CLUSTAL X (1.81.1-alpha) MULTIPLE SEQUENCE ALIGNMENT

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 Mba1 ---------------------------------FGAQGGSKP-----------------------SGGLLVVAPLSDPDD   24
 Psp2 ---------------------------------LSTGVTNEV-----------------------TGSVLVVKPISDPSD   24
 Ybe1 --------------------------------WLNNFGTARLQANVDDRG------------DLDGSQFDMLMPFYDTPS   36
 Ype5 --------------------------------WFNQFGSAKVQLNLDEKL------------SLKGSQLDVLLPLTDSPD   36
Eco14 --------------------------------WLNQFGTAKTQLSVVSDF------------SLKGSSLDVLLPFYNTPK   36
 Sen3 --------------------------------WLQQFGTAKVNLGLDKDL------------SLDNASLDLLLPLYDDKK   36
 Ymo1 --------------------------------WLGHIGKAQVKLQVDDKN------------DFSGSELHLFVPLYNQPE   36
 Yen2 --------------------------------WLGHIGQAQVKLQTDDKN------------DFSGSEIDLFIPLYDQPE   36
 Pas1 -------------------NDDVMQGSDISKSGIADMGFAALQPETEKSAGEVRANLPLSDGKLTSGSIDLFYPLYDGDS   61
 Yfr1 --------------------------------WLGQYGNARVQLNSNS-----------------IGNADVLIPLTETQ-   30
 Yfr5 --------------------------------WLSQFGHARVQLNSSG-----------------TGNADILLPLVESQ-   30
 Yps7 --------------------------------WLSQFGTARVQLNINDDF------------HLDGSAADVLIPLYDNE-   35
 Yfr2 --------------------------------WLSQFGTARVQMNVNDDF------------KLDGSAVDVLVPIYDNQ-   35
 Yfr3 --------------------------------WLSQFGTARVQLNLDNNL------------SLKGSAFDMLLPLYDDQ-   35
 Yps4 --------------------------------WLNQFGTARVQLNVDSDF------------KLDNSALDLLVPLKDSE-   35
 Yps2 --------------------------------WLNRFGTAQVNLNFDKNF------------SLKESSLDWLAPWYDSA-   35
 Esa2 --------------------------------WLSHFGTAQVTLDVDDNG------------NWDNSAFDFLAPLYDNK-   35
 Plu1 --------------------------------WLSQFGTAKINLNVDHRG------------RLDESSVDLLVPFYDDKD   36
 Eco1 --------------------------------WLQHYGTAEVNLQSGNN--------------FDGSSLDFLLPFYDSE-   33
 Pru1 --------------------------------WFNRFGSSQIHLEADKKF------------SLKNSQIDLLMPWYETE-   35
 Pal3 --------------------------------WFNHFGSSQIKLEADKKF------------SLKNSQIDLLLPLYETE-   35
 Eta1 --------------------------------WLNQFGTARVQLDADEHF------------SFKNSQFDLLAPLYEQK-   35
 Sgl1 --------------------------------WLSQFGTARLQLDVDNKF------------SLKNSQLDLLIPLYEQP-   35
Eco26 --------------------------------WFENFGTAHIQLQVDKNF------------SLKNSQLELLFPVFEDD-   35
 Pmi1 --------------------------------WLNQFGHARVSLSADKNL------------TLKNSSAELLIPLYEQK-   35
 Efe5 --------------------------------WLQQYGNARIKLNVDDSF------------SLKDAEFDFLYPWMDTK-   35
Eco20 --------------------------------WLGKYGTARVKLNVDKDF------------SLKDSSLEMLYPIYDTP-   35
Eco25 --------------------------------WLSRFGTARITLGVDEDF------------SLKNSQFDFLHPWYETP-   35
Eco15 --------------------------------WLNNFGTAXISLGVDEDF------------SLKNSQFDFLHPWYDTP-   35
 Eco6 --------------------------------WLSRWGTARVSLGVDEDF------------SLKSSSFEFLHPWYETP-   35
 Efe2 --------------------------------WLSQWGTARVTLSADEHF------------TLKGSALDLLLPWYDTP-   35
 Efe3 --------------------------------WLSQWGTVRVTLGLDEDF------------TLKGSAFDLLLPWHDTP-   35
 Pal2 --------------------------------WLSKAGNVKLNIDFDKKF------------SIKNSQFDWLIPWYDQE-   35
 Csu1 ---------------------------------------LRFDFFPGDRE-----------YPFERTAIDWLFPFYDSL-   29
 Eco3 --------------------------------WLSPWGNASVDVKVDNEG------------HFTGSRGSWFVPLQDND-   35
 Cko1 --------------------------------WLSPWGNASVDLRIDNEG------------SFTGSRGGWFIPWQDNT-   35
 Sen1 --------------------------------WLSAWGSASVDVKVDNEG------------HFNGSRGSWFIPLQDKQ-   35
 Eca1 --------------------------------WLSPWGNASVNVRVDDNG------------TFNGSSGSWFIPWNDNN-   35
 Esp2 --------------------------------WLSPWGNASVDLLVDEEG------------KFNGSSGRWFIPWQDNN-   35
 Esa3 --------------------------------LLSPWGNATVDLLVDEEG------------NFNGSSGSLFTPWQDNN-   35
 Kpn1 --------------------------------WLSPWGNANVDLLVDKEG------------KFTGSKGSWFVPLQDND-   35
 Pan1 --------------------------------LLSPYGNAEFNLNVDMAG------------NFDGTGGNLFSPLADEN-   35
 Eta2 --------------------------------LLSPYGRASVSLALSDDG------------SFNGTSAQLLTPWQDNY-   35
 Spr1 --------------------------------LLSPLGNAKLSLVMSDQG------------DFSGSSGQLFSPLYDVN-   35
 Yin1 --------------------------------LLGKFGKAQVNLAVDDKG------------SLSKSSFSLFSPWYEND-   35
 Yin2 --------------------------------LLGKFGKAQVNLAVDDNG------------SLSKSAFSLFSPWYEND-   35
 Yfr4 --------------------------------LLGKFGQAQVSIAVDDHG------------DFSKSTFSLFTPWYEND-   35
 Ymo2 --------------------------------LLGRFGQAQVNLSMDNKG------------NLNRSTASLFTPWYDSE-   35
Eco10 --------------------------------TLSPYGKVRSNLSIGQGG------------DLDGSSIDYFVPWYDNQ-   35
 Eal1 --------------------------------ALSPYGKVRSNLSIGQGG------------DLEGSSIDYFIPWYDDQ-   35
