

Table S6: Plasmids, primers and strains used

<i>E. coli</i> strains with plasmids			
Strain #	Genotype	Comments / primers to amplify inserted sequence	Source
FC929	TOP10	Cloning strain	Invitrogen
FC3	MT607 / pRK600	Helper strain for tri-parental matings	(Finan et al., 1986)
FC803	Rosetta (DE3) pLysS	Strain for protein expression from T7 promoter	Novagen
<i>Caulobacter</i> expression plasmids			
FC339	TOP10 / pMT585 (pXGFPC-2)	Integrates at the xylose locus, KanR	(Thanbichler et al., 2007)
FC338	TOP10 / pMT528 (pVCHYC-1)	Integrates at the vanillate locus, Spec/StrepR	(Thanbichler et al., 2007)
MTLS 4389	TOP10 / pMT680 (pXGFPC-6)	Integrates at the xylose locus, ChloR	(Thanbichler et al., 2007)
MTLS 4322	TOP10 / pMT581 (pXMCS-4)	Integrates at native locus, xylose-inducible promoter, GentR	(Thanbichler et al., 2007)
MTLS 4423	TOP10 / pMT805 (pBMCS-6)	Replicating plasmid (mid-copy, BBR origin) with xylose-inducible promoter, ChlorR	(Thanbichler et al., 2007)
MTLS 4421	TOP10 / pMT464 (pBMCS-2)	Replicating plasmid (mid-copy, BBR origin) with xylose-inducible promoter, KanR	(Thanbichler et al., 2007)
MTLS 4322	TOP10 / pMT666 (pVENC-2)	Integrates at native locus and generates a C-terminal fusion to venus, KanR	(Thanbichler et al., 2007)
MTLS 4424	TOP10 / pMT630 (pBVMCS-2)	Replicating plasmid (low copy, RK2 origin) with vanillate-inducible promoter, KanR	(Thanbichler et al., 2007)
FC364	TOP10 / pMT585- <i>lovR</i>		(Purcell et al., 2007)
FC432	TOP10 / pMT528- <i>lovK</i>		(Purcell et al., 2007)
FC1361	TOP10 / pMT680- <i>hfiA</i>	F: catatgTCGGGCCATTTATTGAG R: ggtaccGTCGGTCGTGCGCATAGT	This work
pAF465	TOP10 / pMT581- <i>hfiA</i>	F: catatgTCGGGCCATTTATTGAG R: ggtacctAGAGCGTTTGCGGTTTC	This work
pAF463	TOP10 / pMT805- <i>hfiA</i>	F: catatgTCGGGCCATTTATTGAG R: ggtaccGTCGGTCGTGCGCATAGT	This work
pAF493	TOP10 / pMT680- <i>staR</i>	F: aatacatatgGCTTCCATGGGCAAC R: aataggtaccGTACGCGGTGGTCCGACTTTA	This work
pAF498	TOP10 / pMT630- <i>hfsJ</i>	F: atatcatatgTTCGTTCTCAAGAGC R: aataggtaccCCTGAAGTTCAACAGCAT	This work
FC2016	TOP10 / pMT464- <i>wecG</i> (<i>E.c.</i>)	F: atatcatatgAATAACAACACCACGGC R: atatgaattcTCATAGGTTGCCGGTGTAGT	This work
FC2017	TOP10 / pMT464- <i>tagA</i> (<i>B.s.</i>)	F: atatcatatgCAAACAGAGACTATTACACA R: atatgaattcTTAAATCTGTTTTGTATGATCTTTTTTC	This work
