

Supplemental Data File 1. Multiple sequence alignment of TtCsm6 homologs.  
50 closest homologs of TtCsm6 (gi|499548365) were identified by Psi-BLAST and aligned  
using COBALT.

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gi|499548365 ME-----D----LDALWERYREAVRAGGNPQA-----LYQEMV----WPALLAL
gi|570755047 ME-----D----LDALWERYREAVRAGGNPQA-----LYQEMV----WPALLAL
gi|499487817 ME-----D----LDALWERYREAVRAGGNPQA-----LYQEMV----WPALLAL
gi|551068805 MAENPLDRAGD---LEALWLQYKEAVRAGGNPHD-----LYQKMV----WPTLLEK
gi|516806813 MHD-----EG---LENVWQAYKEAVRAGGNPQT-----LYQEQV----WPALLDL
gi|740203173 ME--PLPNQGLD---LEALWQSYKEAVNAGGNAQA-----LYQERI----WPVLLEK
gi|489138195 MEE-----LQALWDRYKEAVRSGGNPQA-----LYQEMV----WPALVAR
gi|518381449 MQD-----LATLWEEYKQAVRAGG-----DAVGLYRERVPALLER
gi|746416481 MQD-----LATLWEEYKQAVRAGG-----DAVGLYRERVPALLER
gi|503470028 MPEKALNDPQAL-KEALEAWAEYKARVEEGG-----DPQTLYRERVPALLAL
gi|740224592 MQT--VNNPGD---LEPIWQAYREAVRAGG-----NPHTLYREMVPALLAL
gi|746419752 MLQ--DQERWNQ---LQEAWAREYKEAVGAGGNPQA-----LYQEMV----WPHLLEL
gi|740218035 MNER-----LGKLWQYKEKVKAGQ-----DPRTLYQOMVWVILLDS
gi|517272690 M--P-----SL-QAQLLEARKTLYERLDRGE-----DPTPFYNEAVWPLLLAL
gi|511098904 MGAE-----SL--RNRLEEARKTLYERLDRGE-----DPTPFYNEAVWPLLLAL
gi|753938889 -----MOKIHLAWQHLKTQELEGA-----RAQELYNQTVWPLLLLEL
gi|296849607 MED-----L--MOKIHLAWQHLKTQELEGA-----RAQELYNQTVWPLLLLEL
gi|701167105 MENH-----PL--EELERLWAEYKTKVKEGG-----NAQKLYRQEVWVPLLLQL
gi|502941971 MAEV--VEP----VELNDLWQFQKEMHASOGL-----EAANDFYDQHVWVPSLLLR
gi|648543053 MNRN-----KERLRQLWTRYKDLLGQGNIGRTEPSPQAKEARELYEKEIWPLT---
gi|654417026 MNQN-----KERLRELWAEYKTLIRQESADRAGPAPQGRAKELYDQTQIWLPT---
gi|502777546 MNQN-----KERLRELWAEYKTLIRQESANRAGSSPQAKAKELYDQTQIWLPT---
gi|654402559 MNQN-----KERLRELWVQYKTLIRQERANRGESSPKPTAKDLYDQTQIWLPT---
gi|302777911 MKEE-LKLTEEE---IERLLKEKTEIWETMQAKNA-----EYYYYNEIFPLVVDK
gi|779961749 MKEE-LKLSNDK---IESLLNEKAKI WETMQAKRA-----EYYYYDEIFPLVVKK
gi|505124139 MKEE-LKLSNDK---IESLLNEKAKI WETMQAKRA-----EYYYYDEIFPLVVKK
gi|502759809 MESE-GILSNSE---IEKKIKEKVEIWETKPAKEA-----EDYYYQEIFPLVVKK
gi|655943915 MESE-GILSNSE---IEKKIKEKVEIWETKPAKEA-----EDYYYQEIFPLVVKK
gi|125715920 -----
gi|489607383 MSDI----YAR---MKEKRDIIWYAMDRSNNEERM-----MAEYYKKEMLPLII EY
gi|754095284 -----LII EY
