

Table S1: List of Plasmids used in this study

Plasmid Name	Description	Source
pSL2183	P_{trc10} - <i>eyfp</i> in pPMQAK1 with RSF1010 origin of replication	Huang et al.
pSL2264	Targeting vector with pUC118 backbone for cloning P_{trc10} - <i>eyfp</i> into NSC1	This study
pSL2267	Targeting vector with pUC118 backbone for cloning P_{trc10} - <i>eyfp</i> into NSC2	This study
pSL2268	Targeting vector with pUC118 backbone for cloning P_{trc10} - <i>eyfp</i> into NS-pCA-1	This study
pSL2269	Targeting vector with pUC118 backbone for cloning P_{trc10} - <i>eyfp</i> into NS-pCB-1	This study
pSL2270	Targeting vector with pUC118 backbone for cloning P_{trc10} - <i>eyfp</i> into NS-pCC-1	This study
pSL2307	Targeting vector with pUC118 backbone for cloning P_{trc10} - <i>eyfp</i> into NS-pCA-2	This study
pSL2308	Targeting vector with pUC118 backbone for cloning P_{trc10} - <i>eyfp</i> into NS-pCB-2	This study
pSL2309	Targeting vector with pUC118 backbone for cloning P_{trc10} - <i>eyfp</i> into NS-pCC-2 (NSP1)	This study
pSL2383	pSL2264 with P_{cpc560} - <i>eyfp</i>	This study
pSL2387	pSL2309 with P_{cpc560} - <i>eyfp</i>	This study
pSL2392	pSL2183 with P_{cpc560} - <i>eyfp</i>	This study

Huang H-H, Camsund D, Lindblad P, Heidorn T. 2010. Design and characterization of molecular tools for a Synthetic Biology approach towards developing cyanobacterial biotechnology. *Nucleic Acids Res* **38**:2577–2593.

Figure S1: Growth Curves for mutants used in this study

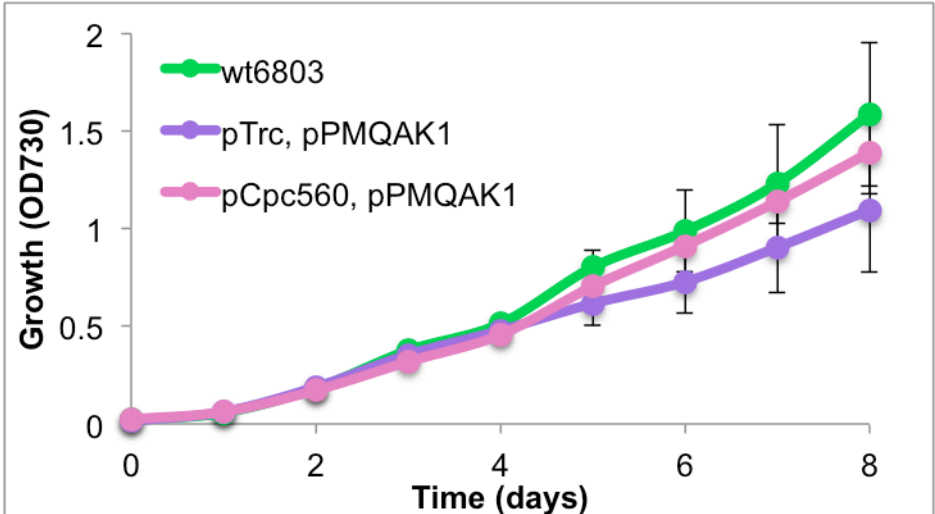
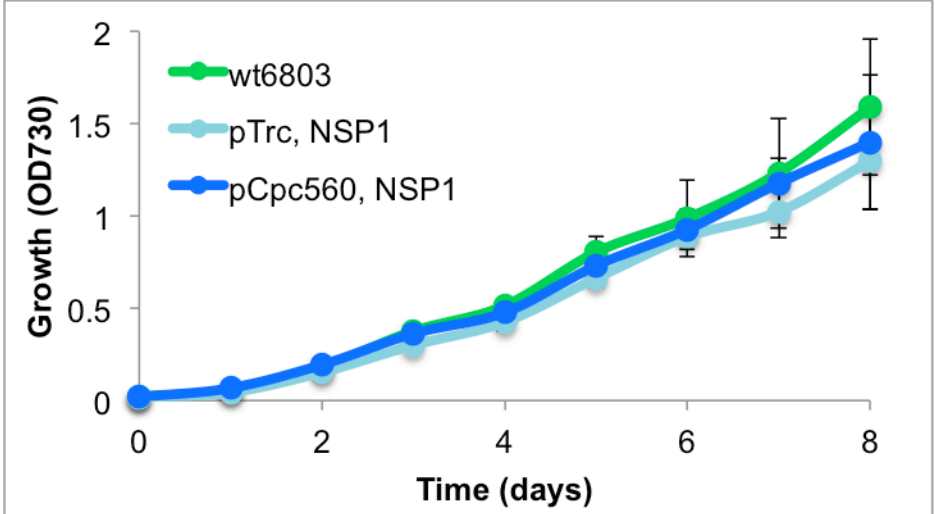
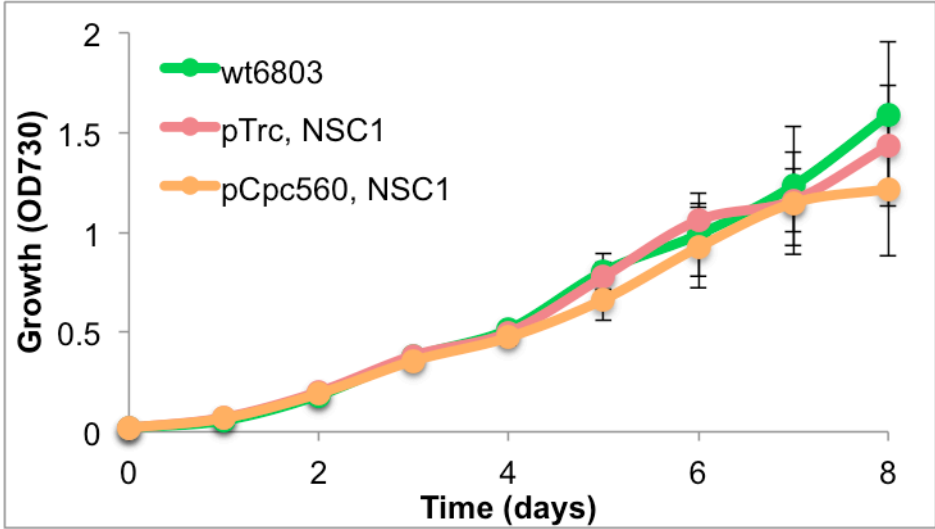


