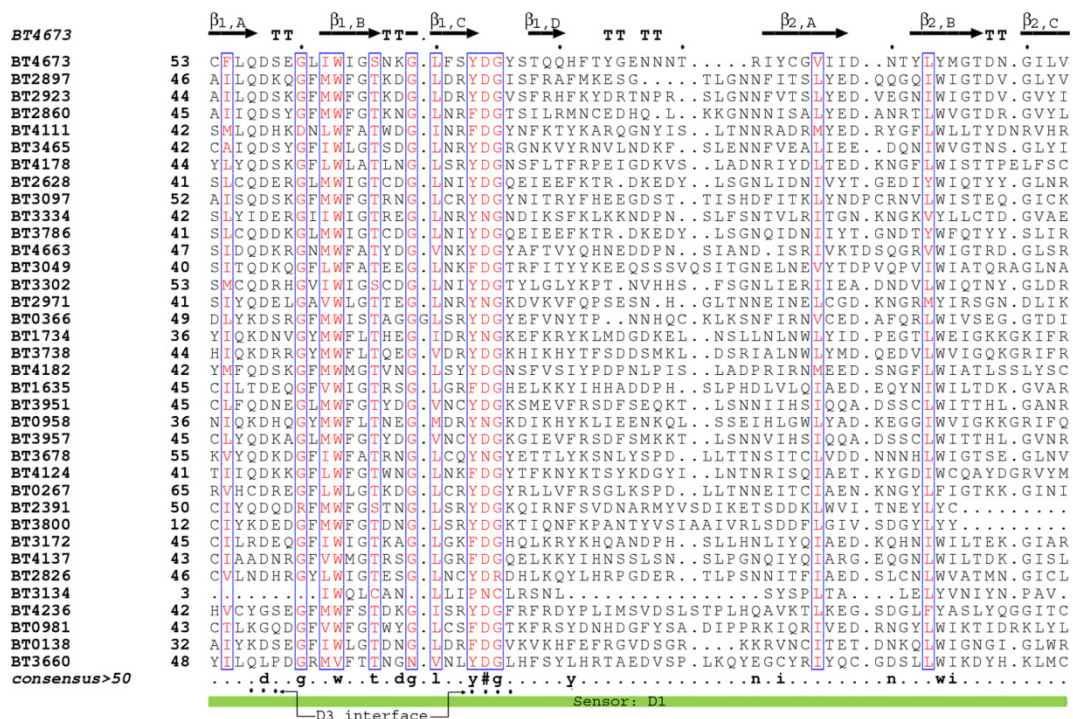
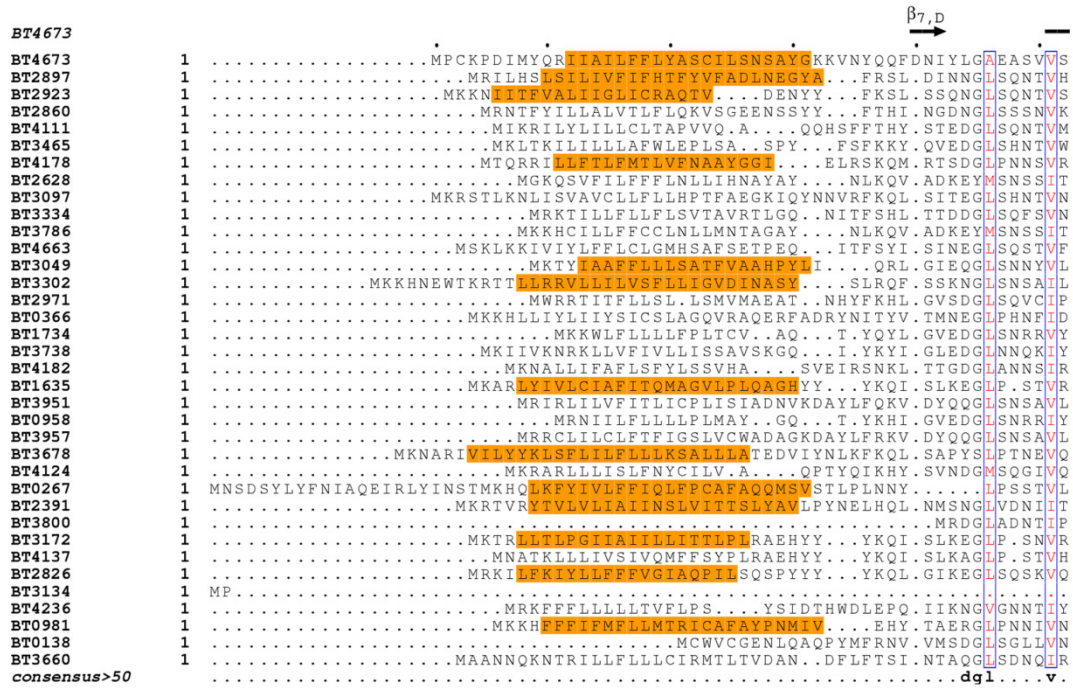


### Figure S1: Sequence alignment of all HK3 sensors from *B. thetaiotaomicron*

Sequences are aligned for all 35 HK3 sequences identified in *Bacterioides thetaiotaomicron*. Elements of secondary structural in BT4673 are shown above its sequence. T stands for a turn conformation.  $\beta_{7,D}$



BT4673 →  $\beta_2, D$   $\beta_3, A$  TT  $\beta_3, B$  TT  $\beta_3, C$  TTT  $\beta_3, D$   
 114 YNYRADRYEQP.....ETDFPDTVRTMALQGD...**D**WLGALNG.LYTYQLQSRKL.....TS  
 108 YSPEHETVERF.IMKSLDLDGIDYTVNLVTDGDKDG...**I**WVVTQSQAVFYFNPTNKL.....INYL  
 109 YYPEKDTFRHF.VELSDRNTRIERAVAMISGDRQGR...**I**WIASAQNLFCYDLKEQSL.....RNYI  
 BT2860 109 YHPASDVVTHI.NQKTKGKTMNDNWSAIVGDTQGN...**I**WVLIIPDQGFIRY..KDNEL.....YFYE  
 BT4111 108 FDPKTEFFEQV...PAAGEEGSTYNIHAIQVLPDGT...**V**WLTIEHDGAIKRVVTLTPQKN.....YTTKSD  
 BT3465 106 YDRATDRFSYF.DKTTQYGVVVSSEIKKIVKTENGL...**L**WIIATLGGGLFIYDPKTEVL.....  
 BT4178 110 YDLQACRFVDY.....TGTALEKNYSIFVAANGD...**V**WLRHSGNGCLRMVHQKDRQ.....MVSTE  
 105 LNRKNTTITHY.....NEFQKLFPMNK.DSHGN...**L**FI IQDSNCLYYHKKKEGVF.....KKIN..  
 BT3097 118 YNPQNEQFTRY.....HIEGNNKNSV...**L**FLINTSDSRLLTGCSN.GIYQYDNEKNSFTPF  
 BT3334 107 FDMTTQRFKTL.....LQGNVDAIYYNEK...**L**YIIGK.REEEVVFVFNENT.....NNFD  
 BT3786 105 LDRKNTSITRF.....NEFQKLFPMNK..DNHST...**L**FI IKDTCNCLYYHKKKEGIF.....KKIN..  
 BT4663 112 YDEEKDIFQNFYKNGKHLQVN.....GIEEISPEO...**L**LI .STPEGLIMFDIKESKF.....IDDS  
 BT3049 109 YNYETQSFVYQYNPEDPQSLITNDVTHITSSVQAGKG...**L**WVCTYYRGIEYLDIATGKF.....THYN  
 BT3302 117 FDRRQTIQSF.....KDFKYINRMAI..SPEDD...**F**FI IKDDGYIYYQPEQKDF.....CKLD..  
 BT2971 115 LDIYTEQFTCL.....RQKGVYGLFCKKD.T...**L**WVSC.ADGYIYYTGGQ.....TELT  
 BT3066 114 IDLSTLKPPIPH.DPKGILPKILELPAIRMKDTQGC...**I**WLRHSDNA.LHRIEFNDKGE.....VQILST  
 BT1734 110 YDRIHDTFELVYKLPIDFKDLPAPITFSWIDHNNH...**I**WLCN.EETIFLYNTRTEEV.....  
 BT3738 102 YDSQHDKPELAYVHPELIRNKQAFALDGYLDKNDH...**I**WLCY.KDITTYNIRTGT.....  
 BT4182 108 YDLKHGRFVDF..TGCGEYKQYSKKI...IASDQS...**I**WLDWNNNGCRRVVYQDGGF.....SSQA.Y  
 BT1635 110 YQRQSDDFYLP.....TDEKGNITAYSTCTPEG...**L**LF GA.KNKIYFYSYRDSGF.....RLQEF  
 BT3951 110 FSKDSRQVICN.....YFDTDFVHS..NHAGN...**I**WALSVDW.IAYNTHHRRF.....VRIP..  
 BT0958 110 YEEKYDRFMTVMYKSP...KVTD AISYGLDRNNN...**L**WL CG.KDSILLYNTKTTQV.....  
 BT3957 102 FSQDSRQVVGY.....YDFTGDIYLLS..NPKGD...**T**WVVSDEG.IFYNYTYHKKF.....VHLK..  
 BT3678 120 MDKRTGEIKKY.....KAPYLSNNVVSALCVTRDNT...**V**WVGT.DNGLCRYVAEKDFT...VVCDDDF  
 BT4124 107 FDNQTEKFIDI..LGSVAETMITNNYADHIYTLKGI...**S**WITFONECAAIRIDDQLCKQ...GKGITL  
 BT0267 130 LDKRTYQIIPV.....THNDLKDQEI RTMIVSDSGV...**V**WVGT.LT..SVFRCS.....ADFSY  
 BT2391 109 FDRRREKFKVLP.....SFQDGKKAIS.VSAMIEITGSL...**F**WIVKGGQLQCLKRHY..KLVKGDLOIEMTVE  
 BT3800 71 FNRKRETF.LP.....IHTESDTAIG.VFNVLPAOSS...**F**WGISGNRLLCQWEIQGKEEKTAVRVYQ  
 BT3172 107 YQQQSNFTFP.....TDEEGNYITAYSFCVLPDGG...**L**IFGG.KDRYIKYSYKSSSL.....RLQYF  
 BT4137 108 YRYQSDDFLLQ.....TDEKGNLIAYSVCRTPEG...**L**IFGG.QGKIYHYSYKESCI.....RKIYEF  
 BT2826 111 YDRGSDSFRTL...SNN.GKPIYVASYLVLEGG...**L**ILGG.SGAIYVYVATNKL.....EPLYYA  
 BT3134 40 .....DVFKRF.KIASSEGITLDNVAEILSDSLDN...**I**WVLIIPDQGFIRY..KDGKV.....HHYS  
 BT4236 110 FDKEMEKF.LP...VRFDRSLKLEIQDFCWNDSG...**L**YLATISHG.LFESFRKKEGKEDFVYICLNP  
 BT0981 110 FDKKHESFHAV..YDDVKEYSENIQIIKIQTDDGD...**V**LLLIKDKSLLRANTDQNGKI.....YMKQLH  
 BT0138 114 LNRSGSELQRI.....VPEKIDCAVNALLADGD...**V**LYIGTERG...LFIQKDGQL...LQVQTDKNN  
 BT3660 95 IDLHQEKYIPH.LDSYFRRKEIHEPVEDLFDVNSGR...**L**WLLTSQE.LRELETGIRL.....  
 consensus>50 yd...d.f.....  
 Sensor: D1

