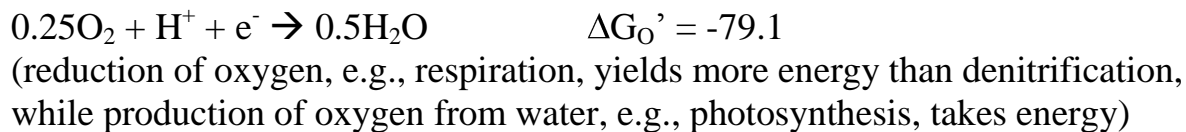
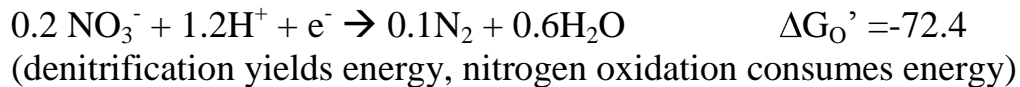
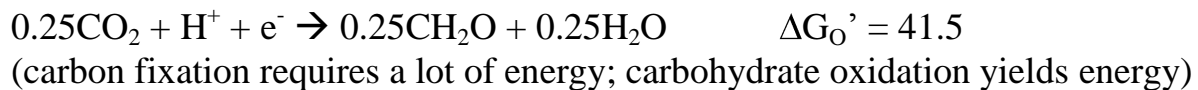


REDOX HALF-REACTION REDUCTION POTENTIALS AND FREE ENERGIES¹

Redox Pair (ox/red)	Electron donor compound	E _o ' (volt)	ΔG _o ' (kJ/e ⁻)
CO ₂ /CH ₂ O	carbohydrate	-0.43	+41.5
CO ₂ /CH ₃ OH	methanol	-0.39	+37.5
CO ₂ /CH ₃ COCOO ⁻	pyruvate	-0.37	+35.8
CO ₂ /CH ₂ CHOHCOO ⁻	lactate	-0.34	+32.9
CO ₂ /C ₁₆ H ₂₄ O ₅ N ₄	protein	-0.333	+32.2
CO ₂ /C ₁₀ H ₁₉ O ₃ N	domestic wastewater BOD	-0.33	+31.8
CO ₂ /CH ₃ CH ₂ OH	ethanol	-0.33	+31.8
CO ₂ /CH ₃ COO ⁻	acetate	-0.29	+28.0
CO ₂ /C ₂ H ₅ COO ⁻	propionate	-0.29	+28.0
CO ₂ /C ₈ H ₁₆ O	Oil and Grease	-0.29	+28.0
CO ₂ /CH ₄	methane	-0.25	+24.1
SO ₄ ²⁻ /HS ⁻	sulfide	-0.217	+20.9
NO ₃ ⁻ /NH ₄ ⁺	ammonium	+0.36	-34.7
NO ₃ ⁻ /N ₂	nitrogen	+0.75	-72.4
Fe ³⁺ /Fe ²⁺	ferrous iron	+0.77	-74.3
O ₂ /H ₂ O	water	+0.82	-79.1

Examples of use of redox energetic in biological processes



1. Values for pH=7, F = 96.5 kJ/volt, ΔG_o' sign convention for reduction half-reaction