | 9 Phosphopyruvate hydratase 4.2.1.11 |
| 5 Triose-phosphate isomerase 5.3.1.1 | 10 Pyruvate kinase 2.7.1.40 |

C. Energy profile



A. Synthesis of ketone bodies and steroids