BT4673  $\alpha 1$   $\beta_4, A$  TT  $\beta_4, B$  TT  $\beta_4, C$   $\eta 1$   $\beta_4, D$  TT  
 163 FDTRRNGLPNNTIYSIIRTK...NQIYVG.TYNGLCRYI...PNSGKFEGIPLPVHSSQS NFL.....  
 BT2897 167 SDQ.SGRLKFGSLGLQLYFDS...NVCWLDIRDGNLYFSKDKLQTLVVPV.PKDGNEPFPKGEYICK....  
 BT2923 168 LTE.HS.LVSTNVKCLTVDNS...GTIWIIFYGDFGLFYSKDNLKLTHPYLSPVNEEYTVDDVSVSK....  
 BT2860 166 ISN.RRQFKQESPNCICVREN...GEVWIGFNGLIGICRYNPQNSFEQIVEDRDRG.PLVGNKINS....  
 BT4111 167 IYSTKSGLFFADHF.YQVYQ...KAGNHLL.TDNGLGMRP...GEQQPVNYFVETKKGQDGMNQAFYA  
 BT3465 161 ..TQNSIQTSFVWDVVCQSYD...KVVYVSSLQEGLLCFDENGKFLQSYRVSSDVN..SSDSYKIN....  
 BT4178 166 FKTERGNLFDNRVQFVNE...DAGGRWIG.TQRGLVSVSD...GQYKVEDRLLHFTSSSLAFKNDMY...  
 BT2628 156 ITGIPISDI.VNF...FIDGNNRMWVVM..KGYN...RCYDIQQEAASG.DITLLPQ....  
 BT3097 170 ILNEGK...ENIRGLVE...SNNVWVIN.SNKGVKRYNLIKKEQFEPL...PLNIRPFLETG...  
 BT3334 151 LY...YHLAGKDINLSLCHL...EKKNLWMTTSTNGVYCLSDDKQLSQPIT...KGNIAS...  
 BT3786 156 VTGIPISDV.ITF...FFDKNNRMWVMM..KGYN...RCYDLQDDPLTE.NITLVSQKSGLD...  
 BT4663 167 FST.AMH...KTIASITLYRQ...DQYIIGTSTDGTYTSTIQTKFEKVI...PILGTQKIQAI...  
 BT3049 171 KST.VPALPSEQWTATEAED...GKLYIGHVEGGLSILSLNDKSKVHFVHDPQNPNSLPGNDVRC...  
 BT3302 168 VKKIHFEEV.QQM...AIDNFGVLWIFS.SDNDN...RSYIEKNG..N.QVKLVPS...  
 BT2971 150 VF.ARVQ...KGFVGRALYV...K.EITVWV.VTRKYLVVAISREDDLRQEL...LTLDKGNC...  
 BT0366 175 LSPVYLVNPGDIAL...KDI...EDGKIMWGNNGEIRKVALS...PQKRLVTTPIADCLKFEAGT...  
 BT1734 157 ...THVKNCLSEAINDIEQID...E.SHYIFG.TEMGIHHAQLKNNLQLLP...CDKLDNVNIOVNDL...  
 BT3738 165 ...QHMPKPVGDGAISTIEQAD...G.GHFFIG.TSGSLFCVGEKELKQIP...DEVVKSIVTVHEL...  
 BT4182 164 KKELGNLSSDKVL.FVYESN...SPGHVWIGTKQGLWYHGD...KLEAMDTQGESWEHI.FSYDQYTCI  
 BT1635 165 DQT...PDFRNFNITILSLW...E.ETVLCCSRWQGLLLNLKTGAYSRPP...FDCGKEIMS...  
 BT3951 160 MPDIKMLKVDVRA...FVT...E.GELYLFP.YESGDLYRF...SLNSFDQDTLST.RLTTPS...  
 BT0958 152 ...MRLPNLEDNITVVEQA...D.THFIA.TEMGVRYTQFENEALKVIP..LDMLDHVYQTQINSL...  
 BT3957 160 NIETPVENMDQRA...FVT...D.GVLWTFP.RNTGSLIQ...SLDGFDRDITLW.HPTVSS...  
 BT3678 178 ...DSRLRYVTIKSLLEDS...D.GDLWITWAQGLFRYSPSTDRVEIYF...KINDQYSSHV...  
 BT4124 169 YSSFKQNLKGDKI..YTVFE...SEGDEWILTNGKISII...GKKQVSDSF...PFQYI  
 BT0267 179 CKRYDSTLPTVTSVNSIYEDA...KNIWVTLWERGLHRYNSKTDSEFIAMP...QIGDLNPPFK...  
 BT2391 170 AGYFPFLDEGESFSLNLCASQ...GHFLYLVTDKGNLFFPKIAGK.VVRKFKYINPSANATTIMS...  
 BT3800 133 KTFQLLEEKGEVFSLLCYHE...KAGSGIWLTTNRGNLILFHPDTPG.AYQKIPLTDGKTLQVTSILN...  
 BT3172 165 NAN...SFKITALSVW...S.KTLCCSRWGTGLYLVLDLQTEGHRPP...FDCGPEITS...  
 BT4137 163 KSE...QNFNITALGLID...S.HTILCCSRWQGMVLDVLDQSGEYRRAP...FGAEKEITG...  
 BT2826 165 QDP...VYYNFF...WQMIRY...E.ENILLNSRWHGYSFNMKTYEVKKIE...SFTENNYTS...  
 BT3134 92 LID..KDNLKNNNPECICINE...Q.GEVWVGTSGIGLFPKYNRYRDDNFEQYLTD RMGR.SLIDKTIIS...  
 BT4236 172 EPLIK...GK.ITNLCT...G.KTNLIFYAVDREKVIHYDLVTKRSTVIREYDV...VNRFLD...  
 BT0981 171 DSRPNVNVYDLRLKHNVPCE...AEFINWIGMDYQILSLRKG...EALKDKPVDFIQKKSANFPDQFTCA  
 BT0138 150 LAA...CNRIMDLCLNE...K.SVLWLA.TVQGLFSYSL...KDGQINSWHFRENVP EADYFR...  
 BT3660 167 ...T...LPENEHRKLQDIHS...E.LAVYLF.YHTGEVVCYD...PKTGKQLYDRAAYPASE...  
 consensus>50 d.....  
 Sensor: D1

BT4673

BT4673  
BT2897  
BT2923  
BT2860  
BT4111  
BT3465  
BT4178  
BT2628  
BT3097  
BT3334  
BT3786  
BT4663  
BT3049  
BT3302  
BT2971  
BT0366  
BT1734  
BT3738  
BT4182  
BT1635  
BT3951  
BT0958  
BT3957  
BT3678  
BT4124  
BT0267  
BT2391  
BT3800  
BT3172  
BT4137  
BT2826  
BT3134  
BT4236  
BT0981  
BT0138  
BT3660  
consensus>50

```

.....
230 VRECEDDICFASDRGRIRWCYQKQGGEFRLLLELPTKARITSIHTVSNNGNTVVTTDSDGFFLCLNLTNKHHT
226 FLTADGDIYCYQTTK.....QKLTQVGLSLSAVAGKTSPTGNFLLNDKWWILNTNGVFNYDFNTRKISVDS
.....
227 ITGKKEIYRHSLSN.....NRLEKIASLTELGDTGVITGSLRLQHQVVMFTATGSYILDPTGKLRFRFSR
.....
218 KEADGIIYLVVSQSDKCLASYNFKTRQPKFIEIPYHVSMINEVKKFDSNTLLLATDNGLIYKIK.EKEFQL
.....
236 SYSSKFLWLGDKNHGIYSVDPQNGVNVRYEPEIDQPISNILVTVESGLMYITVDGAYEYINIG.YKQLTK
.....

```

Sensor : D1

BT4673

BT4673  
BT2897  
BT2923  
BT2860  
BT4111  
BT3465  
BT4178  
BT2628  
BT3097  
BT3334  
BT3786  
BT4663  
BT3049  
BT3302  
BT2971  
BT0366  
BT1734  
BT3738  
BT4182  
BT1635  
BT3951  
BT0958  
BT3957  
BT3678  
BT4124  
BT0267  
BT2391  
BT3800  
BT3172  
BT4137  
BT2826  
BT3134  
BT4236  
BT0981  
BT0138  
BT3660  
consensus>50

```

          β5,A      β5,B      β5,C      β5,D
          <-----> <-----> <-----> <----->
220 .....VNSLLEDTRQCVMVGTTEGYLFGQ.YFPSTGQIKQTEAFHNN.....SI.KS
228 .....LLPGPYNCMYVGTITG.LKEVNLTNKTVRTLLSKDES..G...DDIYV...RE
229 .....IVLGAYNCLYVSSLRKGVKELNLTSGKLRDLLSKDEN..N...EAIYV...RT
227 .....I..CEYG.DWILMAANEGLIKYNTKSHVLEDIKVAG.....ADNTF...YT
300 YSPVTCHELSAQPILSAYVDRTSEVVEEQEPEGVVVVHFNPATGVVRRQMRVEY...SNADRSRPAFH
320 .....CVLDVEGEVWLGAGNNLLGRLNRQTGTVENYMAPSLNF.....GAV...RS
291 GLNIRN.....GEVICDNHGDFWLYNHTGCVTYILAKNGARKEFQFOLPEDKLG...YIDYER...YH
203 .....KTNLIYQTSLIYCFNDEQSLYYIDKEFNFYAFHIPTQKNEF.IANLGKEIQERGI
223 .....IQLVMLPQNQLFNTPTQEVFVYININNDSLYPLA...AIKDIRQF.RC
203 .....IYEDSSKELWGSWEELRYRIRTNG.TIDNFRHDPKPNPNS...ICSDF..V.RC
208 .....HHTPLICSPYDDAAVYVDEKEYNLVAFHIESKKNF..IANLGANIQ.....AHDKI
221 .....LQQSPT.RIWWATEGAGFLINPKTKEIKNYLHSPSPKPS...ISSNY..I.RS
233 .....IYKDTNGNIWIGT.SKGLALFNANTETFTNFHNNPGNIHG...ALSSY..I.FS
214 .....NC.....LNHSEKLLWTFVDGDFLYFIDSTYALYEDLNNHKAYF.IADMEAEILRRGEV
201 .....ILGDSSGNIWVGAWN.GLYRISPNNRETTAYVSHS..GMGE...LSDNQ..V.RC
231 .....YISDFLSKENEVWISSDR.GLFRYKNTGNVIKRYEHDGSGNPYSLSQNYLTN.....
215 .....HFDPKIRKLFVGAFAERGMVYD...MNTKITQPEVSLKD...VSISR..I.KP
223 .....YHTVSKQLFVGSYKEGLLYD...IGTKITPCYAPNN...VEVNQ..I.VA
292 LNIK.N.....GNVTRDNKGNWVHNYTGNVWYVNTSTGDIKHFQFLSSEHLG...YIDVER...YS
219 .....MIIDSKNRIWVAPYNNGLYCFD...RNGKQLASVYTRNNS...LSNNV..I.LS
213 .....HFHSKQIQYVCYQNGVFCFVDSYDLFVYDISRKSIIY..IRNIGEMVH...KYCQ...I
210 .....YFHPQLHRLVGTFSDFTFAYD...MSAHQIIKSDTKLGD...VSITH..I.RP
213 .....DF.....HAK.PI.DNVFVQNGILCFVDAERELYVYDISRRSIIY..IRNLSLVQRYGK.V
231 .....IYEDSNKDIWVGSWYGLFKLQNPQDMQRVSYQRFLHENG...DSSLSLDNIYVD
287 IDIRTS.TQPSNVVQSVYQDHYKELWIFPQTGVIKRYNPSTKEMQHLPFADEVI...RYERKKNV..
236 .....VPQDNKKQHWLTLTWESGIFLLYPEEKDDLMYSHVDIKS...NEHWDKNGCF
233 .....EGEYIWISSIVGGVTRLHPTGKSDYQYQYNEADARL...SSLSHSDAYGV
197 .....RDGVVWVSTIGKIVRYHTKSGHMDRISYGGTQKE...NLLSHDQVYQT
215 .....MITDSKNRIWVAPYSGGLRCYS...RDGKLSASVYTHNNS...LSNDI..V.LS
214 .....MLVDSKQRVWVASYNVGLRCFT...RDGKQIALYTRNNS...LSNDI..I.LS
217 .....IYLDYKRLWVSVYNGLYCYQ...GD.QLIKHFASNSP...LTYDV..I.HD
153 .....I.....CFKKNAILGHEGDLKYNTRTDELSEVSVFLG...EKKTF...LR
224 .....I.....RQGYLWICRLWNDIVCYDLKS.HKERVSVLEGGDQ...PDFSNSVVTDM
305 LPF...SIAGKKVGMIFNDKYDKIWQEGNEALTYVYDPLNKSNNRFFPKQNAIG...NFEKQDAGEQ
204 .....LTRIGE.....TLVQGTMSQGVVCFDIP...KQIFAHTVSLG...CDVISD
217 .....QENFNRTSLVVKSKKGFVGLRNGRKGFFFYFNPQNRTEWELFEQNYTL.....NT
.....

```

Sensor : D1

$\beta_{6,A}$  → TT  $\beta_{6,B}$  → T.T  $\beta_{6,C}$  → TT  $\beta_{6,D}$  → TT TT  $\beta_{7,A}$  → TT  $\beta_{7,B}$  →

