

Supplementary Data File: Multiple sequence alignment of the diverse cyanobacteriochromes

β -sheet Phe

AM1_1499g1 DTTTIFQIAVDKVVQTLQVDRVAIFQFDSATDYKQGVFVAEKVIPIIYSSAVA-----
AM1_6305g1 ETQTIFETSVQRVLELIKANRVAIFKLD SATNYTTGCFVAEKVVPPTSALA-----
FdDpxAg DLETIFQATATEVRQLLLADRVMGFRFYPD SGWDDGEFVSEDVDPAFPSAMA-----
NpR5113g1 DLETIFQTTATEVRLLLLNADRVAVFQFDL-EKDWEGEFVSENVAPGWT SALK-----
NpR1597g1 DIETIFKITVTEVRQLLKTDRVGVFRLYP-DLAWEGEFIYEDVATEWDSALA-----
NpR5113g3 DLDTIFQTTVTEARKMLQADRVAVFRFDP-QKDWEGEFISEDVVPECNSVIA-----
TeSesB ELSTILETTVKDVRELLGCDRVL IYRFLD---DWRGIMDVEAVVPPWLSALG-----
NpF1883g2 NEEDVLKTTVEEVRKVLSTDRVMVYTFNA---NWSGTVIAESVPIPGYPKVL R-----
NpF1883g3 NEEDVLKTTVEEVRKVLSTDRVMIYSFNA---NWSGTVIAESVVLTYPKVL R-----
NpF1883g4 KEEDVLKTTVEEVRKALSTDRVLVYSFYA---NWFGI IIAESVVPGYPKVL R-----
AM1_0048g1 SEEDLLKTTVAEVRQILQTD RVTIFALNN---NGEGTFVAESVAPGYPKLQW-----
AM1_0048g2 HTEEILTNAVQESRKVLRADRVIVYSFDE---NWQGTVA AEAVQPGISKMVW-----
TePixJg DRQAI FETLVAKGRELLACDRVIVYAFDD---NYVGTVVAESVAEGWPQARD-----
Cce_4193g2 NTEEV MQIAVEHMRRALKTDRVLIYTFDE---QWMGTIVAEDVANEYPKALN-----
SyPixJg2 NSEQVFDIAAQEIRLALKADRVIYRFDA---TWAGTVIVESVAEGYPKALG-----
NpR1597g2 DLESIFRTSTVELRQLLNADRVAIYRFNP---DWSGEFVFESVAEGWISLIDEQLRPELSENV S
NpF2164g3 DLRTLFRATATQELRRFLKCDRVVYQFHP---DWSGEVIAESVGAGWSSLVEMQE QDGILKTGLI
Mbr3854g4 NLDTI FDTTTEVRLLKTD RVCVYQFAE---DWSGSFIAESVGATWAPLVQRQQQIPALRDNVS
AnPixJg2 NIDKIFQTTTQEI RQLLKCDRVAVYRFNP---DWSGEFVAESVSGWVKLVGPDIK-----
NpR6012g4 DVEEIFKTTTQEV RQLLRCDRVAVYRFNP---NWTGEFVAESVAHTWVKLVGPDIK-----
Slr1393g3 ELQNI FRATSDEVRHLLS CDRVLVYRFNP---DWSGEFIHESVAQMWEPLKDLQNNF-----
AM1_C0023g2 DIEDIFGATTQDVRESLECDRVVIYQFWP---DWSGEFLVESTAPGLIPLSELDVP-----
AM1_1557g2 DIQDI FRATTHDVRESL GCDRVVYKFFP---DWSGEFLVEATAPNILPLSELEVP-----
AM1_6305g2 DIKDIFIATTEKVRASLECDRVVYHFLP---DWSGEFMFESSDTSFPPLVTANST-----