FC2018	TOP10 / pMT666-P _{<i>hfsJ</i>} - <i>hfsJ</i> - <i>venus</i>	F: atatcatatgTGACGCTCTTGAAGTCGTGCG R: atatgaattcGAGCGCGCCGCTCGTTG	This work
Allele replacement plasmids			
FC55	DH10B / pNPTS138	Allele replacement plasmid, KanR, SacB	M.R.K. Alley
FC1357	TOP10 / pNPTS138- Δ <i>hfiA</i>	UP F: ggatccGATGTGGCAGTTCCTGTTGA UP R+: AGCGGCGAAACCTCAATAAATGGCCCGACAC DN F+: CATTTATTGAGGTTTCGCCGCTCGAAGAT DN R: gaatTCCAGCTCGACGGATTG	This work
FC725	TOP10 / pNPTS138- Δ <i>hfsA</i>	UP F: gaattcCGGCCCACGAACACCTTCAA UP R: ggatccGATCCAGGCGCTCGTCGACAT DN F: ggatccCGGTGAGCGCTTTGGTCCG DN R: aagcttGCAGTCCACGACGATGACCT	This work
pAF491	TOP10 / pNPTS138- Δ <i>staR</i>	UP F: attactcagATCACCTCCCAGTTCGACAG UP R+: ACTTGGCCATGTCGTTGCCATGGAAG DN F+: CAACGACATGGCCAAGTCGCTGAACG DN R: attagaattcCGATGAAGATCTCATTGACG	This work
pAF494	TOP10 / pNPTS138- Δ <i>hfsJ</i>	UP F: atatgaattcAAGGAACCTGGCCAACCTGAT UP R+: GACAGCCTCTGCTCTTGAGGAACGA DN F+: GAGCAGAGGCTGTCCAGACGCTCTAC DN R: atatctgcaGACCATCGTTTCTTCT	This work

pAF456	TOP10 / pNPTS138- <i>hfiA</i> (Δ codonC)	UP F: ggatccGATGTGGCAGTTCCTGTTGA Δ c UP R+: TCGGCTCACTGACAAGATCCT Δ c DN F+: TTGAGCGCGGACAGGATcTTG DN R: gaatTCCAGCTCGACGGATTG	This work
pAF457	TOP10 / pNPTS138- <i>hfiA</i> (Δ codonD)	UP F: ggatccGATGTGGCAGTTCCTGTTGA Δ d UP R+: GGCTCACTGAgAgCATCCTG Δ d DN F+: CGGACAGGATGcTcTCAGTG DN R: gaatTCCAGCTCGACGGATTG	This work
pAF460	TOP10 / pNPTS138- <i>hfiA</i> (Δ codonE)	UP F: ggatccGATGTGGCAGTTCCTGTTGA Δ e UP R+: GGCTgACTGACAACATCCTG Δ e DN F+: CGGACAGGATGTTGTcCAGTc DN R: gaatTCCAGCTCGACGGATTG	This work
pAF458	TOP10 / pNPTS138- <i>hfiA</i> (Δ codonC,D)	UP F: ggatccGATGTGGCAGTTCCTGTTGA Δ c,d UP R+: GGCTCACTGAgAggATCCTG Δ c,d DN F+: CGGACAGGATccTcTCAGTG DN R: gaatTCCAGCTCGACGGATTG	This work
pAF478	TOP10 / pNPTS138- <i>hfiA</i> (Δ codonC,E)	UP F: ggatccGATGTGGCAGTTCCTGTTGA Δ c,e UP R+: TCGGCTgACTGACAAGATCCT Δ c,e DN F+: TTGAGCGCGGACAGGATcTTG DN R: gaatTCCAGCTCGACGGATTG	This work
pAF479	TOP10 / pNPTS138- <i>hfiA</i> (Δ codonD,E)	UP F: ggatccGATGTGGCAGTTCCTGTTGA Δ d,e UP R+: GGCTgACTGAgAgCATCCTG Δ d,e DN F+: CGGACAGGATGcTcTCAGTc DN R: gaatTCCAGCTCGACGGATTG	This work
pAF489	TOP10 / pNPTS138- <i>hfiA</i> (Δ codonC,D,E)	UP F: ggatccGATGTGGCAGTTCCTGTTGA Δ c,d,e UP R+: GGCTgACTGAgTggATCCTG Δ c,d,e DN F+: CGGACAGGATccTcTCAGTc DN R: gaatTCCAGCTCGACGGATTG	This work