BT4673 264 LALD.GNGD.LLAGTD.NGLIYVYH...NDTTP.LQHII...HDSRNIQSLTNNI.IWNN.FAD.QEHN.TWLG.T  
 BT2897 272 IAFY.SDDE.LWAGTE.SGLIYIYNLRTRKTV.....HLRNVSGDPYSISDNAIYS.ICKD.REGGHWIGS  
 BT2923 274 LLVY.TDNE.LWIGTE.SGLIYIYNLRTEKTV.....HLRSSEYDPYSLSDNAIYS.FCKD.EDGHWIGS  
 BT2860 268 TVAY.MKKG.LWLGTF.NGLIYVIDEKKNEVV.....SLKEDLMRSFSLSDKMIYS.CQD.SEGGHWIGT  
 BT4111 365 IHED.VHGH.LWHPYGG.GFSYFDRDR.....NCLV.PFYDDLGSNNWRFSNKIHA.AFS.D.KQGN.TWLC.T  
 BT3465 263 LLKY.TENE.LLVGTD.NGLIYLFN.RESKTF.....LRADNPADPRSLSDQTING.MWD.AEGAT.WVLT.T  
 BT4178 347 IVHD.SRGI.LWISTYGN.GLIYFAYDTTE.....DKLE.HFLANINDQSHISSDFLLY.VME.D.RAGGHWVVS.S  
 BT2628 258 SSIVHYHNS.YFVGF.LMDGLILLEKQKQKTD.HYQIQSLPIN.....SGV....FCLKKDRF.QD.VWIGT  
 BT3097 266 ATTD.TMNN.LWLGTE.NGLIYFIYDQTFRLVT.....HYQQSESDLSNLNDSPIYS.LFED.Y.NHNWVGT  
 BT3334 250 CCED.NLGN.LWIGTF.HGLINRYDKSTGQFQLY.....TANDNKPDGLTHSSIWC.IVKD.E.QGT.WLGT.T  
 BT3786 258 SSIVKYHDS.FFVGL.LMMDGLVLTLEKQKQSG.EYQIQSLPIN.....SGT...FSLIKDRF.QD.VWIGT  
 BT4663 268 LAMD.SQNR.LWIGTF.NGLIYNIYHEGTD.SFA.....SYSSNPVENGLSQRSVRS.IFMD.S.QGGMWIGT  
 BT3049 280 IKQL.KDNR.LWIAELN.GLIMILDLOQNFLLPEQIRFEF.IREGDNNYSLSNASARY.IFQD.S.FNNWVGT  
 BT3302 260 SSIKQKTD.YFVGF.LMMDGLIQLKYMPSDKVKYSLQSI.VQ.....SGI...FCLMKDRF.QD.VWIGT  
 BT2971 246 VLED.DFKH.LWVGTF.KGLIDCYDPVTD.TWSHY.....TRYGSSNSLSHTSILS.LHKD.M.QGNWVGT  
 BT0366 281 .LAITDDKQ.LIVATLR.GLINIYNPMDNFERIACDLPNGT...NLLNSNFI...NCLITD.GEH.I.WVGT.T  
 BT1734 260 LNAK...ELL.IATDGG.GIYKMNVDY.TQTVFP.....IVADYNSYNGMNGNSIND.IYID.EEER.WMAN  
 BT3738 268 LNAK...ELL.IATDGG.GIYKMNVDY.TQTVFP.....IVADYNSYNGMNGNSIND.IYID.EEER.WMAN  
 BT4182 347 IIHD.SRDI.LWISTYGN.GLIYFAYDLNT.....GDLQ.HFTFEVSHSSHSINSYLYQY.IED.R.SGGHWVVS.S  
 BT1635 264 LAER...ENK.LWIGTDGG.GIYNIPELQGLS.LLEHIP.....GRDNYSLPANSILS.LYND.R.NNNWVGT  
 BT3951 265 TGIVPFYED.IVIAFQTN.GLIRLRLSQ...KYAEEIIDQN.....MRI...YGLYD.SR.QGGMWVGT.T  
 BT0958 255 LNQK...ELL.VATEGM.GVHKIDVNTCNTSPF.....IVANYESYNEMNGNIN.TIYID.EEER.WMAN  
 BT3957 265 VGVIPFYED.IVIAFQTN.GLIRLRLSQ...KYAEEIIDQN.....MRI...YGLYD.SR.QGGMWVGT.T  
 BT3678 283 IAEDINTHT.LWVGTR.SGLISILKLDPEDAFINYKSG...KTDYRIPS...DEVNS.TMRD.AQRN.WVGT.T  
 BT4124 350 IFED.RQHT.LWVLP.LPEGLISYLDREN...KELK.PMLKDSNPKSVFSPVLRVFT.LD.N.QGNWVGT.T  
 BT0267 285 ITQDDKYGY.IWIVST.OGLIYALQKRPENIIN.....TVDISHISSKLNIFSE.IVKD.K.SGNWVGT.T  
 BT2391 279 VALD...ND.SYIAVTWNG.YTLLAPEEND...PSKLSATPYINTSFLQYRNVTERRMIS.VYD.K.EGILWVGT.T  
 BT3800 243 IFIG...NN.RYLAVTWNG.YTLLAPEEND...PSKLSATPYINTSFLQYRNVTERRMIS.VYD.K.EGILWVGT.T  
 BT3172 260 LAER...EEQ.LWIGTDGG.GIYNIYHEGTD.SFA.....SYSSNPVENGLSQRSVRS.IFMD.S.QGGMWVGT  
 BT4137 259 IVER...KGO.LWIGTDGG.GIYNIYHEGTD.SFA.....SYSSNPVENGLSQRSVRS.IFMD.S.QGGMWVGT  
 BT2826 261 IMER...DNQ.LWVATDGG.GIYNIYHEGTD.SFA.....SYSSNPVENGLSQRSVRS.IFMD.S.QGGMWVGT  
 BT3134 194 DVMC.FGDE.LWVGS.LHGIF.IINEKENNVI...HLKEDLMRSFSLSDNSIYS.IYKD.Y.EGGHWVGT  
 BT4236 269 VMKD...KQ.TFY.LTWDGLIYKLFENLNCESPF.LTLLTQGERAFHSRIENKMTS.LLWDR.QQILWVGT  
 BT0981 368 .....MFF.LTP.GGLILLFDRKLEMRINQLKPFSDDL...PD...QLFFH.LLD.KDGLWVGT  
 BT0138 264 ISGD.GKET.VYI.LATDGN.GVHFLS...HKDRKVVRRFHDVNDKEGIRSNISY.LLV.D.RGAWVWGH  
 BT3660 247 LIITPQGD.KAYI.LSCVHG.FWIIDLESREQQYIPVLETK.....KGLVSTEVST.FQD.A.QGGMWVGT  
 .....i.....g.....D.....q.....W.....

Sensor: D1

$\beta_{7,C}$  →  $\beta_{14,D}$  →  $\alpha 2$  →  $\beta_{8,A}$  → TT  $\beta_{8,B}$  → TT  $\beta_{8,C}$  →

BT4673 324 DY.GC.SLSRYNSALQFIPIS...QITGTGDGNQ...FYSLFRDSKGF.YWFG.CANG.LTRFTDP.AGERHD  
 BT2897 332 YFGG.NYYPKYTYFD...KV...YPR...TEIDEMGKR.VREFCADHDGT.LWIGTEDKGLFHYYP.STGLIE  
 BT2923 334 YFGG.NYYPKRYTYFD...KV...YPR...TEIDEMGKR.VREFCADHDGT.LWIGTEDKGLFHYYP.STGLIE  
 BT2860 328 LFGG.NYLPNRRNLQFD...KF...VPGS.SGNSLNTKR.IRELAEDVKGN.IWIGTEDA.GLSVLNV.ENGVI  
 BT4111 426 HSKG.EKVTFRRNVPPSMLT...PVPHEYE...SLSN.EVRSVCEDKQGN.LWVGKDKG.MIRLYD.SNRKFI  
 BT3465 322 NLGC.LNYSKQTKRFD...YY...SPAYLSGIAGAGEV.VGPFCEKDKGN.IWIGTQ.SGLYFFNT.VIRELS  
 BT4178 408 EYSG.LSRISVLNEGTSRIY...PE.SRELFDRSNT.IRMLTKMPDGG.IWVGTRKGLYTFD.SNLHSK  
 BT2628 316 DGGG.VYLYS...NPLYSIKSMVLSNYTEKIERP...VRAIYLDDERT.FWVGTKGN.GILKIYDYEPDKNI  
 BT3097 326 YFGG.NYFYASDQF...RI...YPYGNPNHLSGKAVRQIINTPDNG.LYIATEDDGLNLYNS.NREITR  
 BT3334 310 YFGG.NYFYFPEYEIYT...RY...KVGDTKEGLSSPI.VGRMTEDKDKGN.LWIGTEGGGVNVYNR.KNNTYR  
 BT3786 316 DGGG.VYLYS...NPLYSIKSVLVNNTYTEKIERP...VRAIYLDDERT.FWVGTKGN.GILKIYDYEPDKNI  
 BT4663 328 YFGG.NYFYHP.IRNRFKNIRN...IPYKNS...LSDNV.VS.CIVEDKDKN.LWIGTNDGGI.NLYNP.ITQRFT  
 BT3049 348 WGGG.LNFISNAPP.FFHTWSY...SPTQMNESSLSNKV.VSSVCCDDGQGLWIGTDGGI.NVFNEN.GKRVAI  
 BT3302 327 DGGG.LYMYF...TDEFSDINMLDVPEYRVDNP...VRAIYLDDERT.FWVGTKGN.GILKIYDYEPDKNI  
 BT2971 306 YFGG.NVFNFDKNNHS...FY...CAEPLREDCLSPFV.VGKMTEDSAGN.VWIGTEGGI.NCYHG.DTGIFS  
 BT0366 342 ETGG.LNLLNPRQL...SIRSYRHDKENPSSLSYNP...VNAIYEDVYGT.LWVGTEVEGGLNKRKERNSEDFTH  
 BT1734 319 YPICTI.IQNRRYPYKWKIKH...SVGN...KQSLINDQVNSIIEDESGDLWYGTN.NGILSQDS.KTGKWR  
 BT3738 327 YPTCTI.IRNNRYGRYDLIKH...SLGN.NRSLVNDQVHDVIEDSDGDLWFA.TS.NGISFYOT.DTREWC  
 BT4182 408 EFSG.SHLEILNKGTLRIRY...PNGEDASDRSNT.IRMLLRGKNNGVYMANRMG.TLYEYD.ADLKNI  
 BT1635 325 IRNG.LSIREVSMVYTYT.DV...VPGN.DRGLSNNT.ILSLYQQSDDKI.WIGTDGGGV.NLFPN.LTEKFT  
 BT3951 320 DGGG.AIMYS...KKYSIATNLMLNSFSPNLTRQ...VRSIMTDKYGG.LWVGTKGDGLLHVKNYRDGVHA  
 BT0958 314 YPACTI.VVDFFRYKRYRWIKH...SIGN.KQSI.VNDQVHAVIEDSEGD.LWVGTS.NGISFQDS.KTGQWH  
 BT3957 320 DGGG.AVMYA...KKYSIATNLMLNSKLSNLSRQ...VRSVMTDKYGG.LWVGTKGDGLLHVHDYEGGMDA  
 BT3678 344 IGGG.VLMADTRQSTFA...LY...TLNFGDEDIP.VTSVRTLFADSDQN.LWIGVGTYGLACREY.ETGKGL  
 BT4124 410 STRG.LYKLSF...FPHTYNLVHIDNGFE.TRAFLCDNEKRLWVSKAQMIRVYQ.PDGQLE  
 BT0267 345 FNEGVSMIDLNKPLVQ...NY...SFPVIREKTGFVTN.IKNIYEDKEGD.LWIGDQNRWGI.GIYNP.DSNKLL  
 BT2391 343 RGGG.VYFDFRQHSYMQYHS...KKNHE.ISAQVADKDR.LWIGTYHGGI.MRSDQ.....  
 BT3800 307 NGGG.VMYSDLRSQFYDRYQ...DRHNE.ICDILMDDSHRLWLATYHKGI.MRSDI.....  
 BT3172 321 TCNG.LSIREVSMKTYT.DV...VPGN.DRGLSNNT.ILSLYQQSDDKI.WIGTDGGGV.NLFPN.LTEKFT  
 BT4137 320 IYSG.LISVREVMQAYT.DA...LPNN.KQGLSDNI.VLSLCQESGHLWVGTINGGGI.NCFNS.LAGEFT  
 BT2826 321 IRRG.LIGIKNVYACSQY.NV...PFGN.LYGLSNQITNSFFQDSDGI.VWVGTDGGI.NRFDV.VSGTFK  
 BT3134 254 MFGG.NYLPNRRILTF.A...KY...VPGS.DSYSLNTRK.IRGLAEDNNGC.IWIGTEDN.GVNVNDP.RTGKVB  
 BT4236 336 FGGG.VVKFDISDSMYSRVQ...NFKSR.VDGMVEDAKGYI.WLITVDDGI.MRSTT.....  
 BT0981 421 TSGG.VYKVNFPKKQFQLLTEVSPVVDTERATSNWQ.IRALYQAKNGD.LWVGTRWQALYRLD.SNGQIK  
 BT0138 306 FQA.GLDYSLYQNGLFRTYAY...PPQFNSANL...SIRSFVNRG.PEKVIGSRD.GLIFYINE.ATGIVK  
 BT3660 328 LNRG.LYHHPATHKLIHVSRTA.FPASPEEDVA...VK.....d.....v.....g.....d.....  
 .....G.....d.....v.....g.....d.....

Sensor: D1      Sensor: D2

$\beta_{9,D}$  TT  $\beta_{9,A}$  TT  $\beta_{9,B}$  TT  $\beta_{9,C}$   $\beta_{9,D}$