Table S2: List of primers used in this study

Primer Name	Sequence 5' -> 3'	Purpose of Primer
NSC1DS_F	ACACCATCGATTCCCACGCTTGCTC TTTTTCCTGGGTGT	Amplify downstream homologous region of NSC1
NSC1DS_R	TACAGGGCGCGTACTATGGTTCGGC AATAACCATCCCCCAATCAGAAAG GC	
NSC1US_F	CGGTTCCCTGGCCTTTTGCTGGGCAA TGCCCACTCCTCCACAGGCGGTGAG G	Amplify upstream homologous region of NSC1
NSC1US_R	GGTACCATGGCCGATTGTCTTGATT CAAAC TTGTT CATGG	
NSC1Exp_F	AGACAATCGGCCATGGTACCCTCT GCCAGTGTACAACC	Amplify expression cassette (<i>eyfp</i> and <i>kanR</i>) for assembly into SL2264
NSC1Exp_R	AGCGTGGGAATCGATGGTGTCAACG TAAATGCATGCCGCT	
NSC1pUC118_F	GGGATGGTTATTGCCGAACCATAGT ACGCGCCCTGTAGC	Amplifying backbone of pUC118 for assembly into pSL2264
NSC1pUC118_R	TGTGGAGGAGTGGGCATTGCAAGGC CAGCAAAAAGGCCAGGAACCG	
NSC2DS_F	CGGCATGCATTTACGTTGACATTCA GTCCTCGTTAAGGGTAGG	Amplify downstream homologous region of NSC2
NSC2DS_R	CGGTTCCCTGGCCTTTTGCTGATGGC CAACTTAGTCGTACTCTGCG	
NSC2US_F	ACAGGGCGCGTACTATGGTTTTTGT GGAGATCAGCCTTAGCCTGC	Amplify upstream homologous region of NSC2
NSC2US_R	TGGTATTACCAATTAGCAGGGTCGA AGATTCAGGAAAGCCTATAAGC	
NSC2Exp_F	CCTGCTAATTGGTAATACCATGGTA CCGC	Amplify expression cassette (<i>eyfp</i> and <i>kanR</i>) for assembly into SL2267
NSC2Exp_R	TGTCAACGTAAATGCATGCCGC	
NSC2pUC118_F	CAGCAAAAAGGCCAGGAACCG	Amplify backbone of pUC118 for assembly into pSL2267
NSC2pUC118_R	AACCATAGTACGCGCCCTGTAGC	
NSpCA1_DS_F	CGGCATGCATTTACGTTGACATCGC GGATGACAAAATTTGCTG	Amplify downstream homologous region of NSpCA1
NSpCA1_DS_R	TCCTGGCCTTTTGCTCGTTACTTCC AAAGACCTGATCCAACCATCA	
NSpCA1_US_F	ACAGGGCGCGTACTATGGTTGAAGG TGTTAACAGGTTATGGAAAAGC	Amplify upstream homologous region of NSpCA1
NSpCA1_US_R	TGGTATTACCAATTAGCAGGGCATG AAACTTAAGGGGACTTATCG	
NSpCA1_DS_F	CGGCATGCATTTACGTTGACATCGC GGATGACAAAATTTGCTG	Amplify downstream homologous region of NSpCA1
NSpCA1_DS_R	TCCTGGCCTTTTGCTCGTTACTTCC AAAGACCTGATCCAACCATCA	
NSpCA1_US_F	ACAGGGCGCGTACTATGGTTGAAGG TGTTAACAGGTTATGGAAAAGC	Amplify upstream homologous region of NSpCA1
NSpCA1_US_R	TGGTATTACCAATTAGCAGGGCATG AAACTTAAGGGGACTTATCG	
NSpCB1_DS_F	CGGCATGCATTTACGTTGACGTGAA CGCACCCTTGACTAACG	Amplify downstream homologous region of NSpCB1
NSpCB1_DS_R	CGGTTCCCTGGCCTTTTGCTGTTAGA CATTAGAACGCCCTGCC	
NSpCB1_US_F	ACAGGGCGCGTACTATGGTTCGTAT CATAATCACGGGGTTATCG	Amplify upstream