 Sty4 ---------------------------------MSPYGKIRTSLSVGEGG------------DLDGSSLDYFVPWYDNE-   34
Eco16 --------------------------------VLSPYGSVRTSLSIGEGG------------DLDGSTFDYFVPWYDNQ-   35
 Ahy1 SASRYGSEQEVQYWRQQLATQFEEEANAYAASLLGAMGTARTRVTLDDDF------------NMVTAEADLLLPLAEEQ-   67
 Sen2 -------------------------------------IIFRGGVNLEDGA------------KYRSSEFDMFIPVQETT-   30
 Efe4 -------------------------------------AQFRGGITLEDAS------------KYRSAEADLLIPLYQST-   30
 Bpe1 --------------------------------GLPFLRNLQGGLSHDFES------------GRTSLQLNTIDEVYRAG-   35
 Bav2 --------------------------------GLRFLRNLQGDLRHDFDN------------GRTSLELRTIDQVYRKG-   35
 Bbr1 --------------------------------ELPFLRRLQGGVNYDFSN------------KDLSLDLRTIDEVHRGE-   35
 Bpa2 --------------------------------GLPWLRRLEGNVSYDFSG------------RDVAVDVRTIDALHLDQ-   35
 Bav1 --------------------------------GLPWLRHLDGGLRYDLDP------------GRLSFSLRTIDDLMVSE-   35
 Pma1 ---------------------------------AQTSVNISGGTESDTSF------------SINSLMKLGELAKDDQGD   35
 Pma3 ---------------------------------AQTNFNISGGSESDTSF------------SINSLMKLGELAKDEEGD   35
 Pma5 ---------------------------------AQTSLNIGGGTESDTSF------------SLNSLMKLGELAKDDEGD   35
 Pma4 ---------------------------------AQTTVSINGTSNSETSF------------SLDSLMKLREMATDDEGD   35
 Ssp1 ---------------------------------AQTTLGLDAATSSDLTG------------YLDSFMRLKTIGYDNEGD   35
 Ssp2 ---------------------------------SQTEFGVGFESDADMTY------------YLNSLISLAQLGSDDNGY   35
 Plu2 ----------------------------------TNAPS-----------------------WVTSWDVTVPCPVYVSEN   23
 Cla1 ---------SKSKEEIVKNMASSYLNTSANELAKEFIDSLNTSINTDFSFN-------YNERSGFSGNAKALLPIVSEDN   64
 Rba1 ----------------------------------LSVGSDTMGLDKNKSD--------------TKTEAMTVYRLKETG-   31
ruler 1.......10........20........30........40........50........60........70........80
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                               . .   *                * * . .           * . * *
 Mba1 IFNTYFTQGSVFY----EDN-RTTLNLGLGYRK------LSDNKMLLTGINAFYDHEFP---YDHGRTSIGLEARTTVWE    90
 Psp2 NENIIFTQASLFL----SDDSRETINLGFGNRK------LINDDTLLVGYNLFYDHELD---YDHQRASIGIEAISSVGS    91
 Ybe1 --QMAFTQFGIRR-----IDKRTTANLGIGIR-------HFIDD-WMVGYNLFLDRDIT---RDHTRVGAGAEYARDYLK    98
 Ype5 --LLTFTQLGGRY-----IDDRVTLNVGLGQR-------HFFAQ-QMLGYNLFIDHDAS---YSHTRIGVGAEYGRDFIN    98
Eco14 --NVLFTQLGMRD-----NDGRFTTNAGLGHR-------YFTDNGWMLGYNVFYDVDWR---NTNRRYGIGVEAWRDYLK    99
 Sen3 -QNLLFTQWGGRR-----DDDRNIINVGMGYR-------YFADR-WMWGINTFYDRQISD--NAHERLGIGGELGWNYFK   100
 Ymo1 --RLAFSQFGFRR-----IDQRNIMNIGLGQR-------HYLSD-WMLGYNVFLDQQISG--NAHRRLGLGGELARDYVK    99
 Yen2 --KLAFSQFGFRR-----IDQRNIMNIGLGQR-------HYVSD-WMFGYNIFFDQQVSG--NAHRRVGFGGELARDYIK    99
 Pas1 --RLFFGQVGARR-----FDGRNIVNLGIGQR-------YFQGD-WALGYNTFYDIQISG--NAHQRLGFGLEYWRDYLY   124
 Yfr1 -NNLLFGQLGVRY-----NGERTTNNVGLGVR-------SFTDS-WMFGVNTFYDYDLT---GKNSRLGVGGEAWTDNLK    93
 Yfr5 -DNLLFGQLGVRY-----DGYRTTNNAGIGVR-------QFTEN-WMFGVNSFYDYDLT---GKNSRVGVGAEAWTDNLK    93
 Yps7 -KSILFTQLGARN-----KDSRNTVNMGAGVR-------TFQGN-WMYGANTFFDNDLT---GKNRRIGVGAEAWTDYLK    98
 Yfr2 -KSILFTQLGARN-----KDNRNTVNIGAGVR-------TFQNN-WMYGVNTFFDNDMT---GKNRRVGVGAEAWTDYLK    98
 Yfr3 -KSLLFSQFGLRN-----HDSRNTINIGAGVR-------TLQDN-WMYGANVFFDRDIT---GKNNRIGFGAEAWTDYLK    98
 Yps4 -SSLLFTQLGVRN-----KDSRNTVNIGAGIR-------QYQGD-WMYGANTFFDNDLT---GKNRRVGVGAEVATDYLK    98
 Yps2 -SFLFFSQLGIRN-----KDSRNTLNLGVGIR-------TLENG-WLYGLNTFYDNDLT---GHNHRIGLGAEAWTDYLQ    98
 Esa2 -KSVLFTQLGIRA-----PDGRTTGNIGLGVRT------FYVRD-WMFGGNVFFDDDFT---GENRRIGFGAEAWTNYLK    99
 Plu1 -HWLVYSQYGYRH-----KDSRDTVNLGIGTR-------LFINN-WMYGANTFYDNDLT---GNNSRFSLGGELWTNYLK    99
 Eco1 -KMLAFGQVGARY-----IDSRFTANLGAGQR-------FFLPE-NMLGYNVFIDQDFS---GDNTRLGIGGEYWRDYFK    96
 Pru1 -DNLIFSQTSLHR-----KEGRIETNLGLGAR-------WYGE-GQMIGGNTFFDYDIS---RKHSRLGLGVEYRRDFLK    98
 Pal3 -NNLLFTQTSLHR-----KEGRIETNLGLGTR-------WYGE-NQMIGGNSFFDYDIS---RKHSRLGLGVEYRRDFLK    98
 Eta1 -DSLIFTQGSLHR-----TDDRTQVNLGFGLR-------YFAP-SYMLGGNIFGDYDLS---RAHSRTGIGMEYWRDFLK    98
 Sgl1 -DKLVFTQGSLHR-----TDDRTQTNLGMGMR-------WFND-GYMLGGNTFLDYDLS---RDHARMGMGVEYWRDYLK    98
Eco26 -ERLFFSQGGISY-----IDDKFISNIGIGYR-------AFYD-NWMLGGNSFIDYDLR---KEHSRLGLGIEYWQDNLK    98
 Pmi1 -EKLIFAQTNYHR-----KDLRSQFNYGIGYR-------YFTE-KFMVGINGFYDHDLT---HHHNRLGIGAEIWRDYFK    98
 Efe5 -DYVLFSQTSLHR-----TDDRNQANIGIGVR-------HFTPDNAMLGANIFYDYDLT---RSHSRAGFGVEYWRDYLR    99
Eco20 -TNMLFTQGAIHR-----TDDRTQSNIGFGWR-------HFSGNDWMAGVNTFIDHDLS---RSHTRIGVGAEYWRDYLK    99
Eco25 -DNLFFSQHTLHR-----TDERTQINNGLGWR-------HFTP-TWMSGINFFFDHDLS---RYHSRAGIGAEYWRDYLK    98
Eco15 -DYLLFSQHTLHR-----TDDRTQINTGLGWR-------HFTS-SWMSGINLFFDHDLS---RYHSRAGLGAEYWRDYLK    98