BT4673 385 AIWYRMGDKTYPLS...HNRIRHIYED...KEQQDWIAT.DGSIINRYDYATRQFIH...YNIIVD  
 BT2897 394 PFRHPDI...HNVHVGICLDD...GNYLWVGHFAKGLNRIIDLRT.HAVK...HYF...D  
 BT2923 397 FFAPSAG...FTNIHGICLVD...DKLWVGTFSKGLKVIDTRS.GVVL...KTYQKND  
 BT2860 391 QVKDKHSG...NHLVTLAVVPFQD...QIYCLFLKAGLDVIQVPG.YTVR...HYT...P  
 BT4111 488 GHLTNGTISMTG...TPMEGTAYFIMQD...SKGIWVIATKNGLVRAEQISPTSMYKLTTRYQHSDN  
 BT3465 385 EYHIGGV...KSQKYDIRSLMLD...GDCLWIGTYAEGIRVLNLR.TGSIK...EYTHSRG  
 BT4178 470 MSN...QYFHSNIYAI.AED...NQGEMWVGTTRNGL...KIG.DSW...YRNEVS  
 BT2628 379 SDCRAEVLTTNSALS...S...SNAVYCFAKSH.RNLLWIGD.EEGLTYYSY.REKRKIKSIPIRIGNEDF  
 BT3097 389 SERLHERMNIK...ARNIHSLLIDS...KQNLWIGLFLRGMNYMYPKE.NRTL...SFN...D  
 BT3334 374 WYRHEEGKNSIS...HNNVKAIYYDR...TEEIMWIGTHLGGLNKLDLRT.NRFT...VYRMKAG  
 BT3786 379 SDCRSEILTTNSNSGL...G.SNAVYCIRESN...RNLLWIGD.EEGLNFYYSY.RERRIKKLPWIDNEEF  
 BT4663 391 SYTLQEDESARGIG...SNNIKAVYVDE...KKSLLVYIGTHAGGLSILHRNS.GQVE...NFN...Q  
 BT3049 414 YNKENRELL...SNSVLCSLKDS...EGNLWFGTYLGNISYNTRL.KKQF...IIE...L  
 BT3302 390 LP.RAERILASNSPL...M...DNSVYFAPSR.RKLLWIGT.EASGLNYYSY.SQKRIQEPVMDGKVM  
 BT2971 370 RYMYHKGDQGTGLG...SNNVKSIFYRK...ENNRUYAGTHLGGFLVLDLKS.NKGH...TLHHVVT  
 BT3066 407 YT...REHGG.L.SHN.SVSALTD.TDNHLLWIGTWGGGLNLLDLKAPRQLEVISSQGGGF  
 BT1734 382 SFLSTFENVQNS...KNHIFTLLCEV...SPGITWAGGYFSGLYQIDKRT.SKTT...YFTPASYA  
 BT3738 390 SFFSFPDPVPDD...ENHIFLALCEV...SPGVWAGGFTSGYKIEKKKGFKIS...YLSPAIAA  
 BT4182 470 LRR...EKFTHNVSVMCED...NEGQLWLGMRGIG...RIGADQW...YRYSNK  
 BT1635 388 HYLTSWED...KVASICQF...TPDKLLISLFSQGVFVFNPTGKQ...FTIIGNEDF  
 BT3951 383 SNTVEYSLDKKQAMSYVKQNRQFQVSMLESRYRNGFWVGTGSSGLCYYSF.DNGKLHLSNRETGTGR  
 BT0958 377 SFLSSYDKQLKD...KNHIFITLCEV...SPGVWAGGYTSGYKINKRT.LSVE...YFSPFLLS  
 BT3957 383 SATTVYSPVGRQDASSYTRWNREFQAYSLKQSRYMDFWVWGSNGPLFYYSF.ADKALHCVEDKSDAPVI  
 BT3678 407 MYSHIPEFSGKLD...LPSLFAVTRK...KSGEWFPGMYNGGIVYVYR.KG.EKVK...HL...TTK  
 BT4124 466 GYLTLPQKISKDK...QSFT.SVYCFLED...HEGNLWIGTKENGIYLLKKKSPDS...YSVQQFTHQPN  
 BT0267 409 FYTDPISLKNIAN...LKNVSCITVSP...LLNEIWLGSYYPPIYKVKKD.KKGV...ELLGTLLK  
 BT2391 394 PYAKSRPLNFSFVPG...NQKEVPVFCATKDCSNLWFGNASGNIICYDWSDDSFHI...YPLN  
 BT3800 358 PYAKGKKSLSFSKVD...GSGKSEETMLCALKDVDGNLWFGNINGTLYVYHVTRGRFVI...HSSL  
 BT3172 384 HYSSWGD...KVAFISGF...TPGKLLISLFSKGVFVFNPATGKQ...FTIIDKKEV  
 BT4137 383 HYPSTLGD...KVASICGF...ASGKLLSIFAQGFIFDFPVTGNKQ...FTIIDKKEV  
 BT2826 384 HYPATKYE...KVVSIVEY...TPDELLFFSFKGLFIFHKKTQIRP...FVLDKEM  
 BT3134 317 QIYDNVP...GRLLTSLVHK...YENHIYVGLFKQGMNDISIPG.EHLK...YVS...D  
 BT4236 387 P.SFSMDTHFEPWKK...VSGLSGRYHIYK...KDGNIWLGNNFGEIISVNPLTEDVES...PQLKN  
 BT0981 489 QVFTDQN...YLGAVYHIMED...KEGNLWFTKGNGLVKAEPDMNSPHGLRFTRYKNDPK  
 BT0138 366 SFVKPVLTSDL...ILTICFY...EGEYIIGTYGGGMVNLNPQTLSLKY...FTQG  
 BT3660 377 STIYQLAVDQ...DGSRTLLPVPASSVSAELAKELDQR...G  
 consensus>50 .w.g.g

Sensor: D2

$\beta_{10,A}$   $\beta_{10,B}$   $\beta_{10,C}$   $\alpha_3$   $\beta_{10,D}$   $\eta_2$   $\beta_{11,A}$

BT4673 439 NTGTYNTNWYYIFEDTAGDWTSTCLGGIFVVDKHKMLMQSTSGQYIAEQNYSVHNGLSGMF.INQIIPD  
 BT2897 439 AP...NDFSI CRTTSGNLWLGTT.AGLFRYHSET...N...RFER...VPELGVVF.IYNIKED  
 BT2923 445 SPRSLIDNSFAICTATGDYLGTT.FGLVRYNKQS...D...DFDR...IPELNGKF.IYDIKED  
 BT2860 438 SELKIGEGSVYVPHIDRKRKWLGTG.WGLYVAEAGS...F...NFVN...VKETGYNV.IFDLCEG  
 BT4111 551 DMYSLSDNNVYCVYEDDHHGRWAATFAGGINYISQGE...HGETVFINHRNNLKGYPIDVCYKARFITS  
 BT3465 436 IPNTICSDNVLCIYKDRKGEIVGTS.WGLCRYNPDA...D...NFMT...ITSIGMSIVGDIED  
 BT4178 512 DPASLSENVFSLFRDRKDRMIGTFGGGLELAEP...DGKYKFRHFL...QKFGFLRM.VRIEED  
 BT2628 440 KY...IHGIYETADSELWLASVGMVVKARITAGTPDNP.VIVDAQRYVINDGELGNSY.FFTIYAE  
 BT3097 439 GMGK...NSSGFCIIEDETKIYVGGP.SGLFTLKKQN...G...SFQL...KVSALP.VRYMLNL  
 BT3334 429 DPTTLPSDIIYRDI.VPYEDKLIATQ.NGVCLFNPAT...G.TCEHLFKDTRKGRNIGM...VASLYID  
 BT3786 440 KY...IHDIYETEDSELWLASVGMVVRARIGGTPDHP.VLEKLQRYVVGGEFGNSY.FFTICKG  
 BT4663 445 RNSQLVNVNVIYAILPDGEGNLWLGTL.SALVRFNPEQ...R...SFTTIEKEDGTPVVSQK.IITLFRD  
 BT3049 462 EKNEILLDVRV.F.YEDKNKKIWTGTH.AGVFVIDLAS...K...KVIH.HYDTSNSQLLENF.VRSIAQD  
 BT3302 450 KY...VHVSRET...NDSTLWVVSAGEGIVKIILDATSLP.KVKSARRFTLDGGRKNSNY.FFVSFQE  
 BT2971 426 DPASLPHEIYVNDI.QEYKDGIAMLTQ.GGPVFFDPVT...E.KFSPPLTDDPSVQKLI.SREYAFETFLID  
 BT0366 463 PINF...IGVLNYDPINEGIVIGANO.GLYFYDVPVKEITA...PLPDKAENIHGICIGSIID  
 BT1734 438 HESIRPDKYIRDIRKDSRGYVWSGGY.YNLKRINVT...K...DIRLYHGLHSVTAIEE  
 BT3738 447...GIRPDQYIYDIKKDSSGDVWSGGY.YHLKRINLET...K...NVRLYPGVSSITILE  
 BT4182 513 DNNSLSDNNVYLIYDRDRKGRMIGTFGGGLNLAVKTG...NG.YQFKHFQDSYGEKR...VRIQED  
 BT1635 438 TTRLCNRGKAVNLYQNSPDNVLVLDG...HVVYQYDLNK...R...TFRIATEQEGQDII.GAL...LPITN  
 BT3951 452 EVAE...VHSIFEESDVLVLAISGKGFYKVIDNSKQDV...QIKSWKNYRFYHEQQLNLFYSMVPQ  
 BT0958 433 SVNIRPDKYIRDMIKDSKGYIWSGGY.YNLKCIDPRK...N...TVRLYP...GVNTVTAIEEK  
 BT3957 452 E...IHDIYEENDSVLYAVTAGVGRKLI.LERKQGEI.HLKSQKRYHFFYEQKEITMF.YPMLAE  
 BT3678 460 NSGFLTSDCVSALYEDYEGNCWVGTGTR.GG.IGVRLAD...G.TDYRFETMNFNDSLSAGWIYVRDIK  
 BT4124 526 MPYLSLGSNVSYSIFQDSHKRIWIGCYGGGINLLTYNK...DGKTEFIHSDNELLKNTGYASKVRHISEA  
 BT0267 466 TDYVDNSGFRFLFYDTSNHNWVGTGTR.KG.ILVKPAK...E...KILQDTKFFVVDIIG...IREG  
 BT2391 451 YLGGKVNYSYIVALMIDTRYRWFVCTS.AGLYLFDRQGTGH...FELFSLREALKEDAEPW.VTAICED  
 BT3800 418 VDGVANRASVWALYMDKRNLYVGTGTE.DGLLLYNRQTGI...CVKLSAAHYLNEKRQPF.IRAIAQT  
 BT3172 434 TTRLCNRGKSVNLYQNTPTVLELGD...HIYQYHLKE...K...KFSTIEEBGKDI.VGTL...VFPDH  
 BT4137 433 NERLCLHGNIVNVYRNTPTVLELGN...HVYCYHLKE...K...QFSIVSEERGINIEGSL...KAIAIC  
 BT2826 434 NDQTCINGFSVNIQRITKTKILFSAQ...HFIFYDMVT...R...KFDIVATM.GEEYERHSP...LIAT  
 BT3134 363 KDLGIEEGSVYSFLKDSKGRTWIGCPG.WGLYVSQPK...R...KFHR...VEEVGYNW.VFDIMEA  
 BT4236 445 SEGGRMQAVVHCFCLDSNRLWVGTGTS.NGLVQVDPKTHG...CKNIKLPGEIKN...VFAITED  
 BT0981 445 NPNSISNNDVYFTYQDSQERLWVGLLGGGLNLISE.E.NGTLVFKHKYNGLQYPAYGLYMEVMTIED  
 BT0138 413 DTELFQKGHIFCVKFPDRGNLWIGTS.QGLFCYNGQTK...QIKNFTSINSQLEPGNVY...EVSFD  
 BT3660 413 GNKYRGGQSTALCTDTRGWLWAGTA.DGL...ELFTDQEQ  
 consensus>50 .v.d.g

