

Additional File 1. Literature reports of *COG0523* expression data

Organism	<i>COG0523</i>	Gene regulation	Experimental Method	Ref.
Archaea				
<i>Methanosarcina acetivorans</i>	MA4382	Expressed during growth on methanol but not detected during growth on acetate	2D-GE/ MALDI-MS/ MS/MS	[1]
<i>Methanosarcina mazei</i> Gö1	MM1072	Up-regulated in NaCl-adapted cells versus -unadapted	Microarray	[2]
		Up-regulated during growth on methanol versus acetate	Microarray	[3]
	MM1621	Up-regulated during growth on methanol versus acetate	Microarray	[3]
Bacteria				
<i>Agrobacterium tumefaciens</i>	Atu3181	Down-regulated by pH 5.5 versus pH 7.0	Microarray	[4]
		Down-regulated by the plant signals GABA, SA, IAA	Microarray	[5]
	Atu3633	Down-regulated by the plant signals GABA, IAA	Microarray	[5]
<i>Bacillus subtilis</i>	yciC	Zinc-dependent repression mediated by Zur	LacZ-promoter fusion/ β -Galactosidase assay; EMSA	[6]
		Up-regulated in cells grown with sulfate as sole carbon source	Microarray; LacZ fusion/ β -Galactosidase assay	[7]
<i>Brucella suis</i> 1330	BR1307	Down-regulated within murine macrophage at 48h post infection	2D-DIGE	[8]
<i>Corynebacterium diphtheriae</i>	DIP1486	Up-regulated by low Zn and low Fe or low Mn; mediated by Zur; propose also regulated by MntR and DtxR	LacZ-promoter fusion/ β -galactosidase assay; qRT-PCR	[9]
<i>Escherichia coli</i>	yeiR	Up-regulated in an organic solvent tolerant strain versus wildtype under normal growth conditions and in presence of hexane	Microarray	[10]
		Up-regulated in clinical isolates displaying decreased susceptibility to tigecycline	Microarray	[11]
		Up-regulated in the presence of furonone, a quorum-sensing disrupter	Microarray	[12]
<i>Francisella tularensis</i> FSC033	FTT1000c	Protein detected only from cells isolated from spleen of infected mouse versus broth-grown cells	2D-Gel electrophoresis followed by LC-MS/MS	[13]
<i>Francisella novicada</i>	FTT1000	Down-regulated in $\Delta pmrA$ mutant compared to WT	Microarray	[14]
<i>Geobacter uraniireducens</i>	Gura_4357	Up-regulated in cells grown in uranium-contaminated sediment compared with cells grown in laboratory media	Microarray	[15]
<i>Helicobacter pylori</i> HP0312		Up-regulated by growth at pH 5 compared to pH 7	Macroarray	[16]
<i>Mycobacterium avium</i> subsp. paratuberculosis	MAP1730c	Encodes second strongest antigen consistently reactive with cattle serum from cattle infected with <i>M. avium</i>	Protein array	[17]

		subsp. <i>avium</i> , <i>M. bovis</i> , and <i>M. avium</i> subsp. <i>paratuberculosis</i>		
<i>Mycobacterium tuberculosis</i>	<i>RV0106*</i>	Zinc-dependent repression mediated by Zur	Microarray; qRT-PCR; [18] EMSA; LacZ-promoter fusion/ β -Galactosidase assay	
<i>Pseudomonas aeruginosa</i>	<i>PA2945</i>	Up-regulated under anaerobic conditions (cystis fibrosis simulation)	Microarray	[19]
<i>Shewanella oneidensis</i> MR-1	<i>SO1502</i>	Down-regulated during chromate challenge in $\Delta so2426$ mutant compared to WT	Multi-dimensional HPLC-MS/MS and statistical analysis	[20]
<i>Staphylococcus epidermidis</i>	<i>SE0188</i>	Gene in locus encoding antigen recognized by human sera	Bacteriophage lambda expression library probed with sera	[21]
<i>Xanthomonas campestris</i> pv <i>campestris</i>	<i>XC0267</i>	Zur-dependent expression	Microarray	[9]
<u>Eukaryota</u>				
<i>Arabidopsis thaliana</i>	<i>At1g80480</i>	Up-regulated during heat stress	Microarray	[22]
<i>Homo sapiens</i>	<i>CBWD</i>	Differentially expressed in SV40LT immortalized human bronchial epithelial cell line Y-BE	Suppression subtractive hybridization	[23]
		Up-regulated in normal WI-38 fibroblasts exposed to space flight stress	Suppression subtractive hybridization	[24]
	<i>CBWD2</i>	Down-regulated in neuroblastoma cell line exposed to a synthetic peptide corresponding to the 106–126 neurotoxic region of the cellular human prion protein	Microarray	[25]
<i>Rattus norvegicus</i>	<i>Cbwd1</i>	Up-regulated in response to dopamine in astrocytes cultured from rat cerebral tissues	Suppression subtractive hybridization	[26]
<i>Saccharomyces cerevisiae</i>	<i>YNR029c</i>	Up-regulated in a strain with reduced azole susceptibility compared to parent	Microarray	[27]
		Transiently up-regulated 15 min after onset of fermentation in liquid fermentation media versus non-fermentative cells	Microarray	[28]
<i>Taeniopygia guttata</i>	<i>Cbwd1</i>	Enhanced expression in the telencephalon of males compared to females	Microarray, qRT-PCR, <i>in situ</i> hybridization	[29]

* RV0106, COG0523-like: missing canonical GTPase motifs and CXCC motif not conserved

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