gi|489611620 M-EL----YKD---LMKKTIFWREMDRSSEKLRI-----ASEEYKKEMLPLII EY
gi|504021345 MNDI----YIK---MKEKRDIIWYAMDRSNNEERM-----LAEQYKKEMLPLII EY
gi|653611173 M-EL----YKD---LMKKTIFWREMDRSSEKLRI-----ASEEYKKEMLPLII EY
gi|605572971 MKTF----KES---FVQATAQWKLNRGTEEERR-----QADAFYKDHILPEVMMH
gi|740811186 MKTF----KES---FVQATAQWKLNRGTEEERR-----QADAFYKDHILPEVMMH
gi|516314532 MDRT-----A---LDQVI EQWQSLNNEERSQ-----FYDNHVFPALKE-
gi|655011063 MD-----FSEQLQRFRRVGNRRAE-----
gi|670513542 MD-----FSTQLQQFRERVGNRQAV-----
gi|500595682 M-----TASDKRI-----PFPEIF-----
gi|301057067 MLN----TSDHGPVDFGACVDRYHDIHQGRQYGDGTRA--EQATRFYLDHLLGETATR
gi|757183905 MNKELEKR-----TQEWMLERATLQRT-----KAEYYEKQLMKLIVDS
gi|501216200 MD-----FSEQLERFIARVDKRRTP-----
gi|501070122 M-----AQPTREAL-----PFPPMF-----
gi|703489217 MTG----EEAH----FDELAQMRRISLGEESYGDGLRPH--EQANEFYLDRLLGESVAR
gi|559063203 MGSL----DEKH-----SRMRRIFRGE EYGGGTAA--EQAQAFRLAEIYDEAVEV
gi|490153543 MNKELSR-----LTEQWKQMERKTEQORR-----LADAFYETDMMRLIEED
gi|548231998 MADETKRKTADETENPLQMMTEQWMLERKTTKQRE-----AADLFYEKLMNLI EDN
gi|656268823 MTVI----GSSRA---FADELAAFRRARTRDLGFR-----
gi|497885042 MKHH-----LAVYYEKLKQ-----NKDEA-----KEYYFQHMFDNVCHE
gi|585249330 -----

gi|499548365 WRE---KPRVYFPQAFVSVHTLGT-SPEATALAILGAGAERVYVLHTPESARF--LPR
gi|570755047 WRE---KPRVYFPQAFVSVHTLGT-SPEATALAILGAGAERVYVLHTPESARF--LPR
gi|499487817 WRE---KPRVYFPQAFVSVHTLGT-SPEATALAILGAGAERVYVLHTPESARF--LPR
gi|551068805 WRK---EPSVYSPQPFVSVIHTLGT-SPEATALAILGGAEQVYVLHTAESARF--LPR
gi|516806813 WRR---QPRVYPSRQPFVSVIHTLGT-SPEATALAILGTGAETVYVIHTRDSASF--LER
gi|740203173 WRQ---DPPVYPSRQPFQVSIHTLGT-SPEATALAILGAGADVYVLHTPESARF--LSR
gi|489138195 WKE---APNVHPRREAFVSVHTLGT-SPEATILAILGAGAERVYVLHTRESASY--LER
gi|518381449 WRQ---EPPVHPSQPEFAVSIHTLGT-SPEATVLAAILGTRAREVYVLHTDLTRAH--VPR
gi|746416481 WRQ---EPPVHPSQPEFAVSIHTLGT-SPEATVLAAILGTRAREVYVLHTDLTRAH--VSR
gi|503470028 WRA---EPPVHPRQPFVSIHTLGT-SPEAAIQAILGTGAEEVYVLHTTESTRF--LPR
gi|740224592 WRT---APQVYPERRSFRVSIHTLGT-SPEATTLAVLGTGAEEVYVLHTTESTRH--LDQ
gi|746419752 WRH---APPVSPERMVFRASLHTLGT-SPEATALAILGTGAQEVYVLHTTEESRRF--LER
gi|740218035 WKK---SPVVEPQKQFQVSIHTLGT-SPEATTLAILGTRSSSEVYVIHTPETRKY--LEQ
gi|517272690 WRE---DPPVPRFQPYEVS IHTVGT-SPEATILAILGTGAERVYVLHTTEESRRF--LER