FC2099	TOP10 / pNPTS138- <i>hfsJ</i> (Δ codonA)	UP F: attagaattcGATCGGCCAGTTCACAAGG Δ A UP R: CTCCGAGAATaTCTCCAAG Δ A DN F: CTTGGAGAtATTCTGCGGAG DN R: tttctgcaGACCATCGTTTCTTCT	This work
FC2101	TOP10 / pNPTS138- <i>hfsJ</i> (Δ codonB)	UP F: attagaattcGATCGGCCAGTTCACAAGG Δ B UP R: CTGCGGAGATaTTCGTTC Δ B DN F: GGAACGAAtATCTCCGAG DN R: tttctgcaGACCATCGTTTCTTCT	This work
pAF495	TOP10 / pNPTS138- <i>hfsJ</i> (C260R)	UP F: attagaattcGATCGGCCAGTTCACAAGG T778C UP R+: GATGCgGTAGCGGAAGAAC T778C DN F+: GTTCTCCGCTACcGCATC DN R: tttctgcaGACCATCGTTTCTTCT	This work
pAF497	TOP10 / pNPTS138- <i>hfsJ</i> (C260R, W264R)	UP F: attagaattcGATCGGCCAGTTCACAAGG T778,790C UP R+: CgGGGCTCGATGCgGTAG T778,790C DN F+: TAcCGATCGAGCCcGGT DN R: tttctgcaGACCATCGTTTCTTCT	This work
pAF524	TOP10 / pNPTS138- <i>hfsJ</i> (L248R)	UP F: attagaattcGATCGGCCAGTTCACAAGG DN R: tttctgcaGACCATCGTTTCTTCT Amplified allele from sup256-112	
pAF525	TOP10 / pNPTS138- <i>hfsJ</i> (L266fs)	UP F: attagaattcGATCGGCCAGTTCACAAGG DN R: tttctgcaGACCATCGTTTCTTCT Amplified allele from sup256-177	
pAF526	TOP10 / pNPTS138- <i>hfsJ</i> (2XF246-L255)	UP F: attagaattcGATCGGCCAGTTCACAAGG DN R: tttctgcaGACCATCGTTTCTTCT Amplified allele from sup256-185	
Transcription or translational <i>lacZ</i> fusion plasmids			
FC54	S17-1 / pRKlac290	Plasmid for <i>lacZ</i> transcriptional fusions	(Gober and Shapiro, 1992)
pAF427	TOP10 / pRKlac290- <i>PhfiA</i>	F: ggtaccCTTCCTGCGCATCAACGAT R: aagcttTCAATAAATGGCCCGACAC	This work
LT152	TOP10 / pRKlac290- <i>PhfsJ</i>	F: aaaaaagaattcACCCCAAGGCCACGCCAGAA R: aaaaaatctagaGGCCACCAGGCGGCCAGAA	This work
FC1101	TOP10 / pPR9TT	Plasmid for <i>lacZ</i> transcriptional and translational fusions	(Santos et al., 2001)
pAF429	TOP10 / pPR9TT- <i>PhfiA</i> (a,b)	ggtaccCTTCCTGCGCATCAACGAT aagcttTCAATAAATGGCCCGACAC	This work
pAF431	TOP10 / pPR9TT- <i>PhfiA</i> (a-e)	ggtaccCTTCCTGCGCATCAACGAT aagctTCGGCTCACTGACAACATC	This work

Heterologous protein expression plasmids			
FC119	TOP10 / pMal-c2x	Plasmid to express proteins fused to maltose binding protein (MBP)	New England Biolabs
FC2001	TOP10 / pMal-c2x- <i>hfiA</i>	F: taatgaattcTGTCGGGCCATTTATTGAG R: taatctgcagGTCGGTCTGCGCATAGT	This work
FC274	TOP10 / pETDuet	Plasmid for co-expression of proteins from two different T7 promoters	Novagen
