

CLUSTAL X (1.82) multiple sequence alignment

Sus1	-----
Aba1	-----
Mca1	-----
Tko1	-----
Pfu1	-----
Fba1	-----
Nsp2	-----
Fno1	-----
Cac1	-----
Lhe1	-----
Lre1	-----
Pmo1	-----
Tme1	-----
Sac1	-----
Dol1	-----
Orf1	-----
Rba1	-----
Oin1	-----
Eli1	-----
Sfr1	-----
Pde1	-----
Pcr1	-----
Bli1	-----
Sau1	-----
Sha1	-----
Ssa1	-----
Bsp2	-----
Ccu1	-----
Ame1	-----
Gka1	-----
Emi1	-----
Aae1	-----
Nsp1	-----
Msu1	-----
Cdi1	-----
Cje1	-----
Tva1	-----
Ath1	-----
Vvi1	-----
Clu1	MEEKYGGDVLAGPSGGGGGLGPVDVPSARLTKYIVLLCFTKFLKAVGLFESYDILKAVHI
Tca2	-----
Cel3	-----MLAHDFVKKDDRNFTPTQSSRSASYFVVLVLTKILRCIGVFFVDILAKSSHI
Hma1	-----
Jsp1	-----
Xor1	-----
Mpo1	-----
Dra1	-----
Asp2	-----
Tfu1	-----
Kra1	-----
Ace1	-----
Aod1	-----
Bad1	-----
Str1	-----
Rer1	-----
Nsp3	-----
Rsp1	-----
Csa1	-----
Oal1	-----
Mlo1	-----
Lag1	-----
Oan1	-----
Pat1	-----
Neu1	-----
Gbe1	-----
Pbe1	-----
Rxy1	-----
Sav1	-----
Asp1	-----

Mfe1	-----
Sce1	-----
Cbu1	-----
Asp3	-----
Mfl1	-----
Cvi1	-----
Psp1	-----
Tca1	-----
Aae2	-----
Cel2	-----
Tca3	-----
Orf2	-----
Bta1	-----
Xla1	-----
Cel1	-----
Tth1	-----
Ddi1	-----
Ath2	-----
Dsp1	-----
Sau2	-----
Cje2	-----
Cfe1	-----
Abu1	-----
Kst1	-----
Lbo1	-----
Pae1	-----
Aph1	-----
Wen1	-----
Mbo1	-----
Mth1	-----
Gbe2	-----
Chu1	-----
Lin1	-----
Rpa1	-----
Van1	-----
Gox1	-----
Afa1	-----
Bph1	-----
Lpn1	-----
Rgr1	-----
Lme1	-----
Sde1	-----
Ilo1	-----
Asp4	-----
Mma1	-----
Pgi1	-----
Bsp1	-----
Efa1	-----
Lla1	-----
Sgo1	-----
Mba1	-----
Dsh1	-----
Ecu1	-----
Sus1	-----
Aba1	-----
Mca1	-----
Tko1	-----
Pfu1	-----
Fba1	-----
Nsp2	-----
Fno1	-----
Cac1	-----
Lhe1	-----
Lre1	-----
Pmo1	-----
Tme1	-----
Sac1	-----
Dol1	-----
Orf1	-----
Rba1	-----
Oin1	-----

Eli1	-----
Sfr1	-----
Pde1	-----
Pcr1	-----
Blil	-----
Sau1	-----
Sha1	-----
Ssa1	-----
Bsp2	-----
Ccu1	-----
Ame1	-----
Gka1	-----
Emil	-----
Aae1	-----
Nsp1	-----
Msu1	-----
Cdil	-----
Cje1	-----
Tva1	-----
Ath1	-----
Vvil	-----
Clu1	VQFIFILKLGTAFFMVLFOKPFSSGKSITKHQWIKIFKHAVAGCIISLLWFFGLTLCGPL
Tca2	-----
Cel3	VNLLWLCKIIICTCILFPLQKPLSAGKSLKRGIMPMVLKLSLMNSVIEVFWFYGITLCGPL
Hma1	-----
Jsp1	-----
Xor1	-----
Mpo1	-----
Dra1	-----
Asp2	-----
Tfu1	-----
Kra1	-----
Ace1	-----
Aod1	-----
Bad1	-----
Str1	-----
Rer1	-----
Nsp3	-----
Rsp1	-----
Csa1	-----
Oal1	-----
Mlo1	-----
Lag1	-----
Oan1	-----
Pat1	-----
Neu1	-----
Gbe1	-----
Pbe1	-----
Rxy1	-----
Sav1	-----
Asp1	-----
Mfe1	-----
Sce1	-----
Cbu1	-----
Asp3	-----
Mfl1	-----
Cvil	-----
Psp1	-----
Tca1	-----
Aae2	-----
Cel2	-----
Tca3	-----
Orf2	-----
Bta1	-----MTVAEATSGSPGTRGWEREVEIQPVTPDFNRSPEEREELVLLERRGWA
Xla1	-----
Cel1	-----
Tth1	-----
Ddi1	-----
Ath2	-----
Dsp1	-----
Sau2	-----
Cje2	-----
Cfe1	-----

Abu1	-----
Kst1	-----
Lbo1	-----
Pae1	-----
Aph1	-----
Wen1	-----
Mbo1	-----
Mth1	-----
Gbe2	-----
Chu1	-----
Lin1	-----
Rpa1	-----
Van1	-----
Gox1	-----
Afa1	-----
Bph1	-----
Lpn1	-----
Rgr1	-----
Lme1	-----
Sde1	-----
Ilo1	-----
Asp4	-----
Mma1	-----
Pgi1	-----
Bsp1	-----
Efa1	-----
Lla1	-----
Sgo1	-----
Mba1	-----
Dsh1	-----
Ecu1	-----
Sus1	-----
Aba1	-----
Mca1	-----
Tko1	-----
Pfu1	-----
Fba1	-----
Nsp2	-----
Fno1	-----
Cac1	-----
Lhe1	-----
Lre1	-----
Pmo1	-----
Tme1	-----
Sac1	-----
Dol1	-----
Orf1	-----
Rba1	-----
Oin1	-----
Eli1	-----
Sfr1	-----
Pde1	-----
Pcr1	-----
Bli1	-----
Sau1	-----
Sha1	-----
Ssa1	-----
Bsp2	-----
Ccu1	-----
Ame1	-----
Gka1	-----
Emi1	-----
Aae1	-----
Nsp1	-----
Msu1	-----
Cdi1	-----
Cje1	-----
Tva1	-----
Ath1	-----
Vvi1	-----
Clu1	-----

-----MSW
RTLLLFHSDIVVISLLTVLFTSSGGGPAKTRGAFFIIAIVICLLLFNDDDLMAKMAEHP

Tca2	-----
Cel3	RSVLVFELSSSTVLLSAVVSFFKGGNMSTPSKTRGFFLLIVGFVALFLMDRDGTIEDPHHT
Hma1	-----
Jsp1	-----
Xor1	-----
Mpo1	-----
Dra1	-----
Asp2	-----
Tfu1	-----
Kra1	-----
Ace1	-----
Aod1	-----
Bad1	-----
Str1	-----
Rer1	-----
Nsp3	-----
Rsp1	-----
Csa1	-----
Oal1	-----
Mlo1	-----
Lag1	-----
Oan1	-----
Pat1	-----
Neu1	-----
Gbe1	-----
Pbe1	-----
Rxy1	-----
Sav1	-----
Asp1	-----
Mfe1	-----
Sce1	-----
Cbu1	-----
Asp3	-----
Mfl1	-----
Cvi1	-----
Psp1	-----
Tca1	-----
Aae2	-----
Cel2	-----
Tca3	-----
Orf2	-----
Bta1	TQSRFQQAGVRRTSRPEAASLARGASGRRGGRKSKQQQGWAESVLS DAGQVGSSGSGDR
Xla1	-----
Cel1	-----MTISMISP
Tth1	-----
Ddi1	-----MENFKNNELESSPIINKN
Ath2	-----MVTPKLHLDLSLTKK
Dsp1	-----
Sau2	-----
Cje2	-----
Cfe1	-----
Abu1	-----
Kst1	-----
Lbo1	-----
Pae1	-----
Aph1	-----
Wen1	-----
Mbo1	-----
Mth1	-----
Gbe2	-----
Chu1	-----
Lin1	-----
Rpa1	-----
Van1	-----
Gox1	-----
Afa1	-----
Bph1	-----
Lpn1	-----
Rgr1	-----
Lme1	-----
Sde1	-----
Ilo1	-----
Asp4	-----

Mma1	-----
Pgi1	-----
Bsp1	-----
Efa1	-----
Lla1	-----
Sgo1	-----
Mba1	-----
Dsh1	-----
Ecu1	-----
Sus1	-----
Abal	-----
Mca1	-----
Tko1	-----
Pfu1	-----
Fba1	-----
Nsp2	-----
Fno1	-----
Cac1	-----
Lhe1	-----
Lre1	-----
Pmo1	-----
Tme1	-----
Sac1	-----
Dol1	-----
Orf1	-----
Rba1	-----
Oin1	-----
Eli1	-----
Sfr1	-----
Pde1	-----
Pcr1	-----
Bli1	-----
Sau1	-----
Sha1	-----
Ssa1	-----
Bsp2	-----
Ccu1	-----
Ame1	-----
Gka1	-----
Emi1	-----
Aae1	-----
Nsp1	-----
Msu1	-----
Cdi1	-----
Cje1	-----
Tva1	-----
Ath1	-----
Vvi1	YRIECFPLSSMIVDKWGS-LFPRENCVRVLPMLLPFLSGFLGCYERVSMNWG-----
Clu1	EGHHDSALTHMLYTAIAFLGVADHKGGVLLVLALCCKVGFHTASRKLSIDVGGAKRLQA
Tca2	
Cel3	THAHHSGLNHLFYHLIGLFGMADHKGGLCILLISLLLRTGYETSFRHLAVEVGGAKRLHT
Hma1	-----
Jsp1	-----
Xor1	-----
Mpo1	-----
Dra1	-----
Asp2	-----
Tfu1	-----
Kra1	-----
Ace1	-----
Aod1	-----
Bad1	-----
Str1	-----
Rer1	-----
Nsp3	-----
Rsp1	-----
Csa1	-----
Oal1	-----
Mlo1	-----
Lag1	-----
Oan1	-----

Pat1	-----
Neu1	-----
Gbe1	-----
Pbe1	-----
Rxy1	-----
Sav1	-----
Asp1	-----
Mfe1	-----
Sce1	-----
Cbu1	-----
Asp3	-----
Mfl1	-----
Cvi1	-----
Psp1	-----
Tca1	---MHSDSSGT-----PKKVIFCVHGKPSAG
Aae2	-----MKYITSYYEQFIS
Cel2	---MYDVFNTF-----TFHFCCSLWGCHNK
Tca3	--METLCEHVDA-----DDENFLDDENAIKS
Orf2	---MEPSPAAGG-----LETTR-----LVSP-----RDRGGAGGSLRLKS
Bta1	VLGSAPGPFAASYTLPLPCGLLRTRFRTRGSRDLKPAGAGRSCRRRGSSGSDSWKTP
Xla1	---MKGPEKAY-----LVSD-----KATKMYSLTMDS
Cell	SSIRLSSDKRDS-----SSSNLPANIEEDTQSVSSSDSGVSAD
Tth1	-----
Ddi1	NSSHSINNEDNNYYSHNLEHNDNNNNNNNTITNSHINNHDHKNHEHEHKKHKNHDHNNH
Ath2	VSYLFVSRQTLRLSS-----SCLASLFLSFDAFLIARSCFFQMKDHIHEH
Dsp1	-----
Sau2	-----
Cje2	-----
Cfe1	-----
Abu1	-----
Kst1	-----
Lbo1	-----
Pae1	-----
Aph1	-----
Wen1	-----
Mbo1	-----
Mth1	-----
Gbe2	-----
Chu1	-----
Lin1	-----
Rpa1	-----
Van1	-----
Gox1	-----
Afa1	-----
Bph1	-----
Lpn1	-----
Rgr1	-----
Lme1	-----
Sde1	-----
Ilo1	-----
Asp4	-----
Mma1	-----
Pgi1	-----
Bsp1	-----
Efa1	-----
Lla1	-----
Sgo1	-----
Mba1	-----
Dsh1	-----
Ecu1	-----
Sus1	-----
Abal	-----
Mcal	-----
Tko1	-----
Pfu1	-----
Fba1	-----
Nsp2	-----
Fno1	-----
Cac1	-----
Lhe1	-----
Lre1	-----

Pmo1	-----
Tme1	-----
Sac1	-----
Dol1	-----
Orf1	-----
Rba1	-----
Oin1	-----
Eli1	-----
Sfr1	-----
Pde1	-----
Pcr1	-----
Bli1	-----
Sau1	-----
Sha1	-----
Ssa1	-----
Bsp2	-----
Ccu1	-----
Ame1	-----
Gka1	-----
Emi1	-----
Aae1	-----
Nsp1	-----
Msu1	-----
Cdi1	-----
Cje1	-----
Tva1	-----
Ath1	-----
Vvi1	-----TIRQLGRKVR--LISLFFTTVILFVPAVVSILMFEAEGDEFSLASLG
Clu1	LSHLISVLLLCPPWVIVLCGTTES--KVESWFSLIMPFTTVIFFVMILDFYVDSICSVKME
Tca2	
Cel3	LVTAGSAVCLTPVAVLSWALSSSSGASIGYFHYAALLVIIAVFVFLDFYAESICFQHVA
Hma1	-----
Jsp1	-----
Xor1	-----
Mpo1	-----
Dra1	-----
Asp2	-----
Tfu1	-----
Kra1	-----
Ace1	-----
Aod1	-----
Bad1	-----
Str1	-----
Rer1	-----
Nsp3	-----
Rsp1	-----
Csa1	-----
Oal1	-----
Mlo1	-----
Lag1	-----
Oan1	-----
Pat1	-----
Neu1	-----
Gbe1	-----
Pbe1	-----
Rxy1	-----
Sav1	-----
Asp1	-----
Mfe1	-----
Sce1	-----
Cbu1	-----
Asp3	-----MFQLTIR
Mfl1	-----
Cvi1	-----
Psp1	-----
Tca1	-----
Aae2	-----
Cel2	-----
Tca3	-----
Orf2	-----
Bta1	RRPRRGLGGSGLAAGRAAGAARTALVAGERSLSLESPAPDSREHVAGRAGPHESGREDASV
Xla1	-----
Cel1	S-----

Tth1	-----
Ddi1	DHDHNHEEEYGHGN-----
Ath2	DHMQICGEVSSG-----
Dsp1	-----
Sau2	-----
Cje2	-----
Cfe1	-----
Abu1	-----
Kst1	-----
Lbo1	-----
Pae1	-----
Aph1	-----
Wen1	-----
Mbo1	-----
Mth1	-----
Gbe2	-----
Chu1	-----
Lin1	-----
Rpa1	-----
Van1	-----
Gox1	-----
Afa1	-----
Bph1	-----
Lpn1	-----
Rgr1	-----
Lme1	-----
Sde1	-----
Ilo1	-----
Asp4	-----
Mma1	-----
Pgi1	-----
Bsp1	-----
Efa1	-----
Lla1	-----
Sgo1	-----
Mba1	-----
Dsh1	-----
Ecu1	-----
Sus1	-----
Abal	-----
Mcal	-----
Tko1	-----
Pful	-----
Fba1	-----
Nsp2	-----
Fno1	-----
Cac1	-----
Lhe1	-----
Lre1	-----
Pmo1	-----
Tme1	-----
Sac1	-----
Dol1	-----
Orf1	-----
Rba1	-----
Oin1	-----
Eli1	-----
Sfr1	-----
Pde1	-----
Pcr1	-----MNPDPNSKKNDHAHQSI PADT
Bli1	-----MAHS
Sau1	-----
Sha1	-----
Ssa1	-----
Bsp2	-----
Ccu1	-----MSEQDHDERTLHECGDHILGEHA
Ame1	-----MQLVPVFFRTNKQSDNWCTVKAD
Gka1	-----
Emi1	-----MTKKEEHLHVCACS
Aae1	-----
Nsp1	-----

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Msu1 -----
Cdi1 -----
Cje1 -----MNDPASAAQQQPQDRGGADAHRHGSARSG
Tva1 -----MIVDNLYHMKVMNKNEAEPGHHHTHSEH
Ath1 -----
Vvi1 WPLAN-----TVLFGVLLTENYSDEKLVSSRDFQREFLVTFCTLVLELFYFPEL
Clu1 VSKCARYGSFPIFISALLFGNFWTHPITDQLRAMNKAHQESTEHVLSGGVVVSAIFFIL
Tca2 -----MLPLSHKDNLHRGFG-----
Cel3 DPVMAAARWSSVTMFSCAFG-----LAYLWYGSQNLGDHALTGGSITVVCFIL
Hma1 -----
Jsp1 -----
Xor1 -----
Mpo1 -----
Dra1 -----
Asp2 -----
Tfu1 -----
Kra1 -----
Ace1 -----
Aod1 -----
Bad1 -----
Str1 -----
Rer1 -----
Nsp3 -----
Rsp1 -----
Csa1 -----MGHSSSGHDHAP-----
Oal1 -----MSDNHAHPS-----
Mlo1 -----MARPGQFRRRRPAEATARGLSRRIRRLS
Lag1 -----MSDSG-----HHDHAENAPHGS-----
Oan1 -----MSP-----
Pat1 -----
Neu1 -----MTVPQPHP-----
Gbe1 -----MTEAII TPASHSH-----
Pbe1 -----
Rxy1 -----
Sav1 -----MQPLPISTAMRLTAVEAPDARGKAHDMSD
Asp1 -----MSRGHSHGRGAHGRKHEAPHGE
Mfe1 -----
Sce1 -----MGVRDDHGSASDEHQHGR--GAR
Cbu1 -----
Asp3 ILPSPVLASDRSNWRAATPVRRDNRGIPAPPPCLRQPMsAKHAPHHGTAYTRAAGPAR
Mfl1 -----
Cvi1 -----MTPSFHLHDE-----
Psp1 -----MSGSHHFHSHS-----
Tca1 -----CCKVLQSEVIDIKEGDSVDTPKE--NQDATEM
Aae2 -----QNYCICINETKQLFQTKLQ--LVALPHL
Cel2 -----TSTAQN PQCTRVPHIYNTDEGRKT--TVTYDNF
Tca3 -----CNKCKSPSNGFVTMDDHVDTLEDSPLLINDCY
Orf2 -----LFTEPSEPLPEES-----KPVEMP--FHH
Bta1 GRQACSRWLVLATARSGTPAPTPTRGTYTTLWQDGTSSIPPSSPGLALQPTLAPQSSHY
Xla1 -----SEKNNCGKPPLQ-----DDENPHIKYHC
Cel1 -----IDHHHHGHGHGHSHGGHGHSHTHNDDSSSDCSGAG
Tth1 -----MDKHNLGSRVYVELVDIENLHKAL
Ddi1 -----ELEHNNDQEHNVGNKNLLTNNNNQSKKKKHGSHG
Ath2 -----ETSLVG-----IKKTCGEAPC
Dsp1 -----
Sau2 -----
Cje2 -----
Cfe1 -----
Abu1 -----
Kst1 -----
Lbo1 -----
Pae1 -----
Aph1 -----
Wen1 -----
Mbo1 -----
Mth1 -----
Gbe2 -----
Chu1 -----
Lin1 -----
Rpa1 -----MSLSKGIELLQARTK
Van1 -----
Gox1 -----
Afa1 -----