gi|511098904 WRE---DPPVPRFQPYEVS IHTVGT-SPEATILAILGTGAGRVYLLHTTEESQRY--LER
gi|753938889 WRL---EPQVHPLRESFDVSIHTLGT-SPEATTLAALGLGADEIYVLHTPESRRY--LAQ
gi|296849607 WRL---EPQVHPLRESFDVSIHTLGT-SPEATTLAALGLGADEIYVLHTPESRRY--LAQ
gi|701167105 WKE---RPKVIPAPKPFDI SIHTLGT-SPEATILAILGTGADEIYILHTPETKAF--IAK
gi|502941971 WRA---QD----HGPRCNLSLHTLGT-SPEALILAATALRSEQIYIFYTDESEKY--LDR
gi|648543053 --K---EGFVDRGQQQYKASFHTVGT-TPEPVILSARALNAEKVYLLHTKDKTEKL--CER
gi|654417026 --K---EGFTDRGQQRYLASFHTVGT-TAEPVILSVRALDAKVYLLHTKDKTEKV--CGR
gi|502777546 --K---EGFTDRGQQQYVASFHTVGT-TAEPVILSVRALDAEKVYLLHTKDKTEKL--CGR
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gi | 654402559 --K---EGFTDRGQRQYVASFHTVGT-TIEPVVLSTRALDAEKVYLLHTKDTERL--CGQ  
gi | 302777911 FRL---SISDEIQGK-YENLILSLGM-SFEPLVLTITALKPKRVFLYTEDSLKN--LDE  
gi | 779961749 FHL---SINNEFYGK-YENLILSLGM-SFEPLVLTIKALKPKRVFLYTEDSLKN--LDE  
gi | 505124139 FHL---SINNEFYGK-YENLILSLGM-SFEPLVLTIKALKPKRMVFLYTEDSLKN--LDE  
gi | 502759809 FHL---ETDVSFKEK-YENLILSLGF-SFEPLVLTISFIKPKQVFLYTKDSREN--LDK  
gi | 655943915 FHL---ETDVSFKEK-YENLILSLGF-SFEPLVLTISFIKPKQVFLYTKDSREN--LDK  
gi | 125715920 -----MVL-TLGT-SYEPLVLSISVLKPEKVLILYTDKSHHL--LDD  
gi | 489607383 FIQ---ENTKKISGNCAMVL-TLGT-SYEPLVLSISVLKPEKVLILYTDKSHHL--LDD  
gi | 754095284 FIQ---ENTKKISGNCAMVL-TLGT-SYEPLVLSISVLKPEKVLILYTDKSHHL--LDD  
gi | 489611620 FIQ---ENAKKISGSCAMVL-TLGT-SYEPLVLSISVLKPEKVLILYTDKSHHL--LDD  
gi | 504021345 FIQ---ENAKKISGSCAMVL-TLGT-SYEPLVLSISVLKPEKVLILYTDKSHHL--LDE  
gi | 653611173 FIQ---ENAKKISGSCAMVL-TLGT-SYEPLVLSIAVLKPEKVLILYTDKSHHL--LDD  
gi | 605572971 FRE---K---YAHSESCENLILTLGT-SYEPLVLSIALRPERVLIHSTRTRPL--LDD  
gi | 740811186 FRE---K---YAHSESCENLILTLGT-SYEPLVLSIALRPERVLIHSTRTRPL--LDD  
gi | 516314532 YVI---PREQQKHPQAYDCLILSVGL-SPEPIILSVLTFRPTQVCLLYTAESKKL--LDR  
gi | 655011063 -----ALILAGSRQEDTAALLIGALQPNRVAFLLTPETYDF--LRK  
gi | 670513542 -----ALILAGSRQEDTAALLIGALQPNRVAFLLTPETHDF--LEK  
gi | 500595682 --A---SFRATADGCAFRLV-LVGTQLQADTPALLIAGLNPERVAFLLTDQSRPK--LDE  
gi | 301057067 -AR---AESRLPARP-VDLLISLCLGF-TPVPTVLTHELLRPMVVRDAEDS--IDV  
gi | 757183905 FSE---NNKESIVGKT-DYLILSVGT-SYEPLVLSISLLNPKIMFLYTEKSEAS--IDK  
gi | 501216200 -----ALIPGSRQADTAALLIAALRPERVAFLLTPETTF--PAQ  
gi | 501070122 --Q---RFRSTIGDHAFRGLV-LVGTQLQADTPSLLIAGLNPERVAFLLTDQSRKGLVAQ  