 Eco6 -DNLVFSQHTLHR-----TDDRTQTNHGIGWR-------YFTS-SWMSGVNMFIDHDLT---RYHTRTGMGVEYWRDYLK    98
 Efe2 -ENIIFTQHSIHR-----TDDRNQLNTGTGWR-------HFMP-DYMTGVNLFFDHDLT---RYHSRMGLGGEYWRDNLK    98
 Efe3 -ENLLFTQHSFHR-----TDDRNQLNTGAGWR-------HFAP-DYMAGVNLFFDHDLT---RYHSRMGLGGEYWRDNLK    98
 Pal2 -DILLFTQHTLHR-----YDERFHTNNGIGLR-------YFHE-KSTIGMNAFIDHDLS---HAHTRVGLGVEYWQDYLK    98
 Csu1 -EFLFFSQLGFRHN----LDRRDIINLGGGGR--------FFRKNWMLGANAFCDCDLT---GTNTRLGLGLESWTNFLQ    93
 Eco3 -RYLTWSQLGLTQ-----QDDGLVSNVGVGQRW------ARG--NWLVGYNTFYDNLLD---ENLQRAGFGAEAWGEYLR    98
 Cko1 -RYLTWSQLGLTQ-----QDDGLVSNVGIGQRW------ARD--GWLLGYNTFYDNLLD---ENLQRAGFGAEAWGEYLR    98
 Sen1 -RYLTWSLLGLTQ-----QTDGLVSNIGVGQRW------VQN--GWLLGYNTFYDNLLD---ENLQRAGVGAEAWGEYLR    98
 Eca1 -RYLSWSQLGLTQ-----QTDGLVSNAGVGQRW------VAG--NWLLGYNTFYDNLLD---ENLQRAGLGAEAWGQNLR    98
 Esp2 -RYLSWSQLGLTQ-----QTDGLVSNAGIGQRW------VAG--KWLLGYNTFYDNLLD---ENLQRAGLGAEAWGENLR    98
 Esa3 -RYLTWSQVGVSQ-----QNQGLVGNAGIGQRW------AAG--HWLLGYNTFYDRLFD---DDTSRAGFGAEAWGDYLR    98
 Kpn1 -RYLTWNQYSVTR-----REHDLVGNIGLGQRW------RVG--GWLLGYNSFYDKVLS---ESLARGSVGAEAWGEYLR    98
 Pan1 -RYLTFSQLGLHD-----SVEGVVGNAGLGQRW------DAG--NWLLGYNSFIDRSFR---TGLQRASVGTEAWSNNLR    98
 Eta2 -QYLTFSQLGIEQ-----SEYGTVGNAGLGQRW------IAG--SWRVGYNAFVDGLLG---SDRQRGSLGAEAWGEYLR    98
 Spr1 -GLLTYSQLGLLQ-----QTEGSLGNFGLGQRW------VAG--DWLLGYNTVLDSDFE---RHHNRASLGAEAWGDFLR    98
 Yin1 -AMVAFSQVGIHG-----QDGRMIGNLGAGVRF------DQG--DWLLGANTFFDQDIS---RNHSRLGLGLEWWADNLK    98
 Yin2 -AMVAFSQVGVHR-----QDNRMIGNLGAGVRF------DQG--DWLFGANTFLDQDIS---RNHSRLGLGLEWWADNLK    98
 Yfr4 -AMVAFSQVGIHD-----QDSRTIGNFGAGLRW------DKG--NWLLGYNTFLDQDFS---RNHSRLGLGAELWTESLR    98
 Ymo2 -QYLLFSQINIHH-----QDNRKIGNFGLGHRI------ELPSLNGLLGYNVFIDHDFS---RGHNRAGIGAEARADYLK   100
Eco10 -TTVYFSQFSAQR-----KEDRTIGNIGLGVRY------NFD--KYLLGGNIFYDYDFT---RGHRRLGLGAEAWTDYLK    98
 Eal1 -STVYFSQFSAQR-----KEERTIGNAGIGVRH------NFD--KWLLGGNIFYDYDFT---RGHRRLGLGTEAWTDYLK    98
 Sty4 -KTLLFSQLSAQR-----KEDRTIGNFGLGVRQ------NVG--NWLLGGNAFYDYDFT---RGHRRLGLGTEAWTDYLK    97
Eco16 -ETLVFSQFSAQR-----KDDRTIGNIGVGVRQ------NIG--SWLLGGNLFYDYDFT---RGHRRLGLGSEAWTDYLK    98
 Ahy1 -QTLLFTQFGLRRN----GQDRTIANLGVGQRH------FLDR--WMLGYNLFADYDLT---NRHWRAGVGAEAWRDYLK   131
 Sen2 -SSLLFGQLGFRDHDSSSFDGRTFANVGMGYRQ------EVNG--WLLGVNTFLDADIR---YSHLRGGIGGEVYKESLA    98
 Efe4 -SSILFGQLGLRDHDNNSFNGRFFVNTGIGWRQ------DVGD--WLLGINSFLDADVR---YDHLRGSLGVELFRDSMS    98
 Bpe1 -RNTGLLQLGAHN-----QNDRPTANAGAVYR-------REVNDALMVGANGFLDYEFG---KQHLRGSVGLEVIAPEFS    99
 Bav2 -ANTGLLQLGGHN-----QNNRPTANLGGVYR-------RDINERLMLGANAFLDYEFA---KQHLRGSLGVEAIAPEFS    99
 Bbr1 -RDRVLLQLSGHN-----RNHRPTVNGGVVLR-------HALNQHMAVGANAFLDYEFG---KNHLRGSLGGEVIAPQFT    99
 Bpa2 -DRALLLQLGGHN-----QNHRPTVNAGVVAR-------SAAGSSLILGGNAFLDYEVG---KRHLRGSLGAEAVAAQFT    99
 Bav1 -RRALMLQAGLHN-----QNQRPTANTGIVLR-------QQASPGLIVGSNAFLDYEFG---KQHVRGSLGLEAIAPHYS    99
 Pma1 LKTLAFSQARFATAT---NAEGSTINIGLGIR-------NRPDDISMVGANAFWDYRMTDYSDAHSRLGLGGEYFWKDFE   105
 Pma3 LKTLAFSQARFATAT---NADGSTFNLGLGIR-------NRPNDISMVGANAFWDYRMTDYSDAHSRLGLGGEYFWKDFE   105
 Pma5 IKTLAFSQARLATAT---NAEGSTTNLGLGIR-------HRPNDVSMLGANAFWDYRMTDYSDAHSRLGLGGEYLWKDFE   105
 Pma4 IKTLLFSQAKLSKTS---NSDGTTANLGLGIR-------HRPNNESMMGANAFLDYRMTDYSDSHSRLGLGGEYLKNGWE   105
 Ssp1 PMGLMFGQARVTLET---SAQ-PQVNVGLGSR-------FRLGDEAIVGLNGFWDLRTTNYSTAYTRWGIGAEGFWKSFE   104
 Ssp2 PLGLLFAQG-SAKGA---YSGSAVTNLGLGLR-------RRLRDNAMLGANAFWDYRFTNYSSSYSRWGAGAELWWDDFK   104
 Plu2 QADNIFFEGGFDY-----QDARKTVDGALGYRH------LMSDNKVMLGANVLYSHEFP---RNHQRISYGAEIRTSVFE    89
 Cla1 PKISYFLQSGIGEF----ANDRTIGHFGGGIRYYPNATALNNSGNIMLGLNSVYDHDFS---RGHKRMSLGAEAMVDTLA   137
 Rba1 -NWFLFNQTSAVN-----FNNRTTINTGFGARH------INDANTVITGYNIFYDYELQ---SKHERVGAGLELLSSIFE    96
ruler ........90.......100.......110.......120.......130.......140.......150.......160
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         * *                                             * *
 Mba1 INANKYWATTKWKTGK-----NGLE--------------------ERALDGYDIEAGVPLPYMNWATVFVKNFQWDSEIS   145
 Psp2 LRANQYYGLSGWKSGL-----NNIN--------------------EKALNGSDVELGMPLPYLPWTNLYYRSFNWEG-AS   145
 Ybe1 LAANGYLRLSDWRDS--PDFS-SYS--------------------ERPATGFDLRAEAYLPSLPQLGGKLMYEQYFGNDV   155
 Ype5 LAANGYFGVSGWKNS--PDLD-KYD--------------------EKVANGFDLRSEAYLPTLPQLGGKLIYEQYFGDEV   155
Eco14 LSANGYKRLSDWRQS--PTVT-DYD--------------------ERPADGWDIRAEGWLPAYPQLGGKLVYEQYYGNEV   156
 Sen3 LSANGYKRLSGWKDS--SEYE-DYQ--------------------ERVANGYDIRAEGYLPAWPQLGAQLVWEQYYGDDV   157
 Ymo1 LSANSYYRLGGWKNS--TRLE-DYD--------------------ERAASGYDIRTEAYLPYYPQLGGKLMYEQYFGNEV   156
 Yen2 LSANSYHRLGGWKNS--TRLE-DYD--------------------ERAANGYDIRTEAYLPHYPQLGGKLMYEQYFGDEV   156