FC2011	TOP10 / pETDuet(His- <i>hfsJ</i>)(MBP)	<i>hfsJ</i> amplified from genomic DNA hfsJ F: taatgaattcCGTTCTGGGCGGGACCAT hfsJ R: aatcaagcttCCCCTGAAGTTCAACAGCAT MBP amplified from pMal-c2X- <i>hfiA</i> MBP F: TTCACGAGCACTTCACCAAC (NdeI) MBP R: atatggtaccTCATGAAATCCTTCCCTCGATCC	This work
FC2003	TOP10 / pETDuet(His- <i>hfsJ</i>)(MBP- <i>hfiA</i>)	<i>hfsJ</i> amplified from genomic DNA hfsJ F: taatgaattcCGTTCTGGGCGGGACCAT hfsJ R: aatcaagcttCCCCTGAAGTTCAACAGCAT MBP- <i>hfiA</i> amplified from pMal-c2X- <i>hfiA</i> MBP- <i>hfiA</i> -F: TTCACGAGCACTTCACCAAC (NdeI) MBP- <i>hfiA</i> -R: aataggtaccGTGGTCTGCGCATAGT	This work
Bacterial two hybrid strains and plasmids			
FC257	BTH101 (F- <i>cya</i> -99, <i>araD</i> 139, <i>galE</i> 15, <i>galK</i> 16, <i>rpsL</i> 1 (Str resistant), <i>hsdR</i> 2, <i>mcrA</i> 1, <i>mcrB</i> 1)	Adenylate cyclase null strain for bacterial two-hybrid assay	(Karimova et al., 1998)
FC253	TOP10 / pUT18c	Parent plasmid to create fusions to the C-terminal end of adenylate cyclase T18	(Karimova et al., 1998)
FC255	TOP10 / pKT25	Parent plasmid to create fusions to the C-terminal end of adenylate cyclase T25	(Karimova et al., 1998)
FC254	TOP10 / pUT18c- <i>zip</i>	Control plasmid with the adenylate cyclase T18 domain fused to the leucine zipper of GCN4	(Karimova et al., 1998)
FC256	TOP10 / pKT25- <i>zip</i>	Control plasmid with the adenylate cyclase T25 domain fused to the leucine zipper of GCN4	(Karimova et al., 1998)
FC2006	TOP10 / pKT25- <i>hfsJ</i>	F: atatctagaGGTTCTGGGCGGGACCATG R: atatggtaccTAGCGCGCCGCTCGTT	This work
FC2007	TOP10 / pKT25- <i>hfsJ</i> (C260R)	Same as above with pAF495 as template	This work
FC2009	TOP10 / pKT25- <i>hfsJ</i> (C260R, W264R)	Same as above with pAF497 as template	This work
FC2128	TOP10 / pKT25- <i>hfsJ</i> (L248R)	Same as above with pAF524 as template	This work
FC2129	TOP10 / pKT25- <i>hfsJ</i> (L256fs)	Same as above with pAF525 as template	This work
FC2130	TOP10 / pKT25- <i>hfsJ</i> (2X(F246-L255))	Same as above with pAF526 as template	This work
FC2010	TOP10 / pUT18c- <i>hfiA</i>	F: atatggtaccGATGTCGGGCCATTTATTGAGC R: atatgaattcTCAGCGCGGGGGGC	This work
Caulobacter crescentus strains		Source	Figure
FC19	Wild type CB15	(Poindexter, 1964)	2, S2, S4, S6, 6
FC423	CB15 <i>xyiX</i> ::pMT585 <i>vanR</i> ::pMT528	(Purcell et al., 2007)	1, S1, S6