gi | 703489217 -AS---RSLAQPPGD-VDLLISLCLGF-SPTTTLAFELLKPRRLVVITSEDAEES--INV  
gi | 559063203 -AQ---ANSADQPERVDLLISLCLGF-SPTTTLAFALTRPTRLIIITSEGTQKT--IDT  
gi | 490153543 FIA---RNREQVFEQA-DYFIVSVGT-SYEPVILNMKLFQPDRIFLYTEKTDV--LYK  
gi | 548231998 FIA---RNREQVEEV-EYLIVSVGT-SYEPLVLSIKLLNPKILFLFTAITEKY--LDK  
gi | 656268823 -----GLVLLGSRQSTTAALLIGALQVERVAFLLTDETRQM--PDD  
gi | 497885042 FKKKVAEQANREIQEYDYLIMTVGY-NIEPLVMWIKALSPKRVFFLCSDETEKY--VDE  
gi | 585249330 -----MSGL-TPLPTILAYDVLPRPKHLLVIYSEKAAGA--VDV

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gi | 499548365 LRQDTGKDLYP-----VEIGKSDVEAIYR-EVKRL-LEKHP-----EVP----  
gi | 570755047 LRQDTGKDLYP-----VEIGKSDVEAIYR-EVKRV-LEKHP-----EVP----  
gi | 499487817 LRQDTGKDLYP-----VEIGKSDVEAIYR-EVKRL-LEKHP-----EVP----  
gi | 551068805 LREDTGKDLYP-----LEIGKSDVAIYR-EVKRL-LERYP-----DVP----  
gi | 516806813 LRRDTGKDLYP-----LEVKGSDVAIYR-HVKDL-LERHP-----QVP----  
gi | 742023173 LRQDTGKDLYP-----IEIGKSDVAIYR-EVKRL-LEKHP-----GLP----  
gi | 489138195 LQKETGKPIYP-----LEVKGSDVAIYR-EVKRI-LDQHG-----DVP----  
gi | 518381449 LREETG---KE-----IYPLEVGKSDVAIYR-HVRYL-LERFP-----DVP----  
gi | 746416481 LREETG---KE-----IYPLEVGKSDVAIYR-HVRYL-LERFP-----DVP----  
gi | 503470028 LREETG---KE-----YPLEIQKSDVAIYR-KVREL-LEKRP-----EAL----  
gi | 740224592 LEADAN---RR-----VYPKEVHKSDVAQIYQ-QVYEI-LKRLP-----KDP----  
gi | 746419752 LRQDTGVIYYP-----IEIGKSDVAIYR-EVRKL-LERYP-----EEP----  
gi | 740218035 IRRDVG---VE-----LYPIEIEKNDVVTIYK-RIKEV-VERNI-----GKA----  
gi | 517272690 IQRETG---RE-----AYPIRVKSDVALIYK-TVAEL-LGRHR-----GAR----  
gi | 511098904 IQRETG---RE-----AYPIRVKSDVTLIYK-TVAEL-LGRHR-----GAR----  
gi | 753938889 LQQDLG---RP-----VYPIEIDKSDVTRLYQ-VVGEQ-VRKHP-----GKK----  
gi | 296849607 LQQDLG---RP-----VYPIEIDKSDVTRLYQ-VVGEQ-VRKHP-----GKK----  
gi | 701167105 LENETG---KK-----TYPIEVGKSDVAIYN-EVIKI-LEKNP-----DKW----  
gi | 502941971 VEAELG---KR-----VWAYNVSKDDPTTIYQ-RFQDV-LQRYP-----HAD----  
gi | 648543053 IEKELGWGVDL-----IKTLQVRSRDPEDIYR-QVRQO-IDRLD-----PKDP----  
gi | 654417026 IERELGWGVER-----IKTLLVGRSDPEDIYR-QVRQK-VDEIP-----PDAA----  
gi | 502777546 IERELGWGVER-----IKTLLVGRSDPEDIYK-QVRQK-VDELP-----PDAA----  
gi | 654402559 IEKELGWGVER-----IKTLLVGRSDPEDIYK-QVRQK-VDELP-----PDAA----  