 Pas1 LSANGYFGLTDWYSS--SALD-GYA--------------------ERAANGYDIRAQGWFPVYPQLSGKLKFEQYFGDDI   181
 Yfr1 FSANGYFRLTDWHQSVLADME-DYN--------------------ERPANGFDVRAEAYLPSYPQLGGRLMYEKYFGKGV   152
 Yfr5 FSANGYFRLTDWHQSVLSDME-DYN--------------------ERPANGFDVRAAAYLPAYPQLGGSLMYEKYFGKGV   152
 Yps7 LSANNYFGITDWHQS--RDFI-DYN--------------------ERPANGYDLRAEAYLPSYPQLGGKAMYEKYRGDDV   155
 Yfr2 LSANSYIGTSDWHQS--RDFA-DYN--------------------ERPANGYDVRAEAYLPSHPQLGGKLMYEKYRGEEV   155
 Yfr3 LSANSYLRLTDWHQS--RDFA-DYN--------------------ERPANGYDLRVEAYLPAYPQIGTNLKYEQYKGNEV   155
 Yps4 FSANTYFGLTGWHQS--RDFS-SYD--------------------ERPADGFDIRTEAYLPAYPQLGGKLMYEKYRGDEV   155
 Yps2 LAANGYFRLNGWHSS--RDFS-DYK--------------------ERPATGGDLRANAYLPALPQLGGKLMYEQYTGERV   155
 Esa2 LSANTYIGTSQWHNS--GDFD-NYN--------------------EKPADGYDVRAEGYLPSFPQLGAKLMYEQYYGDNV   156
 Plu1 MSANAYFRLSDWHNA--RDLV-NYY--------------------ERPANGYDLIADMYLPSMPSLGAKIKYEQYFGDNV   156
 Eco1 SSVNGYFRMSGWHES--YNKK-DYD--------------------ERPANGFDIRFNGYLPSYPALGARLMYEQYYGDNV   153
 Pru1 LSANSYHRLSGWRSS--RDLA-DHS--------------------ARPSNGWDVRAEGWLPSYPHIGGKLTYEQYYGDSV   155
 Pal3 LSANSYHRLSGWRNS--RDLA-DYS--------------------TRPANGWDLRAEGWLPIYPHIGGKLTYEQFYGEEA   155
 Eta1 LSANGYLRLSDWNNS--SDFK-DYQ--------------------ERPANGWDIRAQAWLPSLPQLGGKLTYEQYYGRGV   155
 Sgl1 IGANNYLRLTNWRDS--KDFA-DYQ--------------------ERPANGWDMSLEGWVPALPQLGGNLKYEQYYGKEV   155
Eco26 LGANSYLRLSNWRNS--SNIV-DYE--------------------ERPANGLDLNIKSWLPSYPQIGGDIKYEKYYGDDV   155
 Pmi1 LSSNHYHRLSSWRAS--NNIL-DYS--------------------ERPANGWDIRTEGYFPAYPQLGTKLIFEQYYGKEV   155
 Efe5 FGANTYFGLSDWKNS--RDLA-DYL--------------------ERPANGWDVSAEGWLPAYPQLGASVQFEKYYGKNV   156
Eco20 LSANGYIRASGWKKS--PDIE-DYQ--------------------ERPANGWDIRAEGYLPAWPQLGASLMYEQYYGDEV   156
Eco25 LSSNGYLRLTNWRSA--PELDNDYE--------------------ARPANGWDVRAEGWLPAWPHLGGKLVYEQYYGDEV   156
Eco15 LSSNAYIGLTGWRSA--PELDNDFE--------------------ARPANGWDLRAEGWLPAWPQLGGKLVYEQYYGDEV   156
 Eco6 LSGNGYLRLSNWRSA--PELDNDYE--------------------ARPANGWDLRAEGWLPAWPQLGGKLVYEQYYGDEV   156
 Efe2 LGANGYLRLTGWRDA--PELDYDYE--------------------ARPANGWDVRAEGYLPAYPQLGAKLMYEQYYGDEV   156
 Efe3 LGANGYLRLSGWRDA--PELDYDYE--------------------ARPANGWDVRAEGYLPAYPQLGATLMYEQYYGDEV   156
 Pal2 LNANSYFGLTSWKSA--SELNHDFN--------------------AKPAHGWDIQVEGWLPNYPHLGGNLRYEQYYGDSV   156
 Csu1 FSMNGYLGLSSPRHS---SLQPNYQ--------------------ESPAHGLDFRLHYWLPFFPRLGGKIFYEQYFGKQV   150
 Eco3 LSANFYQPFAAWHEQ----TATQE---------------------QRMARGYDLTARMRMPFYQHLNTSVSVEQYFGDRV   153
 Cko1 LSANYYQPFASWHEQ----TTALE---------------------QRMARGYDVTAQMRMPFYQHLNTSVSVEQYFGERV   153
 Sen1 LSANYYQPFADWQTH----TATLE---------------------QRMARGYDINAQMRLPFYQHINTSVSLEQYFGDSV   153
 Eca1 LSANYYQPFAGWRDD----SDVQE---------------------QRMARGYDVTAKAWLPWFHHLNTSVSFEQYFGDSV   153
 Esp2 LSANYYQPFASWRDS----SDLQE---------------------QRMARGYDVTAKAWLPYFHHLNTSVSFEQYFGDNV   153
 Esa3 LSANYYQPLGGWQHR----AGLLE---------------------QRMARGYDVTAQAYLPFYQHINTSVSFEQYFGDQV   153
 Kpn1 LSANYYHPLGDWQLRD---NQTQE---------------------QRMAAGYDVTAQARLPFYQHINTSVSVEQYFGDSV   154
 Pan1 FSANYYHPLSGWRNRG---DSQQ----------------------SRMAEGYDITTQSYLPFYRQLGVSFSYQQYLGEKV   153
 Eta2 LSANYYHPLSGWRNRS---NSSQ----------------------MRMARGYDITTRGYLPFYHQLGVTLSYEQYLGDRI   153
 Spr1 FSANYYYPLSALAQQR---DNAQFL--------------------SRPASGYDITTQGYLPFYRQIGGSLSYEQYWGENV   155
 Yin1 LATNYYHPLSGWKDSK---DFDDYL--------------------ERPARGFDVRAQGYLPAYQQLGASVVYEQYYGDEV   155
 Yin2 LASNYYHPLSGWKDSK---DFDDYL--------------------ERPARGFDVHAQGYLPAYQQLGASAVYEQYYGDEV   155
 Yfr4 LATNFYHPLSGWKDSK---DFDDYL--------------------ERPAKGFDVRLQGYLPAYPHLGASVVYEQYYGDEV   155
 Ymo2 FSANYYHPLSHWKDSP---DFDDYL--------------------ERPAKGYDLRSQGYLPAYPQLGVSAVYEHYFGDEV   157
Eco10 FSGNYYHPLSDWKDSE---DFDFYE--------------------ERPARGWDIRAEAWLPAYPQLGGKIVFEQYYGNEV   155
 Eal1 FSGNYYHPLSGWKNSE---DFDFYE--------------------ERPARGWDIRAEAWLPAYPQLGGKIVFEQYYGDEV   155
 Sty4 FSGNYYHPLSDWKDSE---DFDFYE--------------------ERPARGWDIRMESWLPFYPQLGAKLVYEQYYGDEV   154
Eco16 FSGNYYHPLSDWKDSK---DFDFYE--------------------ERPARGWDVRAEGWLPAWPQFGAKLVYEQYYGDEV   155
 Ahy1 LGANFYTPLSSWRDSP---RFEGME--------------------ERAARGMDVRLEAYLPAYPQWSASLTAEQYLGERV   188
 Sen2 FSGNYYFPLTGWRTS---AAHEFHD--------------------ERPAYGFDLRTKGTLPDFPWFSGELTYEQYYGDKV   155
 Efe4 LAGNWYFPLSDWKAS---KVQPLHD--------------------ERPATGIDVRLKGALPSLPWFGAELAFEQYFGDKV   155
 Bpe1 LYGNVYAPLSDWKGAK---RNNRRE--------------------EKPASGMDVGVGYRPAFAPGLSLSATHFRWNGAEV   156
 Bav2 FYGNVYAPMSGWTGAK---RDNRRE--------------------ERPASGMDLGMKYSPGFAPGLSLKANYFRWNGAAV   156
 Bbr1 LYGNVYAPMSGWKAAK---RAERRE--------------------ERPASGWDVGVRLQPEALPGLAIKGQYFRWSGAAV   156