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Bph1 -----MKYTAHQTDSA
Lpn1 -----
Rgr1 -----
Lme1 -----
Sde1 -----M
Ilo1 -----
Asp4 -----
Mma1 -----
Pgil -----
Bsp1 -----
Efa1 -----
Lla1 -----
Sgo1 -----
Mba1 -----
Dsh1 -----
Ecu1 -----

Sus1 -----MHSNHS SHGHVHG-----
Aba1 -----MPHAHSGDLNDAK-----
Mca1 -----MPHDDHEHHHAADSAGA-----
Tko1 -----MAHHHHG-----
Pfu1 -----MEESGE-----
Fba1 -----MGHSHSHNHS-----
Nsp2 -----MAHHHHH-----
Fno1 -----MSNHFYSHHEHSIPHSHE-----
Cac1 -----MEKHSHEHHHH-----
Lhe1 -----MNKDHTT-----
Lre1 -----MDEKVTG-----
Pmo1 -----MDLNHEEKER-----
Tme1 -----MHS-HEHHHD-----
Sac1 -----MKIDGSFHKIPGPKRSVMTGHHPHQHS-----
Dol1 -----MGHN-----HSHSHETT-----
Orf1 -----MPHDHHHQHGHAGHG-----
Rba1 -----MGSCDQNHSENSADNHENCG-----
Oin1 -----MAHDHAHID-----
Eli1 -----MAHSHDQAG-----
Sfr1 -----MSNNNHTHS-----
Pde1 -----MGHSHAHEG-----
Pcr1 HGHVEEG-----EESGGKSNTAYRNQDSHDHDEHLEQTVATRD-----
Bli1 HGHT-----GSHHGSRSAN-----
Sau1 -----MSHSHHHHDH-MHSHVTTNN-----
Sha1 -----MTNHSHTTHSH-NHSHVHTNN-----
Ssa1 -----MS-EHHEHNH-AHGHVHTNN-----
Bsp2 -----MGHNHDH-GHDHTHGAN-----
Ccu1 QGECDCKNRIPTHEKLCNENDNEKHVQKGQDCNEHDHEVNNHDAHAHSHAAN-----
Ame1 FAVSVCCPIANKDRK-----RNTMHEHNHTEHEHDEAHHHHHHHLGAHSAD-----
Gka1 -----MHHHHHHSHDHHGHHHHHHGHHHDHSREGN-----
Emi1 HG-----HKQGHHAHALHEHGHRRHHDHGAGAS-----
Aae1 -----MEREKS-----
Nsp1 -----MFSLQWCECDCTDDPEIILQSQQK-----
Msu1 -----MNAQAKKDKQAHHEHHAHSQVHTEHEHSQVPKN-----
Cdi1 -----MSNHHHDHNNHHDHHHG-----AP-----
Cje1 ASAAAVAQARPADARADAPAPAGASEGGHAHSHDSGHAHSHGHSHGHASHSHAP-----
Tva1 NESDTTVGLLEPENCEQLQVAEKNHNFHVHDHHDHHDHHDHN-----HA-----
Ath1 -----MESPEFSTFMKPIRHIL-----
Vvi1 SLWGLLLCG-----LLYISVRELDPVYSNSLELGMDSSESFTDSIVKPIRHVL-----
Clu1 SANILSSPSKRGQK-GTLIGYSPEGTPLYNFMGDAFQHSQSIPRFIKESLKQIL-----
Tca2 -----SRIKEKLNWMRLIF-----
Cel3 ASISLTHSNQPKHRGGHFVGISNTGLPLFTYGEAFLQRTSKSLMLFMKETLNEIL-----
Hma1 -----MTLHEHTDEETAENHNLPSK-----
Jsp1 -----MSAGHNHAL-----
Xor1 -----MRASHET-----TSMGHDHNNAP-----
Mpo1 -----MGHGH-----AHGGGHGSHGGGIPSG-----
Dra1 -----MTGHNHPHEHDPHHDRADTQEHGHAHGHAGHDHAAHN-----
Asp2 -----MGHDHSHAHGISA-----
Tfu1 -----MGHHHHH-----
Kra1 -----MRHEHSDDPGHGPSGGSPGSPGDHGDHGDHGGSGHGGHGGHGG-----
Ace1 -----MHGEHG-RTPHP-----
Aod1 -----MADNRPTSPGAGSARESAPASTHIDEAVAHSHDHAYSPSGEHGGHS-----
Bad1 -----MAHNHAGVDATTAASG-----
Str1 -----MGATDGHQPGAVA-----
Rer1 -----MVDDREGQIEMGHGHGHGVAEQ-----

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Nsp3      -----MGHGHHGSHSAAA-----
Rsp1      -----MGVGHGSHSGHTQSGE-----
Csa1      ---HDHDDHGHGHDH-----HHE-----HAPT VT-----
Oal1      ---HDHADHDHGDH-----HHHGHHGSHAH PVD-----
Mlo1      PAGAHDRSCHLAHTSH-----DHSGHDHEGAGHVHG-----
Lag1      ---HGSHDGHGHN-----DH---GHGHDHTPEVT-----
Oan1      -----EMSHSHGSH-----DDHSHDHSAPT VT-----
Pat1      -----MAHNHSH-----TE-----
Neu1      -----HPEHGKNGHD-----RDRNHDHNHKQVIT-----
Gbe1      -----THHDHGHAGHD-----H---GALGSHSAGVK-----
Pbe1      -----MHHGHCAGHS-----QEGFGGHHHSGSD-----
Rxy1      -----MT-----HANGHAEGHGREADR-----
Sav1      HGHDHGHGHTGSHGHS-----GHAGHSHGVSADADR-----
Asp1      RCDGHHG---GHRHPEHEH-----DHGEHVHGMGGHHAG-----
Mfe1      -----MENHAH-----DHHGHS---GHHG-----
Sce1      RGEHGDHRRHHAPGHDH-----DHG---HDHGD PQRHDSHDLR-----
Cbu1      -----MTHHHHHKHH-----
Asp3      CGHDHDDHGDHSDHSHGHEHHAPAGHDHGSAPAAAHGHEHAHGH HHH-----
Mfl1      -----MSAHHHHHDSHSHAG-----
Cvi1      NGVDHAHDDDDANHPH-----LHRHGGPAGGEGRR-----
Psp1      KP I KPHSQSGVDP-----SLHAHKKGDARHSHTKQ-----
Tca1      INK---HCHRG-----KSP EIDRKARRKL-----
Aae2      IVT---HCHRP-----RMDGVDKIARKKL-----
Cel2      HCHDEADST-----DSHDSNRRATRIL-----
Tca3      HDEFHCHNI-----LQSEDKKAWKKL-----
Orf2      CHRDP LPPP-----GLTPERLHARRQL-----
Bta1      CHS QKGP GS-----HGDPKK---RAWRQL-----
Xla1      HNNNTKAYD-----ARQREQTSAKKKL-----
Cel1      GGAHKHSHD-----EKYQKGRRAEKVL-----
Tth1      KDEAVYKTP-----DLQSNKVKALRTL-----
Ddi1      GGEDGSSSGGGGRHGHGSHGGSGSDHNHGSDEDEESKPLNQLRNLD SKKKAR---
Ath2      GFSDAKTS-----SIEAQERASMRKL-----
Dsp1      -----MSL ISSKKTAPDN-----
Sau2      -----MVNYGSININLRSYKELFLKATILNTTHLFRSGKRMNGKKAN-----
Cje2      -----MSSKKGYKMYKFLSHEPLAN---KSCHHNHEE-----
Cfe1      -----MQC---VYGHITHKPLE---QSCDHASD-----
Abu1      -----MAN---CGFGLNEHKPFLNKESEHHHHHDKHKLSNKNL-----
Kst1      -----MDDFFQLHHVERS-----
Lbo1      -----MAKROAIPSRV SINAVKHMEHNEQVLSERTF-----
Pae1      -----MWCVMTSCDS---QYSPSMHRR-----
Aph1      -----MLDVQAVAGSNPVLPTFLFMKRFYMTAVHNGKHSAAQSKR-----
Wen1      -----MDCPDHTHDHSQDHSHTNSRK-----
Mth1      -----MIAHEVRVIER-----
Gbe2      -----MHAHADTHLDQSITG-----
Chu1      -----MEHNHTHHDSIILTH-----
Lin1      -----MGHHHSHNHSHDHSHNPHSEN-----
Rpa1      RAPRHSPG PLLRAILSTTAFAPHRNEVVAPHSPMTQIHDHDDHASASEQGHNHGHAHGP
Van1      -----MAHSHEHHVSN-----
Gox1      ---MTPDPHDCACDH DHG---TTL PHEHHAHDHADHDHDDHDDHCDGHS HGFGF
Afa1      -----MLQMAHTHDSHEPN-----
Bph1      SVTHQPKAHVHTDACDHAGHDDADHAHSHGDGHTHDQAHADHADASGKDAHAHHGHGHH
Lpn1      -----MSRSHDGAHHHEHGEVT-----
Rgr1      -----MS-----HNHQHHILR-----
Lme1      -----MKKPMEQLKMK-----
Sde1      AHQDL PQSHSPKPHSQEAEP AQADKGITDHSQRNTGSHSHNAKSKKHKSHSHQH GDF
Ilo1      -----MG---HHHNHDSK-----
Asp4      -----MDKTIGENTAHGHQAN---DHTHVHEPHHTDHHSCQHDHASGHS---
Mma1      -----METKQSHAHACCSEHKHEHEAHHHGH HHHHHHGESG-----
Pgi1      -----MGGREMA-----DKQSS-----
Bsp1      -----MEVFKISKSEKQ-----ENHSHQN-----
Efa1      -----MSLKNKKALKLEHEHDHLDK-----
Sgo1      -----MNSKT-----
Mba1      -----MNYLWMIDKFMGDR-----
Dsh1      -----MASHSHAGHMPSS-----
Ecu1      -----MHGRKHPAQCSHVTC SN-----

Sus1      -----TGRILGWSLLATTVFV LIE-----
Aba1      -----TSRVLRISLGVTVLYIVLL-----
Mca1      -----QGR LV---WALILTGGFVVFE-----
Tko1      -----ELKGR---MLFSFALNIVITLAE-----

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Pfu1 -----RLKRR-MIISFALNMGIALVE
Fba1 -----HSHNDLNGRNLLISIVLNIAITAAQ
Nsp2 -----VKGKNLFITIIILNIIITLSQ
Fno1 -----NDDHHAHEHFNDIENLSGKKLFYVVLNFGITLAE
Cac1 -----HDISSISKNKLFVIIFNFIALAE
Lhe1 -----KRYVFVTLNVIITIAE
Lre1 -----KRFLAVTLNVLITIE
Pmo1 -----ALDFRLLFSVILNFGITITE
Tme1 -----VVERKLIFSIVFNFLITASE
Sac1 -----WGNRLLMTMMLNLVIPVVQ
Dol1 -----MGSRLMAMAINLLIPAAQ
Orf1 -----GHHHHHDT-----ESMGDGRLAWAVVNVLTVVQ
Rba1 -----GLHHHGLTSAGQFDSVSDSRLWSVLNQAALTVQ
Oin1 -----PESG-----DRRVSLAIWANALLTVQ
Eli1 -----HSHGEE-----NLSDRQLLAVAINVLLTLAQ
Sfr1 -----HAHN-----HDGKLSMAVFINILLTVQ
Pde1 -----EHGSHSLPG-----GVGDGTILIAVVNLALTGAQ
Pcr1 -----TKGYQRTLLISFLIITGYMFVE
Bli1 -----QKALFISFGLIFTFMIE
Sau1 -----KEVLFISFLIIGLYMFIE
Shal -----KKILAIISFIIIGLFMIE
Ssa1 -----KKILLISFLIIGSFMIE
Bsp2 -----KKVLIVSFIIITSYMVVE
Ccu1 -----KTTLRNSFLIIFGFMVE
Ame1 -----KKVLSISLLIIGAYMVVE
Gka1 -----KKGLTIALITAGIMLLE
Emil -----KKALLISFILIIIFMVVE
Aae1 -----LKVLAFSFLILIFLAFIE
Nsp1 -----TKILWLAAGLTCFFVVE
Msu1 -----KMILGISLAIISCYMVVE
Cdi1 -----SSS-----RALLVAGLTFAFFIVE
Cje1 -----TDAPLRALLIVLGVGTVFFAE
Tva1 -----AEGVTWRLIMISLTGIFFAE
Ath1 -----SEKSRKIALFLLINTAYMVVE
Vvi1 -----SERKSRKIALFLLINTGYMVVE
Clu1 -----EENDSRQIFYFLCLNLLFTFVE
Tca2 -----SDRNSRNLFLLNLSFAFVE
Cel3 -----MNNSRRIFWFLCVNLGFCGVE
Hma1 -----SSGSTRLALVAVVNFVGFVIE
Jsp1 -----PKGQNQKYLLIAFVLSTFLVAE
Xor1 -----SEIRHETPLWWALGLTATFLAE
Mpo1 -----SAAARNKGRALAWALGLTLYMFAE
Dra1 -----HAAGAGERQLTGALVTGAFLVLE
Asp2 -----TGTGKHKRLIAVLGITLAVVLIQ
Tfu1 -----TAAGAHGRLLVLALTLVMAFQ
Kra1 HGG-----HDHGALTSNRRRLGIALGVTVTILLVE
Ace1 -----ADQVIQRRHLRIALALISAFVVAE
Aod1 -----HDHSHAGASTKRLGWALTGTGAIVVAE
Bad1 -----AEHQKRLMMSLGLTSTVFIAE
Str1 -----DTG-QRHRWRLWTAFTLLGTLMAE
Rer1 -----ASASGKHVSKLWIAVGLGLVTFVTQ
Nsp3 -----GHAGGRYRWRLAVTFAMVATFLVVE
Rsp1 -----VGPSRGRIRRMVIALVILLAFVLVE
Csa1 -----ADSAKRVKLAMYLTAGFMLAE
Oal1 -----GRNETRTLIAAALTGGFMLAE
Mlo1 -----ATDKKRVLIAACLTAGFMVAE
Lag1 -----DRNARAVALAGLLIAAFMFAE
Oan1 -----SDNERKVLLSFFLILTFMIE
Pat1 -----SGNSKRLAAFIITATFMVAE
Neu1 -----AGNERRIRVFFFITAGYALIQ
Gbe1 -----DERRLALAGMILTIVFLGAE
Pbe1 -----DMMRLRIALAIIVLFAAVE
Rxy1 -----RSLAAALAITASYTVAE
Sav1 -----RWLGIALALITLFMAAE
Asp1 -----ASLRRLAASLAITGGVMIAE
Mfe1 -----HKLDLALGLTLLFAIVE
Sce1 -----RAPLRRLIAAFALTTSFLVVE
Cbu1 -----TSHRVLGWAILLTLGFALVE
Asp3 -----TASRWLPLALALTGLFAAVE
Mfl1 -----GGQPSLLLPLLLIAGFAVVE
Cvi1 -----LSSRALAKVLALTCGFALVE
Psp1 -----VSNQNLLIALVLTLGFSGVE
Tca1 -----IVASVLCVLFMIGE

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Aae2 -----ILASVLCVIFMIAE
Cel2 -----WLTVVLCFFMVCE
Tca3 -----LIAAILCFFFMITE
Orf2 -----YAACAVCFVFMAGE
Bta1 -----CVASAFCLLFMIGE
Xla1 -----CIASLICFVFISAE
Cel1 -----WAVAALSAVFIAAE
Tth1 -----KIVCCISTSFMCIE
Ddi1 -----YSLILALTLTTFMVGE
Ath2 -----LIAVLLCAIFIVVE
Dsp1 -----QMPVSNKLLGILFSGIILLAE
Sau2 -----TINRYKYFHHVNHQKIQSSSKTTLWASLIITLFTVIE
Cje2 -----HSHEH--HSH-----ADVRSDKKILKISLMTFSMMLVQ
Cfe1 -----HRAH--SHS-----SSAN-TNKKVLKISLFTVAAMIFQ
Abu1 EQNIEQKFVFSKQENHIHSHEHGCCHDHGVAGHTDHRGTDKRVLKWALGITMITMFLE
Kst1 -----MASAITGVIFIVE
Lbo1 -----QEKGLKRSILLAILVSFSIFLVE
Pae1 -----KGRKAKKGLRFAVSVTGLIFLVE
Aph1 -----MVMAIVVACTLVVE
Wen1 -----LIYSIIIVAITMFME
Mbo1 -----KPLKLAIALTALIFVAE
Mth1 -----RFSLAMILTISILIAE
Gbe2 -----RFRYAIIITAITLVAE
Chu1 -----VNTAFIVGIILNLLFVVIE
Lin1 -----AGKSLVIAMIFNLVYAGIE
Rpa1 -GGHVHAP-----KDFGRAFALGIGLNIAFVITE
Van1 -----YNSAFAIGIVLNLLYVIVE
Gox1 GHQHVHAP-----ASFGMFAFVGITLNTAYVAGE
Afa1 -----SYGFAGFGGILNLAFAVAIE
Bph1 GHHHHHHVP-----AAGHGRAFAIAVALNVAIVVVQ
Lpn1 -----YDKAFIIAITANGLFVVMQ
Rgr1 -----LNVSPALAVLLNFGFVFTE
Lme1 -----QMPYLIGISLNMIFVLSE
Sde1 -----TDMSSNRIGWAFVLNVSFITIE
Ilo1 -----DMPNRLGWAFLLNLFVFTIE
Asp4 -----MNLSTFILE
Mma1 -----VHPVTSNLKVAFFLNFCFTIE
Pgi1 -----SNLLFAFAMNLFFAIVE
Bsp1 -----VKNTKVAFFINLLFAIVE
Efa1 -----QPKNKIKIAFFTNFIFSMIE
Lla1 -----LVSQNVITIVFALNLFFAILE
Sgo1 -----SVWIAFFLNLSYAIVE
Mba1 -----EKNVGFAAVLNILFTFIE
Dsh1 -----GKALVISAWLTGVYFVIE
Ecu1 -----DADIRKISKVLLIILMFMLE