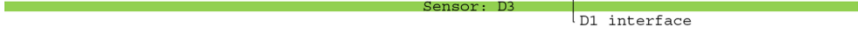
Sensor: D2



**BT4673**                     $\beta_{13}$   $\beta_{14,A}$   $\beta_{14,B}$   $\beta_{14,C}$   $\beta_{D3,A}$   $\beta_{D3,A'}$   
614 MDAR.QQNMTNKRFTS **T**LD**F**DPK.EDC**V**Y**L**GG**A**D**G**FG**I**SHSNLEATYQPERP...**F**LL**T**A**L**Y**T**NNQLVSPRT  
610 ANGL...LSNQFN**Y**Q**S**SYK**D**.NGR**I**Y**F**GS**I**NG**F**IS**F**EP**S**V**F**VD**N**DF**L**PP...**V**V**I**DT**D**FM**L**FN**K**K**V**P**V**GS  
621 ANGL...LG**D**Q**F**NYR**S**S**F**ED**E**.NGM**I**Y**F**GG**I**D**G**FI**A**FN**P**K**D**F**S**EN**K**N**L**P**T**...**V**V**I**DT**D**FL**L**SY**L**ND**E**Q**E**V  
614 KDGL...LGNQFN**Y**KS**A**L**K**AR.NG**K**Y**F**GG**I**D**G**LV**A**FD**P**RE**A**K**T**DD**F**V**P**P...**I**Y**I**SK**F**S**I**Y**N**KE**V**T**V**HT  
614 RSIS...FR**V**RF**S**E**A**ST**L**TS.GG**D**ML**F**GT**S**N**G**LF**M**F**P**DS**I**R**K**SS**V**VP...**V**V**F**SK**L**M**V**AN**E**D**V**IP**G**.  
612 NDGL...QGNQ**F**MA**R**SS**L**KS**S**.EG**K**LY**F**GG**I**NG**F**NV**F**Q**P**ER**F**VD**N**SY**I**PP...**V**V**I**DT**D**IR**L**SY**L**ND**E**Q**E**V  
617 SSYT...LGN**V**Y**S**EN**S**AC**V**GV.DG**K**LF**F**GT**N**Y**G**LL**V**ID**P**DK**I**Q**D**SE**T**F**S**P...**V**V**I**DT**D**LS**I**NG**T**Q**I**N**P**T**M**  
617 GDGL...KV**V**E**F**SD**G**AA**F**RD**S**RT**G**TL**F**FF**G**GIN**G**V**V**A**I**RA**D**GR**E**Q**L**Y**M**PP...**V**V**I**DT**D**LV**I**F**G**E**Q**Y**N**LG**E**  
617 ADGL...PT**N**Q**F**NY**S**SV**C**KK**P**.DG**E**LF**F**GT**I**NG**M**IS**F**Y**P**E**Q**V...**R**P**V**E**P**H**F**N**I**AL**T**G**V**W**S**NN**D**V**S**SS**N**  
612 ENGF...PL**T**AV**N**EN**A**L**F**V**T**H.DG**E**V**L**GG**I**Q**G**M**I**S**F**W**E**KK**L**H**F**T**P**K**S**Y**S**...**I**IL**S**RL**L**V**N**G**K**E**I**T**A**G**D**  
617 GDGL...KV**V**E**F**SD**G**AS**Y**RD**P**Q**T**GT**L**FF**G**GIN**G**F**V**A**I**Q**A**D**GR**E**Q**L**Y**M**PP**...**I**Y**F**DK**L**LV**I**F**G**E**Q**Y**N**LG**E**  
623 SDGL...Q**S**NQ**F**NT**A**SY**C**RT**S**.V**G**O**M**Y**F**GG**I**NG**I**T**T**FR**E**LL**L**DN**P**Y**T**PP...**V**V**I**TK**L**Q**L**FN**K**V**V**R**P**DD  
637 SNNI...P**Q**GS**F**IS**G**CV**T**K**D**H.NG**L**IY**F**GS**I**NG**L**CF**F**NP**D**IA**N**SP**Q**IP**P**...**V**V**I**TK**L**VR**I**PG**R**L**T**S**R**E**K**  
626 QGDL...E**V**IE**F**SD**G**AF**F**K**D**Q**T**GT**L**FF**G**GT**N**CP**I**T**I**SE**N**D**Q**L**S**E**E**Y**M**PP...**L**H**F**NR**L**LV**I**F**G**KE**C**NI**D**  
610 YH**L**F...R**Q**T**Y**N**L**GS**A**LY**R**SK.NG**I**Y**I**S**G**T**N**GL**A**MF**Q**ER**S**F**Y**ES**Q**V**K**S**F**...**L**N**F**DK**L**VR**I**FN**E**D**I**AP**G**D  
617 QDGL...I**D**T**Q**F**Y**WN**A**SC**G**SS.HD**L**IY**F**GS**V**GL**V**A**I**ES**N**RR**P**AM**S**LP**A**AK...**V**RF**R**LR**I**FN**E**E**I**LP**G**  
610 EMGL...M**T**TH**F**N**A**LS**G**TL**R**R.NNN**I**Y**F**GS**S**D**C**A**I**E**F**PN**K**DM**K**LP**R**TY**S**SK...**M**IF**S**D**F**FK**L**FY**Q**TY**P**PP**G**  
614 EQGL...M**S**V**N**FN**A**GS**A**TT**Y**S.NNN**I**Y**F**GS**D**CA**V**PK**F**PT**D**IE**I**EP**E**Y**S**R...**L**LL**R**D**L**V**I**A**Y**H**P**Y**P**GG  
614 SSHT...LGN**V**Y**S**EN**T**AC**I**NA.DGR**L**LF**F**GT**N**Y**G**LV**V**LD**A**N**K**V**E**N**M**E**K**L**A**S...**T**V**F**T**G**L**H**NG**A**H**M**L**P**G**M**  
605 SDGA...IQ**N**E**L**YS**K**PR**L**LS**S**.H**G**D**V**Y**M**GG**V**KG**L**LL**H**INS**N**LP**A**T**S**E**L**PK...**L**Q**L**S**D**V**I**V...**N**  
633 SGGI...Q**I**GE**F**S**D**AY**R**CP**Y**T**G**CF**L**Y**F**GG**I**NG**L**LY**L**D**K**K**V**SA**A**PE**Y**PE...**I**LL**R**K**L**I**E**K**T**FF**N**VL**N**Q**D**  
601 EQGM...M**S**AC**F**N**A**T**S**GA**L**R**K**.NN**N**V**F**FG**S**VD**G**AVE**F**PA**G**I**K**LP**D**Y**E**Y**S**K...**M**IF**S**D**F**H**I**SY**Q**PI**Y**PP**G**  
631 AAGV...Q**V**GE**F**S**D**AY**Y**Q**C**P**Y**T**G**RF**L**Y**F**GG**I**D**G**LL**Y**L**D**KE**V**A**T**A**P**E**F**Y**P**N...**I**LL**R**K**L**I**G**R**K**E**V**LN**L**G**D**  
624 RI**Y**T**S**AD**G**L**Q**DN**F**IV**N**SS**C**.S**R**.NG**E**LF**F**GG**H**K**G**Y**N**S**F**FP**D**K**M**E**I**PS**Q**ET**N**...**F**L**I**T**D**IK**I**FN**H**S**F**SN**L**P  
744 NS**L**H...Q**E**F**S**F**S**E**A**AP**V**INA.RN**O**I**V**FG**T**DK**G**FI**E**ISS**K**EM**Q**KS**S**V**P**P...**I**V**F**T**G**L**K**V**O**...**G**  
644 M...T**D**V**M**V**N**S**F**MP**N**SY**Y**K**T**R.SG**K**LY**L**GG**N**K**G**IS**V**FT**P**Y**D**H**L**S**D**N**P**RR**I**R...**T**M**V**S**D**V**K**I**D**G**V**S...  
632 SSSN...K**S**V**M**.L**F**.K**N**T**L**FG**N**KN**S**LT**Y**FE**P**E**I**L...**T**S**A**T**I**AS**K**T**L**L**T**G**V**LN**K**P**I**NI**G**E  
600 AG**S**N...I**Q**NE**Y**LP**N**AR**L**V**N**E.QG**D**AY**I**GG**V**KG**M**LR**I**D**G**Q**L**L**N**T**S**EM**P**E...**L**Q**L**D**I**IT**I**...**N**  
601 S**N**GA...I**Q**NE**Y**LP**N**AR**L**V**N**E.QG**D**AY**I**GG**V**KG**M**LR**I**D**G**Q**L**L**N**T**S**EM**P**E...**L**Q**L**D**I**IT**I**...**N**  
610 T**D**GA...V**P**NE**Y**FP**E**AR**L**LS**Q**.K**G**D**I**Y**G**GV**K**GL**L**H**I**D**G**K**L**P**R**NT**N**.P**Q**...**L**Q**L**S**D**V**I**I...**N**  
599 V**D**GV...L**P**NE**F**IF**H**AT**L**L**A**K.NG**D**V**F**GG**T**T**G**MT**V**INS**A**V**H**FD**T**D**E**D**Y**T...**V**EL**L**D**V**LL**I**...**N**  
539 K**D**GL...LGN**V**Q**F**NY**Q**S**A**L**K**A**Q**.D**G**R**F**Y**F**GS**V**D**G**LI**A**FD**P**T**V**Q**E**E**E**K**L**PP...**V**Y**I**SK**F**S**I**Y**N**KE**V**T**V**HT  
620 SV**G**N...C**S**AV**C**RL**N**.D**G**R**L**W**A**NS**W**GL**I**FD**P**S**A**T...**K**G**D**S**G**K**H**L**M**L**T**D**V**GG**E**T**V**L**A**G**E**  
740 Y**D**GF...L**N**VE**L**E**E**GS**A**L**R**A**L**.N**G**D**L**W**L**GS**R**Q**G**IL**T**F**S**P**D**K**L**E**T**Q**H**T**N**Y**D**TR**I**V...**D**FK**V**SN**R**N**L**RS**L**  
588 F**N**D**G**V...P**G**P**T**T**N**GA**Y**K**F**S**D**.R**G**L**I**Y**F**GN**T**K**G**LL**Y**V**D**P**K**Q**V**D**E**V**R**G**K**VR**P**...**I**V**F**DT**IL**AN**G**V**S**IN**K**SS  
614 F**N**Q**L**D**G**A.L**E**E**E**Y**I**Q**G**A**I**F**E**S.D**G**L**W**Y**F**GG**I**D**G**FT**I**FR**P**D**H**K**S**A**T**P**G**L**P**Y**K**...**E**V**F**FN**L**I**H**Y**G**E**K**V**T**NG**E**  
consensus>50                    . . . . . f . . . . . g . . . . . fg . . . . . g . . . . . i . . . . .



**BT4673**                     $\eta 4$   $\beta_{D3,A'}$   $\beta_{D3,B}$   $\beta_{D3,C}$   $\beta_{D3,D}$   
680 RD...D**V**PN**I**R**Y**T**N**S**T**K**L**K**Y**D**Q**N**N**LS**F**EL**S**DL**P**Y**S**LD**E**KN**K**F**V**Y**R**TE**G**M**D**KE**N**FL**K**SN**I**N...  
673 ...T**D**SP**L**Q**S**IT**L**SD**Y**EL**Q**SN**Q**N...**S**F**S**F**S**VA**A**LS**Y**Q**S**P**D**M**N**T**V**L**Y**K**L**E**G**Y**D**SE**M**Y**S**V**G**K**N**...  
684 ...P**N**S**P**L**E**K**S**IT**F**SD**K**IV**L**R**A**D**Q**N...**S**F**S**FR**I**S**A**LG**Y**Q**A**P**R**M**N**K**L**K**Y**K**L**E**G**F**D**DE**M**L**S**V**G**ES**P**...  
677 ...A**D**SP**L**KE**C**IT**H**TD**R**IV**L**NY**D**ES...**N**IS**F**D**V**ALL**S**Y**S**T**A**E**A**N**O**Y**Y**Y**R**MA**P**I**D**K**D**W**I**KA**A**T**N**...  
808 ...E**K**S**I**L**K**V**D**LD**D**T**Q**EL**V**L**S**H**D**EN...**I**FS**V**Q**Y**A**A**LD**Y**T**N**P**O**N**I**Q**Y**Y**I**LD**G**F**E**K**Q**W**T**F**A**D**R**Q**R**...  
675 K**K**.L**L**Q**L**G**K**P**I**Y**M**AD**K**IT**L**S**Y**EN...**S**FT**I**RV**F**V**A**LS**Y**ED**P**AR**N**RY**S**Y**M**L**K**G**V**.D**K**E**M**.IT**N**SEN**N**...  
762 ...G**D**SP**L**Q**S**L**A**Y**S**DE**I**T**L**K**Y**F**Q**N...**S**FL**I**D**F**S**T**F**D**Y**S**D**S**G**R**I**K**Y**M**Y**L**EN**Y**D**K**G**W**.S**T**P**S**PL**N**...  
681 F**L**...L**T**RR**K**ET**E**V**L**N**L**Q**Y**D**Q**N...**F**F**S**V**S**F**A**SV**D**Y**L**NG**N**CT**Y**F**Y**K**L**K**L**S**D**Q**W**.V**N**GS**E**S...  
669 ...P**D**ALL**P**AS**I**ES**D**VM**T**L**T**HE**Q**A**Q**S**I**R**I**E**S**GL**N**Y**Q**Y**K**D**K**T**O**Y**A**M**K**L**E**G**I**.D**K**E**M**.Q**V**N**G**Q**H**...  
675 ...D**T**G**I**L**E**Q**S**I**A**Y**T**PE**I**S**L**K**A**D**Q**S...**M**FS**I**E**Y**A**T**SN**F**IP**A**NR**N**E**I**Y**R**L**E**GF**S**DE**M**N**H**T**D**R**K**Q**T**...  
681 F**I**...L**T**RR**K**EN**E**V**L**N**L**K**Y**D**Q**N...**F**FA**V**S**F**T**S**V**D**Y**L**NG**N**CT**Y**SY**K**L**K**L**S**D**Q**W**.I**NN**G**K**E**S...  
686 ...E**T**G**I**L**T**K**N**IS**E**T**K**S**I**T**L**K**S**W**Q**T...**A**FS**I**E**F**V**V**SN**Y**IS**G**H**N**T**F**AY**K**L**E**G**Y**.D**K**E**M**.Y**Y**L**T**D**S**R...  
700 ...N**E**T**A**IP**I**SE**G**E...**I**EL**T**HE**Q**N...**S**FN**L**T**F**N**V**Q**D**Y**S**L**A**N**Q**V**E**Y**A**Y**M**L**K**L**S**D**Q**W**.Y**T**I**NE**Q**N...  
690 F**L**...Q**G**AT**K**Q**E**T**L**V**L**D**Y**S**Q**N...**F**FN**L**S**F**I**A**V**D**Y**I**NG**N**Y**T**SY**K**I**D**GL**S**D**S**W**.I**EN**G**L**S**T...  
673 ...E**S**G**I**L**T**E**I**L**A**K**T**SD**I**F**L**S**Y**Q**Q**N...**N**V**T**VE**F**A**T**FN**Y**NS**D**R**N**RL**F**E**Y**Y**L**D**G**F**D**K**V**M**.T**Q**T**SG**T**...  
709 ...S**E**Y**L**S**E**D**I**A**I**T**T**E**L**K**L**H**E**K**K**...**S**F**S**L**E**F**A**AL**N**F**E**S**N**TA**I**Y**S**Y**R**L**V**GF**D**DK**M**.V**Q**P**G**N**R**R...  
669 ...K**N**SP**L**E**K**D**I**NET**K**EL**R**L**K**Y**Q**N...**S**F**S**L**M**V**S**IN**Y**D**P**SN**V**L**S**W**K**L**E**E**F**.Y**E**E**M**.S**K**P**G**N**E**S...  
677 ...D**G**SP**L**K**D**IN**E**T**D**C**L**E**L**AY**Q**Q**N**...**T**FS**L**D**V**AS**I**N**Y**D**P**SN**I**L**S**W**K**I**D**G**Y**.H**K**E**M**.T**R**P**S**Q**D**N...  
672 ...D**S**PL**N**E**T**M**S**Y**T**G**L**N**L**K**H**Y**Q**N...**S**F**V**I**A**F**S**T**P**FN**L**.S**G**AS**K**Y**S**Y**R**M**P**P**Y**.D**S**E**M**.S**I**P**S**A**Q**N...  
660 ...G**S**EV**N**N**E**L**C**G**D**P**T**IG**I**SV**P**WN...**S**.N**I**S**I**R**I**M**S**K**E**E**D**I**F**R**Q**K**V**Y**R**Y**Q**IE**G**L**N**D**Q**C**.I**ES**Y**NP...  
697 H**Y**...L...P**D**R**K**G**L**R**M**Q**G**AN**L**...**S**FS**L**FF**V**VP**D**Y**A**S**G**D**D**V**E**Y**S**Y**M**L**E**G**Y**.D**K**D**W**.G**A**F**S**SV**N**...  
664 ...K**D**SP**L**E**K**D**I**D**T**D**V**L**R**L**K**Y**G**EN...**T**FS**F**RV**S**S**I**N**Y**DF**P**SH**S**V**Y**Y**R**L**E**GS**S**Y**N**E**M**.V**Q**L**S**GN**S**...  
695 Y**Y**...T...D**G**G**K**A**L**S**F**K**G**A**K**A...**S**FS**L**S**F**V**P**D**F**L**T**G**D**D**V**E**Y**Y**S**Y**M**L**D**G**F**.D**K**D**W**.T**S**F**S**S**I**N...  
710 V**E**L**Q**Q**I**SP**V**M**P**Y**T**SK**E**L**P**H**K**Y**N**...**S**FI**E**F**A**AL**T**Y**K**NP**E**LN**R**Y**A**Y**R**L**Q**N**F**.D**R**D**M**Q**Y**T**D**AD**R**R...  
778 ...Q**S**S**V**IA**I**D...D**L**E**E**L**R**L**T**PS**Q**R...**N**V**T**F**Q**A**A**L**D**Y**V**D**S**K**E**I**R**Y**A**Y**R**L**K**L**E**E**M**.H**D**G**D**K**N**R...  
703 ...S**L**L**E**K**N**Q**R**F**N**L**R**S**Q**I**I**LN**A**G**D**K...**N**IE**I**D**F**S**S**L**N**Y**A**FP**D**K**I**Y**A**Y**K**M**D**G**V**.D**D**D**V**Y**V**R**G**D**R**Q...  
687 K**I**K**G**Q**V**V**L**D**S**N**I**A**S**I**D**H**L**EL**V**N**A**NR...**D**FS**L**LF**N**N**L**A**F**SK**.D**L**Q**K**Y**SY**R**L**P**Y**.Q**K**D**W**I**V**S**.E**A**G**K**...  
655 K**I**NN**Q**I**L**N**Q**F**I**P**F**T**D**R**I**V**L**D**N**D**N**K...**D**FS**L**TF**N**N**L**S**Y**SD**.E**Q**Q**K**Y**N**R**L**P**Y**.Q**GN**N**L**I**S**E**G**E**K...  
656 ...G**S**AN**H**E**W**Y**N**H**P**A**K**IS**V**P**W**N...**S**.N**I**S**I**R**I**M**S**R**E**E**D**I**F**R**Q**K**I**Y**R**Y**Q**IE**G**L**N**NE**Y**...**T**ES**Y**NP...  
655 ...G**S**EP**A**NN**K**L**Y**D**G**I**R**K**L**SV**P**W**N**...**S**.N**I**V**I**H**V**MA**K**E**E**D**I**F**R**Q**K**V**Y**R**Y**Q**I**K**G**L**D**E**Q**L...**V**ES**Y**SP...  
654 ...G**L**P**V**S**L**SE**P**Q**E**AA**E**I**I**Q**I**P**W**N**F**...**S**L**Q**L**V**LL**N**ES**D**V**F**R**K**N**F**FR**N**IE**G**L**D**Q**E**L...**A**SS**N**S...  
602 ...P**E**SP**L**K**Q**C**I**V**H**T**D**E**I**V**L**Y**D**Q**A**...**N**IS**F**D**V**ALL**S**Y**S**T**A**ES**N**O**Y**Y**R**M**E**PL**D**R**H**.V**R**AAS**N**Q...  
677 K**R**NG**Q**M**I**L**A**V**S**P**E**K**O**E**K**V**F**AS**D**NN...**D**F**H**L**F**FS**D**L**R**Y**G**L**A**Q**R**K**I**A**Y**R**L**LP**A**.D**K**E**M**K**M**I**P**L**A**E**G**...  
802 ...N**D**CP**I**Q**E**S**I**T**Y**TD**A**L**Q**L**K**Y**Q**S...**M**FT**I**E**F**A**A**L**N**F**Y**N**Q**NR**V**S**Y**R**I**L**E**G**Y**.E**K**E**M**.H**Y**NG**K**NR...  
653 ...L**K**Y**Q**N...**N**L**T**FC**T**DF**A**Y**G**L**P**S**A**L**L**Y**E**K**L**E**G**A**D**SS**M**.K**L**L**T**A**Q**S...  
589 K**Y**GN**R**I**L**P**Q**A**A**P**Y**T**K**LE**L**D**Y**Q**N**...**F**L**T**FE**C**S**A**L**N**Y**V**NS**E**R**T**Y**R**Y**Q**L**E**G**I**.D**K**Q**M**NA**F**AS**G**Q**G**N**A**T**V**  
consensus>50                    . . . . . l . . . . . q . . . . . y . . . . . y . y . l . g . . . . . d . e . w .