 Bpa2 LYGNVYAPLSGWKAAK---RAERRE--------------------ERPAAGWDVGFTARPEAVQGLALNAQYFRWRGAQV   156
 Bav1 LYANYYAPLSGWKGAR---RDSRRE--------------------ERPAAGYDLGGQLS--SDAGLSLQAAYFRWHGAGI   154
 Pma1 FRNNWYMAITNEKDVIIKGVDYQ----------------------ERVVPGWDLEVGYRLPNNPELAFYIRGFNWDYKYT   163
 Pma3 FRNNWYISITDEKDVTIKGVSYK----------------------ERVVPGWDVELGYRLPNNPELAFFVRGFNWDYKHT   163
 Pma5 LRNNWYMSITNEKDVTIKGVSYK----------------------ERVVPGWDVELGYRLPNNPELAFFVRGFNWDYKNT   163
 Pma4 LRNNWYMSMTEQKNVTVNGTVYT----------------------ERVVPGWDVEAGYRFPNHPEMAVFVKGFNWDYKNT   163
 Ssp1 LRNNWYINGSADKNITINNIDYV----------------------ERVVPGWDVEVGYRIPSYPQLAIFVRGFNWDYQDH   162
 Ssp2 LTNNWYIAGTGIKRITTSGRAYTDTTSLAAGTYDETTLLGANTFDERVVPGWDVALNYRLPSYPQLSLGIRGFRWDYMRK   184
 Plu2 INSNYYHRLTDWKLTG---VDNNE---------------------EKARGGYDVELALAVPYVPSAHFRVKHFCWNGIAS   145
 Cla1 FNANVYQRLSSWIDSY--DFDKDYVQ-------------------ERPANGWDAKIKYAFPSLINVSFFAKMGQWYGNKV   196
 Rba1 FRANAYQAVSKTLTYN------GIQ--------------------ETALDGYDAKLTANLPYFYSS-------NLYGKLS   143
ruler .......170.......180.......190.......200.......210.......220.......230.......240
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 Mba1 GSKD---------IKGNDLQLRAYIPGITGLEIQAGRTFFSDSSGTD--ENYINIFYNVTQLFADKPRY----------N   204
 Psp2 GAAD---------LEGDEISLEAKLTNFN-IEIGK-RS--NDGVTED--EEFLKITYTCCNNSN---------------N   195
 Ybe1 GLFG--KDN--RQQNPAAITAGINYTPIPLVTVGIDRKQGSAGNGET--LFNLGVNYEVGTPWAK----QISP--DAVNA   223
 Ype5 GLFG--VDN--RQKNPLAVTLGVNYTPIPLFTVGVDHKMGRAGMNDT--RFNLGFNYAFGTPLTH----QLDS--DAVAI   223
Eco14 ALFG--ESE--RQKNPHAITAGVTWTPFSLLTAGVDYRRGKNGADDT--RLNLGLTYRIGEPLAH----QLDS--SRVGA   224
 Sen3 ALFD--DSEDDRQRNPYAVTAGVNYTPFPLVSIGLNQKMGKGNHNDT--QIDLAVNWMLGSSLKS----QLDS--DAVKA   227
 Ymo1 ALFG--LNE--RQKNPSALTASVSYTPFPLVNLALEHTIGNSGKNKT--GVNLAVNYEINTPWQK----QIDP--AAVKA   224
 Yen2 ALFG--INE--RQKNPSALTAGVSYTPIPLVSLGLDHTIGNGGKKKT--GVNVAVNYEINTPWQQ----QIDP--AAVQT   224
 Pas1 ALLN--HQN--RYKNPYALTMGLEYTPIQLISLGIDRTFSHRGKDDT--KVNLSFNYQLGVPLSQ----QIDP--TVAPV   249
 Yfr1 ALNSGSTSPDDLGDSPSAFTVGLNYTPIPLFTVDVAHKKGQNTNNEL--QLGLNFNYRFGVPWVD----QINK--NAVGL   224
 Yfr5 ALNSGSTSPDDLGDSPSAVTLGVNYTPIPLITVDVAHKKGQNTSNEL--QVGLNFNYRFGVPWID----QINK--DTVAL   224
 Yps7 ALFG----KDNRQKNPHAITAGVNYTPIPLVTIGAEHRAGKGGQNDS--NINFQLNYRLGETWQS----HIDP--SAVAA   223
 Yfr2 ALFG----KDNRQKNPHAVTAGVNYTPIPLLTVGAEHRAGKGSKNDS--SINFQFNYRLGESWQS----HINP--SAVAA   223
 Yfr3 ALFG----KDDRQKNPYAFTAGINYTPIPLITIGAEQRAGKGGRNDT--NISIQLNYRLGEPWQS----QIDP--SAVAA   223
 Yps4 ALFG----KDDRQKDPHAVTLGVNYTPVPLVTIGAEHREGKGNNNNT--SVNVQLNYRMGQPWND----QIDQ--SAVAA   223
 Yps2 ALFG----KDNLQRNPYAVTAGINYTPVPLLTVGVDQRMGKSSKHET--QWNLQMNYRLGESFQS----QLSP--SAVAG   223
 Esa2 ALFD----KDHLQSNPSAVTVGLNYTPVPLITAGIDYKRGQDSMDEM--KFSLNFHYALDSSWQS----QISP--EQVAT   224
 Plu1 ALFG----KNKRQKDPYAATIGVNYTPIPLITAGIDYKLGKEGKSDG--IFSFNVNYRFGVPLSE----QLSP--ENVSS   224
 Eco1 ALFN----SDKLQSNPGAATVGVNYTPIPLVTMGIDYRHGTGNENDL--LYSMQFRYQFDKPWSQ----QIEP--QYVNE   221
 Pru1 ALFG----TKNLQQNPYSITAGLNYTPIPLVTFNAEHRQGKASKQDS--RFGLQLNYQFGKTWKQ----HLDP--GSVTT   223
 Pal3 ALFG----TKNRQNNPYSITAGINYTPIPLITLNGEHRQGKASKQDS--RIGLKLSYQFGKSFKQ----HLDP--DAVGE   223
 Eta1 ALFG----KENLQQDPRAITAGVNFTPFPLLTLNAEHRQGASGKNDK--RLGVDFSYQLGMPWQQ----QINP--QAVAT   223
 Sgl1 ALFG----KDNRQKDPHAITVGVNYTPFPLLTFSADQRQGKAGQNDT--RLGVQLNIQLGTPWQH----QLDT--SAVGA   223
Eco26 ALFG----ENHRQRNPHSTTLGISYTPFPLMSFKAEHKMGSNNINDS--RIGFEINYQIHTPWES----QINP--VLIPA   223
 Pmi1 GLFG----KDKRDKNPHTYTLGINYTPIPLVTLNAERRIGLHDRADN--NLNINLSYRIGESLAS----QLNP--DNVKA   223
 Efe5 GLFG----SDNLQENPYAVTGEISYTPVPLVKFSAQHRQGQSNTHDT--RFGVEINYRPGVPLSK----QLDS--DNVAA   224
Eco20 GLFG----KDKRQKDPHAISAEVTYTPVPLLTLSAGHKQGKSGENDT--RFGLEVNYRIGEPLAK----QLDT--DSIRE   224
Eco25 ALFD----KDDRQSNPHAITAGLNYTPFPLMTFSAEQRQGKQGENDT--RFAVDFTWQPGSAMQK----QLDP--NEVDA   224
Eco15 ALFD----KNDRQSNPHAITAGLNYTPFPLLTLSAEQRQGKQGENDT--RFAVDLTWQPSSSMQK----QLNP--DEVAG   224
 Eco6 ALFG----KDERQNDPHAITAGLSYTPVPLISFSAEQRQGKQGENDT--RIGMELTLQPGHSLQK----QLDP--AEVAA   224
 Efe2 ALFG----RDHRQKDPHAFTAGVSYTPVPLVSLSAEQRQGKGGENDT--RFGLNLSYTPGVSLAR----QLDP--DAVAY   224
 Efe3 ALFG----KDKRQQDPHAFTAGLSYTPVPLISLSAEQKQGKGGENDT--RFALNLTYTPGVSLAH----QLDP--DAVAY   224
 Pal2 ALFG----KTKRQKNPNAATIGANWTPFPLFTLNASHKLGSEKQVET--QAKLQFTWTFGKNLAH----HLDP--TKVAE   224
 Csu1 SLFG----RSDLQHDPFVITTGVEFTPFPLLSMEIDHRMSKASRHYT--LFNIRLNYRFGESLSS----QLNP--FSVAK   218
 Eco3 DLFN----SGTGYHNPVALSLGLNYTPVPLVTVTAQHKQGESGENQN--NLGLNLNYRFGVPLKK----QLSA--GEVAE   221
 Cko1 DLFD----SGTGYHNPVAVKLGLNYTPVPLVTVTAQHKQGESGVSQN--NLGLNLNYRFGVPLNK----QLSA--SEVAE   221
 Sen1 DLFD----SGTGYHNPVALKLGLNYTPVPLLTMTARHKQGESGVSQN--NLGLTLNYRFGVPLKK----QLAA--SEVAQ   221
 Eca1 DLFN----SGTGYHNPMAVNLGLDYTPVPLVTISAAHKQGESGVSQN--NLGLKLNYRFGVPLAK----QLSA--GEVAA   221
