Supplemental Data for

"Expansion of protein farnesyltransferase specificity using "tunable" active site interactions: Development of bioengineered prenylation pathways"

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Table S1. List of vectors used in fluorescent protein localization studies

Vector	Open reading frame 1	Open reading frame 2
pPA-TagRFP-N	TagRFP	None
pCAF2 WW CVLS	WT FTase	TagRFP-CVLS
pCAF2 WW SVLS	WT FTase	TagRFP-SVLS
pCAF2 WW CVDS	WT FTase	TagRFP-CVDS
pCAF2 WW CVKS	WT FTase	TagRFP-CVKS
pCAF2 RL CVDS	W102R / W106L FTase	TagRFP-CVDS
pCAF2 FE CVKS	W102F / W106E FTase	TagRFP-CVKS

Figure S1. pCAF plasmid map

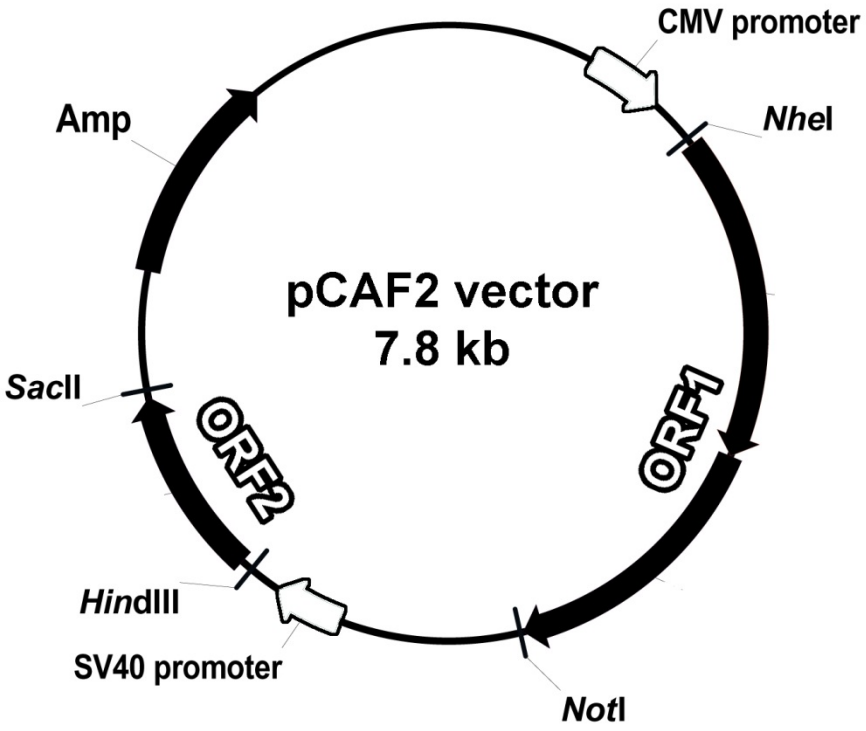

Figure S2. Polyacrylamide gel expression analysis of WT and variant FTases; variant FTase plasmids were chosen at random to check FTase expression compared to WT FTase.

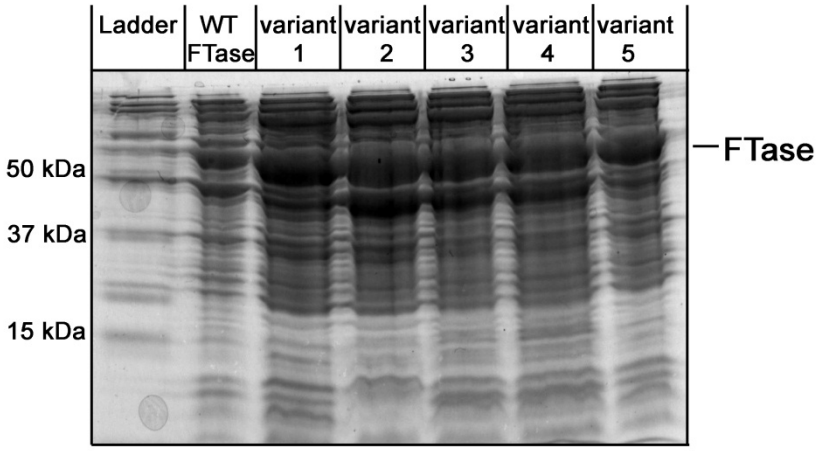

Figure S3. Representative secondary screening reactions of 102/106 library variants with dns-GCVLS