NSpCB1_US_R	TGGTATTACCAATTAGCAGGCCAGA AACTCCCAAATTTGAC	homologous region of NSpCB1
NSpCC1_DS_F	CGGCATGCATTTACGTTGACGGCAA TAGTCCAAGATTTCC	Amplify downstream homologous region of NSpCC1
NSpCC1_DS_R	CGGTTCCCTGGCCTTTTGCTGGAATT GTTGGCAGATAGGGCACG	
NSpCC1_US_F	ACAGGGCGCTACTATGGTTGCGTA TGACTCTTTTAGCATCC	Amplify upstream homologous region of NSpCC1
NSpCC1_US_R	TGGTATTACCAATTAGCAGGTGTGC CTATCCCTTTGTCAAGAG	
pSmall1ExpC_F	CCTGCTAATTGGTAATACCATGGTA CCGC	Amplify expression cassette (<i>eyfp</i> and <i>kanR</i>) for assembly into SL2268, SL2269, SL2270
pSmall1ExpC_R	TGTCAACGTAAATGCATGCCGC	
pSmallpUC118_F	CAGCAAAAGGCCAGGAACCG	Amplify backbone of pUC118 for assembly into SL2268, SL2269, SL2270
pSmallpUC118_R	AACCATAGTACGCGCCCTGTAGC	
NSpCA2_DS_F	TGCATTTACGTTGACACCATCCCGT TAACAGGTATAGCATAGCGATATAC AGAA	Amplify downstream homologous region of NSpCA2
NSpCA2_DS_R	GCGAGGAAGCGGAAGAGCGCCCAAT ACGCAAACCGCTCCAACAGTGACT GGGTTAGCAC	
NSpCA2_US_F	GCTGCAAGGCGATTAAGTTGGGTAA CGCCGAAACACTTGATACTCTCCAA GCGATTTTAG	Amplify upstream homologous region of NSpCA2
NSpCA2_US_R	TGTAACACTGGCAGAGCGGTCGGGA AACGTACAACGACCAAAAA	
NSpCA2Exp_F	TGGTCGTTGTACGTTTCCCGACCGC TCTGCCAGTGT	Amplify expression cassette (<i>eyfp</i> and <i>kanR</i>) for assembly into SL2307
NSpCA2Exp_R	ATGCTATACCTGTTAACGGGATGGT GTCAACGTAAATGCATGCC	
NSpCB2_DS_F	GGCATGCATTTACGTTGACATTCAA ACAAATATTAATACTCATTATGAC TTTATCACTAGACTCGG	Amplify downstream homologous region of NSpCB2
NSpCB2_DS_R	GCGGAGCCTATGGAAAAACGCCAGC AACGCGGCCTTTTTAAACACCCTCG ATAAGTTTCCCTGT	
NSpCB2_US_F	CGCCGCGCTTAATGCGCCGCTACAG GGCGCTACTATGGTTGTCTCGACT TCTGGTGATATGGACTCT	Amplify downstream homologous region of NSpCB2
NSpCB2_US_R	TGGTATTACCAATTAGCAGGTGTTA ATGCCCAAAGGAAATAGCATCAAGC	
NSpCB2Exp_F_2308	ATTTCCTTTGGGCATTAACACCTGC TAATTGGTAATACCATGGTACC	Amplify expression cassette (<i>eyfp</i> and <i>kanR</i>) for assembly into SL2308
NSpCB2Exp_R	GTATTTAATATTTGTTTGAATGTCA ACGTAATGCATGCCG	
NSpCB2Exp_F_2309	AACTGATAGAAATCTCTGATCCTGC TAATTGGTAATACCATGGTACC	Forward primer for expression cassette (<i>eyfp</i> and <i>kanR</i>) for assembly into SL2309
NSP1DS_F	GGCATGCATTTACGTTGACAGGAGT TTAGCCATGGGATTAGTCAGAGTCC	Amplify downstream homologous region of NSP1
NSP1DS_R	GCGGAGCCTATGGAAAAACGCCAGC AACGCGGCCTTTTTAACGCCATCGC TCGC	