 Esp2 DLFR----SGTGYHNPMAVNLGLDYTPVPLLTFSAAHKQGESGVSQN--NLGMKLNYRFGVPLKK----QLSS--EEVAT   221
 Esa3 ELFD----SGTGYHNPVAVKVGLSYTPVPLVTVSAHHRQGESGVSQN--DLGLKLNYRFGVPLTK----QLSP--DEVAA   221
 Kpn1 DLFH----SGTGYHNPVAVSVGLNYTPVPLVTVTAKHKQGENGVSQN--NVGLKLNYRFGVPLKQ----QLAA--DEVAI   222
 Pan1 DLFN----SGNRYHNPAALSLGLSYTPVPLVTISASHKTSSAGESQD--QLGLKLNYRFGVALSK----QLDA--NNVAE   221
 Eta2 DLFN----SGNAVADPSAVSLGINYTPVPLFTLAASRKEGEGGESQN--QFTLKMNYRIGVPLRQ----QLSS--DNVAE   221
 Spr1 DLFG----SGKKQNDPRAMQLGVNYTPVPLVTVKALHKMGEGGVSQD--QVELALNYRLGVPLVK----QISP--EYVAQ   223
 Yin1 ALFG----KDNLQKDPSAVTVGVDYTPFPLATLKLIHKRGQQGKNNT--EVGLRVSYQIGTPLDK----QLDP--ANVAA   223
 Yin2 ALFG----KDNLQKDPHAVTVGVDYTPFPLATLKVSHKMGKDGKNNT--ELGLQVSYQIGTALEK----QLDP--GNVAA   223
 Yfr4 ALFG----KEHLQKDPRAVTLGLDYTPFPLTTLKVSHKEGQQGQKEA--QVDLQMNYQIGTALSK----QLDP--DNVAA   223
 Ymo2 ALFG----KSHRQKDPRALTLGIDYTPVPLVTLGAKHKYGQQGKKDT--QIDVAFRYQFGSPLSA----QLDP--DNVNQ   225
Eco10 ALFG----TDSLEKDPFAVTLGVKYQPVPLIVVGTDFKAGTGDNTDL--SVNATLNYQFGVPLKD----QLDP--DKVSA   223
 Eal1 ALFG----TDNLEKDPHAVTLGLNYQPVPLITVGTDFKTGTGDNTDV--TVNATLNYQFGTPLKD----QLDP--ENVKI   223
 Sty4 ALFG----TDNLQKDPHAVTLGLEYTPVPLVTVGSDYKAGTGDNNDF--SVKATVNYQIGTPLAA----QLDP--ENVKI   222
Eco16 ALFG----TDNLEKNPQALTVGLMYNPVPLFTVGSDYKSGTGDNSDL--SVNVSLNYQIGMPLKD----QLDP--DNVKA   223
 Ahy1 GLLD----ADQLERDPHAITAGLHYNPFPLLKMDVEQVEASGRQHDT--RFTLGLEWKLGATLWD----MLNP--SSVD-   255
 Sen2 DLLG----NGTLSRNPRAAGAALVWNPVPLLEVRAGYRDAGNGGSQA--EGGLRVNYSFGTPLHE----QLDY--RNVGA   223
 Efe4 DILG----NDSLTRDPAAFTGAITWKPVPLVEIKAGYKDAGSSGSQT--EAGLNLNYTFGVPLRA----QLDP--SQVRP   223
 Bpe1 DYFD----NGRTQAGAKGFKVGVEYRPVSLVSVGLEQTKVIGGGRET--RMQLGLNINLSEPLSK----QLRR-DASGTP   225
 Bav2 DYFD----NGRTQDRATGFKYGVQYKPVPLLSLGVEQTRVIGGASQT--SVQLGVALNLSEPLSK----QLRR-GGE-TP   224
 Bbr1 DYFD----NGRPQRNARGYKYGVEYRPVPLVAVGLEQTKVLGGARQT--TVQLGVNLSLGEPLSR----QLR---HQSGP   223
 Bpa2 DYFD----DGRYRRNPSGFKYGIEYRPVPLIGVGVEQARLQSGERQT--SVQLGVRLNLGEPLSR----QLRRGAQDTAP   226
 Bav1 DVFD----SGRAQRNASGFRYGVAYQPGALFNIGLNQTRTLDGQKQT--SVQLNVRINLQEPPSR----QLRR----ESQ   220
 Pma1 QDNS--GLEGAVSWQATPHVGLEAYVSNEISAASTTANTDLPGTDEN--FFGLRMNITGNPVKFEK-----------SNY   228
 Pma3 QDNS--GLEGAVSWQATPHVGLEAWVSNEISAASTTVNTSLPGTDET--FFGLRMNITGNPIKFEK-----------SNY   228
 Pma5 QDNS--GLEGSVRWQATPHLGWEAYVSNEISAASTTVNTSLPGTDEI--FFGLRVNITGNPVTFGK-----------KDY   228
 Pma4 QDNS--GIEGSFNWQATPHVNWEAWVSNEISGAKTVKNSDLPKTDET--FFGLRFRWTARPVKFAK-----------KNL   228
 Ssp1 SDNS--GIEGSVNWQATPHANLELWVSNEIPAYPTDSNDTIGNQPGP--YIGARVRLTGRPVVFTK-----------SNT   227
 Ssp2 SDNS--GVEGSVNWQATPHTNLSAWISSEIPAYPAQSNAQLSSGDDV--YVGVRFNVQLKPVTYKTG---------SNRI   251
 Plu2 NDSN---NPIDDLKGNTFSVSGSVYDGLSVEVGYIDYTSGNADYSKAGGERFLKVSYNFDIFGTH----------VNKAT   212
 Cla1 GIFG-ANSVDDLEKNPLIYEGGISYSPFPALTFTLSHSRSAESSKKN-TSINANINIPLDEKAMK---LAFEP--KLAGI   269
 Rba1 NWKD----AASYETEHYEAGINAEIAPNLTLRVAAQHKKNSNNTEAV---ASINYSVPLGGANQP---AKVKQDGDWSTK   213
ruler .......250.......260.......270.......280.......290.......300.......310.......320
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 Mba1 HQWISKDAYKLESMEDRRYEKVRRTN-------------------------------------NIVKQIKSLGVKVSGI-   246
 Psp2 EIGISDTAYNLTSVSDQKFAKVRRQN-------------------------------------LIVKQ-KEMDLTVIGF-   236
 Ybe1 RRTLQGSRNDLVERNNQIVLEYKKQD-VINLYV-SNNVSGRAA------ET-----------KQLVVSV-TSKYGLRNIQ   283
 Ype5 KRSLMGSRYNLVDRNNQIVMKYRKQN-RVTLEL-PARVSGAAR------QT-----------MPLVANA-TAQQGIDRLE   283
Eco14 QRSLAANRLELVNRNNDVVLEYRKQT-LITLQL-PPDVYGAEL------TT-----------VTLTPQV-NAKYGLSRIE   284
 Sen3 RRTLLGSRLDLINRNNNIVLEYRKQD-LISLKV-QNKVTGTES------ET-----------LPVSVNV-KSKYPLDHIS   287
 Ymo1 TRTLAGSRMDLVDRNNNIVLEYRKQQ-VVTLNL-PAKVSGKEK------QV-----------LPINYTF-NARHGLDRIE   284
 Yen2 TRTLAGRRMDLVDRNNNIVLEYRKQQ-VVTLNL-PEKVSGKEK------QV-----------VPINYTF-NARHGLDRIE   284
 Pas1 KRTLADNRYHLVERNNNIVLKHRERA-QLSLYL-PTGLSGFGG------ER-----------KLINFSF-NGKYRLKHIQ   309
 Yfr1 MRSLMGSRYDIVDRNYNIVMQYEKQD-LIKLTL-PETLAAYAI------TN-----------LSLTGNI-TAKYGAERME   284
 Yfr5 MRSLAGSRYDLVDRNYNIVMQYEKQN-LINLTL-PETISAHAL------EN-----------VTLTGTV-ASKYGTERIE   284
 Yps7 SRTLAGSRYDLVERNNHIVLDYQKQN-LVRLSL-PDSLAGDPF------SQ-----------LSVTAQV-TATHGLERID   283
 Yfr2 TRTLAGSRYDLVERNNNIVLDYQKQE-LIRLSL-PERVEGKAG------DI-----------ATVNAQV-TSKYGLERID   283
 Yfr3 SRTLAGSRYDLVERNNNIVLEYQKQD-LIQLVL-PNQMTGSAF------EI-----------IKVEAQV-TAKYGLKRID   283
 Yps4 NRTLAGSRYDLVERNNNIVLDYKKQE-LIHLVL-PDRISGSGG------GA-----------ITLTAQV-RAKYGFSRIE   283
 Yps2 TRLLAESRYNLVDRNNNIVLEYQKQQ-VVKLTLSPATISGLPG------QV-----------YQVNAQV-QGASAVREIV   284
 Esa2 RRSLAGSRYDLVDRNNEIILQYKKK-------------------------------------------------------   249