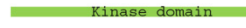
BT4673

823 RQKMAFFFTNLSNELKTPLSRIIAPISQI...LP.STEEVHEKQTLVEEVQRNAMKINSIHQVLFNFRRIE  
 820 TSKIEFFFTNVAHEIRTPLELTKSPLESV...LTEKELPENVKMELEIMDQNAERLLNLTNQLLDFRKRTE  
 822 NAKIIDFFTNVAHEIRTPLELTLINGPLENI...LLKKSVDSETREDLNMKQNTERRLLLTNQLLDFRKRTE  
 825 ESQVNFTEIAHEVRTPLTLINGPLETL...QEMEIADPKIQKNLSVITQNTNRRLLLTGQLLDFQKIG  
 949 DIKLRFFFTNISHELRTPLELTLIAGPVEQV...LKNDKLPADAREQLVVERNTNRMLRLVNGQLDFRKRTE  
 824 KSKIGFFFTNVAHEIRTPLELTLIRLPLEK...QEIEH.EGKEAKYLSVIDKNVNYLLGTNQLLDFQKME  
 903 EYKLVFFFTNISHEFRTPLELTLIQGALEKI...QRVADIPRDLIHPLKTMDKSQRMRLRLINQLELFRKMQ  
 825 ESKLRFFFTNIAHEFRTPLELTLIYSPCGRI...LSSKGLSKFVVVDYVQMIQTNAERLNNLIHELIEFRRIE  
 819 QSINFFFTYVSHDLKTPLELTLILSPLOQL...IKQKQIDNNDREKLEVIYRNANRMHYLIDELLTFSKIE  
 820 QSKLRFFFTNIAHEFRTPLELTLIVGQVETL...LQVQTFPTNIIYHKILGLIYKNSLQLELITELLDFRKRQE  
 825 ESKLRFFFTNIAHEFRTPLELTLIYGPCGERI...LSSKGLSKFVVVDYVQMIQTNAERLNNLIHELIEFRRIE  
 834 QMKRFFFTNIAHELRTPLELTLILTPLOEL...IN.KISDRWRTRNQLEYIQRNANRLLHLVNGQLMDYRRAE  
 845 QERLRFFTNITHELRTPLELTLILGPLEDM...QKDTSLPTRQAQKLSVIHLSALRLLNLTNQLELFRKRTE  
 834 ESKLRFFFTNITHEFRTPLELTLINGPCEKI...LSYSRVDYVVRKYASMIQQNALKLNALILELIEFRRIE  
 819 QVKLRFFFTNISHEFRTPLELTLILGQIEVL...MQMDLGT.TVYNRIQRITRYKNAWHMRRLISELLDFRKRQE  
 901 LDKISFFFTNITHEFRTPLELTLIGPIERA...LKLSYNP.QVIEQLNFVERNSKYLLSLVNGQLMDYRKRVE  
 803 DEKIHFFFTNIAHDIRTPLELTLIKAPLEDL...REKEALSKEGIAMNNTAIRNVNALLRLTNTLNINFERAD  
 812 DEKTRFFFTNIAHDIRTPLELTLIKAPLEV...VENHMAEAKALPHMNMALKNVNTLLQTLNLTNINFERID  
 901 EYKLVFFFTNISHEFRTPLELTLIQGALNKL...INIENPPKEMQRPKTMDKSQRMRLRLINQLELFRKMQ  
 802 EEKVRFLINISHELRTPLELTLIHAPLSRI...LKSLSPADTQYLPKAIYRQSQRMKLNINMVLDFRKRME  
 834 NISLAADSYQAREVLTCTLIYQACDLDNDKNISSEGHAEKIGQIRSVMSLFLGCG.LGDECFRLLSSLL  
 799 DEKTRFFFTNIAHDIRTPLELTLIKAPLEDL...VEEETLTEIGSORINTALRNVALRLLSTNLTNINFERAD  
 831 NEALPESASLNRELLNRFITSIYRSCDLEAENLPYEQRLRIMEQVHETVIATLFRSGTLAVELEKSFPPFT  
 826 HAKLQFFFTNITHELRTPLELTLISATVDEL...K...TQAPSHNDLYTVMNSNIQRLRLLOQILDFRKRME  
 917 NIKLRFFFTDISHELRTPLELTLISSPVNEV...LENEDLSATAREHLTVQKNAERMLRLMNQILDFRKRQE  
 854 QTKLRYFFFTNISHDLLRTPLELTLITCLIDDA...E...MTNGSRIQSLTMRSNVNKRLRLLOQILDFRKRME  
 842 EERENFFMNAHELRTPLELTLILAPIHDI...MKSITPSDNWFDSPSRHLHKNCLSLQTLVDRLLYVQKIE  
 811 VERENFFTGVAHELRTPLELTLILAPLOEL...MKQCNPLDDFYKKLQVMYKNAASLHTLVQDQLLYVQKIE  
 798 EEKVRFLINISHELRTPLELTLIHAPLNRI...LKSLSSEDPQYLPKAIYRQSQRMKLNINMVLDFRKRME  
 799 EEKVRFLINISHELRTPLELTLIYAPLQKI...LKSLSQPDQAYLPKAIYRQSQRMKLNINMVLDFRKRME  
 799 EEKINFLTNISHELRTPLELTLICAPLKRIT...INQESDKQDVEKLVLPYKQAYQMKSLIDMVLDFRKRME  
 749 ESQVDFTEIAHEVRTPLTLINGPLEAIT...EEMEIQEPKMKKYISVMVQNTKRLLLTGQLLDFQKIG  
 824 AMRNRLLMLFVQELRTPLELTLIAPLKELE...QKDDAQTSQL..SLQVAYRNSLRMVDACDQLLAVYVGG  
 943 EMKIKFFFTNISHELRTPLELTLIKGPIQEL...KEREELSPKGLQYVDLMEKNTNQMLQLVNGQLDFRKRQE  
 760 .....  
 742 .....  
 consensus>50 e.k..ff.n..he..tpltli..p.e.....n...l..l..q.ld...e



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888 DNKDSLILSRIEIVSFSRSIFS...VYEEDKRFTFHFEANKAK.IYADMDAIKLGVL...DNILSNAL  
 886 NKGFLINP.VECVSGSIIERSVYK.RFTTLVNQKGIELKVEIPEEE.LLASVDREALTK...SNLFTNAL  
 898 SQGFRINP.AECNITEVILKETHK.RFTSLAKQRELDIFILNVVQD.FYAHVNKEAFTKIV...SNLFTNAL  
 891 AHKFMETM.ECVDITSLRETV.A.RFEPTISKKNKELALHIPEES.IEAVVDEKAITKIV...SNLFTNAL  
 1015 NKKMKMQV.QQLNVAVFVRKIMD.NFESVAEEHNIDFLFQTEKEA.LNLWVDADKFEKIV...FNLFTNAL  
 889 NGALQNLV.VSCDIIKEIVNDVYS.QFTSPAELKGIELVLTLPQEQ.LVSMVDREKLSKIV...VNLFTNAL  
 969 NNKLAALSL.EETDVIAFLYEIFL.SFGDVAEQKNNMFRFIPSPIS.YKMFIDKGNLDKVI...YNLFTNAL  
 891 TGNRRVRI.EEELNVTFTTQIYM.CFYEYAKKKEITYRFDSEET.ISVWFDPQLQKVI...FNLFTNAL  
 885 MQQMEINVR.KKGNIMHFLIEESH.IFDIVSKEKEIDFIVSLEETD.EEVWVSPSKLERIV...YNLFTNAL  
 886 QGHMKIKV.SRNNLVNFLYENYL.LFLIYASSKQINFKFNKQSDI.IEVWYDQKQKQV...NNLFTNAL  
 891 TGNRRVRI.EALNVSSLMKNIAK.TFVDMAKSRNITFSLKIPEQV..SWNSDKGFLNTI...INLFTNAL  
 899 LGVFLKKA.KKGNAHQLQDNFL.FYDKLARHKKITYTLHSELED.KEVLPDANYLELIV...NNLFTNAL  
 911 TQNKRLCV.CKGNIVPLIHEIGL.KYKELNQQKAIDFQIQIEKEE.MPLFFDKIITITIL...DNLFTNAL  
 900 TGNKILKI.KHVPVTEQRTIAE.SFGEALAESRKLNYRQLQIEDGV..FWNTDVSLCSKIV...NNLFTNAL  
 884 QGYLKLVR.EEQNLVTFTRQIYM.CFYEYAKKKEITYRFDSEET.ISVWFDPQLQKVI...FNLFTNAL  
 966 SGKLEIVK.TRGNLFLKFDLSLIT.PFEVFAQERNIVLKKRYRME.PEILYDEEAMRKV...TNLFTNAL  
 869 VYSSLEYI.SHEHLNFTFMTEIFN.AFQPYANIKHINFTYESNFRY.MNVWFDKCKMESIV...KNLFTNAL  
 877 VYSSLEYI.SHEHLNFTFMTEIFN.AFQPYANIKHINFTYESNFRY.MNVWFDKCKMESIV...KNLFTNAL  
 967 KNKLAALSL.EETDVIAFLYEIFL.SFKDTSESKNIDFSFEPSPQA.YKMFIDKGNLDKVI...YNLFTNAL  
 868 VGESLILIQPHPLNHWIEHVSQ.DFISEGEAKNIQIHYRLDPR.IKIVSFDKDKCEIIL...SNLFTNAL  
 903 HFSVSGRL.SLLKMAEEVLQVLE.KEGHDVSSIQLD...IPENF..TYPAYKNALRCILYFSYLYISCS  
 865 VYSSLEYI.SHEHLNFTFMTEIFN.AFQPYANIKHINFTYESNFRY.MNVWFDKCKMESIV...KNLFTNAL  
 901 EYAITGCM.CMKEISIEVHLVLE.GQGVDISSVKLA...IPEHF..VYPVYKNALRCMLYWCYLYIGGV  
 925 TGNLKLVR.SPGDIAAFVKNAAE.SFQPLVKKRKHFSFLCDPES.MIGYFDMDKLKLIV...YNLFTNAL  
 983 NQKMKLVV.EKTDLIPLEKVM.I.NFRLIAEKKINFRALASELKS.IYAWIDRDKKEKIF...FNLFTNAL  
 917 SGNMKLVS.SKSDVISFIDDVCKIHFTPLMRKKNQTFPTLTEDRH.LMAYFDRDKLKLIV...SNLFTNAL  
 908 GGMKILHL.SESDIKEIVSRVAN.PFLQMAVMVKKREFLVQVDTVP.LYLWVDVAKIESAV...QNLFTNAL  
 877 AGMVRILQL.SETDLVQLVCNVE.PFRQMAEIKGLQFDIDLPEGK.FLYWVDEGKIASAV...QNLFTNAL  
 864 VGESLILIQPHPLNHWIEHVSQ.DFISEGEAKNVIIRYQLDPOI.ETVSFDKDKCEIIL...SNLFTNAL  
 863 VGESLILIQPHPLNHWIEHVSQ.DFISEGEAKSVHISYRFDSPRI.EAVSFDKDKCEIIL...SNLFTNAL  
 865 EGKDMHLI.LPHPLNHWIEHVSQ.DFISEGEAKNVIIRYQLDPOI.ETVSFDKDKCEIIL...SNLFTNAL  
 815 ANKLTMKF.ESVDITELLAGIVA.RFEVTFSLNRKELQLKSTDEQ.VWAADVKAITKIV...SNLFTNAL  
 901 NMESKLEV.APYSVDMKIDSFLF.GVRDLLKVVYITDFHCEKRIKKEMEFYVDKKEKIEFVI...HNLFTNAL  
 1009 NGKMRILHV.SLIDFNEMIASFKQ.EFRVLSEENEISFTFQLPDEP.IMVWADKDKLSIVI...RNLFTNAL  
 761 .....  
 743 .....  
 consensus>50 .....l...d.....f.....d.....i...nl..na.