FC438	CB15 <i>xyiX</i> ::pMT585- <i>lovR</i> <i>vanR</i> ::pMT528- <i>lovK</i>	(Purcell et al., 2007)	1, S1, 2, S6
FC1289	CB15 Δ <i>hfsA</i> <i>xyiX</i> ::pMT585 <i>vanR</i> ::pMT528	This work	1, S1
FC1290	CB15 Δ <i>hfsA</i> <i>xyiX</i> ::pMT585- <i>lovR</i> <i>vanR</i> ::pMT528- <i>lovK</i>	This work	1, S1
FC1244	CB15 Δ <i>sigT</i> <i>xyiX</i> ::pMT585 <i>vanR</i> ::pMT528	(Foreman et al., 2012)	1, S1
FC1247	CB15 Δ <i>sigT</i> <i>xyiX</i> ::pMT585- <i>lovR</i> <i>vanR</i> ::pMT528- <i>lovK</i>	(Foreman et al., 2012)	1, S1
FC1949	CB15 / pRKlac290- <i>PhfiA</i>	This work	1, 5, 6
FC1950	CB15 <i>xyiX</i> ::pMT585 <i>vanR</i> ::pMT528 / pRKlac290- <i>PhfiA</i>	This work	1
FC1951	CB15 <i>xyiX</i> ::pMT585- <i>lovR</i> <i>vanR</i> ::pMT528- <i>lovK</i> / pRKlac290- <i>PhfiA</i>	This work	1
FC1398	CB15 <i>xyiX</i> ::pMT680	This work	2, 5
FC1399	CB15 <i>xyiX</i> ::pMT680- <i>hfiA</i>	This work	2
FC1365	CB15 Δ <i>hfiA</i>	This work	2, S2, 6
ACC349	CB15 Δ <i>hfiA</i> <i>xyiX</i> ::pMT680	This work	2

ACC272	CB15 $\Delta hfiA$ <i>xyiX::pMT680-hfiA</i>	This work	2
FC1370	CB15 <i>xyiX::pMT585-lovR vanR::pMT528-lovK xyiX::pMT680</i>	This work	2
FC1371	CB15 <i>xyiX::pMT585-lovR vanR::pMT528-lovK xyiX::pMT680-hfiA</i>	This work	2
FC1986	CB15 / pPR9TT	This work	S2
FC1987	CB15 / pPR9TT- <i>PhfiA(a,b)</i>	This work	S2
FC1988	CB15 / pPR9TT- <i>PhfiA(a-e)</i>	This work	S2
FC1990	CB15 <i>hfiA</i> (Δ codonC)	This work	S2
FC1991	CB15 <i>hfiA</i> (Δ codonD)	This work	S2
FC1992	CB15 <i>hfiA</i> (Δ codonE)	This work	S2
FC1993	CB15 <i>hfiA</i> (Δ codonC,D)	This work	S2
FC1994	CB15 <i>hfiA</i> (Δ codonC,E)	This work	S2
FC1995	CB15 <i>hfiA</i> (Δ codonD,E)	This work	S2
FC1997	CB15 <i>hfiA</i> (Δ codonC,D,E)	This work	S2
FC1934	CB15 / pMT805	This work	3
FC1935	CB15 / pMT805- <i>hfiA</i> (sup256 parent strain)	This work	3
FC1936	CB15 <i>hfiA::pMT581-Pxyi-hfiA xyiX::pMT680-hfiA</i> (sup261 parent strain)	This work	3
FC1943	CB15 sup256-39	This work	3
FC1944	CB15 sup261-15	This work	3
FC1945	CB15 sup256-112	This work	Table S1
FC1946	CB15 sup256-177	This work	Table S1
FC1947	CB15 sup256-185	This work	Table S1
FC1974	CB15 $\Delta hfsJ$	This work	3, S4
FC1975	CB15 <i>hfsJ</i> (C260R)	This work	
FC1977	CB15 <i>hfsJ</i> (C260R,W264R)	This work	
FC2119	CB15 <i>hfsJ</i> (L248R)	This work	
FC2120	CB15 <i>hfsJ</i> (L256fs)	This work	
