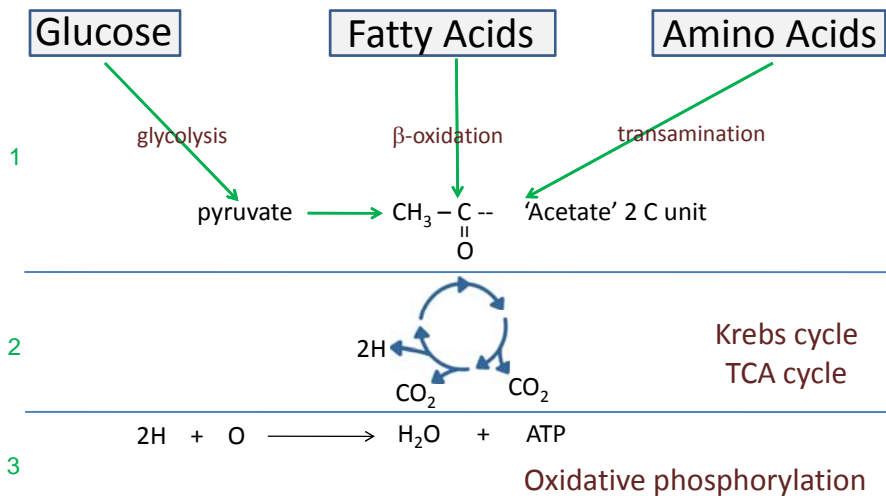


Oxidative Phosphorylation (Cytochrome Chain)

Barbara Moreland



Catabolism of sugars, fats & amino acids occurs in 3 stages

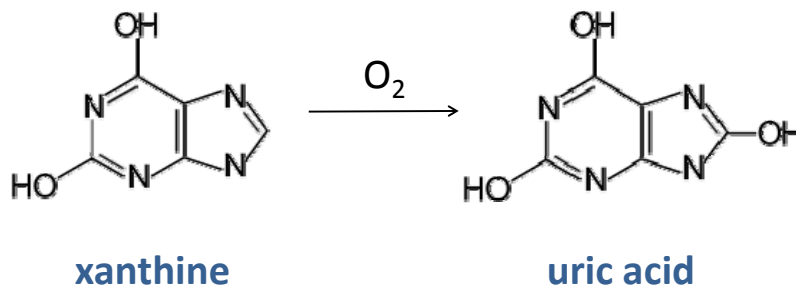


Examples of oxidation reactions

1. Add O₂ directly to the molecule (rare event in metabolism)

Oxidation example 1

Direct addition of O₂

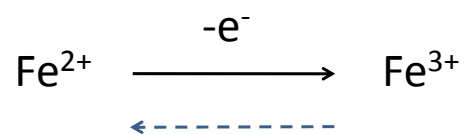


Examples of oxidation reactions

1. Add O₂ directly to the molecule (rare event in metabolism)
2. Remove one electron e⁻

Oxidation example 2

Removal of one electron



Reduced form
(bright red)

Oxidised form
(brown)

Iron in haemoglobin or cytochrome proteins

Examples of oxidation reactions

1. Add O₂ directly to the molecule (rare event in metabolism)
2. Remove one electron e⁻
3. Remove a pair of hydrogen atoms

Oxidation example 3

Hydrogen transfer



Cofactor required as hydrogen acceptor

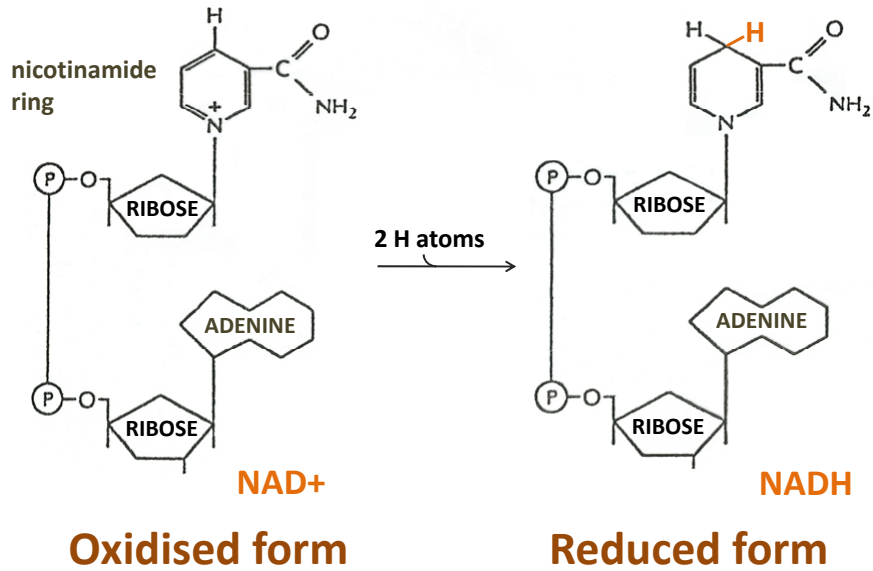
Examples of hydrogen acceptor cofactors

NAD⁺

FAD

NADP⁺

Nicotinamide adenine dinucleotide



Flavin adenine dinucleotide