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Sus1 VVAGLQAHSLALISDAAHNFTDALAIGLAWGLRLQTKP-ADETKTYGYHRASVLSAFVN
Aba1 VVMGIRSHSLALLSEAGHNLSDFLALLLTWVAVYVQSRP-PSATKTFGYQRAGVLAAFIN
Mca1 ALAGWKANSALALLTDAVHNLSDFLALGLSWYAMRLTAQP-AHAAKTFGYHRAGILAALAN
Tko1 VIGGILSGSLALLSDSLHNFSMSILASYLAIKIGERE-KNEKYTFGYKRAEILVAFVN
Pfu1 IIGGIVSRSLALFSDSLHNFSMSILTSYIAIKIGERE-KNEKYTFGYKRAEILVAFVN
Fba1 VVGGLISGSLALLSDALHNFSVISLIISYIANKLVKRR-ASIKRTFGYKRAEILAAFIN
Nsp2 IVGGIYANSLALLSDAMHNLSDFVLSLVIWAANTIAAKP-STKSYTFGLKRAEIIAALFN
Fno1 FIGGMLAGSLALVSDSMHNLSDALSIILAYFAHKISLRG-ANKGKTFGYGRAKIIISAFVN
Cac1 VIGGSISGSLALLSDALHNLSDTASLILSYVSIKISEKP-KNKAKTYGYKRANILAAFIN
Lhe1 FLGGILSGSLALLSDAVHNLSDFGAILSFVAHLISRRN-RNQRKTFGYDRAETLAAFTN
Lre1 ILGGILSGSLALLSDAFHNLDGSLSVLGYFAQHIGGQP-ENRQRTYGYRRAEILSALTN
Pmo1 ILGGIFNSLALLSDAIHNLDTTAILISYIARVLSKKK-RDSKRTYGYKRVETLAAFIN
Tme1 IIGGIVSGSLALLSDALHNLSDTGALLISYFARKISKKP-VDNKYTYGYKRAELVASVIN
Sac1 IIGGILAGSMALISDALHNLSDFTSLLISYVALRMGERQ-PTVSQTFGYKRIEVLAAFIN
Dol1 IAGGIVAGSVALISDAVHNLDGFASLVVAYGAHRAGRGRG-PSLRHSFGLQRMELAAVIN
Orf1 IAGGVVSGSLALVADAHNLSDAALGIALFARKVARRG-ADERMTYGYRRAEIIAALIN
Rba1 VIAGILSGSVALLSDAAHNFSANSLLIAYIARRIARKE-ANQRYTFGYRRAEILIGATIN
Oin1 IVGGVLTGSLALLSDALHNFSMASLVIAFVARKIARRP-ADARMTFGYGRIEIVAALIN
Eli1 IVGGILSGSLALLSDALHNFSDAASLGLAWFARRIGRRP-ADKLMTFGYAQGEVVAALIN
Sfr1 VIGGVLSGSLALLSDALHNLSDAGAIVIAIVARKIARKP-ANSQMTFGFKRAEIIIGALIN
Pde1 ILGGYVADSTALIIDGVHNLSDALALVLAFGARRLARRP-ASPGMSYGWGRAEVVAAFIN
Pcr1 AIGGWLTGSLALLSDAGHMLSDAIALGATLMAFKIGE-KAATHQKTFGYKRFEILVASVN
Bli1 VIGGILTNSLALLSDAGHMLSDAALGFSLAFKIGE-KAASASKTFGYRRFEILAAFIN
Saul IIGGILLANSALLRDGIHMSSDTFSLGVALVAFIYAE-KNATTTKTFGYKRFEVLAAALFN
Shal IVGGFIANSALLSDGLHMFSDTVSLGVALVAFIYAE-KNATSSKTFGYKRFEVLAAALFN
Ssal IIGGFLANSALLSDGLHMFSDTISLGVALLAFIYAE-KYANKNKTFGYKRFEILAAALFN

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Bsp2      AIGGFLTNSLALLSDAGHMLSISLAIALLAFVFGE--KAASYSKTYGKRFELAAVLN
Ccu1      IAGGLATNSLALLSDAGHMFSDAAALALSFLAFKFGE--KKGTLQNTFGYKRVEILAAAIN
Ame1      IIGGWLITNSLALLSDAGHMFSDALALALSFLAFHLS--RPVNGRQTFGYKRFEIIAAAVN
Gka1      FFGGLITNSLALLSDSGHMLSASSLVLSLVAIWFIAT--KPASPNKTYGYRFEILAAALFN
Emi1      LAGGLISGSLALLSDAGHMFSDAFALGLSLTAVIAGQ--RAATKTKTYGYRRFEVLAAFFN
Aae1      FLGGLITNSLALLSDAGHMLTDAVSLIALVAQYLAL--KVVKTRTTYGLYRLEVLAAALVN
Nsp1      WTVGLWSQSLSLQADAGHMFSDIAALVISLSTYLAQ--QPAKGKATFGNQREVLAAALLN
Msu1      FIGGYLNSLTLMDAGHMANDSLSLFLALVALFLSA--KAQK-----WFALLN
Cdi1      LVGGALAKSLALMSDALHMLSSTGLI IALIAVVIGR--RKATSQATYGYKRFEVLAAALVN
Cje1      LIGGLITGVSALLADAMHMLSDAAGLI IAVVAIFIGR--RSATAQATFGYRRFEVLAAALVN
Tva1      LITGIIITKSLSLQSDAHMLSDEMSLI IGLVAHEKAK--KPPTKKYTFSLARAEVIGGFTN
Ath1      FVAGFMSNSLGLISDACHMLFDCAALAIGLYASYISR--LPANHQYNYGRGRFEVLSGYVN
Vvi1      FVSGFMSNSLGLISDACHMLFDCAALAIGLYASYISR--LPANSQFNYGRGRFEVLSGYVN
Clu1      LFYGVLTNSLGLISDGFHMLFDCSALVMGLFAALMSR--WKATRIFS YGYGRIEILSGFIN
Tca2      LVYGVWSNSLGLISDSFHMFFDCTGLLAGLAASVITK--WKANEKYSYGYVRAEVLGAFVN
Cel3      FLYGFWTNSLGLISDGFHMLFDCSALVMGLVASVMAR--WPPTRHFTFGFGRVEILSGFIN
Hma1      LVGALAGSVALISDALHMLFDMLAYAMAFGASYTAERFEGGEAWSYGLHRLPEVAAFLN
Jsp1      VIGGLVTGSLALLSDAAHMLTDASALAIALIAIQIAKRA--ADSRRTFGYHRFEILAAAFN
Xor1      IIGAFVTNSLALLSDAAHMTDTVGLMIALVAVRLSRP--ADARRTYGYVRLEALGALAN
Mpo1      VVGGLLTGSLALLADAHMVTDAGGLALALLAIIHYAKA--PTAGKSFGYMRFEILAAALAN
Dra1      VAYALLSGSLALLSDAGHMLTDVAALALALFAIRMGRP--ADRQRTFGYRRFEVLAAALN
Asp2      IIGAVISGSLALLADAGHMLSDAAGVFIALLAAWIATRP--ASDQRTYGYQRAEVLAAALAN
Tfu1      VVGGLAAGSLALLGDAGHMAVDAFGILVALFAIWIANQP--STDERTFGLKRAEILAAALN
Kra1      AVGAWLSGSLALLADAGHMLTDSAGLAIALIAASLAARP--ATPQRTWGYRRAEVLAAATLQ
Ace1      VVAAIAGSVALISDALHMLFDVAALAAALWAAHLAARP--AGGVWVYGLKRAEILAAAVN
Aod1      LVGAFWSGSLSLAADAGHMVDASGLVIALIAARLMRRP--RDEKHTWGWARSEVLAAATLQ
Bad1      VVSAIVTGSALALLVDAGHMLTDMSVLIASVTAVLMQRK--PSNKRTWGWARLEVLTAAVG
Str1      AVTAVRTGSLTLLGDAGHMTDVLGIGMSLAALTLSQRGKNPQRTFGLYRVEVLAAALTN
Rer1      VIVGLTSGSLALLSDAHVFTDVFGLMALTAIILAQARSRPDRTFGMYRAEVFAALFN
Nsp3      LVVGLWSHSLALISDAGHMTADVVALGAALVATRIATRKDTSGRRTYGSYRAEVFASGLT
Rsp1      VVVGLTVNSLALLADAGHMLTDVVGMGMGLVALVLARKGSATAARTFGWHRAEVLTAAMAN
Csa1      AIGGWLISGSLALLADAGHMFSDSFSGLALFAFYMGDKA--PDKRRTFGYQRFVLAFAFIN
Oal1      VIGGLTGSALALLADAHMLTDFAAALILAWGAFRLSRP--ATDKRSYGYDRLQILAAAFAN
Mlo1      ALGGLFTGSLALLADAGHMLDAIALGLAWYAFHLAGRP--ATGQLTYGFRVKTLYAYTN
Lag1      LVGGWLAGSLALMADAVHMTDAAASGLAWWAFQQS KKP--ADARLT YGRDRLPVLI AFAN
Oan1      VIGGLISGSLALLADAGHMLSAAAALALAYAAFRFGRA--ADSKRTFGYLRFEVLGAFIN
Pat1      VIGGLTGSALALLADAGHMLTDAALFVALVAVRFAQRK--PNARHTFGYLRLLTTLAAFIN
Neu1      AIGGWLSGSLALIASGHMISDAAALLALVAYRIARKP--ADSTRTYGFHRVRVLAALAN
Gbe1      IVGGLLSGSLALLADAGHMVSDVLSLLMGWAALRIGRRP--SSTRHSYGFRRLEVLAAAFVN
Pbe1      IVGGVLSGSLALLADAGHMVTDVAVALALALGAKYLAQRP--ASDRFNFGHQRTQVLAFAFLN
Rxy1      AVGGFLTGSALALLADAHMLSDNFSGLALFALWLSRP--PTPERSFGYKRAEILAAALFN
Sav1      VVVGVVASSLALISDAHMLTDAASIVLALIAMRLAARP--AKGGFTYGLKRAEILSAQAN
Asp1      AIGGWLSGSLALLSDAAHMLTDAGALGLALVAAYLATRP--ANDKRTYGYRRAEVLAAQLN
Mfe1      LIGGLISNSLALLADAHMSSDVIALALAAFAAGRLALKP--AHSGMTYGYGRARVLSAQLN
Sce1      AAVGWWSGSLALLADAGHMLDAAALGLAIIAQRIAAQA--RTRERTYGFRRAEVLAAAFAN
Cbu1      ALGGYFAHSLALLGDAGHMASDAVALGIAAFASWIALRP--PSHKHSYGFRAEVI AAWAS
Asp3      ALAGLWSGSLALLGDAGHMVTDAMALGLAALAAARIALRP--ASTRHSFGLPRVEALAAALAN
Mfi1      AVGGWWTGSLALLSDAGHMVSDAFALALAWLGSWIARKP--ATRKNHFGVLVRAEVIVALVN
Cvi1      ALGGWWSGSLALLSDAGHMLTDSL LLLALWAARIGRRP--ATERLSFGHGRAEVLGALLN
Psp1      GAAAYFANSLALISDAGHMVTDAAALGLALLAQIIARRP--PSPRHSFGFGRAEALAAAFVN
Tca1      VIGGYLSNSLAIASDAAHLLTDFASFMSLFLALWMATRP--STKTMHFGWYRAEVIGALTS
Aae2      IVGGIYSNSLAVATDAAHLLADASFMSLFLALWVAARP--STKRLSFGWHRAEVI GALT S
Cel2      VIGGVLAGSLAIVTDAHLLTDFASVLISLFSLYIARRP--PSQKMSFGFHRAEVLGAFFS
Tca3      LIGGFAGSLAVMTDAAHLFSDFIGFLISLLSIWVARKA--PTRNMTFGY YRAEVLGAFLS
Orf2      VVGGYLAHSLAIMTDAHLLADVGSMMGSLFSLWLSTRP--ATRTMTFGWHRSETLGALAS
Bta1      VIGGYLAHSLAIMTDAHLLTDFASMLISLFLSWVSSRP--ATKTMNFGWHRAEILGALLS
Xla1      IVGGYIAGSLAVVTDAAHLLVDLSFFISLGLSLWSSKS--STMRLTFGWYRAEILGALMS
Cel1      FVGGFWAQSLAIMTDAGHMLS DLLSFIISIFAIRCRLP--ASKRLSFGYERA EVLGALTS
Tth1      FVGGYLSNSLAIMTDAVHLLSDVVGFLVTILAIYISRLK--ANSTMTYGYHRAEII GAMIS
Ddi1      IVGGYFANSLAIMTDAHLLTDIGAMFLSLFAMWISQHP--PTSSMSFGFHRAEILGALVS
Ath2      VVGGIKANSLAILTDAHLLSDVAFAFISLFLSWASGWK--ANPQOSYGF FRIEILGALVS
Dsp1      FVGGLASNSLALLSDAGHVLTDLVALSLSYFALMQAKRP--SNFKMTFGYHRIGVLVAILN
Sau2      FVGGVLVNSLALLSDSFHMLS DVLALGLSMLAIYFASKK--PTARYTFGYLRFEILAAFLN
Cje2      FIYSILSNSLALLSDTLHMFSDVFALALSFLAIIAVEKW--QDHQKTFGYRFEVLVAFIN
Cfe1      FFIYFLSNSLALISDAIHMFTHSFALIVSLFAII IASKT--API SKTFGY YRAEVLAAFIN
Abu1      VIGGIITNSLALLSDAGHMLTHLFALLISLFAIMFASKP--PTQRKTYGYRLEILAAALLN
Kst1      LFGGIQSGSIALADAGHIITDVIALSLSLIAVLLASQK--PNHRFSFGY YRIEILTSLLN
Pae1      LIGGWVSGSLALMADAGHMTDLFALSISYLAIRLSARP--STKKRSYGYFRIEIIAALIN
Aph1      TIGGFVSHSLVLLSDAGHVFDLVALILSFAAYRLATKE--ADEQRSYGYHRFPQVMAAFVN
Wen1      IVGGIISHSLALLSDAGHMLTDLFALVLSWL AHRFSAKK--SDLQRSYGYHRLQIIAAAFVN
Mbo1      IIGGYLSGSLSLLDGAGHMLQDVVALGLSLGAMTMAERL--PTPRTFGYHRL EIAAAVIN
Mth1      LLGSWWTGSALALLSDAAHVFLDLFALGLSWFAIRISALP--ASERYSGFHRFEVIAALAN

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Gbe2      LAGGLWNTSLALLSDAAHVFLDLFALLSLGAIKLASYP-VSETRTFGWHRMEVFASFIN
Chu1      AIVGLSVHSLSLSDAGHNLDVASLALLAFRLLIK-SNESYTYGYRKTSILVALFN
Lin1      AGIGLTSGSLALLSDAGHNLMVSSLLAWIAIKLQEKK-PFPGFTYGWKKSTILVSLN
Rpa1      AAFGWLGNMALLADAGHNLSVDVGLAVAWIAAELSKRP-PSQRYTYGLRGSSILALFN
Van1      ATYGFTTDSLALLADAGHNLSVDVTLALAWGAFVLAKKA-ATEQRTYGFGRKVTILASLTS
Gox1      VLWGVWAHSLSLADAGHNLSVDVGLAGAWLAQVLATRP-SSARFTYGLRRSTILSALAN
Afa1      GFYGWRRANSALLADAGHNLSVGGVLAWVAYGAAKMR-PNQRHTYGWRKASILASFVN
Bph1      GMYGVLANSTALLADAGHNLSVDVGLLLAWGATWLATRR-PSARYTFGLGGSSILASLLN
Lpn1      IIFAYLANSTSLADAFHNLDGDLGLILAWVATGLMKRK-PTHKATYGFKKTSILAALAN
Rgr1      VVYGFIAHSVSLSDAVHNFADVLGLLMSWGASVLIKRR-ATQRYSYGYKKLTILAALAN
Lme1      LVFAKLHSTALFADAFHNLSVDLALMIAWLAVVVFGLO-ATKRHTYGWHNMSILASFVN
Sde1      FIGGWLNTSTAMADAVHDLGDSLSIGSAWVLNKLSENKQ-ANRKFSGYKRFSLLGALIN
Ilo1      FTGGFLNTSTAILADAVHDLGDSLSLGLAWILNKLKQKQ-ANQHFTYGYKRLNLAGAFIN
Asp4      IIGGIWINSVAIISDAVHDLGDSVSLGLAWYLDKKSCKS-ANHQSFGYTRFSLLGALIN
Mma1      LTGGVLNTSMATMSDAIHDLGTIAIGSAWFMEYSEKG-CDDRYNYGYKRFSPLSAFIT
Pgi1      LVGGIFTGSVAILSDALHDFGDSISLGIARWLQKLEKG-RDRSFSYGYKRFSLLGALLI
Bsp1      FTGGVMTNMAILSDAVHDLGDSLSLGSWYLEKLSGKG-RNSRYSFGHRRFSLLGALIN
Efa1      FFFGSLFNSVSIIMSDAVHDLGDSISIGFAWFFQGYSEKQ-QDEQFTFGYNRFSLLGALIT
Lla1      FTFGVIFNSTAILSDAVHDTGDAVAIGLAWFFQKFSKRR-EDKHFSFGYQRFSLLGASLT
Sgo1      FIAGGIFGSSAVLADSVHDLGDAIAIGMSALLEITISNRE-EDGKYTLGYKRFSLLGAILT
Mba1      LTGGFLNTSLADALHDFDSFALI IAWYAEKKAKKP-ATSKMTFGYRRLSLLSATFT
Dsh1      LAVGLWTGSI AVLSDAFHTLSAVGGVLVAITAQRIARRP-ADSTRSFGWYRAEIIIGALVN
Ecu1      LWGHWKTNSLSLLADSLHLLVDIFGFIVSLLSLSWAKKP-SNKRMTFGYHRIEIIIGSMVS
          *   :   :   *