gi | 302777911 VIKWTNLLPSQ-----YTAEEIVKDDPVDIYR-VLKKVYVDRWG-----CPDK----  
gi | 779961749 VIKWTNLLPSQ-----YVAEEIVKDDPVDIYR-VLKKVYVDRWG-----SPVK----  
gi | 505124139 VIKWTNLLPSQ-----YVAEEIVKDDPVDIYR-VLKKVYVDRWG-----SPGK----  
gi | 502759809 VIQWAGLLPSQ-----YVAEEIEKDNVPDIYR-VLKKIYVEKWN-----KPKD----  
gi | 655943915 VIQWAGLLPSQ-----YVAEEIEKDNVPEIYR-VLKKIYVEKWN-----KPKD----  
gi | 125715920 VIEFTKLKPSQ-----YVATDVDAENPLQLYR-KIKDV-YEKWG-----RPRN----  
gi | 489607383 VIEFTKLKPSQ-----YVATDVDAENPLQLYR-KIKDV-YEKWG-----RPRN----  
gi | 754095284 VIEFTKLKPSQ-----YVATDVDAENPLQLYR-KIKDV-YEKWG-----RPRN----  
gi | 489611620 VIEFTKLKPSQ-----YVATDVDAENPLQLYR-KIKDV-YEKWG-----RPRN----  
gi | 504021345 VIEFTKLKPSQ-----YIATDVDAENPLQLYQ-KIKDI-YEKWG-----RPNK----  
gi | 653611173 VIEFTKLKPSQ-----YIATDVDAENPLQLYQ-KIKDI-YEKWG-----RPNK----  
gi | 605572971 VIELTGLKPSR-----YISRMVNSENPLKLYQ-VVKEV-YEEDW-----RPGK----  
gi | 740811186 VIELTGLKPSR-----YISRMVNSENPLKLYQ-VVKEV-YEEDW-----RPGK----  
gi | 516314532 IDEANLKASQ-----IEMAEISETRLQNIYQ-KIREV-YEKWE-----RPTR----  
gi | 655011063 VAIKLGREPDQ-----RWISRTAHYTDVTQVYR-ELRAV-IEEWSDL--DRDQ----  
gi | 670513542 VAAKLDREPDQ-----TWIKRIAHYTDVNQVYR-ELRAV-IEEWSDL--DRDQ----  
gi | 500595682 VRQRLAQVADQAPLRCSPDDWFCPDGDYSSVLRVYT-GLRTV-LDRWRDL--ERHE----  
gi | 301057067 IHDRVTRPSGPL----RPRDFRHASCDPTDPLSIYR-IVKEE-LDRTPAGDGRP-Y----  
gi | 757183905 IVKFCGLDASI-----YDKRKVHETNPLSVYQ-EIKRA-YLMWN-----RPDK----  
gi | 501216200 MAERLGRQPAD-----GWLCKTARYTDINQVYR-ELRAV-IEAWSDL--EREQ----  
gi | 501070122 CRARLEQVADQVSLRCLPDADWFCPNGDHSNVLVSYT-GLRAV-LDRWNDL--ERHE----  
gi | 703489217 LGERIVG-SGKL----QHKDFLPRRCVPTDPLGIYR-IVAAE-LEEHHARRVGRPSL----  
gi | 559063203 IWEKLAG---KI----KFSEARHVTCDPDPTSIYDIVLKEV-RSLLAA--GRPPR----  
gi | 490153543 IVKYCKLEPDS-----YEKNKVSERNPLDIYR-EIKRQ-YLEWD-----KPKK----  
gi | 548231998 IVKHCLNPVSA-----FQKCIIVSETPEMDIYR-EIKKA-YIEWG-----KPEK----

gi | 656268823  
gi | 497885042  
gi | 585249330

VAALLGCSP-Q-----AWLCPQGNHNTTRAVYQ-GLRQV-LEQWADL--DRAA----  
ICKRAELIHTQ-----CDHEVIRKTNGTVDVYE-MINKF-IEKNR----IMQENKLN  
IGDHVVGPGQLKA-----SQFSHPVDPDPRIVYQ-VINEY-LARFN-----PADGR--

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gi | 499548365  