NSP1US_F	CGCCGCGCTTAATGCGCCGCTACAG GGCGCGTACTATGGTATATAATCCC GTTAACAGGCTAAACCCA	Amplify upstream homologous region of NSP1
NSP1US_R	TGGTATTACCAATTAGCAGGATCAG AGATTTCTATCAGTTCCCCAGC	
NSP1Exp_F	AACTGATAGAAATCTCTGATCCTGC TAATTGGTAATACCATGGTACC	Amplify expression cassette (<i>eyfp</i> and <i>kanR</i>) for assembly into SL2309
NSP1Exp_R	TAATCCCATGGCTAAACTCCTGTCA ACGTAAATGCATGCCGC	
pSmall2pUC118_F	TAAAAAGGCCGCGTTGCTGG	Amplify backbone of pUC118 for assembly into pSL2307, pSL2308, pSL2309
pSmall2pUC118_R	ACCATAGTACGCGCCCTGT	
PromoterSwap_F	GCGCGAAGGCGAAGCG	Amplifying backbone of pSL2264 and pSL2309, without P_{Trc10}
PromoterSwap_R	ATGGTGAGCAAGGGCGAGG	
pCpc560swap_F	GCCCTTGCTCACCATTGAATTAATC TCCTACTTGACTTTATGAGTTGGG	Amplify P_{cpc560} for assembly into pSL2383, pSL2387, pSL2392
pCpc560swap_R	GCTTCGCCTTCGCGCACCTGTAGAG AAGAGTCCCTGAATATCA	Reverse primer for amplifying P_{cpc560} for assembly into pSL2383, pSL2387
pCpc560swap2183_R	GTGAGCTGATACCGCACCTGTAGAG AAGAGTCCCTGAATATCA	Reverse primer for amplifying P_{cpc560} for assembly into pSL2392
2183promoterswap_F	GCGGTATCAGCTCACTCAAAGG	Forward primer for amplifying backbone of pSL2183
SL2264_seg_F	CAATGCCCACTCCTCCACAG	For checking segregation ratio for mutations in NSC1
SL2264_seg_R	ATCAGAAAGGCTAGGGTTGG	
SL2267_seg_F	TGTGGAGATCAGCCTTTAGC	For checking segregation ratio for mutations in NSC2
SL2267_seg_R	AGTCGTACTCTGCGCCGATC	
SL2309_seg_F	AACAGGCTAAACCCATGCAG	For checking segregation ratio for mutations in NSP1
SL2309_seg_R	AAGGGTCATACGTCATCGTG	