Sus1      ALTLVALSAWILYESVLRLRNP----EAVQESVMMAVAGLGLVLNGGIMLALRAS-----
Aba1      AASLVLI AFFIFYEAGRRLYAP----SDVEPRMTMMWVAACGVVMNGAIALMLLR-----
Mca1      SAGLVGVALYILYDAYVRLLSNP----APVQADILIGVGGAALLVNAFTAWLVHGG-----
Tko1      SAVLVGVALFLVEAYKRKFNP----EPIDGPLMLGVALIGLFANLISVLLLHEH-----
Pfu1      SAILVGVALFLVEAYKRKFNP----EPINGPLMFSVALIGLFANLISVLLLHEH-----
Fba1      ASTLIIVAILLIFEAVRFQNP----QEIESNLVIWLSIVAILGNGFSVLLLKRN-----
Nsp2      ASLLLGIAIFLVIEAFHKFFHP----QSVDSLWVIWLGGLSILLNTLSVLLVKKD-----
Fno1      SVTLMVITVLLIEAVLRLIKPN----EFVHSDTVIIVGTIGLIANILSMIFLKGH-----
Cac1      SAALIGISIFLVQALEKLTSL----KKINANIVIVVALIGLGNFLSVIILKKG-----
Lhe1      GVVLVIVISVVLFEAIQRFWKP----EHIHGIMLVVSIIGLVANIISMLAMHHD-----
Lre1      SIFLVIVSVFLIIIEAIKRLEHP----QHINGGIMLTAVAVIGLLANFISAALLHAG-----
Pmo1      TEILMVITAVYLLIEAGKLSNP----SIIQGNIMLIVAFIGLAGNLATAYLLHSG-----
Tme1      ITVLLSISFSLILEGIIKILSP----VQINTSIMLIVAYVGLVGNLLTAILLSSH-----
Sac1      VSLLYGVAIFIAIEGWQRLLP----QVIKQQLVVWIALAGLAGNAFSAVLLHAG-----
Dol1      SALLGGAAIFIAIEALDRLANP----QPIRLGIVAWLALAGLAGNLSAWLLHRD-----
Orf1      LTTLIVIGVVLVYEAIRFFAP----EPIVGWIVVVVAGVALAIDLVTAAALTYAG-----
Rba1      LTLAVVGCYLVYEAHRFFDP----QPIIGWLMAVTAVALVVDLGTAFLLWAM-----
Oin1      YTTLILVGIYLYIEGGMRMIDP----PAVAGWTVVILGGVALVVDLTALLTYSM-----
Eli1      LTTLLIIGFYLIVEAINRFAAP----QPVEGWTVIIVAGIALVIDLVTAFIVYRG-----
Sfr1      STTLIIVIGYLYIAAEKYFNP----QPIDGWIVVWIAIALVIDISTAWLTQYAG-----
Pde1      YIALIAISVWLIEALGRMVPEP----PQVAGGLVMALAGFALLVDMATAALVWRA-----
Pcr1      GATLVIIALMIFYEAIKRFNSP---PEIATQGMILIVATIG-MLINILVAVLMHRGSRSGD
Bli1      GITLLLSISLYIFWEAYNRFFSP---PEVAGRGMLAIATVG-LFVNIAAAWVIMKGDTS-
Saul      GVTLVISIVLVEAIKRFNP---SEVQSKEMIISIIIG-LIVNIVVAFFRFKGGDTSH
Shal      GVTLFVISIVIVEAIKRFNP---PEVQSTEMFIISLIG-LIVNIVVALIMFKGGDTNH
Ssal      GVTLFVIGIIIIIEAIERFFNP---VEVQSTEMFIISVTG-LIVNIIVALLMFRGGDTSH
Bsp2      GVTLIGIALFIFYEAIERFANP---PEVATTGMLIISTIG-LLVNILVAVIMMRGSDTKD
Ccu1      GTALIAI AVLVIEAIRRLQNP---PEVASLGMVLISAVG-LAVNIVVALYMARGADTKE
Ame1      GLALMVIAMVIVYEAIRGFVNP---PDIA TRGMLIISTIG-LL-----
Gka1      GVTLFVIAGFIIWEAIERFYNP---PTVASGSMMLIASIG-LFANLLSAWALMKKGDVKN
Emil      AITIFLIAVFI LKEAVVRIQNP---APILSGYMFIIAIVIG-LLVNIAVLMILRRREIKD-
Aae1      GVFLGLIGIYIIIEAHRFENP---EPVKP-QMIYIAFAG-LIVNLVVGYYILKHSEEN-
Nsp1      GLSLLAIATFTTWEAIQRWQHP---GVILGLPMLVVAVMG-LIVNLLNISLHPSHND-
Msu1      GTSLVFVAVMILIEAFKRWQAP---TEMAALPMMTVAIIG-LLVNILVAVIMLKSDQEN-
Cdi1      ALSVTFITGWIVLEAIRRLSSH---TVIDT-RTTMVIAIIGLVFNIVGAVVLHGHSHEGV
Cje1      AVTVLGISAWIVVEAFQRLSEP---VEIMA-GPMIVAVIGLLANII SAWILNRQREHSV
Tva1      AIFLLAVCMTILFEAIERFIKV---EEIVEPKAFLIVGILGLLVNAIGIFIFHDH-HHSD
Ath1      AVFLVLVGALIVLESIERILDP---QEIST-NSLLVSVVGGLLVNIVGLIFFHEEHHHAH
Vvi1      AVFLVLVGALIVLESERILEP---QEIST-NSLLTVSIGGLLVNVVGLIFFHEEHHHAH
Clu1      GLFLVIAFFVFVESVARLIDP---PELDT-HMLTPVSVVGGLLVNLIIGICAFSHAHNNH
Tca2      GLFLLFISFFIMSEAVEAIEP---PEVKH-ERLFLVSVLGLLVNLVGIYAFQHGHGSH
Cel3      ALFLCVIALFILIEALERLFDLP---PNINT-DRLLFVAISGLLVNLFMGYSLG-EHGHSH
Hma1      GVLLLPVGYIVWESYQRFLEP---VAINP-ELTLIIATGGLLVNIGSVYVLQGGEMSLN
Jsp1      AITLFFVAMYILYEAYRRFKS---P-IEIQSM-GMLIIASLGLIINLISMKLLSSGK---D
Xor1      GALLFAVGGYILWEAAQRVRA---P-QDIAYG-GMLLIAGFGLVINLIAMKLLHAGS---G
Mpo1      AVVLLGVTAYIILYEAYRRFVE---P-TEILGW-PMMLVALVGLGVNLSMKLLSGGS---S
Dra1      AGALFAIGLYILWEAVQRFQ---P-VEVQTT-SMLVVAVAGLVVNLSARLLAGG-----
Asp2      ALVLIVISVLI FTEAVRRIGS---A-PEVQTD-VMLYAAVLGAVANLVSLILRSA---QK

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Tfu1      ALLLFALCGFIGYEAVRRLD--P-QPV SAS-TMVVFSTVGLLANLIALGLLRRG---QA
Kra1      AAILLAVGVFIIVEGIRRLQ--P-PEVAST-AMIVFGVVGLLGNAASILVLTGGQKQON
Ace1      GVTLLVALALVIVVEAVRRLTS--A-PSVVG S-IVLLTAVAGLIVNAVATAVLARG---QH
Aod1      AGMLLIICAIVAWEGAWRLLS--P-PEVEAG-PMLLVGIIGLASNVVSLAILAGG---RD
Bad1      ALVLLIVGIIYALVEAGMRLFGGAA-DEVH D V R L L L F M G I L G L A A N V G S I F I L A G Q---SE
Str1      ALMLSAVSIYVLVEAIRRFSG--P-PEVDTG-PMLVAVLGLLANIVAFVLLRPG---AK
Rer1      ALLLFGVAGWVLYEAAGRLSD--P-PEVPGL-PVSIVAVVGLVMNIAAFLLLRSG---AK
Nsp3      VLIMLGVAVYVVEAVGRIGA--E-PEVQTG-AMLVGAIGLAVNIASMLLLREG---ST
Rsp1      AAMLLAVAVWVYEAISRIGD--A-PELPGM-ALILTATVGLAANLVVMLMLRAD---SK
Csa1      GLTLLGIADVILIAAVQRFQFP---VEVMAA-PMLAIAVLGLLVNVVFRILHGG---DH
Oal1      GVTLSILVVWIIACEAVMRLFDP---NEIEAT-GMMVIAVLGLIVNIAAFGV LHGA---DT
Mlo1      GIAIFVIALWIVYEAQRLLTP---APVLGG-PMLVVAI LGLLVNIGSFLVLHGG---DR
Lag1      SIFLLVIVGIIYALVEAGRMFEP---ETVLAG-PMFIIAVIGFLVNIGAFFILQRG---GD
Oan1      AITLFAIVVWIVYEAQRFFQEP---HVILAG-PMLGVAIAGLLINILVFWILTRG---DT
Pat1      ALTLILITAFIFWEAIQRFYDP---QPVAGV-PMLLVAIAGLLANIVAFWLLHHGS---EE
Neu1      GVTLLLLVVWIIIEAIGRMHTP---TEILAG-PMLIVAVIGLVINLVGAWVLWSG---NK
Gbe1      GSSLIVGIIWIVIEAVRLLNP---QPIGGG-LMLAVAAGVGVANAI SLILNEG---RE
Pbe1      GVGLFLLIAYLLVESVHRMAEP---ATIEAS-TMLNVAVIGLLANIAAFVWLQNG---T
Rxy1      GVTLVAVSLWIFYEAYRLLLEP---REVMGG-WVAAVAAAGLVNAAA AWVLLR-P--RS
Sav1      GLTLLLLGVWIIAYEAVRRLVEP---PDVEGG-LMLITALAGIVVNVA AWCISK-A--NR
Asp1      V G A L L V S V W I V Y E A V E R L R Q P---H A A I D L R-L M A S V A V V G L A A N L A I L W F L H E---E
Mfe1      G P A L W F L S G W I T W E A T G R L S A P---P A V H G G-M V I A I G A I G L I V N L V I L T W L H G---E
Sce1      G V A L A L T A I W I F I E A A H R W R A P---Q A V H A E-A L A I T A A L G L L V N V A A L L S T G E---H G
Cbu1      S L L M V I I A L A V I E A I K R I Q Q P---S S V H S V-P V M L I A V F G I L L N V L L A G L I S R---S E
Asp3      S L F M L L V A A L W Q A A A R L A A P---R D I S G E-T V T L V A L A G L A L N L A V A W L L T R---G E
Mf11      A L L M L A V I G G I A Y E A V Q R I A D P---R P V Q G G-E V M L I A F I G M L V N I V V A L M L H K---G H
Cvi1      S L L L F G L S A F I V A E A V E R L L R P---H A V N G M-G V M L I A A I G L A V N V L A A R V L S R---G A
Psp1      S I A M L A L V L W I V I E A I S R F A N P---H K V D G L-T V T V V A A I G L L M N V V A V L S R---D T
Tca1      V L L I W V L T G I L Y I A V Q R V I H K---S F D I D S K V M L I T S G I G V I V N L I M G L T L H---Q H
Aae2      V L M I W V V T A I L F Y L A V L R T I N Q---D F E V D G Q A M L I T S G L G I L V N V I M G A T L H G---G H
Cel2      V F L I W I V T G V L V L A I M R I V S G---D Y E V E G G I M A L T A A L G V V V N L V M L A L Y F---G-GH
Tca3      V L T V W L L A G V F A V L A I N R L L K K---E Y D I E A N T M M L V A S L G L V V N I V M G A V L F G---F-C H
Orf2      V V S L W M V T G I L Y L A F V R L L H S---D Y H I E G G A M L L T A S I A V C A N L M A F V L H Q---A-G P
Bta1      V L S I W V V T G V L V Y L A A E R L I S G---D Y E I K E E T M L I T S G C A V V V N I I M G L I L H Q---S-G H
Xla1      I I T I W L V T G V L V Y L A I E R I I R P---D Y T I D G T V M L I T S A C A L G A N V V L A L I L H Q---S-G H
Cell      V I I L W V L T T V L V V V A I Q R I V N N---E H E V D A D V M L I T A G V G V L F N I V M G L V L H F G T G-G H
Tth1      I L I I W V L T A W M F V E G I E R F F K---P P E I Q G T M L I L A C C G L F F N L V M K I L E T---K L
Ddi1      V L M I W A L T G V L V Y E A I Q R I L Y P---P D A V D G K I M F I I A S C G L F I N I I D A I I L H W G S G-G H
Ath2      I Q M I W L L A G I L Y E A I V R L N N G---S G E V E G S L M F A V S A V G L L V N I A M A I L G H D H G H G H
Dsp1      S I S L I G T A V F I F Y E S F Q R F Q S P---P E I N A W L V L P A L L G L A T N L A V A L I L H S---E---
Sau2      G L A L I V T A W I I E S I K R F I F P---Q P I E S G I M F M I A S I G L V N I I L T V I L V R S L K---
Cje2      A L T I I L S A L F I I Y E A I E K F I N P---K E I D A K T M I I V A I L G F L V N G I N A L M M F K G---
Cfe1      S I L I A V P G L F I V Y E A I V K L I N P---E P I E I G T M L I V A A I G L G V N I T G L I M L K G---
Abu1      G I T I V L S I I W I I Y E A I E R F L N P---Q I I D I K T A M I V A I I G L I V N I I T G V I L M Q G---
Kst1      G I L I L L T V G I W F Y E A Y H R F V T P---E A I S S G M M F F L A I I G L L A N I S C V Y I L K S G---
Lbo1      S I L I F G I S F Y I F Y E A T E R F Q N Q---K E V L S F P M I F Y S V S G I V L N L I S A W I L F R F---
Pae1      G V I L C I T A L F I T I E A W K R I S L P---K E I D S A Q M L V F G I I G L T A N I A S A I M L H R E---
Aph1      G I S W F V I A A L I V I E S I K R F V N P---V E V H G H L M L P A V V G F A A N I F V F C M M Y R R---
Wen1      G L T L L L T G V I W E S V L R L F S H Q---V N V E W K V M L I A T L G L V S N I I V F F I L H S K---
Mbo1      G L L L I G V S A L I I L E A L A R F S H P---S P V N S T L M L A V A L V G L V A N I S A F V L H G---
Mth1      G L T L G F A L V I L I E A Y R R L L Q P---E P V K G L D L L L I A T F G L I V N L I V A F V L S R D---
Gbe2      G S T V F L I A G I I S Y E A L V R F I H P---E E V K S L E M L I I A F V G L V M N L I A A G A L H S H---
Chu1      S M L I A S I G A I F Y E A A H R F F N P E---P L P G Q T I A V V A G I G I L I N A A T A M L F L R H K---
Lin1      S I L I F G T V G L I V Y E S I E K L S K P S---S V P G G M I A A V A F V G V L V N F S S S F L F H K S K---
Rpa1      A V F L L I A V G A I G W E A I A R L F A P E---P V G S V T M M V A G I G I L I N G A T A W L F F S G R---
Van1      A L L L L F A L G A I A W E A V L R F S E P R---P V A G T V M V V A F I G V I I N A A T A M L F A K G Q---
Gox1      A T I L L L T V G G I V W E S V L R L F S H Q---N V Q G E V I S W A L V G I A V N A V T A L L F M K G A---
Afa1      A V I L L V A M G S L A S E A I S R L G D P G---T P N A Q T I I I V A G V G V L I N A V T A W L F M A G S---
Bph1      A G L L L F A C G V I V A E A V G R L I H P S---P V A G F D V F I V A C V G M V V N G V S A W L F M R G Q---
Lpn1      G A L L V F T C G I I A T D A M Y K L F S P T---E I Q A V S V M I V A A I G I V V N F S T A L L F L R G---
Rgr1      A L L L V L T S A L I I Y E S V N R L Y N P K---E I N E M I I M I V A F I G M V L N G S T A L L F L R E N---
Lme1      T I L L I F A V I T I F Y E S I R N L I L P E N---T V T T G W L V M V V A A V G I V I N F A T A M L F K A S G V P D E
Sde1      G L V L V L G S V W V L T E A I P R L S S P Q---M P V T E G M F V L A I F G I M V N G F A A Y K L S S G---
Ilo1      A V V L I A G S A W V L V E A I P R L W N P Q---M P V A D G M I A L A V V G I T V N G F A A Y K L S E G---
Asp4      A L I L I G S I F V I T E A V T R I L N P E---V S N A Q G M I I F A L I G V A V N G Y A A W K V S H G---
Mma1      S V I L I V G S V F I F I E T I P R L I H P E---A V N A K G M L L L A I L G V T M N G L A V L R L K S G N---
Pgi1      S I I L L V G S V F V I I A A V Q R F S M P G---E P K A G G M L I L A I F G L V V N G L A A L R L K G---
Bsp1      G I I L I V G S L F V L Y E A I P R L F H P Q---H P N A Q G M V W L A I L G I I L N G I A A Y R L H K G---
Efa1      G V V L I G S F I M I Y R S I P R L I D P Q---P V N Y S G M F W L S L V A I G L N G Y A A W I L S K G---
Lla1      S V I L I T G S F I V L F E A L P R F F N P Q---P V E T T G M L G L A I F A I V A N G F G A W L L A R G---
Sgo1      A V I L M I G S V L V I L E N I T K I V H P Q---P V N E E G V L W L G I A V S I N V L A S L V R K G---
Mba1      I I V L V A G S L F V L T Q A I P R L I S P E---P V N A E G M V L I A V I G V T I N S L G Y F R L K K G---
Dsh1      G G F L L G M A L L V I W M G A M R L G D P---I H L A T G P M L W A F G G L V T E V V S L A L M W Q S S---