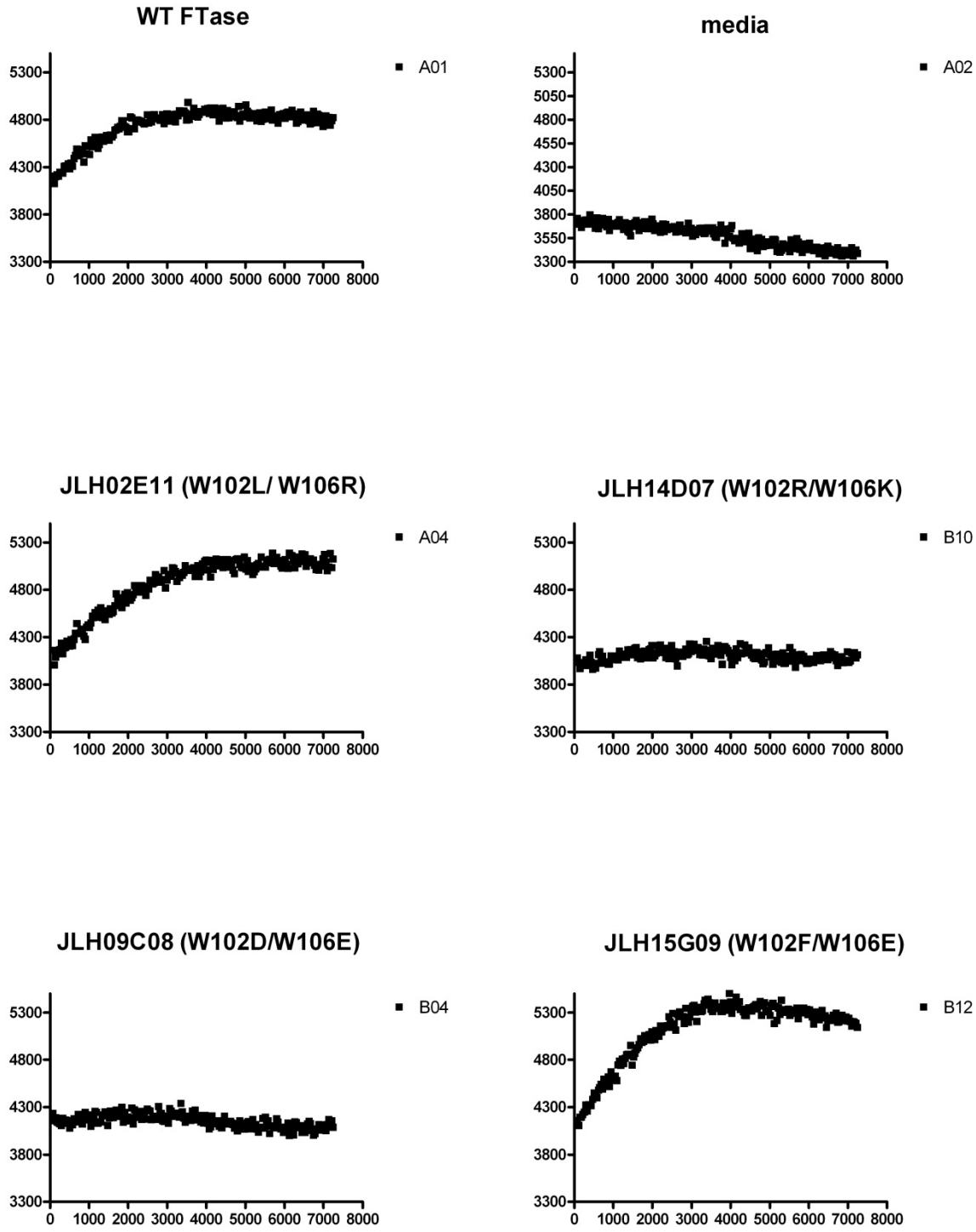

Figure S4. Representative secondary screening reactions of 102/106 library variants with dns-GCVDS