Insert Cys

2nd Cys

1st Cys

AM1_1499g1 -----ARVQDDSFGENYATKYQLGRVF-AVADVYDAGLSDC^{CH}IQ
AM1_6305g1 -----ANVRDDCFGHNYANKYQQGQVF-AVADIYAENLSDC^{CH}VR
FdDpxAg -----QRIHDHCFGEQFAVQYQQGRVQ-AVADIYNCGLSDC^{CH}IQ
NpR5113g1 -----VKVYDHCFGEQFASSYQQGRVQ-AVADIYNAGLSDC^{CH}AA
NpR1597g1 -----AKLCDHCFSEEFASLYQQGRIR-AIADIYQVNASDC^{CH}IQ
NpR5113g3 -----EKIYDYCFGENFASLYAQGRVN-AIADIYQAKFPGC^{CH}IQ
TeSesB -----DVVGDSCFTEQYVEAYKRGRIH-VVNSLEKASVAPC^{CH}YRD
NpF1883g2 -----SEIQDPFCGQGYVEKYQSGRVA-TTNNIYQAGLAD^{CH}IS
NpF1883g3 -----AEIEDPCF GQGYVKEYQSGRVL-AINNIYEVGLAD^{CH}IN
NpF1883g4 -----SKIHDSCFTQGYIEKYQSGRVV-AINNIYESGLAD^{CH}IK
AM1_0048g1 -----STLHDPCFNEG YQEYRQGRVS-AIDNIYNSGLND^{CH}IG
AM1_0048g2 -----AEISDPCFANKYVEQYRRGRVQ-AINNVDAGLTE^{CH}VQ
TePixJg -----QVIEDPCF REHWVEAYRQGRIQ-ATTDIFKAGLTE^{CH}LN
Cce_4193g2 -----AEIMDPCFATK FVDRYLNGRVQ-ATADIHNAGLTE^{CH}LN
SyPixJg2 -----ATIADPCF ADSYVEKYRSGRIQ-ATRDIYNAGLTP^{CH}IG
NpR1597g2 ---ECSAKDLAK-----PPVADTYLQDTEGGSFSSCEVYRICNDIYNSGFSDC^{CH}YIK
NpF2164g3 SSERCNIKDYGS-----PVKADADTYLKETQGGMYAKGTRFRKVNDISAAGFSSC^{CH}YLE
Mbr3854g4 ---QCDNMTSLIERQQSGQLAPQASGPASRD^{CH}TYLQETEGGRFQTEQAF-SVEDIYQAGFSTC^{CH}YLE
AnPixJg2 -----TVWEDTHLQETQGGRYRHQESF-VVNDIYEAGHFS^{CH}LE
NpR6012g4 -----TVWEDTHLQETQGGRYAQGENF-VVNDIYQVGHSP^{CH}IE
Slr1393g3 -----PLWQD^{CH}TYLQENEGGRYRNHESL-AVGDVETAGFTD^{CH}LD
AM1_C0023g2 -----MTWQD^{CH}TYLQENQGGKFKDNAPT-VVADIYQQSYTD^{CH}LE
AM1_1557g2 -----MVWQD^{CH}TYLQENQGGKYRDNATT-VVADIYQESYRD^{CH}LE
AM1_6305g2 -----TNWED^{CH}TYLQETQGGHYRHQATT-VVADIYEQGYTD^{CH}LA