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Ecu1      IGLIWAAVGYLVIESFHKYLHP----AEIDGGMFFGIADVGVFVNCICIYVLHYDEYQHK
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Sus1      -----SKNDINIRSAFV
Aba1      -----TRRDLNIRSAFL
Mca1      -----SHDDLNMRS AFL
Tko1      -----AHESMNVRSAFL
Pfu1      -----SHENINVRSAFL
Fba1      -----AEDNMNMKSAYL
Nsp2      -----SEKNINIKAAFL
Fno1      -----SEKDINIKSAYL
Cac1      -----AEKSLNVRSSYL
Lhe1      -----AKGNLNVRSTFI
Lre1      -----SEDSLNVKATYL
Pmo1      -----SKTNLNVRATFV
Tme1      -----SKENLNLSAFL
Sac1      -----AKTNINIRSSFL
Dol1      -----SARNLNARGAFL
Orf1      -----AKESMNIRAAFL
Rba1      -----SKGSLNVRAAFI
Oin1      -----QKGSVNIRALFL
Eli1      -----AHD SINMKA AFL
Sfr1      -----AKNNLNLR AFI
Pde1      -----AKESVNIRAAFL
Pcr1      THGHDHHDHGANEGTATVKTSD-----KEPVNLNMQSAYL
Bli1      -----NLNMRSAFL
Saul      -----NLNMRGAFL
Sha1      -----NLNMRGAFL
Ssa1      -----NINMRGAFL
Bsp2      -----NLNMRGAFL
Ccu1      -----NVNMRGAYL
Ame1      -----
Gka1      -----NVNLRSAFL
Emil      -----NINVKGALL
Aae1      -----INIKSALL
Nsp1      -----LNLQGALL
Msul      -----LNIKAAYL
Cdi1      N-----VKGAYL
Cje1      N-----VQGAFL
Tva1      N-----IQGIFL
Ath1      GGS-----GIFL
Vvi1      GGSCSHSHSQSHSHDLHHHSHACGGHD-----HTKRNHKHIDHNMEGIFL
Clu1      GASQGSCHSSDHS SHHMHGSHDHGHG-----SHGSTGRGMNANMRGVFL
Tca2      G---GGGHGSHGHNNHNSHGHS-HDHTL-----DIDIAASGNSQIMKGVFL
Cel3      GGGSSHGHSHGGGGSHGHSHGG-----GGNANMQGVFL
Hma1      E-----RGAFY
Jsp1      -----ASLNIKGAYL
Xor1      -----ESLNVKGAYL
Mpo1      -----ESLNVKGAYF
Dra1      -----EGLNLR AAYL
Asp2      -----ESLNVRGAYL
Tfu1      -----ESLNLRGAYL
Kra1      -----SNLNMRAALL
Ace1      -----RSLNIRGAFA
Aod1      -----ANLNMKA AFL
Bad1      -----DNMNMKA AFL
Str1      -----ESINLKGAYL
Rer1      -----ESINVRGAYL
Nsp3      -----ESLNVKGAYF
Rsp1      -----DSLAVRGAYL
Csa1      -----ENLNLRGALL
Oal1      -----DNLNIRGALA
Mlo1      -----ESLNMRGAIL
Lag1      -----GSLNMRSAIL
Oan1      -----EHVNIKGAIL
Pat1      -----KNINVRAAAL
Neu1      -----EDGNLRGALL
Gbe1      -----SSLNMRGVWL
Pbe1      -----DDVNMRGAVL
Rxy1      -----ESLNLRGAIL
Sav1      -----TSLNVEGAYQ
Asp1      -----HTLNARA AFL
Mfe1      -----HDINSRAAFW

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Sce1 -----HNINTRAALA
Cbu1 -----KTLNIRAVLL
Asp3 -----GDLNTRGALL
Mfl1 -----SSLNSRAALL
Cvi1 -----HSLNSRAALL
Psp1 -----KSVNTRAALV
Tca1 GSHSG-GGSTH-----SHDNINVRAAFI
Aae2 GSHSHSAGSAHGHAGGP-----SEENINVRAAFI
Cel2 SHSHG-GGSSHGHSHGGG-----NGDNINVRAAFI
Tca3 NSHSG--LSDQ-----SNSNINVRAAAA
Orf2 PHSHGSRGAEYAPLEEGPE-----EPLPLGNTSVRAAFV
Bta1 GHSRNPEHSHNASQEQG-----SPSVRAAFI
Xla1 GHSHAGGKHEHMASEYKP-----QTNASIRAAFI
Cell GHTHG-GHSSHGHADHGK-----NVNVRAALI
Tth1 ETVTEESQKEELLSEFSIK-----QDVEKENMSMRAAQI
Ddi1 GHSHGGGHGHSHGIGGGTQKKKSKKNRLLNNQGQDIEDLGGENGKKNKGVRNINVHSAYI
Ath2 GHSHDNGHGHSHDHGHGIAATEHH----HDSGHDESQLSDVLEQKK-QRNVNIQAYL
Dsp1 -----QKENLNKISAFW
Sau2 -----QEDNINIQSALW
Cje2 -----ANLENVNMKSAFL
Cfe1 -----DMGNLNKISSFA
Abu1 -----DKDNINLKSAFI
Kst1 -----EHGHSNLNVKSAFL
Lbo1 -----SAENINIKSAYI
Pae1 -----QKNSVNVKAAYI
Aph1 -----GE-HNLNIRSAVL
Wen1 -----CE-SNINIKSAVL
Mbo1 -----S-HDLNTRSAFL
Mth1 -----GHMDDLNLRSAIL
Gbe2 -----SH-DDLNVHSAFL
Chu1 -----EKDLNVKSAYL
Lin1 -----DQDINMKGAYL
Rpa1 -----DNDLNIRGAYL
Van1 -----KHDLNMKGAFI
Gox1 -----SSDLNVRGAFL
Afa1 -----RNDLNIRGAFL
Bph1 -----GDDLNIRGAFL
Lpn1 -----SDDLNIRGAYL
Rgr1 -----CSDLNIKSAFL
Lme1 HGHSH-----EQDLNAKTAYI
Sde1 -----TSINERVLNW
Ilo1 -----KTLNERVINW
Asp4 -----STQNEKVVSF
Mma1 -----NDSINQKAVML
Pgi1 -----SSSLNERAVML
Bsp1 -----SSMNESILSW
Efa1 -----SSKNEGMLNL
Lla1 -----SSRNESILNL
Sgo1 -----KTKNESILSL
Mba1 -----MSQSEKVLWS
Dsh1 -----KDDLNARGALW
Ecu1 -----LKHKNLNIRATYV

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Sus1 HMLGDALGSVAII-AGAVAIRYTGWL--RVDPVLSIVIALLIVWTAWDIIRESLNILLE
Aba1 HELGDTLSTAABI-VGGWVILETGQS--WVDPALSFSGIGVLVLWSSFGVIRDSLNIILE
Mca1 HLLGDVVSTLGAII-AAGVAIRYTGLY--WLDPAVSVLIALLILWNAKGLMAEVMIDILLE
Tko1 HLLSDTLSSVAVVIGGIAIIRWDVL---WIDPLVTVLISVYILREGYEILKESVEVLME
Pfu1 HLLSDTLSSVAVVVGGLLQFYQIW---WIDSVLTFALIALYLIWMGFLLKASTKVLML
Fba1 HLLTDMMASVAVLVGGLLMQFYQIW---WIDSVLTFALIALYLIWMGFLLKASTKVLML
Nsp2 HLLTDVFTSIAVVVGGLLMQFYHIY---WVDPVLSIIVAFYLIYASIDIVKESIALME
Fno1 HMLGDAFSSVAVVLGAILIKYLNII---TIDPILTFIALYIGKESFEILKSLNVLMQ
Cac1 HMLSDAMASLAVIISGVFIKYFAIY---WIDSVLTFINMLILKSSYNILKESINILMQ
Lhe1 HMLSDALSSVAVVIGAFIIFYFNVT---WLDPVLTILVSIFVLHEAYEITMKAANVLME
Lre1 HLLSDALSSVAVVIGGIIITFTFVNVP---WLDPALTIQVALYIAYEAWPIINQTIKILMQ
Pmo1 HLLSDTFSSIFVIIGAFLLIYQKLY---IVDAIFTLMISGYIFVESVPLLKNTVNILLQ
Tme1 HLLSDMFSSVGIITGHVMSYNIW---ILDPIITFVISGYIIIESIKILKESIRVVMQ
Sac1 HMLTDALTSGLVVVLGIWLYRPWY---RLDTLVSWGIVALIFYGGWGILKETYQILMN
Dol1 HNVGDTLTSAAVLTGALVMRVADMP---WLDPALSLAIVAYIAWNAVLLKKEATHVLMN
Orf1 HNVADALGSVAVIVAGTLVWFGWN---WVDPVAVTLLIAGYILWHGLVEIRACIYILMA
Rba1 HNLVDAAGSVAVLIGAAVYILKWL---WVDSILTLLIATYILYQVWQMLPEATRILME
Oin1 HNLSDALASVAVIFGGTLIILYDLR---WVDPAITIGIALYILYLALTEIGGPPIRLMLL
Eli1 HNVSDALASIGVIVAGVLIILYDLV---VADLIITLIIAAYVIVQGATLLPRTVRLLMG

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Sfr1      HNLSDAFASVVVIVAGSLIILYQWY----VVDLLATILISVYVVYHGIILAKQSIRILMQ
Pde1      HNLDAAVSVVAVILGGALIWAFGWH----LADPVLTLISGVILWHVQGEIGPVMRMLML
Pcr1      HVLSDLMGSVAAI-IAALLMMSFGWV---WADAVASVIVAILILFSGYRVIRDSVHILME
Bli1      HIIGDMLGSFGAI-IAGLLMLFFNWN---IADPIASAVVAALVLVSGWRVTKDSVHILME
Saul      HVIGDLLGSVGAI-TAAILIWAFGWT---IADPIASILVSVIILKSAWGITKSSINILME
Shal      HVLGDLGSGVGAI-IASILIWTFNFT---IADPIASIVVSLILKSAYGITKSSINILME
Ssal      HVMGDLLGSVGAI-IAAILIWTNLNT---IADPIASIVVSLIILKSSWGITKSSINILME
Bsp2      HVLSDMLGSVGAI-VAALLIMFFFGWG---WADPLASVIVALLVVRSGYVYVTKSAIHVLME
Ccu1      HVLGDALGSGVGAI-VAAILIMSFGWG---WADAVASVLVSLLIKASGYGLLKATFHILME
Ame1      -----
Gkal      HVIGDALGSGVGAI-IAGLVMWLFWSWY---VADPIISILVALLILKGAWGVIKHTVHILME
Emil      HVLGDILGSGVGI-IAAALIYFFFGWY---IADPIISVIVAFILILYSAWKIFAETVNILLE
Aae1      HVADTDLGSGVAAI-IAGIAIVFWKFY---LADPILSAVALILPSAYSVIKETVNVILLE
Nsp1      HIADTASSVGI-IAAVMIHLWDWW---WADVAISLVVATFTGVSAALPLVQESIKIFLE
Msl1      HVLADLPGSVVAI-IAGLSAWLLDWQ---WVDVVASVILSALVLRSLSVIKQAITALRS
Cdi1      HILVDLGGSVAVI-VSLLIMTGTGM---WCDAVSVLLAVIILPRSLSLVRSTLGILME
Cje1      HVLADMLGSGVAVL-VAGGVIIITGWQ---YADVIASLVIAALVLPRAWQLMMQALRILLE
Tva1      HIIGDLLGSVAVV-ISAAVCQWTTWNGRFLDPACSFIFIFILVYGSQGLLRRTGSILLE
Ath1      HVLADTMGSGVGIV-ISTLLIKYKGWL---VADPASSIFISILIIASVIPLLRNSAEILLQ
Vvi1      HVLADTMGSGVGIV-ISTLLIKYKGWQ---VADPACSFISVILIVASVIPLLRNSAEILLQ
Clu1      HVLADMLGSGVGI-VSTVLEQFGWF---IADPLCSLFI AVLIFLSVFPLIKDAYQVLLL
Tca2      HILADTLGSGVGI-ISAVLMQMFQW---IADPICSMFIAILIALSVLALIKDSVILMQ
Cel3      HVLADTLGSGVFI-ISTLLIQWFGW---WVDPLCSLILSLIIGSVYPLLVSISTLLQ
Hma1      HLLGDAGGSVAVI-VSTAATAVFDLP---IADPVAVLIGLLVLASAGNVLRSTISILLE
Jsp1      EVWSDMLGSGVAVI-AGALIIRFTGWT---WVDVSVIAGVIGFVLPRTWILLRESINVLE
Xor1      EVWSDMLGSMVAVI-IGALLIHWTWQ---WIDPVLAFLIGLWVLPRTWVLLREAINVLE
Mpo1      EVFSDMLGSGVGI-LAALVVMGTGWT---WVDPLIGAGIGLFI VPRTWRLLEALHILLE
Dra1      EVLGDLGSGVAVI-AGALLIRLTGWS---WVDPLLGAGIGLWVLPRTWSLLKTSVNVLE
Asp2      EVLGDLGSGFAVI-AAAVVIMVTFGQ---AADTIASVIAVMIPLPRAWHLLRDVVDVLE
Tfu1      EVLGDLSSAGVV-VTALIIWLTGWH---WADSVVSAIALFIAPRAWHLLNEALRILLE
Kra1      EVINDALGSAVAVL-IAAVVIATGTWL---RADALVSLIGALILPRTIKLLRETIEVLE
Ace1      HLLTDVYAFAGTA-AAGLVILITGWG---RADAIASLLVAALMGKAAVRLLRDAGRILLQ
Aod1      EVANDALGSAVAVI-VAAGAWEAFGWT---RADAIASLLIAALMAPRALTLRNRSAVILME
Bad1      EVMNDALGSAVAVI-VSAIVLISTGWA---GFDVAVAGGIIALMMIPRAVLLRNAVRVLE
Str1      EALSDDLGSLSVI-AAALIIAGTGWQ---LADPLIAVALGLFRLPRIWLLGRAATRILVQ
Rer1      EVMADMLGSGVGL-ISGLVTLLTFGWR---YADPVIGVAGLGFVLPRAVNLGRHALRILLQ
Nsp3      EVVADAVGSGVGI-LAGLLVATGQT---WWDTGVAVAIGLFAVAVRAIVLGRQVLAVLGQ
Rsp1      EVLADAVGSGVGL-IAGGVVLAFDWA---YADIIVGVLSLWVVPRAVKLAASLRILTQ
Csa1      HVMGDLLGSVAAI-VASLVIMATGWM---PIDPLLSMLAAALILRGAWKIVRRSGHTLLE
Oal1      HVMGDLLGSVAAI-IAAGVIWWTGWT---PIDPLLSLLIAGLIGISAWRLVRDAGRVLLE
Mlo1      HVLGDLLGSAAAI-VAAVVILVTGWT---PIDPILSVLVLILSTAWSLMRAAAHVLE
Lag1      HVLGDLGSAVAVI-AAAVVIYFTGWY---PIDPILSVFVALLIVRSVAVSVMRQSAHILLE
Oan1      HVLGDLGSAVAAV-SAAIVIMVTFGWT---LIDPILSVFVSLILRAAWNLLGKSIHILLE
Pat1      HVLGDLGSGVAVI-AAAIILYTNWT---PIDPILSVLVLVLSAWALLKESIHELLE
Neu1      HITIGDLGSAVAVI-AAAVGIMVTFGWT---ILDPIILSVLVALIIRSAVVLKDSVHVLLQ
Gbe1      HVLSDLFGFAAAI-LAALIIMITGWV---IADPLLSLIFAAMILRGAVSVVKGSAHVLLQ
Pbe1      HVIGDLGSAVAVI-VSAIILITGWV---VVDVLVTLVLCGLIARSAYALVKETGVVLE
Rxy1      HVLADLGLSLGVL-VSGMVLLTGWY---PADPLVSAAGLILASSWRLLRDSVNILLE
Sav1      HITLNDLFAFIGTA-IAGLVVVVTGFA---RADAIAITLVVVVLMVKAGYGLLRDSGRIFLE
Asp1      HVLSDTVSSVAILGGAGAMALRPDLR---WLDPVLSLAIAALILWGALRLIFEITDILME
Mfe1      HVVGDLGSAVAVI-IAGVVIYFTGWM---PIDPILSVLVAAILAWGGWRLIRETTAELE
Sce1      HVLSDALGSGVAVI-TAGVLILAFGWT---RADPVISAAGALVLWGGRVLRDTSRVLME
Cbu1      HVSVDIVGTCAVL-LSGIVIFFSHWA---LIDPILSVLIGILIISSVRLWRRESMTVLE
Asp3      HVLGDLGSAVAVI-LAGAVIYFTGWV---TIDPLLTMLICGLILASTLSLLKQVVTLLLE
Mfl1      HVLGDLGSAVAVI-LAGAVIYFTGWM---PIDPILSVLILVSTLRLLGEVLHVLE
Cvi1      HVLGDLFGSAAAI-ASGVVIYLTGWM---AADPLLSMLVALMLAAAWRLIRQAVMVLE
Psp1      HVMGDLLGSVAAI-IAGVVIQLTGWM---PIDAILSILVSLILKSTISILHESYHFLME
Tca1      HVIGDFLQSFQVF---VAAAVIYFNE-QWVIIDPICTFIFSVLVMFTTFNIIKDTLTVLE
Aae2      HVLSDFLQSLGVL---IAALVIYFKP-EWNIVDPICTFILFSLVLTITLAIMKDALMVLE
Cel2      HVLGDLQSLGVL---VAALFIYFQP-SWVIIDPICTLFVSVLCTTIYILRDAMIVLE
Tca3      HVLGDLQSLGVL---IASIILKVPF-SAKVADPICTLFSAVVIFTAKVAKDSIWLLLE
Orf2      HVLGDLQSLGVL---AASILIYFKP-QYKAADPISTFLFSICALGSTAPTLDVLRILME
Bta1      HVIGDFLQSLGVL---VAAFILYFKP-EYKFIDPICTFIFSLVLTTLTILRDVILVLE
Xla1      HVIGDFLQSLSVL---ISALIYFKP-EYKIADPICTFIFSLVLTITVTVLRDLNILLE
Cel1      HVIGDLQSIGVL---IAALIIRFT---GWTLPDPICTFIFSLVLTITVTVMRDIFVLE
Tth1      HILGDTIQSAGVI---IGALFVFEGGEDYFIADPIITIVFTIVVTFITLPMKDSIKVLE
Ddi1      HVLGDCQSIGVM---VASCIIWVHP-HWKIADPITLIFSVILGTTIKLLRESLGVLE
Ath2      HVLGDSIQSVGM---IGGAIWYKP-EWKILDPICTLFVSVILGTTIGMLRNILEVLE
Dsp1      HFAGDLQSGVGI-ISAVVVIYSGNY---LADIIVSVIIGLIIISLGINIFRQGLRVILE
Sau2      HMGDDLNSIGVI-VAVVLIYFTGWR---IIDPIISIVISLIIIRGGYKIKTRNAWLILE
Cje2      HMMSDLLGSLAVI-IGGIVVYFSGIV---YIDTILAVLSILLRWAIIILLQSANVLE
Cfe1      HMMSDLLSSVAII-LGGIIVYFTNLW---WIDSALALFIAIIAKWSFSLARDSMNILLE
Abu1      HMLTDALSSVAII-IGYIVYFTSWY---FIDIILAVIVALVIAKWAIDILKSSNTNLE

