

**Text S1. Overview metabolites.**

Full Name	Short Name	Compartment	Constant	Concentration [mM]	References
ATP	atp	cyto	Y	2.8	[1-6]
ADP	adp	cyto	Y	0.8	[1,3,4,6,7]
AMP	amp	cyto	Y	0.16	[3,4,6]
UTP	utp	cyto		0.27	[4,7]
UDP	udp	cyto		0.09	[4,7]
GTP	gtp	cyto		0.29	[3,7]
GDP	gdp	cyto		0.10	[3,7]
NAD <sup>+</sup>	nad	cyto	Y	1.22	[1,8]
NADH	nadh	cyto	Y	0.56*10 <sup>-3</sup>	[1,8]
phosphate	p	cyto	Y	5	[1,8]
pyrophosphate	pp	cyto		0.008	[9,10]
CO <sub>2</sub>	co2	cyto	Y	5	[11]
glucose-1-phosphate	glc1p	cyto		0.012	[5,9,10]
UDP-glucose	udpglc	cyto		0.38	[5,9,10]
glycogen	glyglc	cyto		220	[12]
glucose	glc	cyto		5	[2,10,13]
glucose-6-phosphate	glc6p	cyto		0.12	[1,2,5,6,9]
fructose-6-phosphate	fru6p	cyto		0.05	[2,5,10]
fructose-1,6-bisphosphate	fru16bp	cyto		0.02	[2,5,10]
fructose-2,6-bisphosphate	fru26bp	cyto		0.004	[6]
glyceraldehyde 3-phosphate	grap	cyto		0.1	[1,5]
dihydroxy-acetone phosphate	dhap	cyto		0.03	[1,2,5,10]
1,3-bisphospho-glycerate	bpg13	cyto		0.3	
3-phosphoglycerate	pg3	cyto		0.27	[1,10]
2-phosphoglycerate	pg2	cyto		0.03	[1,10]
phosphoenol pyruvate	pep	cyto		0.15	[1,5,6]
pyruvate	pyr	cyto		0.1	[1,2,5,6,10]
oxalacetate	oaa	cyto		0.01	[1,2,5,10]
lactate	lac	cyto		0.5	[1,2,5,6]
glucose	glc_ext	blood		5	[13]
lactate	lac_ext	blood		1.2	[8,14]
CO <sub>2</sub>	co2_mito	mito	Y	5	[11]
phosphate	p_mito	mito	Y	5	[1,8]
oxalacetate	oaa_mito	mito		0.01	[1,2,5,6,10]
pep	pep_mito	mito		0.15	[1,5,6]
acetyl-coenzyme A	acoa_mito	mito	Y	0.04	[1,2,5]
pyruvate	pyr_mito	mito		0.1	[1,2,5,6,10]
citrate	cit_mito	mito	Y	0.32	[1,2,5,6]
ATP	atp_mito	mito	Y	2.8	[1-6]
ADP	adp_mito	mito	Y	0.8	[1,3,4,6,7]
GTP	gtp_mito	mito		0.29	[3,7]
GDP	gdp_mito	mito		0.10	[3,7]
coenzyme A	coa_mito	mito	Y	0.055	[1]
NADH	nadh_mito	mito	Y	0.24	[10,14]
NAD <sup>+</sup>	nad_mito	mito	Y	0.98	[8,10]

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