BT4673

951 RFTSEGGSRLSLFYR...QETGLLETCVSDTGAGTPQQDIPYIFQRFQSPHS...GSKE.GTGIG  
 951 KYAQTYAYLSLSVD...EAG..KEFTIVMSNDGKIPIEMRENIFRPFVQYRDG.KD..IVP..GTGIG  
 963 KYAETVYVHYLEIN...GTGENKMFYRSVNDGVIIIPNEMKEEIFKPFVRFNEK.EDGKVTT..GTGIG  
 956 KYARHSICVELQRE...TEA...FLVVRVTSDDGKIIPAEISQQIFEPFYQAACK.DSA..SF..GVGIG  
 1080 KYTPNGKMTVFR...EDEGTVSFVGVQDQGIGIAENKRKSLFVRFENLVDK...NIFNQA.SSGIG  
 954 KYARTRIDLKLVT...DAG...YEIVVSDDGRGVIPDAQKQKIFEFAYQMPDD.KVA.TAT..GTGIG  
 1034 KYTPSNGTILSLTV...DEVKKTLLIQVADTGVGIPKEKQNELFKRFM...Q...SSPSGD.SIGVG  
 955 KYTPDQGSKIEVDT...GENMLTLRVANEGSTIKEKDFQYIFNRYAILDNFENQDEKNFS.RNGLG  
 950 KYTQPGDYVKLAKLL...KKDSENFIEISVKDSGRGIPKEMKDIKDFSYFQVEKK.DHR...E..FGGLG  
 951 KHTKAEDTISINVS...QEDKYVIEIETKDTGTGIAAAEIDKIFDRFYQTERL.DSLNTGA..GTGIG  
 955 KYTPDGKSKIEVDTN...DENLLVLRVANEGSTIKEEDFQYVFNRYAILDSEFENQDEKNFS.RNGLG  
 964 KYTESGQSTVTLK...EENGWLLLVQVSDTGIGIPINKQKGFERFYQIESE...H...V..GSGIG  
 976 KYTEQGGITLSLYPT...TRNGVTYETIKVSDTGYGISAALPHVDFRYQESGK.HQA...S..GTGIG  
 964 KYTPENGSTVLETRIE...GEQ.LCIRVSNTEGKIKEADLTKIFDRYKILDNFENQKNGISPRNGLG  
 949 KYTSNKNITVEVR...KVASQAVVSVCDTGIGIPVEHISKIFDRFYQTDNA.SSSSFTL.GTGIG  
 1031 KFTPNGGTVSLYLSALFAKDSEKETLYICVKDSGSGIPEEDLNRIFNRFYQSQNVKYPVYQGA.GTGIG  
 934 KYTPENGNVQIFVS...ENNDSSWSEVKTDTGIGIPASEQKFLKLFHFRGSNA.TNS..KVT.GSGIG  
 942 KYTPENGSCVICAC...EENGTWIEVKDTGIGIPSEEQKLFNCFRGSNV.VNL..KVT.GSGIG  
 1032 KYTPSNGKIFFKIDI...QEDKQQLRIVQIDNNGIGIPKEKRSELFKRFM...Q...SSPSHS.SVGIG  
 933 KHSPQDTEITITISEL...LPEEKRVRIISITDQGGCLQQVDTQKLFTRFYQGMGE.QSG...GTGIG  
 965 KTEK...VSVTV...TE...EAGCMLTFVSPDETIVKGL...KDVLSGEEELLSIR.AK..GSDSD  
 930 KYTPENGIIVSVSIS...ETKDSWLEVKDTGIGIPANEQNKLLKMHFRGTNG.INA..KIT.GSGIG  
 963 KHKSD...VVDV...KE...EEGRMILQFSAVDDTLKEL...YKQLSGSEEEGRDSDK..ETEE  
 990 KYNKEDGFIQVLS.Y...DETDKDFILLKIKDNGKGISKEKQKHLFKRFY...EG.DYRKFNTI.GTGIG  
 1048 KYTPAEKAITIEV...KQTDKVTISVDEGIGIETPKLRLTFQRFETLAQQ...NML.QP.SSGIG  
 983 KYTANGNKLIIVDSY...WESENHHLRIQVVDTEGIPADLENVFKRFYTINGK.DESES...GIG  
 973 KYTSONGRVLEAVSEA...EIDGRFYCIIVTSDNGVGIIPDDLQHQVDFSVFTGKRI...PQYST.SIGLG  
 942 KYTPSGGRVLLSVSHL...MKSGQGYCRIIVSDTGAGIPEWLQKHAFESFVTGDNV...PEMST.KAGIG  
 929 KHSPQDTEITIASSEL...LPETRGRVRSIIDQGGCLKQVDTKHLFTRFYQGTGE.QSG...GTGIG  
 928 KHSPQDTEITIVSEL...ISERKRVRSVIDQGGLENVDTRKLFTRFYQGTGE.QNG...GTGIG  
 930 KFSSEGTITLITLITL...SQEKDWRVSRDEGMGLNMVDTLDFSSSFYQGGHE.KGG...SGIG  
 880 KYASQNVLVELEK...EDS...FTIRVTSDDGKIIPAEVSYIFEPFYQVDRK.EKP..RN..GVGIG  
 967 THTHYAGTVSLSVCEV...VNDNMHYVCLIVEDDGKERRVTEVQMLSEN...EGS...ERDMS.AAQM  
 1074 KFTPSGGSIYVTVGL...TDDGKSCYVVRVEDNGVGIIPQNKLSIEIFERFSQGENA...NNPHYQ.GTGIG  
 795 .....EAECK.....RSEKK.....S.....  
 764 .....i.....v.d.g.i.....f.f.....  
 consensus>50 ky.....i.....v.d.g.i.....f.f.....  
 Kinase Domain

BT4673

1011 LYLKTYTELHGGSIDGVTSEKKGTSIGLSIP.....  
 1010 LALARSLAELHQTIT.MDQDM.ECNRFILSIPIRHQTASDVLE..EEHRE.....  
 1026 LALARSLAELHRRGNIT.MLESE.EANVFCLSLPVEQDSV.IKLAS..EH.....  
 1013 LPLARSLASLHRRGLYLDSEH.EDNSFVLSVPLVENTL.RSLPK..LE.E.....  
 1140 LSLVLELVEMHKAATIS.VDSRLGEGSCFKVDFLKGKEHY.NSSVEFILEDSV.AP...LSMERIVDIANS  
 1012 LAFAKSLAEAHQGSILR.LEDNEPQGSFVLSLPLSEKKA.EEAD..IVE.....  
 1092 LHLSEYLVQVHKGITIE.YKDNDGGGSVFTVCIPTDKSVY..SEKDFLIPGNV.....  
 1019 LAISYNAKLLNGLTK.VENTPDGVMFTLTPVVELTT...GVAETKR.....  
 1012 LSLTKSLIHHMKGEIK.VESEVKGGSFIVSLNVSESAY.SSSEK..SLESI.....  
 1012 LALTKGIIELHHTIIR.VESEPGKGSRFIITLKSNGQHF.TEEQI.IRDNAD.....A  
 1019 LAISYNAKLLNGLTK.VENTPDGVMFTLTPVVELTT...GVSSSKR.....  
 1012 LSLVQRLIELHHRGRIE.LDSEENKGSFVSYPQLDLSVY.KPSEL..ASNNE.....  
 1037 LALVRNLVLELHEGRII.VESIQNEGSTFYISLLTD.NIY.PNALH..GDSTK.....  
 1028 LAICHSMVNLNNGOIQ.VSSIPNEVTFDFVWVLPVMEVTV...D.NEDEK.....V  
 1011 LALARKIMNMHHGKIE.VESTVGEGRFVLSLPLGNRRHF.SDEEMAVTEGRE.....  
 1100 LYLCKRIVQMHHGKIEK.AFNRRHAGCSFRILPLQQRNER.KDEKTIIDHND..S...SATPV.....  
 994 LMLVWKLVLRLHKGKIN.LSSVENQGSVIFKISFPKDSKRF.HKAHL..ATPSK.....  
 1002 LMLVYKLVKLVHKGKIH.IQSVEHQGTVCVITFPKGNTHL.HKAKF..ISPKT.....  
 1090 LHLTHELVQVHKGKINIS.YDENEGGSVFTVLLPTNSDIY..QEKDFLIPNQL.....  
 991 LYSYKILVLELHGGSIG.ARDNSGSGATFFELPLKLESE.EIIC...QPKA.....  
 1014 MFRIRTMQRVVFSAIK.QQNS...VMRYIT...PVGQDNQ...L  
 990 LKLVKLVHLSGKIN.IESVEQQGTITVVFPPKGNKHF.RHSNL..IDPEK.....L  
 1014 AITTRQLLFSVQAALR.QLNV...TLHYAD...RE.KDHL.....L  
 1052 LSLTKDLVELHGGTIS.VESEVDHGTFFMVRPIERSYY.DEEQI..DDEAI.....  
 1107 LSLVKEMVDMHHTGIIK.VTSEPEAGSRFIVTLPLQKEVFEQDSQVEFILLNDSQSP...TTHP...D  
 1045 LSLTKDLVELHHTIIN.VESELGKGSFTFDVLPINKDSY.QEDEL..ISEHI.....  
 1036 LHIVKHTMGLHHTGFVT.LTSRVGEGSRFVHLHPVGLSHF...AQGEYEMVDPMPKG  
 1005 LHIVKNTMDLHHTGLV.LKSVDPDEGSIFALYIPEGKEHF...AKDSYELI.DSHQG  
 987 LYSYKILVLELHGGSIG.AQDNPEAGAIFFELPLKQESE.EIIC...QPKA.....  
 986 LYSYKILVLELHGGSIG.ARDNQETGATFFELPLRQDAE.EIIVC...QPKA.....  
 988 LSYAKSLITHHKGKRVG.ASNAAGKGAFFVLEPLFTDT...CG...QLEP.....  
 937 LSLARSLASLHKGITTY.LDTRQ.ENNMFTIPL...NM.EGIKQ..EN..N.....  
 1026 FTIMQQMIEAHYGTIT.LESTEGKGTVTVNLPPADRDFVFNPNPQFIDPEELTEVABLEPESAEETQKQD  
 1136 LALSKEIVNLHHTIIR.AESPEGGQAVFIVELLLDKDHYRPEVDFYVSDTETAP...AATD.....  
 800 .....ELHDRLVA.....Y.....VEKEK..P  
 770 .....HPVSCD.....RNETA.....DDNE.KP  
 consensus>50 l...l.lh.g.i...f...p...  
 Kinase Domain