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Kst1      HMLGDTISSVGVI-IGAVIIYYTNWY---IIDPIISIMLCILILIWSYKLIMESVDILLE
Lbo1      HVLSDLLSTAGVL-IGSILIYLTNWN---WLDPLISILISILILRSANGIFQESISILLE
Pae1      HILSDLAGSVGVV-AGSILISLTRIT---TIDSIISFIIAILIVQSALKIIREAVDVLME
Aph1      HVIGDLLCSVAAI-ASSIIIRFSGWQ---IIDPMLSLVSTVMLISAFSIVKNSSNILLE
Wen1      HVIGDILGSVAAT-LASIIIMLTGWQ---IVDPILSVFVSIIILNSGYKILKNSCHILLE
Mbo1      HVIGDLLSSLAVI-VAALWIALTGQT---VVDPLLGLAISVLILFSSFSILAESFRILLQ
Mth1      HVLGDAASLGI- AALVIWRTGWY---PADPIISLLISVMIFAGSYRLIKDSFRILME
Gbe2      HVIGDAASVGVI-IGGIIMYFTNWY---LLDAVISIGIGFIIFWGSWRVMRESVHILLE
Chu1      HLMSDALVSLGLV-IGGIIMFYTGWF---WIDSVLMSIVAIILFSTWKLKDSLRLSLD
Lin1      HLLADGLVSLGVI-ISGLLIQWLGF---WIDPVVGLLVGLVILYGNIPLFRQSLRLSLD
Rpa1      HMVADAGVSAVV-VAGVVILFTGWN---WIDPAVSLAVAFVIIWGTWGLLRDSTAMSLD
Van1      HMAGDAAVSLGVI-ITAFIINITGWD---WLDSATSLAIVVILIGTWGLLKDSINYSLD
Gox1      HMAADVGMFVSIV- IAGLLIAFTGYT---IIDPIMSLIVSVSIVIGTWGLLRSSLNLALD
Afa1      HMAADAASVSLGVV-ASGCLALWQSWV---KLDPVVSLVIAVIIIFATLSLFKRSLLHMLFD
Bph1      HMLADAASVSAVA-VSGLAIVFTGWT---WLDPVMSLVVVAVIVYGTWGLLRDSSLALN
Lpn1      HLFYDALISVGVI-LSAGVLYLTGWV---WIDPVVGLLIALVILKGTWSLFADSFRLIID
Rgr1      HLTYDALIALGVV-LAGAVIYTKWL---WIDPIVGLLIVGITWGSWNLLRRSVELILG
Lme1      HLLADAGVSVGVI-IAGLLIQVTGWH---VIDPIVSMIIGVIIAVTSWPVMKSTFNALN
Sde1      HLLLEDVLGWVAVL-IVSVVLMFVEWP---ILDPILSILFTLFIIVNLVKNLTQTLQIFLQ
Ilo1      HLLLEDVLGWVAVL-IVGIVLLFVDWP---ILDPLLSIGFTLFIIVNLVLRNLWATLKLFIQ
Asp4      HLLLEDVLGWVAVL-IAGTILYFVYIP---WLDPGLSLAISIFILWNVFNKLNKETYIFLQ
Mma1      HLMEDALGWVAVL-VGSIVMLFADVP---IIDPILSLIAVYILYNAFKNLRILNVFLQ
Pgi1      HLLLEDVLGWAAVL-VVSIVMLFVNAP---ILDPILSLCITAWILYNVYGNLRETFKVLLQ
Bsp1      HMLLEDILGWIGVL-IVSIVLLFKEIH---ILDPILAISIAGFVLFNAFKKTVKTMRIFLD
Efa1      HMLLEDVLGWIGVL-VVSIVMNFTEAY---RLDPILSLIALYILYKTVPEFLSTMKILLN
Lla1      HALEDLVGLWLVGL-IVSIVLHFVDWY---WLDPLLSILIALFILSKAIPKFWGTLRILLE
Sgo1      HFLEDTLGWLAVI-LMAIILRTDWY---ILDPLLSLVISIFILTALPRFWSALKIFLD
Mba1      HLLLEDILGWVLL-TGSIIIRFWNKP---VIDPIMTIGFTFVVLWGVSKNAKEIFNLLLE
Dsh1      HIQTFFVGSLLII-VTALVIEFTGFL---AIDPILGMAGFVLLWASVGVKEAVHILME
Ecu1      HVVGDLIQSVGVIIAGMVTYFYPSKA---IVDVICTMFFSVLVLISTGFVFRDGVYILAE

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Sus1      GLPRGIHLVDVA--KAMGGVTGVLGVHDLHIWSLGSKTHALSCHVLIEDVPPSAS-----
Aba1      GTPRGMNVQRLA--ERMCSIDGVIDVHDLHVWSLGSETHALSCHIRIADLRASES-----
Mca1      STPRDVMGSMV--RDMMQVEGVHGVHHLHVWSISRQLRMLSAHIVTDDIRLSEG-----
Tko1      AAP-DLLDEIK--REIESIPGIRNAHHFHVWRIGEKEIHFECHVEV--NDMPIS-----
Pfl1      ASP-NLDFNEIK--REIESIPGVKNAHHFHAWRVGEKEVHFECHVEV--NDMLIS-----
Fba1      FTPEDIPVDEII--KEINAFESIKNVHHIHVWQLNEDETHFEAHVDFESNITLS-----
Nsp2      FAPKSIDIEKIA--DEVKKIEKVENIHHIHWRLGEHDIFLEAHIDFKENLPLQ-----
Fno1      STPHNIDVDEII--KRLENISEIENVHVVHWSLDGKTNFFEGHINKEDVTVS-----
Cac1      TTPVNLDMDDVK--EQLLKIKEIKGVHFFHIWTLDENNVLEGHIEI--DDILVS-----
Lhe1      SNP-NIDLNSVN--DIVLSFPEVKNIHHVHVWRYSDDFIMMDAHINVDRLHAD-----
Lre1      SSP-DLYDSIE--NDLKQIDGVTAVHHVHAWMMDEHRIIFSAHLNCD-DLPLS-----
Pmo1      GTPTDIEIEKIK--AKLEKFDVFKDVHHIHWTTDGGDKYMEAHIRLQESLDQNNY----
Tme1      GTPKGVLDKVK--KIIQNFSFVKDVHHIHWVSLDGLIELYLEMHVTVDG-----K----
Sac1      ATPPGISVKEIK--RAVEAIEGIREIHHIHWVTLSPDRAALAAHIIVDDQMLSQ-----
Dol1      GTPRGLDLEKVR--ADMEAVDGVLSVHYLHAWAMGC SVAMTGHVVVTDQMVSA-----
Orf1      GVPAGVELAALS--TAVRAVDGVGVHHLHVWQLDERAPYFEAHVVIDRVADARL-----
Rba1      GAPANFHFDEMM--ADLGMDGVSGIHHVHLWELDESHRALEAHVVEIPTRFEDL-----
Oin1      GSPPDMADAGAV--EAMTKVAGVRDVHHVHLWQMGEHEVALDCHVVLEGGQDWTDL-----
Eli1      AVPDEVFEDQMV--ENLRALGGVQDIHHVHVWNLGEHHRALAHLTLDVYSQTAF-----
Sfr1      AVPVDDIDIDKIC--KDIESMENVEKVRHIIHWQLDDSEVYLETSVNLK--TMEQF-----
Pde1      AAPAGVDHAALI--GAMAGVEGAGAHHLHLWQIDERRTALS VHLMVR--DGADA-----
Pcr1      GTPEGISLVNVE--EKLLAHPQVQKVHDLHVWSITSGLNALSCHVVVDGEMSIHE-----
Bli1      GKPKDIDAEALK--NGLLSIPSVREVHDLHIWSISSDMPSLSCHIVAD-ENS DRD-----
Saul      GTPSDVDIDEVI--TTITKDSRIQSVHDCHVWTISNDMNALSCHVVVDHTLTMKE-----
Shal      GTPSIDLEQVI--YTIMGHEEIQNVHDYHVWTISNDMNALSCHAVVDKSLTIEA-----
Ssa1      GTPIDINMSEVI--ATIKEEDAIQSVHDCHIWTISNELNALSCHAVVPHEMSVAQ-----
Bsp2      GTPSNVDIQEII--GLIEQTDGIESIHDLHIWTITSGTNALSCHAVVNEHLKIAD-----
Ccu1      GAPANVDTSEIL--AAIGGTAGVRSTHDLHVWSITSGVNALS AHVVIEGDMSVSA-----
Ame1      -----
Gka1      GTPITIDQNEVK--KALESIEGVINVHDLHIWTITSGLDLSLSCHILIEDHQD--S-----
Emil      GAPGHINIEALK--SSVCVIKGVVDAHDMHVWSISSGFLVLTAHITVSEDAD--R-----
Aae1      VAPSHINTEELE--KELLNLQGVKGVDLHVWSITPGTEVLTVHVVEDTISI-----
Nsp1      YAPKSIDPVEVE--KLIKSFAGVVQVEKLHIWTISSNKVMLCANVIVECATNQER-----
Msul      DG-----EEFSMDTHSH-----
Cdi1      RVPKTVDVETIR--SRIAQIDGVGGVHDVHVWSIDGQQDIATVHVVDENVNVK-----
Cje1      QAPPGRPAEVD--ALLRQVDGVLDVHDLHLWSLDGTSAASVHLVPEGR--D-----
Tva1      SCPEYIDLELIK--ADLMKIEGIVAVHELHVWELCKEIIYLLALHVVVDKSKE--R-----
Ath1      RVPRAHRQDLKEAMRNILKTKGVCSIQRLHVWSFTNSDVA TLHLLVSADSDK-----
Vvi1      RVPRVHEHDLKDALKNVMKIRGVCGIQNLHVWSFTNTD VVGTLHLHI STEADK-----
Clu1      RLPPEYEKELHVALEKIQKIEGLISYRDPHFWRHSASV VAGTIHIQVTS DVLE-----
Tca2      RQPYALDNVLPQCYQKVVS LPGVYSVQEPHFWTLCEVYVGALKLEVSKNVDP-----

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Cel3      DVP--EEEEFEYHINEILEIEHVESYSNAHMQHKSDINVASVHVQVKEEANA-----
Hma1      RSPVSSEELR----DELTTLDGVDQIEDLHVQVCSQLTVATVRLTDTSTTLEE-----
Jsp1      GVP E H I D L E K L R - K S V - S D I A G V R S I H D L H V W S I T S G K I S L T M H V V G D L E A F N R -----
Xor1      GVPKGIDLAQVQ-QAL-TSHPGVEDVDHDLHVWALASSTPALTAHIVVN-EATDR-----
Mpo1      GTPPGVDLAALK-TEI-EAMPGVRRAYDLHAWTLTSGFDAMS GHVVVD-DVAGG-----
Dra1      GVPEGLDLDA LR-AEL-RALPGVQDVHDLHVW SVTGGVVNLTAHLVSD-RAP-----
Asp2      ATPKGVEVQMIR-EHI-LSVHGVS SVHDIHIWITITSGVPVFSAHVVVEDAVLSARGA---
Tfu1      ATPRGLDLSEVR-RHL-QTHPNVVDVHDLHAWTITSGMPVLSAHVVVEDSALADSG---
Kra1      ATPRGLDLDAVR-RHL-LELPHVRDVHDLHASQITSGLPVLSAHVVVDGCFHDGHT---
Ace1      AAPESIDLAEVR-AHL-IDVPHVVDVHDLHVWTVTSGLPVLSAHVVLEDHCFASGHA---
Aod1      QAPANVDVTELR-AHM-LDVGVDLVHDLHVA AVSSHLVTVTAHVTVSEHADGP-SR---
Bad1      ETPQELDLDEVR-EHL-EQVPHVVAHDLHASTVSTGMPVMAHV VVERGLTMD-DA---
Str1      AAPEHLQVTA VQ-DRL-IAPGVGTVDVHDLHVWTLTSGIEVTS AHLTVDPGADIG-----
Rer1      HAPAGVSITEVT-QAL-QGIAGVKDAHDLHIWTLTSGMEVASAHLTIDDESPT-----
Nsp3      HVPDGMQVDQVQ-ADL-EALPGIEDVHDLHVWTLTSGMNVATAHLVVAPDADPQ-----
Rsp1      ASPEDVDVESVQ-ADL-EALPGVTGVHDLHVWTLTGM DVATVHLT TD--ADSS-----
Csa1      GTPGNIDVDGIR-AAL-EDIEGVSVHDLHVWGLTPQDPLL SLH--LVVRDDMSH-----
Oal1      AAPDHIDPSVLR-ADLTAEIEDVLDIHHVHVWSLTPDRPMATLH--ARIEPEADA-----
Mlo1      GVPPSLDRDLIA-TDLETTIQGVREVHMHVWSIDGSSNMATLH--ACLD EGVDA-----
Lag1      GAPADIDRDTLK-TDLLNAVPGLV DVYH IHLWSLAE GKINATMH--ATLKPEDDA-----
Oan1      GAPDNATPEKIE-RHLVENIADVASVSHIHVWSITSGRTLATLH--VRPKADVDA-----
Pat1      GTPS QLSVEALQ-KDVT LNIPEVRNIHHVHLVQVGE-KPMMTLH--AQVVP PHDH-----
Neu1      VVPRGMDTRVVE-NGL-TQLPEIEEAGHFHAWILADETTIATVH--VSPARGVDP-----
Gbe1      GTPADIDLDAIA-SDLVHTIPGVQRVHHLHAWSLTGNDR LITLH--AVTGAGEETGE---
Pbe1      GAPQEIDPTDLR-DVIRRDVRGVTDVHNVR LWM LTPGANQATMH--VRVRDPYQG-----
Rxy1      AAPHGMDAAEIG-RRM-ASTSGVAEVHDLHVWITITSGFPALSAH--VLVAAGEDC-----
Sav1      AAPADVDPDALG-DKL-VAQA AVVEVHDLHVWQITSGQAALSAH--VLVQPGSDC-----
Asp1      GVPRHLDVAAVT-RQM-ESAHGVS AVHDLHIWITISSGMYALSAHLVVHAESIGRN-----
Mfe1      AVPDAIDTVEVE-ACL-KAVQGISDIHHIHLWKL PDGRMGMSAH--VEIESMSEW-----
Sce1      GSPIEIDL AHVE-DTI-RSVPGVVDLHDLHVWSISDGFNVLT VH--VVLAKGHHG-----
Cbu1      GVP A H L N I K Q V S - Q T M - V R F E G V K A V D V H I W T L S S G V T A L S A H -- V N I K N I T S W -----
Asp3      GVPDHLSLPEVG-QAM-AEVEGVRSVHDLHIWSLDSRQAALSAH--VVLGDSSTW-----
Mfl1      GVPLHLDIQAVE-HAM-SASDKVQGVHHLHIWSLSSEKTALSAH--IVLENILDW-----
Cvi1      GVPPHL DYNRIG-EAL-SAIAGVRSVHDLHVW TMSAERVALSAH--VRIAAPQDW-----
Psp1      GVPLHIDYLA VG-RDL-KAVPGVLAVHDLHVWEMTPSF PALIGH--IEISDMQEW-----
Tca1      GAPKGI DFNQVM--KTL LNIEGVKR VHNLR I W G L S L D K I A M S A H V A I T G Q S S W L R D V G R -----
Aae2      GTPKYLDTFEVM--QTF LQIQGVVRVHNLRIWALSINKIALSAHLAVEPNTN-----
Cel2      GRPSNIDFAKFV--SLEDIEGVKKVHDLRIWSLTMDKIALSVHLEIDANSQ-----
Tca3      GSPK--HSGDLA--FEL LNISNVRHLNHLI WALS PGKDAVSVHLCVG-----
Orf2      GTPRNVGFEPVR--DTLLSVPGVRATHELHLWALTLYHVASAHLAIDSTAD-----
Bta1      GTPKGIHYSDVK--QSI LAVDGVKSVHSLHLWAL TMNQVILSAHIATDILGE-----
Xla1      ATPSHYDLS DVK--KALSALEGVKG VHD LHLWSIGMDKTA FSVH LALES PNR-----
Cel1      GQPDDIKIYETVK--EKLEKVS GVVNVHDLHVWSINPGFVSLTAHICSKTPSVT-----
Ddi1      GVPPELDIVSEVK--GDLSEIEGVTEVHDLHIW SITLGRPALSVH LTI LPTID-----
Ath2      STPREIDPTMLE--KGVCEIEEVVAVHELHIWAI TVGKLLLA CHVKIRPEAE-----
Dsp1      ASPKDINISQLA-ASVKN-IPGVKDFHHIHIW SISP E I H A L S A H V L I D D C P -----
Sau2      SVPQHLDTDQIM-ADIKN-IDGILDVHEFHLWSITTEHYSLSAHVVLDDKY-----
Cje2      SSP--VDIEKVR-QVLL-LNPSVDEVVDL HITQITNKMLVASMHLKVRVCN-----
Cfe1      ASP--IDINAAK-NVMLE-NPLVLDVHDLHISEITHKMYVLT AHIVLNKDN-----
Abu1      SSP--VDVKEVQ-EYIEK-NEKVLELHDVHIWEITQDMYNMTAHVKIDKKY-----
Kst1      ATPKDINVG E V I - S Q L E Q - I T G V D G A H D I H I W T I T S G M Y A M S V H I D T K D M P -----
Lbo1      SSPQTFEILHIL-EHIRE-IEGIRQILDYHFWAITRGVYACTLKVSVD-----
Pae1      SVPPELDIQ E I E - E A L L N - F R H V E G L H D L H V W A L T S G V N A L S C H L L V K N -----
Aph1      GKPYNIDVGELQ-RNITSAIPNVIDVHHVHLWSLTAEYPIMTMHVRIACGSSD-----
Wen1      GTPEGISAE E I K - S K I T S E L P E I D V H H I H T W S L S D N Y F I I T M H A K I Q N -----
Mbo1      FAPRDVPIEDVI-AAMES-VPGVSGVHNVHLWTLCSNINVLD AHVYCCEND-----
Mth1      GVPECIRTDEVV-DQIST-ASGVIQVHDLHIWGVCSNILLSAHVVVSP-----
Gbe2      GVPRGVEVEQVS-AAILE-VEGVEEVHVNIWTICSHILALSGHIVVPPTF-----
Chu1      GVPEYIHIHEIK--ETALKIAGVKDLHHIHAWAISTENALTAHLV---LDKNTTIAD--
Lin1      STPETIQSGIVE--KELKSIEGV LNIHHIHIWSLSTTENALTAHLV---LKNDLTFEH--
Rpa1      AVPPGIDPVA VR--AFLESRPGVAQVHDLHIW SMSTTEVALTSHLV---MPGGSPG---
Van1      AVPSNVMVGLK--AYLAALPNVATFHD LHVWPMSTTENAMTVHLV---VDEYDKG---
Gox1      AVPAGIDPDAVQ--AALLSLDGVSGLHHLHIWAMSTTETALT VH LV---CDPTKPVST--
Afa1      GVPDDIDLNAV R--SVLLEIPGLKSLHDLHIWNLSTTETALT VH LV---LDENIDV---
Bph1      GVPRGVMQKIR--AYLAAQPGVTDVHDLHVWALSTGNALSAHLV---IPGGHPG---
Lpn1      GVPRDISWIKVS--DFLLAIPGVKSIHDLHIWALISTKENALSVHLF---MP EESLS---
Rgr1      AVPYGVDSKEIY--TYLKNLPGVQEVHDLHIWGLSTQETALTAHLI---MPETNLS---
Lme1      GVPDNVNESDVL--RYLSTHEGVEQLHDLHIWPLSTTEAMTVHLS---VKNVDE---
Sde1      AVPDTQQQQQIQ--QALVTLDAVDSLHHLHFWSLDGEQHVLTAHIV--LAHELTPTAQ--
Ilo1      ATPDKET YRQVA--DTLLELPHVADLHHLHFWSLDGEHVLTVHLV---LSKNLDIEAR--
Asp4      AVPAELSLEEIK--KKICDIDQVESVHHTHLSLEGAAHVFTTHVR--IKKVDNLKEV--
Mma1      AVPPKF DLETTK--EKILKIPHVIDLHDVRVWSMDGSEMIMSLHLV--VEENLSSAQCK--