α -helix Phe

AM1_1499g1 IYER**FQ**VRATLVVPLLQGEK**LWGLLC**IHQCSRPRAWKSAEIEF**IKKL**ADQLSVALKQAELHEQAL
AM1_6305g1 I**LERFQ**VRANLVVPLLQGEK**LWGLLC**IHQCSGPRAWQPYETQFIQE**VADHL**SEALRQAERLEETQ
FdDp \times Ag V**LAQF**HIKANLVVPLLQGN**NLWGLLC**CVHQRTSRTWHNTEIEFATQIANH**LAVALQ**HAELLADVQ
NpR5113g1 I**LSKFQ**VKANLVVPLSRQ**KELWGLLC**IHQCSEARNWKESEIEFIRQ**IADHLT**VAIQQAKHLHEVQ
NpR1597g1 I**LERFQ**VRANITAP**LIKGNLWGLLC**IHQCSSSRQWEASEIEFVQ**LIAEHLG**VALQQADYLEQVK
NpR5113g3 I**LEKFQ**VRANLVAP**LLKKGELWGLLC**IHQCTTFRHWQ**PSEIEFTS**QIAEQ**LGVALKQ**DSY**LKQVQ**
TeSesB **LLAHYQ**VKANLVVPIV**VEGRLWGLLC**ICHQCAHPR**NWQDSEIE**ELIKQISTQLAIAI**LQAELYQ**KAQ
NpF1883g2 **LLESF**GVKANLVAP**ILKDEQLFGLL**IAHQCSRPRD**WQPEIDL**FAQIAIQ**IGFALD**HARLLQRIE
NpF1883g3 **LLESF**GVKANLVAP**ILKDEQLFGLL**IAHQCSRPRD**WKQSEIDL**FAQIAMQ**VGFALD**HARLLQRIE
NpF1883g4 **LLESF**AVKANLVAP**IIKDDQLFGLL**IAHQCSGPRD**WQPEIDL**FTQIAMQ**VGF**FTLDYARLLQAYQ
AM1_0048g1 **LLERF**AVKANIVAP**ILQENENLYGLL**IAHQCARPRE**WNQSEIGL**FKQLALQ**VGYALD**RRARVMSHLD
AM1_0048g2 Q**LEKYG**VQANLVVPI**LVGEYLFGLL**IAHQCSGPRI**WQSSEIDL**FTQIGV**QLGHALEQ**ANVLTQTE
TePixJg Q**LRPLK**VRANLVVPM**VIDDQLFGLL**IAHQCEPRQ**WQEIEIDQ**FSELASTG**SLVLERL**HFL**EQT**I
Cce_4193g2 **E**LKPF****KVRANLVAP**IIIRKGLLGLY**IAHECSGPR**NWNASEIS**FFSQVAAQ**IGFALER**ADLLEQ**QK**
SyPixJg2 Q**LKPF**EVKANLVAP**INIKGNLLGLL**IAHQCSGPRD**WHQNEIDL**FGQ**LTVQVGL**ALERSD**LLAQK**
NpR1597g2 I**LEIYQ**ARAYV**IIAIYHGQ**KLWGLLAVYENAR**TRDWQKDE**VYLLTQ**VGTQLG**VALQQAE**FIQQM**
NpF2164g3 **SLEK**FQ****AKAYIIVPV**FRAGNLWGLL**AA**YQNSEV**RQWTEEEAGALLQ**IAEPLS**IALQQAE**YIEQLR**
Mbr3854g4 **VLEQY**QCRA**YAI**VPI**FKGPQLWGLL**AA**YQNN**GPRD**WENE**EV**TLLRQ**IGT**QLGVA**IQQSEY**LQQLQ**
AnPixJg2 I**LEQ**FE****IKAYIIVPV**FAAEKLWGLL**AA**YQNSG**TREW**VEWESS**F**LTVGLQ**FGIAIS**HAEY**LE**QTR**
NpR6012g4 I**LEQ**FE****VKAYV**IVPVFAGEQLWGLL**AA**YQNSG**TRD**WDESE**V**TLLAR**IGN**QLGLAL**QQTEY**LQVQ**
Slr1393g3 **N**LRRE****FEIRAF**LTVPVFVGEQLWGLL**GAYQNGAP**RHWQAREI**HLLH**QIANQL**GVAVY**QAQLL**AR**FQ**
AM1_C0023g2 I**LEW**FD****IRAY**MVVPVFIGKTLWGLL**AA**YQLNH**PRQ**WQKVELY**LLKQAGA**QLGVAL**QQAE**LLNQLR**
AM1_1557g2 I**LEW**YK****IRAY**MVVPVFIGETLWGLL**AA**YQLNV**PRQ**WHKVELY**LLKQAGA**QLGVAL**QQAE**LLKQVR**
AM1_6305g2 **MLER**FH****IRAF**MVVPVFG**EKLWGL**LATYQHTQIR**HWQD**LELKL**LK**VGAQLG**VALQQAN**LLKDLR**