FC2121	CB15 <i>hfsJ</i> (2X(F246-L255))	This work	
FC1978	CB15 <i>hfsJ</i> (C260R) / pMT805	This work	3
FC1981	CB15 <i>hfsJ</i> (C260R) / pMT805- <i>hfiA</i>	This work	3
FC1980	CB15 <i>hfsJ</i> (C260R,W264R) / pMT805	This work	3
FC1983	CB15 <i>hfsJ</i> (C260R,W264R) / pMT805- <i>hfiA</i>	This work	3
ACC392	CB15 <i>hfsJ</i> (L248R) / pMT805	This work	3
ACC393	CB15 <i>hfsJ</i> (L248R) / pMT805- <i>hfiA</i>	This work	3
ACC394	CB15 <i>hfsJ</i> (L256fs) / pMT805	This work	3
ACC395	CB15 <i>hfsJ</i> (L256fs) / pMT805- <i>hfiA</i>	This work	3
ACC396	CB15 <i>hfsJ</i> (2XF246-L255) / pMT805	This work	3
ACC397	CB15 <i>hfsJ</i> (2XF246-L255) / pMT805- <i>hfiA</i>	This work	3
FC2100	CB15 <i>hfsJ</i> (Δ codonA)	This work	S4
FC2102	CB15 <i>hfsJ</i> (Δ codonB)	This work	S4
FC380	CB15 / pMT630	This work	S4
ACC371	CB15 $\Delta hfsJ$ / pMT630	This work	S4
ACC372	CB15 $\Delta hfsJ$ / pMT630- <i>hfsJ</i>	This work	S4
FC646	CB15 / pMT464	This work	S4
FC2090	CB15 $\Delta hfsJ$ / pMT464	This work	S4
FC2019	CB15 $\Delta hfsJ$ / pMT464- <i>wecG</i>	This work	S4
FC2020	CB15 $\Delta hfsJ$ / pMT464- <i>tagA</i>	This work	S4
FC2021	CB15 $\Delta hfsJ::pMT666-P_{hfsJ}$ - <i>hfsJ</i> - <i>venus</i>	This work	S4
FC1952	NA1000 / pRKlac290- <i>PhfiA</i>	This work	5
FC1953	NA1000 <i>ctrA</i> (V88G) <i>ts</i> / pRKlac290- <i>PhfiA</i>	Parent strain (Jacobs et al., 1999)	5
FC1954	NA1000 <i>ctrA</i> (T170I) <i>ts</i> / pRKlac290- <i>PhfiA</i>	Parent strain (Quon et al., 1996)	5
FC1955	NA1000 <i>gcrA</i> Ω <i>xyi::gcrA</i> / pRKlac290- <i>PhfiA</i>	Parent strain (Holtzendorff et al., 2004)	5
FC1961	CB15 <i>xyiX::pMT680</i> / pRKlac290- <i>PhfiA</i>	This work	5
FC1962	CB15 <i>xyiX::pMT680-staR</i> / pRKlac290- <i>PhfiA</i>	This work	5
FC1960	CB15 $\Delta staR$ / pRKlac290- <i>PhfiA</i>	This work	5

FC1963	CB15 Δ <i>staR</i> <i>xyfX</i> ::pMT585 <i>vanR</i> ::pMT528 / pRKlac290- <i>PhfiA</i>	This work	5
FC1964	CB15 Δ <i>staR</i> <i>xyfX</i> ::pMT585- <i>lovR</i> <i>vanR</i> ::pMT528- <i>lovK</i> / pRKlac290- <i>PhfiA</i>	This work	5
LT396	NA1000 / pRKlac290- <i>PhfsJ</i>	This work	5
LT397	NA1000 <i>ctrA(T170I)ts</i> / pRKlac290- <i>PhfsJ</i>	Parent strain (Quon et al., 1996)	5
FC1972	CB15 <i>xyfX</i> ::pMT680- <i>staR</i>	This work	5
FC1970	CB15 Δ <i>staR</i>	This work	S6
FC2071	CB15 / pRKlac290- <i>PhfsJ</i>	This work	S7