gi | 570755047  
gi | 499487817  
gi | 551068805  
gi | 516806813  
gi | 740203173  
gi | 489138195  
gi | 518381449  
gi | 746416481  
gi | 503470028  
gi | 740224592  
gi | 746419752  
gi | 740218035  
gi | 517272690  
gi | 511098904  
gi | 753938889  
gi | 296849607  
gi | 701167105  
gi | 502941971  
gi | 648543053  
gi | 654417026  
gi | 502777546  
gi | 654402559  
gi | 302777911  
gi | 779961749  
gi | 505124139  
gi | 502759809  
gi | 655943915  
gi | 125715920  
gi | 489607383  
gi | 754095284  
gi | 489611620  
gi | 504021345  
gi | 653611173  
gi | 605572971  
gi | 740811186  
gi | 516314532  
gi | 655011063  
gi | 670513542  
gi | 500595682  
gi | 301057067  
gi | 757183905  
gi | 501216200  
gi | 501070122  
gi | 703489217  
gi | 559063203  
gi | 490153543  
gi | 548231998  
gi | 656268823  
gi | 497885042  
gi | 585249330

-VALDLTSGTKAMSAGLAAAGFFQRFYPKVRVYVDNEDY-DPELRRP--RAGTEKLRI  
-VALDLTSGTKAMSAGLAAAGFFQRFYPKVRVYVDNEDY-DPELRRP--RAGTEKLRI  
-VALDLTSGTKAMSAGLAAAGFFQRFYPKVRVYVDNEDY-DPELRRP--RAGTEKLRI  
-VALDLTSGTKAMSAGLAAAGFFQRFYPKVRVYVDNEDY-DPELRRP--RAGTERLVI  
-VALDLTSGTKAMSAGLAAAGFFQRFYQVRVYVDNEAY-DPELRRP--RAGTERLVI  
-VALDLTSGTKAMSAGLAAAGFFQRFYPEVRVYVDNEVY-DPELRRP--KAGTERLII  
-VALDLTSGTKAMSAGLAVAGFFRRFYPKARVYVDNEDY-DSELRRP--RAGTERLII  
-VALDLTSGTKAMSAGLAAAGFFQRFYPEVRVYVDNDDY-DPELRRP--RAGTERLII  
-VALDLTSGTKAMSAGLAAAGFFQRFYPEVRVYVDNDDY-DPELRRP--VAGTEKLII  
-VALDVTGGTKAMSAGLAAAGFFQRFYQVRVYVDSGEY-DVKLRRP--RAGTERLIV  
-VALDITSGTKAMSAGLAAAGFFRRHYSNLQVYVDNEEY-DQELRRP--KAGTERLMI  
-VALDVTSGTKAMSAGLAAAGFFRRFYPKVYVDNEDY-DVALRRP--RAGSEKLIV  
-VALDVTGGTKAMSAGLAAAGFFRRFYFNIRVYVDNEEY-DEELRRP--VAGTEKLVI  
-VALDLTSGTKAMTSLGAAAFFLQRIHSEVQVYVDNEGY-DPRLRRP--IPGTEYLV  
-VALDLTSGTKAMTSLGAAAFFLQRIHSEVQVYVDNEGY-DPRLRRP--IPGTEYLV  
-IALDLTSGTKAMSAGMAAGYFLQRVHPSLRVAYVDNDAF-DVALRKP--VAGTEKLII  
-IALDLTSGTKAMSAGMAAGYFLQRVHPSLRVAYVDNDAF-DVALRKP--VAGTEKLII  
-VALDLTSGTKAMSSGLGAAGFFRRFYDKLRVYVDNDLY-DVEVRRP--KAGSERMVI  
-IAVDITSGTKPMVTGLGAAAFSAMTFYKLRVYVNGE-F-DPAARRP--RAGSEALIQ  
-IAFDPTGGTKAMVAGLAMFAFSLAEEGRITAHVYVDNEEY-DDQLRRP--VAGTEFLKR  
-IAFDPTGGTKAMVAGLAMFAFSLAEEGRITAHVYVDNEEY-DDELRRP--VAGTEFLKR  
-IAFDPTGGTKAMVAGLAMFAFSLAEEGRITAHVYVDNEEY-DDELRRP--VAGTEFLKR  
-IAFDPTGGTKAMVAGLAMFAFSLAEEGRITAHVYVDNEEY-DDELRRP--VAGTEFLKR  
