TABLE 4.1 Midpoint potentials for some common electron carriers in photosynthesis research

	ox + $n(e^-)$ + $m(H^+)$ ⇌ red			Change in E_m (mV) when pH increased by 1 unit
	n	m	E_{m7} (mV)	
Dithionite ox/red	1	0	–610	0
Methyl viologen ox/red	1	0	–450	0
CO_2/CH_2O	2	2	–430	–60
Ferredoxin ox/red	1	0	–430	0
$H^+/½H_2(H_2$ 1 atm)	1	1	–420	–60
NAD^+/NADH	2	1	–320	–30
$NADP^+$/NADPH	2	1	–320	–30
Menaquinone/menaquinol	2	2	–74	–60
Plastoquinone/plastoquinol	2	2	–0	–60
Fumarate/succinate	2	2	+30	–60
Ubiquinone/ubiquinol	2	2	+40	–60
Ascorbate ox/red	2	1	+60	–30
PMS ox/red	2	1	+80	–30
DCPIP/$DCPIPH_2$	2	2	+220	–60
TMPD ox/red	1	0	+260	0
$DAD/DADH_2$	2	2	+275	–60
Cytochrome *f* (ox/red)	1	0	+350	0
Cytochrome c_{553} (ox/red)	1	0	+370	0
Plastocyanin (ox/red)	1	0	+380	0
Ferricyanide ox/red	1	0	+420	0
P_{700}/P_{700}^+	1	0	+480	0
O_2(1 atm)/$2H_2O$(55 M)	4	4	~~+840~~ +816 by hand	–60
P_{680}/P_{680}^+	1	0	+1100	0

Note. DAD, 2,3,5,6-tetramethylphenylene diamine; PMS, phenazine methosulfate; TPMD, *N*,*N*,*N*′,*N*′-tetramethyl-*p*-phenylene diamine; DCPIP, 2,6-dichlorophenolindophenol. (Adapted from D. G. Nicholls and S. J. Ferguson, *Bioenergetics*. London: Academic Press, 2002.)