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Pg11      GVPDGIDLEGLK--TDILSLPHIRSVHDIHLWTLDGESHVMTIHVVYCPDDFSSPQAV--
Bsp1      GVPEGINLDAVE--KDMKKVEGVVEEISHLHIGSIDGEKNAMSAHVK--VRNGLEARDE--
Efa1      GSPENVNVENLA--SSINNIPAVKALSHFHIWSLDGEENALIVTVL--IDS--SDINKA--
Lla1      SVPEDIDYKKLL--IALEKLPEVRSVTQLIIWSIDGEQNAAMIHIV--IPE---NQDF--
Sgo1      AVPDGVETGDLA--KDLEALTNVKS VNQLSIWSMDGLENNALVHIC--IKD---WEQM--
Mba1      GVPEYIDIDEIK--KSILSVEGVKMVHDLHIWSLEGETVLLTAHVV---VEDKYLQTP--
Dsh1      GTPEGTDLDAVT--ADLNGQDGVLDVHHVHAWTLTSGKHAFSAHIRHQSPAAAD-----
Ecu1      GAPTDLDIDGMR--SDIQDVENVYKIVDLYAWSISMNRS AVSIRILADDLLISDY-----

Sus1      -----DCILRSLN-----TLEHKYGIS
Aba1      -----EAILKAVN-----EAVAHDFHII
Mca1      -----EGLQKRV T-----RLLAQRYGIA
Tko1      -----EAQRLIDE-----IEERLKR-FGIT
Pfu1      -----EAQQIIDV-----IAERLRR-FGIT
Fba1      -----EFDIILHQ-----IEELLFHKFEIN
Nsp2      -----EVTQIIAD-----IEKLLREKFYIS
Fno1      -----QSMVIYKK-----IEQELSK-MEII
Cac1      -----ETRAISDK-----IEHILNEDFHIT
Lhe1      -----ELENLYQD-----IGKKLKSELGIN
Lre1      -----QVERIYSQ-----VEKILHEKYGIC
Pmo1      -----DLNCDIK-----LNKVLKEDFEID
Tme1      -----DYDDYLRR-----IKETLKEH-GFR
Sac1      -----VDLLVSR-----VRELLWSRFGID
Dol1      -----TEQLART-----LGDRLLDGFID
Orf1      -----EDIKRA-----VKWALRERFGIA
Rba1      -----ETIKRE-----IKLYLTSEHNIR
Oin1      -----EAVKQA-----VKKMLANDFGIT
Eli1      -----EGVKRR-----ARAMLEKDFGIA
Sfr1      -----QDLKP-----IKDLLAAQYGIH
Pde1      -----VMAVRQ-----AKAMLR RDFGID
Pcr1      -----SSILIGS-----LERSLLELGIH
Bl11      -----R-ILKQV-----SKYLRKECNVE
Sau1      -----CELLLEN-----IEHDLHLNII
Sha1      -----CEQLLKQ-----IEHELAHLNII
Ssa1      -----GEQLLNK-----IEHKLQHLNII
Bsp2      -----GEHILRK-----IEHNLEHKG I K
Ccu1      -----AQEVTHE-----IERKLAHLGIA
Ame1      -----
Gka1      -----QKVLQEA-----IHFIEDHFKIQ
Emil      -----DLVLEEA-----RKIIADNASIE
Aae1      -----CNDILKE-----VEKIAHKYGIK
Nsp1      -----DRLINKL-----QIHLQENFKIA
Msu1      -----
Cdi1      -----DCTTLDR-----IQKVFDHAGID
Cje1      -----PAAVLCA-----AQAAALQERGIA
Tva1      -----NKKVLEQ-----CHNIMISHGVY
Ath1      -----TDTKLQ-----VSRLLDAGVK
Vvi1      -----ASTKVQ-----VSNILHDAGIK
Clu1      -----QRIVQQ-----VTGILKDAGVN
Tca2      -----KYVVSH-----TQMIFASVGVR
Cel3      -----QMIRHR-----VSNILKSTGAT
Hma1      -----QRRIQSR-----VHDYLTNRGID
Jsp1      -----DRLLTEIQT-----TLAEQWE--IH
Xor1      -----DRLRDALAT-----LLHDFRFD--IV
Mpo1      -----PAVIRAVRG-----LMKERHG--IE
Dra1      -----AELLPAVHE-----VAHG-AG--IE
Asp2      -----DQVLDKLAT-----CLGSHFD--TE
Tfu1      -----RLLARLHD-----CLSTHFS--ID
Kra1      -----PQMLDALQA-----CVAEHFEVAIE
Ace1      -----PQLLDALQN-----CLAGHFDVT--
Aod1      -----DRIVHQLGE-----CACHHFP--IA
Bad1      -----ADVLSQLQN-----CLREHFPVSVP
Str1      -----DVLGSAQT-----ALREEFR--IE
Rer1      -----KVLAVAQD-----LLAQQFD--LV
Nsp3      -----RVLTDAQA-----LLSSSHR--IE
Rsp1      -----VVLESART-----VLES-HL--LS
Csa1      -----AVMLKAA-----YARLHERFGIS
Oal1      -----PAIIVAI-----KSRLAERYKLT
Mlo1      -----HRAVSAI-----KKRLASEHGIS
Lag1      -----ENVLRQI-----RERLKS RHGIG
Oan1      -----RSVMRAV-----ERELKSQFKIE
Pat1      -----DALLRRI-----QEYLLKHYQIE

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Neu1      -----LSLPPLV-----SSWLRERYAID
Gbe1      -----DRDRILDAI-----QHRLSDRFGIS
Pbe1      -----DRILEDI-----KSLLAAR-GIL
Rxy1      -----HAKRREL-----EQLLREEYGIS
Sav1      -----HAVRRDL-----EELLRQDYGIT
Asp1      -----DDILNEV-----KHGLRRSFGID
Mfe1      -----DEILPLL-----LEKLrk-QGVD
Sce1      -----TNVAAAV-----ARRLREKHALT
Cbu1      -----DDVLLGL-----KSTLKQKYDIN
Asp3      -----PAVLARQ-----QRLLSERFGIG
Mfl1      -----HEVLNNL-----RHMLHERFNIE
Cvi1      -----PRILAAC-----QLMLSREFCID
Psp1      -----PSIMAKI-----NAMLLDKHGID
Tca1      LDHQALADWLAGHTSGSGKFRGFNAPRPGPTPALDPNEAKMERWSSVASNDRQPNYLCL
Aae2      -----TETILQQ-----ATRrTVHAKYDFF
Cel2      -----SQSILRE-----TRKMLKQTYNVH
Tca3      -----EFHYLFL-----
Orf2      -----PEAVLAK-----ASSRLYSRFGFS
Bta1      -----AQAVLKA-----VSDRLQEMFHH
Xla1      -----SKRILKD-----VTQNVCSFPFH
Cel1      -----AMENVAE-----ARSLIRRRFGVA
Tth1      -----LFEATKLCKKLGIV-----
Ddi1      -----PEEILSI-----ANKILLEDYEIN
Ath2      -----ADMVLDK-----IIDYIKREHNIS
Dsp1      -----VSQADYIRQI-----ETSLREGFALN
Sau2      -----EGDDYQAIDQV-----SLLKEKYGIA
Cje2      -----LKEFEKLSQDL-----SHKLLHEFEIG
Cfe1      -----IFKFDEIINDL-----SLSLKNRLEIG
Abu1      -----LDDYEEILHKI-----NHNLKEKFKIV
Kst1      -----ISKTAISREI-----NRVLVEKFRIG
Lbo1      -----LKHTEGVIFNS-----NRILKSKFGID
Pae1      -----LDAGQNILVPI-----HRELKEYNID
Aph1      -----VASSVQVVKSI-----KKLQERFSIS
Wen1      -----VQHTNVLYEI-----KKILLDKFEIA
Mbo1      -----PETREQIKEE-----IKHRLHFRIG
Mth1      -----ESDHQRTLSEI-----RDKLSSIFGIE
Gbe2      -----KGEHGPILRRI-----EERLFFERFHS
Chu1      -----ENIKREL-----KHELEHKNIH
Lin1      -----QRIKSKA-----REILKGLKIE
Rpa1      -----DAFLIEIA-----HELQHDGFGIA
Van1      -----QGMPDEIK-----HYVHDHFEIE
Gox1      -----DLVIARAA-----ELVTRTFDIA
Afa1      -----DAALRGAT-----NILIERFSIH
Bph1      -----DRVIDAIV-----GTLRTEFDMH
Lpn1      -----DDLRLREL-----EKLKHDFSIO
Rgr1      -----DEEYFKIN-----QVLAKEFHIO
Lme1      -----QELLANIS-----SDLREKYDIS
Sde1      -----LNLKQQIA-----VTLAPYKLS-
Ilo1      -----SDLKQRID-----DVLAPYALS-
Asp4      -----LDAKTAIK-----EVLKAYPFS-
Mma1      -----ALKHEVK-----HTCQHLHIG-
Pgi1      -----FDMKESVR-----EKCSAHGIR-
Bsp1      -----EKIKETIR-----SQLSSCNLT-
Efa1      -----REIKKEIA-----ELAHTSGVKN
Lla1      -----SEAKIAVR-----TLLESEKVC-
Sgo1      -----METKEAVR-----QLLEERGVO-
Mba1      -----DKMRQSIK-----SKLEKHHIE-
Dsh1      -----LLNRAY-----RRLTEQHGFH
Ecu1      -----ENILLEVN-----HI IKGKYLVD

Sus1      HTTVQFEHVSCAISETGCAIPVSEQHHH-HDH-----
Aba1      HTTIQFEHEVCEVAH-GCVIPVSHADHrTHDHA-----
Mca1      HTTLQLESESCQPDsLYCDISRPNHRYHGE-----
Tko1      HVTVQLEAG-----RCEDKNTICGEKGD-----
Pfu1      HVTVQLEAG-----RCKEKGMIcDEGV-----
Fba1      HINIQPEFG-----KCDsKDVIVQD-----
Nsp2      HVTLQPEFQ-----RDDDKSIVVQRDPGA-----
Fno1      HSTIQFEYK-----GCEPGVISHKK-----
Cac1      HVVIQFEST-----SCEDN--ICKI-----
Lhe1      HVTLQAECEGRN-----DKMIVPCRGtNED-----
Lre1      HVTIQAEYHRGKDEELFNTPVDEKNVISNDFKQD-----
Pmo1      HTTLQFEKN-----RCLEGEKVT-----

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Tme1      HSTIQLEQI-----NCGENCIAEIQ-----
Sac1      HPTLQFETR-----SEDNFLLCCPKENHHH-----
Dol1      HPVFQFETR-----VCGQGELLCQMTSCEQEH-----
Orf1      HSTLEIEFVGTH-----SDCIETAAVVAH-----
Rba1      HSTLEFEFAGT-----SDCHDSGDNLIHDGCS-----
Oin1      HSSLEFETSANAH-----QDAALFGHESGPTRAGKDAEHSVEASHDR-----
Eli1      H--VTFEPCLATD-----CDDALIPAHAPN-NGKNTVGD-----
Sfr1      HSTIEVVVGNTLQ-----MENCFELE-----
Pde1      HATIEAEREGDA-----CSDAGDGDGHRH-----
Pcr1      HATIQUESAAHPQSTHSEALVCNISE---RPAENNHIGHNH-----
Bli1      HVTVQIE--GERCSPHES---CSLG-----ANHPRS-----
Sau1      HMSIQLET---PNHKHDESIICSGTHSHSHNHHAAHHAAHVH-----
Shal      HMTIQLET---PKHQHDESILCSG-----FMHQHSH-----
Ssa1      HMTIQLET---KDHQHDDETLCSS---IYKTTAHNHAHDH-----
Bsp2      HVTIQLET---ASHPHESSILCQLK-----NVHEHHHE-----
Ccu1      HVTIQIET---GAHGHADELICEIK---GGEAGHLGHS-----
Amel      -----
Gka1      HATIQIET---SQIHHGEMKV-----
Emil      HVTIQIES---CEHKNSCNGRCN-----
Aae1      HTTVQLEK---EGYACAECPLLSPQGLKFHHHHHHGHEHEH-----
Nsp1      ETTLQLTSPPKSAKLPLHPLFNQDLSMLAANKSN-----
Msul      -----
Cdi1      HVTVQLEHDTMHSHELPCQH-----
Cje1      HATIQVERASHADHEGPQNV-----
Tva1      STTVQIEFVDDFPQGTDSVGSFYATSFSGDKRIFQTPPVYQHSIGCPHVNLPGHEHDHD
Ath1      DWTLQVESVNS-----
Vvi1      DLTVQVEYVKST-----
Clu1      NLTIQVEKEAYFQHMSGLSTGFHDVLAAMTKQMESMKYYKDGTYIM-----
Tca2      QIYVQLDYTPM-----
Cel3      HSTVQVEKKTFAHRIQQVC PGYKAGYTVVRGSVIREKKHDHSHHHGSHDDHSGHHH---
Hma1      HATVELVGRTPDTPDVGTTNHS-----
Jsp1      HTTIQMEA-----EACDQATNDHTFGPPGDEKDHPEKSS---
Xor1      HVTLQVESG-----DCGTEPCGTPKPAADAGHDAHGHGSHAGHSHH---
Mpo1      HVTVQVED-----EALSAEFPPLPV-----
Dra1      HVTVQVEP-----PGLHATDAALHP-----
Asp2      HCTFQLEP-----ESHSEHESHQHA-----
Tfu1      HSTIQVEP-----VGHAAHENACRA-----
Kra1      HSTFQLEP-----AAAAAHEAGAH-----
Ace1      HSTFQLEP-----RTHLTHEVGAHR-----
Aod1      HSTFQLEC-----AQHASHEHIEH-----
Bad1      HTTFQLEP-----EGYDSDSRKELHF-----
Str1      HATLQVEP-----DASIEDCGS-FKW-----
Rer1      HATLQVEP-----AAGDGRCE-LPW-----
Nsp3      HATLQLET-----AP-TRQCHE-VTW-----
Rsp1      HATVQVES-----TANGRHCANVTW-----
Csa1      HATLQVEGE---ACLTGGDCQVTST-----THP-----
Oal1      HVTVEVETG---PCAD---QKT-----
Mlo1      HATVEPEFG---QCADEAGDHEHEH-----EHEHDAAAHSHHH-----
Lag1      HVTIEITEG---S-----
Oan1      HPTIAIDWN-DDADACSLSQASALTGH-----AHGDRHDHGDHNNHNGPEHV
Pat1      HATIOMEYQRCDDHCSFHQENHHLAI-----HDGEKHDAEGHHKH-----
Neu1      HVTVQIDPP-----GQLEH-----EHR-----
Gbe1      HATVQMETG---LRSDHPCRLSPL-----PGQVHHADHDHND-----
Pbe1      DSTIQIEMS---PPSVWSPSTISAR-----PAEAQCPDEAVRAREGTDLG
Rxy1      HTTLQVDHAGDH---AAHGPRFLP-----LRPKRKTRSPHT-----
Sav1      HTTLQVDHIPEQLLQVALRGDRIPPDGAPHC-----EDAHGPVHREEPHGH-----
Asp1      HTTLQIES-----VEYEH-----LHDVHSH-----
Mfe1      HATLQPESS-----HLQGD CSP-----CNDHHC-----
Sce1      HCTIQPEPLQEELLVTLRRPGAGAP-----GGDGPAGNRSGA-----
Cbu1      HITLQPEA-----DIEEC-----TPCYKL-----
Asp3      HVTLQPELPATVPLVFSRNS-----TPPSDRP-----
Mfl1      HVTLQPEIGNLHSDASANCWL-----TSTNHRHDHDDASDHLHGQP
Cvi1      HVTLQAEWPASAPAGKVPID-----IISEDKLP-----
Psp1      HVTLQPEEVGQDEHDHEDHGLNTEKPTTFLHQGDTFYVQCSSGSEHRMAYHVWGD
Tca1      YDFHKFVEFGIPVQFDSQSTNLLREQLKSGT-----
Aae2      ETTLQIEEFQADMEDCNQCTNPV-----
Cel2      EITIQIEEFGANRSDCGKCDFPTK-----
Tca3      FQ-----
Orf2      SCTLQVEQYQPEMAQCLRCQEPQA-----
Bta1      TMTIQIEDYSEDMKDCQSCRGPSD-----
Xla1      SVTIQVEPVEEQSPECMFCYEPTQ-----
Cell      VATVQVEPFDEKIDSDTCQQQETA-----
Tth1      HSTIQVENFFEQDKYDYKKCEELH-----