-IAFDPTGGTKAMVAGLAMFAFSLAEEGRITAHVYVDNEEY-DDELRRP--VAGTEFLKR  
-TAIDFTGGTKMSAGIAMAGAYF-----KIDLIVYAS-DY-NNKMRKP--KPGTEKLK  
-TAIDFTGGTKMSAGIAMAGAYF-----KIDLIVYAS-EY-NSKMRKP--KPGTEELKF  
-TAIDFTGGTKMSAGIAMAGAYF-----KIDLIVYAS-EY-NSKMRKP--KPGTEELKF  
-TAIDFTGGTKMSAGIAMAGAYL-----KIDLIVYAS-EY-NNKMRKP--WPGTEKLK  
-TAIDFTGGTKMSAGIAMAGAYL-----KIDLIVYAS-EY-NNKMRKP--WPGTEKLK  
-IYVDFTGGTKMSAAGCAMAGSAI-----GAKLIYIAG-NF-LTDLRKP--EPGSEKLCY  
-IYVDFTGGTKMSAAGCAMAGSAI-----GAKLIYIAG-NF-LTDLRKP--EPGSEKLCY  
-IYVDFTGGTKMSAAGCAMAGSAI-----GAKLIYIAG-NF-LTDLRKP--EPGSEKLCY  
-IYVDFTGGTKMSAAGCAMAGSAI-----GAKLIYVGG-NF-LPDLRKP--EPGSEKLCY  
-IYVDFTGGTKMSAAGCAMAGSAI-----GAKLIYVGG-NF-LPDLRKP--EPGSEKLCY  
-IYVDFTSGTKMSMTAGCAMAGSVI-----NAKFVYIAS-HY-LADLRKP--EPGSETLSY  
-IYVDFTSGTKMSMTAGCAMAGSVI-----NAKFVYIAS-HY-LADLRKP--EPGSETLSY  
-IAVDPTGGTKAMVAGCTLAGNLI-----GADLVYVSS-DY-NTILRKP--NPGSESLLI  
-ILVDLTAGTKPMTVGLAKAAAYVL-----GLGAIYIESDY----EQNQV--VPGSQRLLI  
-ILVDLTAGTKPMTVGLAKAAAYVL-----GLGTIYIESDY----EQNQV--VPGSQRLLI  
-IAVDLTGGKSTMTVGLAKAAHVL-----RLAAVYVDS----DYADGRP--VPGTQRLAT  
-AIIIDITGGRKMSAAAAMAQWL-----KLELSYVEG-RF-DPHTRHP--IPGTDRLLI  
-IYIDFTGGTKMSAAAAMAGAMI-----DIQLVYVGTEDY-LVHFRKP--MPGSERLYY  
-ILVDLTGGTKPMTVGLAKAAAYVL-----GLGTIYIESDY----AQNRV--IPGTQRLIE  
-IAVDLTGGKATMTVGLAKAAHVL-----RLASVYVDS----DYADNRP--IPGTQRLAT  
-AYIDITGGRKMSAAAALAQWL-----DLRICYVES-DW-DPMLRRA--VPGSDRLLL  
-VIIDITGGKMSAGAALAASQL-----DLPCYIDS-TF-DPEMRQA--LPGSERLCV  
-IYIDFTGGTKMSAAAAMAGAMI-----DIQLVYVGTFRNY-MNDFRKP--EPGSETLFI  
-LHIDITGGTKMSAAAAMAGAVI-----DIQLIYVGSNHY-LPDRFRP--CPGSETLFI  
-IAVDVTGGLKPMVAGLEKAAHVL-----GLTTIYVESDYGPLPDPGRGPLGTQRLII  
RVAIDITDGTSMVTGCTLTANHL-----GMDLLYIHKEES-D--SGYL----GKEEPMI  
-VILNVTGGKMSAAAALAQWL-----DLELCYLDG-EV-EDAIGSV--IPYQRLLL

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gi | 499548365  
gi | 570755047  
gi | 499487817  
gi | 551068805  
gi | 516806813  
gi | 740203173  
gi | 489138195  
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LA-TH-GVLAERPDLDR-L-QORQ---PQLENEY-----RAVERS-LGFRERGLQPNRDG  
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gi | 753938889 VEKLOQFARKLYLTTR--EEAKLALS-----VEPVE-----LM-----  
gi | 296849607 VEKLOQFARKLYLTTR--EEAKLALS-----VEPVE-----LM-----  
