

Table S2: Genomic markers of CUE or CUE temperature sensitivity ( $Q_{10}$ ) identified in exploratory and complete glucose datasets and confirmed by their presence as correlates of efficiency in the microcosms dataset or for at least two of the three remaining substrates in the liquid culture assays. Markers are included when the slopes were either both positive or both negative for the two datasets at an alpha of 0.05.

validation method	Temperature/ temperature range (°C)	corelation	KO			
microcosms	15	negative	K09474 - acid phosphatase (class A) K01625 - 2-dehydro-3-deoxyphosphogluconate aldolase / (4S)-4-hydroxy-2-oxoglutarate aldolase			
	25	negative	K00809 - deoxyhypusine synthase			
		positive	K02167 - TetR/AcrR family transcriptional regulator, transcriptional repressor of bet genes K09815 - zinc transport system substrate-binding protein			
other substrates	15	negative	K01733 - threonine synthase K07095 - uncharacterized protein K14441 - ribosomal protein S12 methylthiotransferase K01752 - L-serine dehydratase K02016 - iron complex transport system substrate-binding protein			
			positive	K02072 - D-methionine transport system permease protein K03786 - 3-dehydroquinone dehydratase II K03825 - putative acetyltransferase K05596 - LysR family transcriptional regulator, chromosome initiation inhibitor K09780 - Uncharacterized protein K12256 - putrescine—pyruvate transaminase		
				20	negative	K14441 - ribosomal protein S12 methylthiotransferase
				25	positive	K03442 - small conductance mechanosensitive channel K00864 - glycerol kinase
					positive	K02013 - iron complex transport system ATP-binding protein K02015 - iron complex transport system permease protein K02342 - DNA polymerase III subunit epsilon K05846 - osmoprotectant transport system permease protein
	microcosms	15-20		negative	K01638 - malate synthase [EC:2.3.3.9] K07222 - putative flavoprotein involved in K <sup>+</sup> transport K02536 - UDP-3-O-[3-hydroxymyristoyl] glucosamine N-acyltransferase [EC:2.3.1.191] K03560 - biopolymer transport protein TolR K06168 - tRNA-2-methylthio-N <sup>6</sup> -dimethylallyl-adenosine synthase [EC:2.8.4.3]	
			positive		K07023 - putative hydrolases of HD superfamily K08191 - MFS transporter, ACS family, hexuronate transporter K09747 - uncharacterized protein K11085 - ATP-binding cassette, subfamily B, bacterial MsbA [EC:3.6.3.-]	
					15-25	negative
		20-25	negative	K01858 - myo-inositol-1-phosphate synthase [EC:5.5.1.4] K09764 - uncharacterized protein		
				positive	K02049 - NitT/TauT family transport system ATP-binding protein K07240 - chromate transporter	
other substrates		15-20	positive	K08151 - MFS transporter, DHA1 family, tetracycline resistance protein		
		20-25		K03417 - methylisocitrate lyase [EC:4.1.3.30] K19294 - alginate O-acetyltransferase complex protein AlgI		