BT4673

BT4673 1066 .....ILKPIEA.....ESQ.....DE
BT2897 1183 FSVEYLRVNVANLLSNRRRLRRRFFIES.....PF.....IKADTM.....AQTKADE
BT2923 1195 FSVEYLQACIANLINSREKLRQAFAS.....PF.....VAANTM.....ALTKADE
BT2860 1181 FSNFYLLKTOIVSLYNRQKEREAFSKR.....PF.....FPTNKM.....QMNKVADE
BT4111 1336 FSATYLQARVENLLMQRRKLLQNFYRDSLTHVTVSETPVAQGETLAGHASAEPVSSAAEEPPAMPFNDP
BT3465 1181 FSIKQLHKQIENLRLRQSFHKLMVSLSGN..AN.....QASAEI.....AMTQRDC
BT4178 1275 FSIKLLARVFRLLIEQRDKLREKF.....SSEPGIVRAAVCS.....TDRDK
BT2628 1193 FSAEYLRISVQCQVIERKEVLKNYFSSP ISS.....FEKSDGK.....LTHKESK
BT3097 1197 FNAQNLELLVQNMRTNRKQNIYFKRI.....EKLNITQI.....TNNPRDE
BT3334 1196 FNTNLLISRCNNLV.NSRRLLEKQEFK.....QPQA.....FAQML.....ATNPMDK
BT3786 1193 FNAEYLRISVQCMLERKEVLKDYFSSA ISS.....FEKTDGK.....LTHKESK
BT4663 1206 FSLAILTTKIQNMRTRRRMLDKYAKS.....LEVEPEKI.....TFNAMDE
BT3049 1211 FSASLLRSRINLLDSRKKLIAQFQQTGTNHNPNSHLDEKRSIITE.....ALSKLDN
BT3302 1202 FNVEYLEKVVRRLLQREEDLKEYSSVLSA.....FELDDGH.....FLHKEDK
BT2971 1198 FNKVLVAVRCNNLKNKRLIAHYAGK.....VITE.....SPVAE.....AINEKDK
BT0366 1270 FDETLILLARIQNIENLRKRYQRKFTLDM.....DVDVLNMEESG.....DK
BT1734 1172 FNIGLLKATVSNLLINRALLRSKYGSL.....DMDEDDHEDECIN.....CSQDIDW
BT3738 1181 FSVGLKVTIKNILANRELLRQVNSI.....ENKEKHL.....PVN.....CNTLDDW
BT4182 1273 FNVSLLLARIFKLIELRDKLRQY.....SNEPGLAHSIICT.....NDKQDQ
BT1635 1165 FEVEMLMELIRNRLKNNREHTKKRYLNAGLI.....PAPEES.....TFSQADE
BT3951 1168 YDIFPLKETHKVIYKREARQIYMEDLEG.....WA.DSIV.....CTTLEQA
BT0958 1166 FSIRLLKASIANLLANRALLRSKYANL.....EIDIEV.....KTPLAK.....CTNSLDW
BT3957 1168 YDIIFLKEAVNKAIYGTREARQIYMEDLEG.....WA.GRIV.....CTTBEQA
BT3678 1230 FNLTVLHARIRNLLKYKERMARDFKNO.....IVFE.....VKDLN.....YTS.LDE
BT4124 1294 FSATYLKTRIASLRLRQRKSLQEIYMAKLTG.....KEIYVAEALT.....PSQPQITPYDE
BT2067 1225 FELKILEARINNFIMHKKNKQEEFRSN.....VEVN.....IDSLE.....PSS.IDK
BT2391 1226 FNPEILLKKEVKALIEQRDLRKLKLYAKTLM.LD.....BEVLESSEDEV.....QD
BT3800 1186 FNPEILKTKVDNLIQRELRKRYTKALML.K.....QESEGEKE.....D
BT3172 1161 FEVEMLMEIISNRLLKNNREYIKRYLHTGII.....PVPKET.....TFSQVDE
BT4137 1160 FEIEMLMELIRNRLKNNREYTKRYLDAAGLI.....PAPEET.....TFSLADE
BT2826 1159 FEIDGLLALIHNLQRLRQEQIRARYKDDKLL.....THKEV.....SFSNADE
BT3134 1104 FSNFYLLKQVLSLDDNRRRERERAFK.....PF.....FSVNNM.....QMNKADE
BT4236 1233 FTPGILLKAKVSSLLINGRQLTKQMYTKLFLK.....PGTDTIVVSEPEQAGEEV.....KTED
BT0981 1318 FSKEYLLARIDQLGERKLFREIRIQOMENOTTTE.....EDSYEQYLVKKDV
BT0138 .....
BT3660 790 .....EP.....DSAES
consensus>50 f...l...i.....y.....d.

BT4673

BT4673 1078 KFLSNIIRLVEDHLSADLVNVALCELSG ISNKQTYRKIKQLTGMSPVEYIKSIRMKKAAAMLLQQK...
BT2897 1225 VFIQKLNNEYVSHLDNNTLVIDDDMAEAMN MGRSNFYRKLKGVLDMS PNEYLRRLIRLKKAAOQLKDG.R.
BT2923 1237 EFMKLLNEIIEQGNFHPNDFSMDDIIVDSLMSRNFYRKLKGVLDLSPNEYLRRLIRLKKAAOQLKKEG.N.
BT2860 1223 EFMNKVIRTIIEENIDITNLNVEHLAEELGMSRSLLRKIKMLSNLSVPVDFIRLIRLKKAAELIHGEC.K.
BT4111 1406 KFMDKLVLDLMEQNMNDNGELVVDLVLRELAVSRVFFKLLKTLTGLAPIEFIKEMRIKRAAQQLI.ET..G
BT3465 1226 EFVAKIQEVIIADQLADENFSIDTLAEQMLMSRNFYRKLKALS GMSPNDYLRKALRMKAAELIQGG.T.
BT4178 1317 EFFADRLAVVLEQNLSRPEFSIDEFAQLMLGRTVFYRKLKRGVTGYSPNEYLRVVRMKKAAELLS.GE
BT2628 1237 KFLQSVLKIINDNITNKDLTPRYIADLAIISPRSLYRKMEEIGEDSPDILKECRLHIAKDLLLHQC..T
BT3097 1239 VFMKELVDLIMANIKDEEFGVTEIITHEMKVSRLLHTKLLKSLTGCSITQFMRTIKKKA.KIHLQN.G.
BT3334 1238 EMLDRAMAIIEQHLDNTDFNVNIFAREMG MARTNLFTKLLKAVTGTPNDFILSIRLKKGAAMLRN.P.
BT3786 1237 KFFQSVLKIINDHIQEKELTPRFIADHLAISVRSLYRKMEEEMGEESP TIMIKECRLYVAKDLLK...T
BT4663 1248 ALLKRAMAIVEKNMDNIEFSTIDEFAREMMSRNLHLKLLAITGESTIDFIRKIRFNEAAKLLKDG.R.
BT3049 1264 EFIEKITQLVEDNLSSEKIDITYLSDKMCMSGSTLYRKMKAALTGLSTNEYIRKVKMNAERLLLEG.K.
BT3302 1246 SFFEKMMQIIDSHTQNTDLSVELLSLSSLGYSTRFYRKLKRVTEKTPADIREYRLTIVERLLLT...T
BT2971 1241 ELLTKCVNIVRENFENPFDVDTALASELCMGRSKLYMQFKQMTGLTPNEFILLKVKLDEAMSLLTEH..P.
BT0366 1312 KFLNVVMEVIEKENYKNSYFEVSDFCFAVGVSKSLNKKLQNLIGQSAGQFIRNVRNLNARELILKNNRETK
BT1734 1220 KFIANVRKNIIEDNIDNPALTVDVLCNLMMSRSTFYNKLKALTDQAPGDYIRLIRLKRVSVKLLKKEG..T.
BT3738 1225 KFIA SVKCEIEKNMGDLDLFGVDFVLSNQHMSRSTFYNKLKALTDGAPADYIRMIRLORAAOQLKQK...E.
BT4182 1315 KFSVKNLEVLNEHMTDTDFSVNDFAGIMGLGRTVIFYKVKVGVGTGYSPYELRVVRMKKAAEMLLT...E.
BT1635 1208 TFLLLKLNKIIEENLDSSRLDIPFICEIGMSRSLYNNKLKALTDMGANDYINKFRMEQA..ILLIT..GT
BT3951 1211 DFVRRKFLQVVEQNLDREDLGSFTFAEQMLMSRQFYRRFKEISGMSPSDLIKDYRMEKAAARLLQN...E
BT0958 1212 QFLSAVKKTIEDNINNPAFVSEVLDLHNMMSRTRFYKLLKAITGLSPQELIKTTRLLKRAATQLLKEG..E.
BT3957 1211 DFIRKLLQVIEQNLDQEEIGSTLIADRAMSPRFYRKFKEISNAAPSDLIKSYRMEKAAARLLQN...E
BT3678 1272 DFIQRRAIHCVNNHLEDPNFDQAQFADEMRTSKSTLYKLLKSLAGLNTSSFIRNVRLKAAACRIMEEK..GT
BT4124 1346 QFMQRVMEFIEEQMDNAELTIDEFAEHLMSRTIFYRKLKSLIIGLTPVDFIREYRIRKRAAQQLI.DS..G
BT2067 1267 EFLDKVIVSVINSNMSEGDVVDVQLADALAVSKSLYRKMKAALTGLSPIEFIRNIRLKHGSOLLKDK...
BT2391 1269 VFMPKMLQIIEENLSNRNFTIRKVLTDKLNMSQPTLYRKKVQRKGLSIEVIRGVRMKSASIMSG...R
BT3800 1227 AFLOQLIHIIEANLSNADFNVKMLAEQLNMSQPTLYRKKVQRSDLSVIDMIRISIRISKAATLILEN...R
BT3172 1204 SFLLKVNKTIIEENLSNTNLDIQFICEIGLSRSTLYTKLKALTDGANDYINKFRIEKA..LTLIA..NT
BT4137 1203 TFLVKNLNRITIEENLSDTKLDVSVFICEVGMRSASLYTKLKALTDGGLNEYINKIRMEKA..ILLIT..AT
BT2826 1201 TFLKLLNTLIEADNMSNPDLDVAFIATNMCISRSLLFNKVKAITGMGIVDYVVKQR...IEQSIVLLT..TT
BT3134 1146 EFMNKVIVKVIEDNITDDNFGVERMADLCLMSRSLLRKIKTLFNLSPDFIRLIRLKKAAEFIQEG..K.
BT4236 1285 PFITAVIKVIEENICEADFVKKLAAEMNMSQPTLYRKKVQRSTDYTIEELIRGVRMRRAAGVLLKTK...Q
BT0981 1366 QFLEKIHQVIEENMDDSDFNIDTIIASGILSRSAFFKLLKSLTGLAPVDLVKELRLKKSIEILLI.KN...T
BT0138 817 .....NPDLKMGELAAALTSSSHSLSYLLNQSYDFINEYRVAQFKKVVEDS.DYS
BT3660 797 AFLVLAIELVEKNLDVNGVSEQLSRDLMEKTLGTYRKLVTLLDQSPSLFRNIRLIRLORAAELI.AEG...
consensus>50 .f...n.d.v.....m.s.....y.k.k.....dyi...rl...a.l.....

BT4673

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1144 KFTVAEVMYMGVCFSNHSYFSKCFQAEFGKTPRQV LNDGL.....
1292 .YGLVEIISYMGVFNSPSYFSNCFKKQFGLPKDFMQ.....
1304 .GRVNEICYMGVFNSPSYFSKCFQKQFGLPKDFAG.....
1290 .YLLGDI CFMGVFNSPSYFSKLFKQFGMTPKDFEKQSQADKEKIDMPS.....
1472 EFNMTQISYMGVINDDPRYFSKCFKAQVGMTPTEYREKVGR.....
1293 .R ISEVAAQVGTSSSYFAKCFKAQVGLPKKEYVNQLSVSDTAVESTP.....DADSTI
1384 NLTVAEVAYKVGISDPFYFSKCFKTFGVAAPSVYQRGEMKEQGEN.ETAEA.....
1303 KKTIDEIVFDSGFSNKKVTFKVFREKYECTPKEEFRQKHLAEVQ.....
1305 .MNVSEASAYAVGMSDPN YFTKCFKKEFNITPTTEFIKQLNL.....
1305 ELNITEISDRIGFSSSR YFSKCFKEIYHVSPLAYRKGEKKEEGNEETDQ.....
1303 KKTIDEIVFEAGFSNKKVTFKVFREKYGCTPKEFRTKHLAEVQ.....
1315 .YTVAEVSTMVGFNTPSYFATSFKKYFGCLPTEYIKKSKG.....
1331 .YNI SEIAYKIGMNSTGYFRQCFKDEFGVSPSDYLKQFTSP.....TPPPSS
1312 QLSIEEIMDKTGFSNRGTFYKAFKQFEMTPKQYRNKTKDVHEASEEGGTMNV.....
1308 ELNITEISVRIGFSSPRYFSKSFKAFFGIAPQGVRSRKE.....
1382 NMNIAEVAYEVGFNDPKYFTRCFTKHFNVTPSALLNNEE.....
1287 .HSITEIAEMTGFSDAKYFREVFKKHFNVSPSQYKGEKPKHKEGKAGKENKSDKEGGEKEE
1292 .YTIIEIAEIVGFSDAKYFREVFKKYNNVSPSKEV.....NSDQE
1381 DLTIAEVAYSVCINDDPFYFSKCFKNQFGVSPSAYRKKLSEDENEPINDADV.....
1274 EMSFTEIAEKVGTTSRYFSTTFKQYTGCTPTQYKEKHKRETSKTINQ.....
1277 ELSIQDVISDVGISSRAYFYKETFRRKFGVTPKVYREKLLGNDTHKNQE.....
1279 .YNI SEI SEMCGFSESKYFREVFKREYKMSPSQYAKKYSISSSGII..EDDSDE
1277 ELSIQDVI AEVGISSRSYFYKETFRRFGMTPKQYREQLR.....
1340 NVRVSELAYAVGFNDPKYFSSCFKKEFDMLPSEYIERFIQNV.....
1412 EYNFSQVAYMTGFNDPKYFSKCFKVVVGITPSEYKEK.NK.....
1333 SISVAEVAYECGFSNPKYFATCFKEFGVTPKEYQKSC.....
1336 YSSLTEVAEMVGYDSMISFRKQFVAFGLVPSKYMEEKMRK.....
1294 YS.IQEISEMVGYS DTRTLRKHFMEOFGVSPSKYMGSTDR.....
1270 EMTFTEISEEVGFTSPSYFSTAFKQYTGCTPTQYKEK...TSKI.....
1269 DFTFTDI SEKVGFTTISYFSTAFKQYTGCTPTAYRSRQKK...KE.....
1267 TMNITEISEVGFSSLR YFSKVFKSIKGEIPSA YRKQDK.....
1213 .YRIGDI CYMGVINSPSYFSKLFKQFGMTPKDFEKQYQSGKQIIITQEIKNVEAGEGTK.
1352 YA.VQEV AEMVGYNDIP TFRKH FVDAFGTTPSTYE.....
1432 DLSVSEVAFAVGFKDSGYYSKCFRKKYNQTPREYMNEWKRG.....
871 RYTLTALAE LCFSSRA SFRRSFKKSTGVTPNEYIRSIGGTAKDE.....
863 KLSVTEIAERTCFSSSYLSKCFQEMVGCRRPSEYTEKAKKST.....
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consensus>50

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...i.ei...vGf...yf...F...fg...P...y.....
AraC-HTH Domain
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