gi | 701167105 NERLQEKAEKLAKTIK--KSEDVFSF-----VEALK-----IDKGILRFEEL  
gi | 502941971 YRKLASLLSPLHEALL--QLEGRSER---CPASAVPLP-----  
gi | 648543053 ANDLAQVLOTLV-----ERGGLPKV-E-----YSPIP-----LA-----  
gi | 654417026 ADNLSEVLTDLV-----RKGG LSEV-R-----FEPIP-----LP-----  
gi | 502777546 AKNLSEVLVALV-----QSGGLPEV-R-----FEPIP-----LS-----  
gi | 654402559 AKNLSEVLMALV-----QGGDLPEV-K-----FEPIP-----LA-----  
gi | 302777911 FDKIRKTVKRIPTSFY--EIEGIDF-----  
gi | 779961749 FDKFHEIVRKIFIRFC--DLENINFE-S-ICGNYKFIL-----LS-----  
gi | 505124139 FDKFHEIVRKIFIRFC--DLERINFE-S-VCSNYKFIL-----LS-----  
gi | 502759809 FNDFHETVKKILIRFC--EIERIEFE-K-VCKDYKFVL-----LE-----  
gi | 655943915 FNDFHETVKKILIRFC--EIERIEFE-K-VCKDYKFVL-----LE-----  
gi | 125715920 YNEFKKVVEDYMNLLC--SIEGIDKE-E-LFDSCEFIK-----L-----  
gi | 489607383 YNEFKKVVEDYMNLLC--SIEGIDKE-E-LFDSCEFIK-----L-----  
gi | 754095284 YNEFKKVVEDYMNLLC--SIEGIDKE-E-LFDSCEFIK-----L-----  
gi | 489611620 YNEFKKVVEDYMNLLC--SIEGIDKE-E-LFDSCEFIK-----L-----  
gi | 504021345 YMEFKKVVEDYIDLCC--SIDCINKE-E-IFSICKFIN-----L-----  
gi | 653611173 YMEFKKVVEDYIDLCC--SIECINKD-E-IFSICEFIN-----L-----  
gi | 605572971 YSQFKAADVDEYVDRFF--HLEELDRD-E-AFGPMNFIT-----LSAD-----  
gi | 740811186 YSQFKAADVDEYVDRFF--HLEELDRD-E-AF-----  
gi | 516314532 FMSFKTLVESLVDIFK--TIQENQA-Y-WNDCI-FVE-----EIV-----  
gi | 655011063 YRDFVSVVEQVLDQFF--ITTKHRRE-D-WEEQYQFVK-----L-----  
gi | 670513542 YRDF-----  
gi | 500595682 YEQFADIVEELLDRFF--ALIGRSRQ-E-WERVHRFVS-----LAA-----  
gi | 301057067 TEELRRRADSLQVYW--ELHGD TGSLDEMCDRLQFVRTDR-----  
gi | 757183905 FTRFKNFVILLQRFC--AIEEIDFA-Q-ISEDILWINPLESKYCMHVLLHI---  
gi | 501216200 YREFARVVEQLDQFF--TIAQEQRS-S-WEERYRFIE-----LPAT-----  
gi | 501070122 YEQFADIVENVLDRFF--TIAQLPRY-E-WEQTYHFVT-----LAV-----  
gi | 703489217 SEQLNSMAQSVVRAYW--TLHHADENLDELRLRIRAGR-----  
gi | 559063203 SAQLSGRAGALLRYFL--QVHAPNODITERIKTLRFVSEL-----  
gi | 490153543 FHKFQCFVLDLQFLFC--SLEQIPYQ-E-YRENMTWVNPLTSKYDTGM-GE-----  
gi | 548231998 YLKFKFSVLELFRFC--DIEQISFA-Q-YNSKMTWITPFDSVYVYSGLEGN-----  
gi | 656268823 YESFCEVVEQLERYL--QLVCVSRA-D-WETTFRFVA-----IDVLTNPEE--  
gi | 497885042 VEGFYNRKIGLSNFVWNHDKHNLKVEVG--FEFSSPYSFVN--ISLRSRLVSV---  
gi | 585249330 SQKLGERAFFLKKLW--ELERPSDNLDELRLNLA FVRQGT-----