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Ddi1      HTTIQIEKPLVKDKCKDHSCPPPKPKKKKIKNDNLSSPPNQ-----
Ath2      HVTIQIERQ-----
Dsp1      HITLQMECRVCRANDILCQLEIGRQSHSHKHH-----
Sau2      HSTLQIEN-----LQLNPLDEPYFDKLT-----
Cje2      HITIQIRSENEI-----
Cfe1      HITIQPEWRES-----
Abu1      HTTFQFEW-----
Kst1      HTVIQYGCECNNGESSKHYLNKEHAHEQDHTAHDNK-----
Lbo1      YITIQCEPALIEKIQGLPLADSRGTQEHGHHGFHPPH-----
Pae1      HVTIQLE-----DERFIAAHNKG-----
Aph1      HVTIEIEHEECSDAN-----
Wen1      HSTVEIEYDECADNKILKH-----
Mbo1      HSTLEFECRECSDCRVLRELHDEPGEGHRHDG-----
Mth1      HATIQLENEYCG--QGRVVFQKRVD-----
Gbe2      HTTLQLETTTRCTDTEGAKQFRHRPRAASLAHAHAHPHHHPHGTCQGGHHHDHTP-----
Chu1      HVTLETERENDPCGAEVC-----
Lin1      HVTLETEERENC EQIDCN-----
Rpa1      HTTVQIETDP-NTVCALAPDHVV-----
Van1      HVTVQIESS--SYACDSKHQHCIGIQQ-----
Gox1      HPTFQLETO--PSVCDTHQPC-----
Afa1      HSTIQCESPRFATDCTLNVRH-----
Bph1      HATLQVDMGTTQHRCSLDHTPHVH-----
Lpn1      HVTIQVEKTEAECNDACHNPRII-----
Rgr1      HVTLQVEQGQKDF--PCSQSLIC-----
Lme1      HVTIQIETNEFDQSCNVI-----
Sde1      HTNIELEMPDETCRDGDTSESRSVGTGHDGASIRD-----
Ilo1      HTTVELEDPDEACRDN-----
Asp4      HYTVEVELEEEELCELTEPHQH-----
Mma1      HVTLELETLSEGCKLVK-----
Pgi1      HATIELDPEGCSGCMESC-----
Bsp1      HSTIEINHS-----
Efa1      HITIEITTSKDELEKGYAYGS-----
Lla1      RSAIELDETVDHKKHMIYEV-----
Sgo1      NITIEVDSSQSNHAQHRRVTDLEQHHGHH-----
Mba1      HSTLELESEGFCATECIFESKN-----
Dsh1      MVTLQLETECLDERHARDLDIVQIAAKAAQEKTDVRDAHPHSPNTEGP-----
Ecu1      IVVVQIDTPNTFYGDRGFVVDGVAMDLKMLETPGMLIPQA-----

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Sus1      -----
Aba1      -----
Mca1      -----
Tko1      -----
Pfu1      -----
Fba1      -----
Nsp2      -----
Fno1      -----
Cac1      -----
Lhe1      -----
Lre1      -----
Pmo1      -----
Tme1      -----
Sac1      -----
Dol1      -----
Orf1      -----
Rba1      -----
Oin1      -----
Eli1      -----
Sfr1      -----
Pde1      -----
Pcr1      -----
Bli1      -----
Sau1      -----
Sha1      -----
Ssa1      -----
Bsp2      -----
Ccu1      -----
Ame1      -----
Gka1      -----
Emi1      -----
Aae1      -----
Nsp1      -----
Msu1      -----

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Cdi1	-----
Cje1	-----
Tva1	HDDHDHAHLHSHSDHLHNEMQGNLRTPLNE-----
Ath1	-----
Vvi1	-----
Clu1	-----
Tca2	-----
Cel3	-----
Hma1	-----
Jsp1	-----
Xor1	-----
Mpo1	-----
Dra1	-----
Asp2	-----
Tfu1	-----
Kra1	-----
Ace1	-----
Aod1	-----
Bad1	-----
Str1	-----
Rer1	-----
Nsp3	-----
Rsp1	-----
Csa1	-----
Oal1	-----
Mlo1	-----
Lag1	-----
Oan1	HSKQEHER-----
Pat1	-----
Neu1	-----
Gbe1	-----
Pbe1	GIAPIPS-----
Rxy1	-----
Sav1	-----
Asp1	-----
Mfe1	-----
Sce1	-----
Cbu1	-----
Asp3	-----
Mfl1	GHAH-----
Cvi1	-----
Psp1	TNPKVLLCVHGLTRRGSDFKTLAQAMCKDYVVCPDIVGRGESDRLSNPMLYAVPQYVAN
Tca1	-----
Aae2	-----
Cel2	-----
Tca3	-----
Orf2	-----
Bta1	-----
Xla1	-----
Cel1	-----
Tth1	-----
Ddi1	-----
Ath2	-----
Dsp1	-----
Sau2	-----
Cje2	-----
Cfe1	-----
Abu1	-----
Kst1	-----
Lbo1	-----
Pae1	-----
Aph1	-----
Wen1	-----
Mbo1	-----
Mth1	-----
Gbe2	-----
Chu1	-----
Lin1	-----
Rpa1	-----
Van1	-----
Gox1	-----
Afa1	-----
Bph1	-----

Lpn1	-----
Rgr1	-----
Lme1	-----
Sde1	-----
Ilo1	-----
Asp4	-----
Mma1	-----
Pgi1	-----
Bsp1	-----
Efa1	-----
Lla1	-----
Sgo1	-----
Mba1	-----
Dsh1	-----
Ecu1	-----
Sus1	-----
Aba1	-----
Mca1	-----
Tko1	-----
Pfu1	-----
Fba1	-----
Nsp2	-----
Fno1	-----
Cac1	-----
Lhe1	-----
Lre1	-----
Pmo1	-----
Tme1	-----
Sac1	-----
Dol1	-----
Orf1	-----
Rba1	-----
Oin1	-----
Eli1	-----
Sfr1	-----
Pde1	-----
Pcr1	-----
Bli1	-----
Sau1	-----
Sha1	-----
Ssa1	-----
Bsp2	-----
Ccu1	-----
Ame1	-----
Gka1	-----
Emi1	-----
Aae1	-----
Nsp1	-----
Msu1	-----
Cdi1	-----
Cje1	-----
Tva1	-----
Ath1	-----
Vvi1	-----
Clu1	-----
Tca2	-----
Cel3	-----
Hma1	-----
Jsp1	-----
Xor1	-----
Mpo1	-----
Dra1	-----
Asp2	-----
Tfu1	-----
Kra1	-----
Ace1	-----
Aod1	-----
Bad1	-----
Str1	-----
Rer1	-----
Nsp3	-----

Rsp1	-----
Csa1	-----
Oal1	-----
Mlo1	-----
Lag1	-----
Oan1	-----
Pat1	-----
Neu1	-----
Gbe1	-----
Pbe1	-----
Rxy1	-----
Sav1	-----
Asp1	-----
Mfe1	-----
Sce1	-----
Cbu1	-----
Asp3	-----
Mfl1	-----
Cvi1	-----
Psp1	IAQLIKKLGVSQVDWLGTSMGGLIGMVYAAMPNCPIQKMLINDVGPRIEPEALKRLGSYV
Tca1	-----
Aae2	-----
Cel2	-----
Tca3	-----
Orf2	-----
Bta1	-----
Xla1	-----
Cell	-----
Tth1	-----
Ddi1	-----
Ath2	-----
Dsp1	-----
Sau2	-----
Cje2	-----
Cfe1	-----
Abu1	-----
Kst1	-----
Lbo1	-----
Pae1	-----
Aph1	-----
Wen1	-----
Mbo1	-----
Mth1	-----
Gbe2	-----
Chu1	-----
Lin1	-----
Rpa1	-----
Van1	-----
Gox1	-----
Afa1	-----
Bph1	-----
Lpn1	-----
Rgr1	-----
Lme1	-----
Sde1	-----
Ilo1	-----
Asp4	-----
Mma1	-----
Pgi1	-----
Bsp1	-----
Efa1	-----
Lla1	-----
Sgo1	-----
Mba1	-----
Dsh1	-----
Ecu1	-----
Sus1	-----
Abal	-----
Mca1	-----
Tko1	-----
Pful	-----

Fba1	-----
Nsp2	-----
Fno1	-----
Cac1	-----
Lhe1	-----
Lre1	-----
Pmo1	-----
Tme1	-----
Sac1	-----
Dol1	-----
Orf1	-----
Rba1	-----
Oin1	-----
Eli1	-----
Sfr1	-----
Pde1	-----
Pcr1	-----
Bli1	-----
Sau1	-----
Sha1	-----
Ssa1	-----
Bsp2	-----
Ccu1	-----
Ame1	-----
Gka1	-----
Emi1	-----
Aae1	-----
Nsp1	-----
Msu1	-----
Cdi1	-----
Cje1	-----
Tva1	-----
Ath1	-----
Vvi1	-----
Clu1	-----
Tca2	-----
Cel3	-----
Hma1	-----
Jsp1	-----
Xor1	-----
Mpo1	-----
Dra1	-----
Asp2	-----
Tfu1	-----
Kra1	-----
Ace1	-----
Aod1	-----
Bad1	-----
Str1	-----
Rer1	-----
Nsp3	-----
Rsp1	-----
Csa1	-----
Oal1	-----
Mlo1	-----
Lag1	-----
Oan1	-----
Pat1	-----
Neu1	-----
Gbe1	-----
Pbe1	-----
Rxy1	-----
Sav1	-----
Asp1	-----
Mfe1	-----
Sce1	-----
Cbu1	-----
Asp3	-----
Mfl1	-----
Cvi1	-----
Psp1	GQFFVFGNRADALERLNKICASFGEHTPQEWEIYNGPMLIQKDEQWIMHYDPNISVPFAS
Tca1	-----
Aae2	-----

Cel2	-----
Tca3	-----
Orf2	-----
Bta1	-----
Xla1	-----
Cel1	-----
Tth1	-----
Ddi1	-----
Ath2	-----
Dsp1	-----
Sau2	-----
Cje2	-----
Cfe1	-----
Abu1	-----
Kst1	-----
Lbo1	-----
Pae1	-----
Aph1	-----
Wen1	-----
Mbo1	-----
Mth1	-----
Gbe2	-----
Chu1	-----
Lin1	-----
Rpa1	-----
Van1	-----
Gox1	-----
Afa1	-----
Bph1	-----
Lpn1	-----
Rgr1	-----
Lme1	-----
Sde1	-----
Ilo1	-----
Asp4	-----
Mma1	-----
Pgi1	-----
Bsp1	-----
Efa1	-----
Lla1	-----
Sgo1	-----
Mba1	-----
Dsh1	-----
Ecu1	-----
Sus1	-----
Abal	-----
Mca1	-----
Tko1	-----
Pfu1	-----
Fba1	-----
Nsp2	-----
Fno1	-----
Cac1	-----
Lhe1	-----
Lre1	-----
Pmo1	-----
Tme1	-----
Sac1	-----
Dol1	-----
Orf1	-----
Rba1	-----
Oin1	-----
Eli1	-----
Sfr1	-----
Pde1	-----
Pcr1	-----
Blil	-----
Sau1	-----
Sha1	-----
Ssa1	-----
Bsp2	-----

Ccu1	-----
Ame1	-----
Gka1	-----
Emi1	-----
Aae1	-----
Nsp1	-----
Msu1	-----
Cdi1	-----
Cje1	-----
Tva1	-----
Ath1	-----
Vvi1	-----
Clu1	-----
Tca2	-----
Cel3	-----
Hma1	-----
Jsp1	-----
Xor1	-----
Mpo1	-----
Dra1	-----
Asp2	-----
Tfu1	-----
Kra1	-----
Ace1	-----
Aod1	-----
Bad1	-----
Str1	-----
Rer1	-----
Nsp3	-----
Rsp1	-----
Csa1	-----
Oal1	-----
Mlo1	-----
Lag1	-----
Oan1	-----
Pat1	-----
Neu1	-----
Gbe1	-----
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Rxy1	-----
Sav1	-----
Asp1	-----
Mfe1	-----
Sce1	-----
Cbu1	-----
Asp3	-----
Mfl1	-----
Cvi1	-----
Psp1	VNPIMAKAGEMAMWHAFKQIRIPMLIVRGDSDLLSAATVAEMCKINPYARSIEIPHVGH
Tca1	-----
Aae2	-----
Cel2	-----
Tca3	-----
Orf2	-----
Bta1	-----
Xla1	-----
Cel1	-----
Tth1	-----
Ddi1	-----
Ath2	-----
Dsp1	-----
Sau2	-----
Cje2	-----
Cfe1	-----
Abu1	-----
Kst1	-----
Lbo1	-----
Pae1	-----
Aph1	-----
Wen1	-----
Mbo1	-----
Mth1	-----
Gbe2	-----

Chu1	-----
Lin1	-----
Rpa1	-----
Van1	-----
Gox1	-----
Afa1	-----
Bph1	-----
Lpn1	-----
Rgr1	-----
Lme1	-----
Sde1	-----
Ilo1	-----
Asp4	-----
Mma1	-----
Pgi1	-----
Bsp1	-----
Efa1	-----
Lla1	-----
Sgo1	-----
Mba1	-----
Dsh1	-----
Ecu1	-----

Sus1	-----
Abal	-----
Mca1	-----
Tko1	-----
Pful	-----
Fba1	-----
Nsp2	-----
Fno1	-----
Cac1	-----
Lhe1	-----
Lre1	-----
Pmo1	-----
Tme1	-----
Sac1	-----
Dol1	-----
Orf1	-----
Rba1	-----
Oin1	-----
Eli1	-----
Sfr1	-----
Pde1	-----
Pcr1	-----
Bli1	-----
Sau1	-----
Sha1	-----
Ssa1	-----
Bsp2	-----
Ccu1	-----
Ame1	-----
Gka1	-----
Emi1	-----
Aae1	-----
Nsp1	-----
Msu1	-----
Cdi1	-----
Cje1	-----
Tva1	-----
Ath1	-----
Vvi1	-----
Clu1	-----
Tca2	-----
Cel3	-----
Hma1	-----
Jsp1	-----
Xor1	-----
Mpo1	-----
Dra1	-----
Asp2	-----
Tfu1	-----

Kra1	-----
Ace1	-----
Aod1	-----
Bad1	-----
Str1	-----
Rer1	-----
Nsp3	-----
Rsp1	-----
Csa1	-----
Oal1	-----
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Pat1	-----
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Rxy1	-----
Sav1	-----
Asp1	-----
Mfe1	-----
Sce1	-----
Cbu1	-----
Asp3	-----
Mfl1	-----
Cvi1	-----
Psp1	APAFVKPEQIALAKEFFS
Tca1	-----
Aae2	-----
Cel2	-----
Tca3	-----
Orf2	-----
Bta1	-----
Xla1	-----
Cel1	-----
Tth1	-----
Ddi1	-----
Ath2	-----
Dsp1	-----
Sau2	-----
Cje2	-----
Cfe1	-----
Abu1	-----
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