 Plu1 LRSLAGSRYDLVERNNNIILNYLKKQ-QHFRLL-VPVIEISSY------GG-----------EVKPIQI-QSDTPFKNVT   284
 Eco1 LRTLSGSRYDLVQRNNNIILEYKKQD-ILSLNI-PHDINGTER------ST-----------QKIQLIV-KSKYGLDRIV   281
 Pru1 FRSLMGNRYDFVSRNNHIVLEYKKND-VIQLNI-ANSITGYAG------EK-----------IPLSFTV-ASKYGLSHLK   283
 Pal3 FRSLMGNRYDFVSRNNHILLDYKKND-TIYLNM-NASITGISG------EK-----------IPLKYTI-NSQYGFNRIN   283
 Eta1 MRSLAGSRYDLVERNNHILLQYRKKE-VIRLHT-VGRVTGYAG------ER-----------KSLGVSV-NSSYGLERID   283
 Sgl1 MRTLAGSRYDLVDRNNNIVLEYRKKE-VIHLYT-ADHLAGYAG------EQ-----------KSLNVSI-NTKYGLERID   283
Eco26 MRKLAGQRYDLVERNNNIILDYRKKE-IIKIDG-VDVISGFSG------EK-----------KRLDIRV-NSKYPVDRID   283
 Pmi1 IRTLAGSRYDFVNRNNDMILEYKKET-LVFLSM-VDSINGYAK------EE-----------RDLQVQV-KTKYPLANIE   283
 Efe5 MREVQNRRYDFVERNNNIVLEYKKKS-TLRISL-PDAIEGESG------AT-----------IPVTLNVSHASNGIQSVQ   285
Eco20 RRVLAGSRYDLVERNNNIVLEYRKSE-VIRIAL-PERIEGKGG------QT-----------LSLGLVVSKATHGLKNVQ   285
Eco25 RRSLAGSRFDLVDRNNNIVLEYRKKE-LVRLTL-TDPVTGKSG------EV-----------KSLVSSL-QTKYALKGYN   284
Eco15 RRSLAGSRYDLIDRNNNIVLEYRKKE-LIRLSL-LDPVKGKSG------EI-----------KPLVSSL-QTKYALKGYN   284
 Eco6 RRSLVGSRYDLVDRNNNIVLEYRKKE-LVRLTL-TDPLKGKPG------EV-----------KSLVSSL-QTKYALKGYD   284
 Efe2 RRSLSGSRHDLVERNNNIVLEYRKKE-LVKLQL-NDPVTGKGG------EQ-----------KPLVASL-QSKYALKTLQ   284
 Efe3 RRSLAGSRHDLVERNNNIVLEYRKKE-LVKLQL-HDPVTGKGG------EQ-----------KPLVASL-QSKYALKTLR   284
 Pal2 TRRLSGNRYDFVERNNNIILNYQKKT-VLHLSL-PSKIQGITG------QS-----------VPLVKSF-TSKYPLKHIE   284
 Csu1 MRFLNENRYNFVSRNHVIVFNYSEYT-YDIFVS-PASISAIEF------AS-----------STVSLKCPNTKT-LAHFE   278
 Eco3 SQSLRGSRYDNPQRNNLPTLEYRQRK-TLTVFLATPPWDLKPG------ET-----------VPLKLQI-RSRYGIRQLI   282
 Cko1 SQSLRGSRYDNPQRNNLPTMEYRQRK-TLTVFLATPPWDLQPG------ET-----------VPLKVQI-RSRHGVRHVT   282
 Sen1 SQSLRGSRYDMPQRNALPTMEYRQRK-TLTVFLATPPWDLTPG------ET-----------VTLKLQV-RSVHGIRHLS   282
 Eca1 TRSLRGSRYDPAERNSLPVMEFRQRK-TLSVYLATPPWDLKGG------ET-----------VMLKLQI-RSTHGIRQLH   282
 Esp2 TRSLRGSRYDPVDRTSLPVMEFRQRK-TLSVYLATPPWDLTPG------ET-----------VVLKMQV-RSTHGVRQLH   282
 Esa3 SRSLRGSRYDRVERTNVPVMEFRQRK-TLSVFLATPPWDLSAG------ET-----------VALKLQV-RSRHGIRQLS   282
 Kpn1 SNSLRGSRFDSPERDNLPVVEYRQRK-NLTVYLATPPWDLQSG------ET-----------VQLKLQI-HSLHGIKALH   283
 Pan1 ARSLRGSRYDTVTRSQNPVMAYRQRK-TLSVFLATPPWQLNPG------ES-----------VPLKLQL-RASHSIKALS   282
 Eta2 ARSLSGSRYDSVNRDNSPVMAFRQLK-TLSVFLATPPWQLQPG------ET-----------LRLKLQI-ANKNTIKAVS   282
 Spr1 AKSLRGSRYDNIERKNVPVMAFKQRK-TLQVFLATPPWRLQPG------ET-----------LPLVLEI-KTTNKITRVS   284
 Yin1 MRSLKGSRYDLVDRNNDIVLEYKEKA-SLALDLAAVPMTLLEG------DI-----------YLMQPLV-RSKYKIVGVT   284
 Yin2 MRSLKGSRYDLVDRNYDIVLEYKEKA-VLSLDLAAVPMTLLEG------DV-----------YMMQPLV-RSKYRITSVS   284
 Yfr4 MRSLMGSRYDRVDRNYDIVLEYKEKAGLLMLDLAAVPATLLEG------DV-----------YLMQPLV-NGKYPIASVS   285
 Ymo2 LRSLKGSRYDLVDRNNDIVLEYKEKQ-VLFADLAAVPDSLMEG------ES-----------YILRPLV-KSKYPIIDLI   286
Eco10 AHSLMGSRHDFVERNNFIVLEYKEKD-PLYVTLWLKADVTNEHPECVIKDTPEEAIGLEKCKWTINALI-NHHYKIVAAS   301
 Eal1 AHSLMGSRHDFVERNNFIVLEYREKD-HLDVTLWLKADATNEHPECVIKDTPEEAVGLEKCKWTVNALI-NHHYKIVAAS   301
 Sty4 QHSLMGSRTDFVDRNNFIILEYREKD-PLDVTLWLKADATNEHPECVIEDTPEAAVGLEKCKWTVNALI-NHHYKIISAS   300
Eco16 KHSLMGSRHDFVERNNFIVLEYREQD-PLDVTLWLKADTANEHPECIVKDTPELAVGLEKCKWTINALI-NNHYKIVAAS   301
 Ahy1 -KSLAGMRHDLIERNNDMVLEYRDKV-LLKASL-NDQYSAVEG------QA-----------LTLTLNI-QHSRQIASIQ   314
 Sen2 PSNTTN-RRAFVDRNYDIVMAYREQA--SKIRITAMPVSGLSG------------------TLVTLMATIDSRYPIEKVE   282
 Efe4 ASNTTN-RTAFVDRNYNIVMEYREQA--SRIRVYASPVNGQSG------------------DTVTLSATINSRYPVERIE   282
 Bpe1 AFSPDARRHALVERENRIVLNTRRKEIILPLVVSKVSTLQADG--------------------RVTVIGATQPFATVTVR   285
 Bav2 VFNLDAHRNALVERENRIVLNTRQKLIILPLTVTTVLTDSVSG--------------------RITLVGQTQAQATVNWT   284
 Bbr1 AFDLQARMGEFVERENRIVLQTRRKHVVLPLTIARVDTDPATG--------------------RITVTGVTEPGAQVSLG   283
 Bpa2 PFDRGARLQDFVRRENRIVLDTRRKKIVLALRIAEVRTDPATG--------------------RITVYGVTEPLADVQLW   286
 Bav1 PFNLTSRRHQWVERESRIVLNTRRKAITLPLSIAQLRGDPTNG--------------------AIEVSGQTEAGARIMLT   280
 Pma1 KKNMVTQMTQPVKRKYDVLLERSAG----------GVFQNR-------------------------------AKGV----   263
 Pma3 KKNIITQMTQPVKRVNDVLLERAAINSS-----GAATFTVRVS-----------------------------AQGT----   270
 Pma5 KKNMITQMTQPVKREYNVLLERYGAN---------STFTNR-------------------------------AKGS----   264
 Pma4 KQNLVTQMTQPVRRRYEVLLERSTGG-----------FQNR-------------------------------ARGI----   262
 Ssp1 KQNLLTQMTQPVRRRYEVLLERVKEPTK-----GENGSITS-I-----------------------------AQGI----   268
 Ssp2 RENLLTQMRQPVQRRNDVLLERWKPKQKKTIGGVNGSFINQ-------------------------------AAGI----   296
 Plu2 KPRFSNTPYEFERMDDRRFEKIRFEQKVISAHNNEQPPA-----------------------------------------   251
 Cla1 SNTIEGTRTQFIDRDYSMVLEYRATPNKYHISYCGDLGNDKHCILLKN-----------GFDEVVKNTPMRVTPTHSCVV   338
 Rba1 FEPIREKLYRPVQRENRIMKKAIKLG---------VTVSGY---------------------------------------   245
ruler .......330.......340.......350.......360.......370.......380.......390.......400
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  Mba1 ------------------------------------------------   246
  Psp2 ------------------------------------------------   236
  Ybe1 FDQGA----------------LAAAGGKIIP----QGPSQFALQLPPQ   311
  Ype5 WEASA----------------LTLAGGKITG----SG-NNWQITLPSY   310
 Eco14 LDDAE----------------LRQAGGKIIS----NTGNQITLQLPAW   312
  Sen3 WEDDN----------------LVKNGGKISE----NNG-SWSVTLPHY   314
  Ymo1 WDAAD----------------VINAGGNISD----QGNLAYHITFPPY   312
  Yen2 WDAAD----------------VIKAGGQVIN----QGNLAYYIAMPPY   312
  Pas1 WNDGA----------------LRARGGRIIA----LSNNSYVVQFPNY   337
  Yfr1 WSAPA----------------LMAAGGSIIP----LTMESASVTLPPY   312
  Yfr5 WSAPV----------------LVTTGGALTP----LAMESAVVTLPAY   312
  Yps7 WQSAE----------------LMAAGGVLKQ----TSKNGLEITLPEY   311
  Yfr2 WDSAA----------------LIAAGGTLSK----GSSNSISITLPPY   311
  Yfr3 WDTAV----------------IVAAGGVVTQ----TSSQNISIKLPPY   311
  Yps4 WDATP----------------LENAGGSTSP----LTQSSLSVTLPFY   311
  Yps2 WSDAE----------------LIAAGGTLTP----LSTTQFNLVLPPY   312
  Esa2 ------------------------------------------------   249
  Plu1 WDIPE----------------LFQKNGGMIN--I-ESTHGYTIQLPEY   313
  Eco1 WDDSS----------------LRSQGGQIQHSGS-QSAQDYQAILPAY   312
  Pru1 WNAET----------------LVAAGGHIVQE-----NGKYSLVLPAY   310
  Pal3 WHADS----------------LVAAGGQVIDEK----NGAYSIILPTY   311
  Eta1 WSASS----------------LLAAGGKLVREN----EGSWSVILPEH   311
  Sgl1 WSAPE----------------LLAAGGKIVQES----IDNYSIVLPDY   311
 Eco26 WLANT----------------FIANGGKIINEG----LHNYSIILPDY   311
  Pmi1 WSASK----------------LNAQGGQIKHHG----GTHYTVILPQY   311
  Efe5 WSDSA----------------FAAAGGKITGS-----GTSWQFTLPAY   312
 Eco20 WEAPS----------------LLAEGGKITGQ-----GSQWQVTLPAY   312
 Eco25 VEATA----------------LEAAGGKVVTT-----GKDILVTLPAY   311
 Eco15 IEAAA----------------LEAAGGKVSTS-----GKDITVTLPGY   311
  Eco6 IEAAS----------------LQSAGGKVAVS-----GKDIQVTIPPY   311
  Efe2 TDAAT----------------LTAAGGVISTA-----DNQVTVTLPAY   311
  Efe3 AEAAE----------------LQSAGGVVNTE-----ANQVTVTLPEY   311
  Pal2 WQAPE----------------FLAVGGSISSD-----DQTATLTLPSY   311
  Csu1 WEAQN----------------FIEAGGEITLVSAGKSNAEYTVKLPPH   310
  Eco3 WQGDT------------QILSLTPGAQANSAEG-------WTLIMPDW   311
  Cko1 WQGDT------------QALSLTAGAKADSAEG-------WTIIMPAW   311
  Sen1 WQGDT------------QALSLTAGTDTRNTEG-------WTIIMPAW   311
  Eca1 WQGDT------------QALSLTSPANSTSSDG-------WSIIIPAW   311
  Esp2 WQGDT------------HALSLTSPANANSDEG-------WSVIMPAW   311
  Esa3 WQGDT------------QALSLTPPLDSTSADG-------WTVIMPAW   311
  Kpn1 WQGDT------------QALSLTPPVDASSPDG-------WSIIMPVW   312
  Pan1 WQGDT------------QALSLTSPPNNNAIDG-------WSVIVPPW   311
  Eta2 WQGDT------------QALSLTPPPDNSDPQG-------WSIIIPAW   311
  Spr1 WQGDT------------QALSLTPSQNSNDPHG-------WSLIVPQW   313
  Yin1 WNGDT------------VPLSLLATAGATNPQG-------WQITLPAW   313
  Yin2 WHGDA------------VPLLLVPTAGANNPQG-------WQITLPAW   313
  Yfr4 WQGDT------------VPLALLATAGVDNHQG-------WQITLPAW   314
  Ymo2 WLGDL------------LPLQLLATAGSHNPQG-------WQITLPAW   315
 Eco10 WQAKNNAASWQAKNNAARTLVMPVIKENTLTEGN---NNHWNLVLPAW   346
  Eal1 WQAKN---------NAARTLVMPVIKENTLTEGN---NNRWNIVLPAW   337
  Sty4 WQAKN---------NAARTLVMPVVKADALTEGN---NNSWNLVLPAW   336
 Eco16 WQAKN---------NANRTLVMPVVKANALTEGN---NNRWNLVLPAW   337
  Ahy1 WLGDVLG--------------LSGLSPADTAGQ-----DKRALTLPSL   343
  Sen2 WSGDA-----------------ELIAGLQLQGS-----LGSGLILPQL   308
  Efe4 WTGDA-----------------ELIGGLQQQGN-----VNSGLRLPDL   308
  Bpe1 MPDGM-------------TGTATADASGRFAYTSAGDQPSGVLALRAR   320
  Bav2 LPDGS-------------SGQSRADASGVYRIESRKDQPSGPIRLKAV   319
  Bbr1 LPNGE-------------VVVAQADGSGTYRATSARDMVGGPVRARAT   318
  Bpa2 LPDGT-------------ATSVRANAAGGFEASSAGDMTSGLIRARAT   321
  Bav1 FPDGS-------------GNWVRADASGRYTARSGPDMPSGTVRAQAR   315
  Pma1 ------------------------------------------------   263
  Pma3 ------------------------------------------------   270
  Pma5 ------------------------------------------------   264
  Pma4 ------------------------------------------------   262
  Ssp1 ------------------------------------------------   268
  Ssp2 ------------------------------------------------   296
  Plu2 ------------------------------------------------   251
  Cla1 FEKGFD--------------YITDNSGKVYVQIIRSCTPKTDLNAVAG   372
  Rba1 ------------------------------------------------   245
 ruler .......410.......420.......430.......440........
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