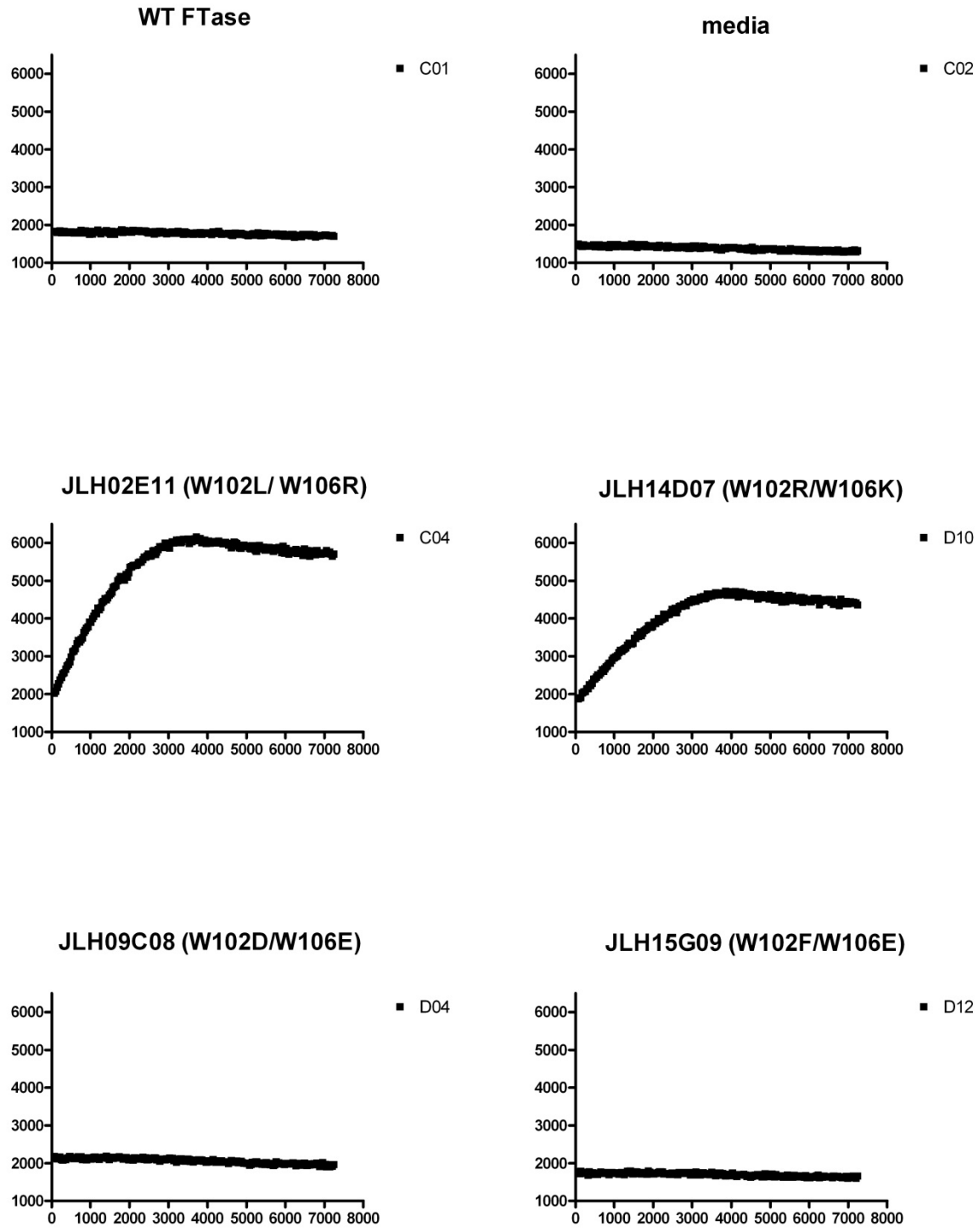

Figure S5. Representative secondary screening reactions of 102/106 library variants with dns-GCVKS

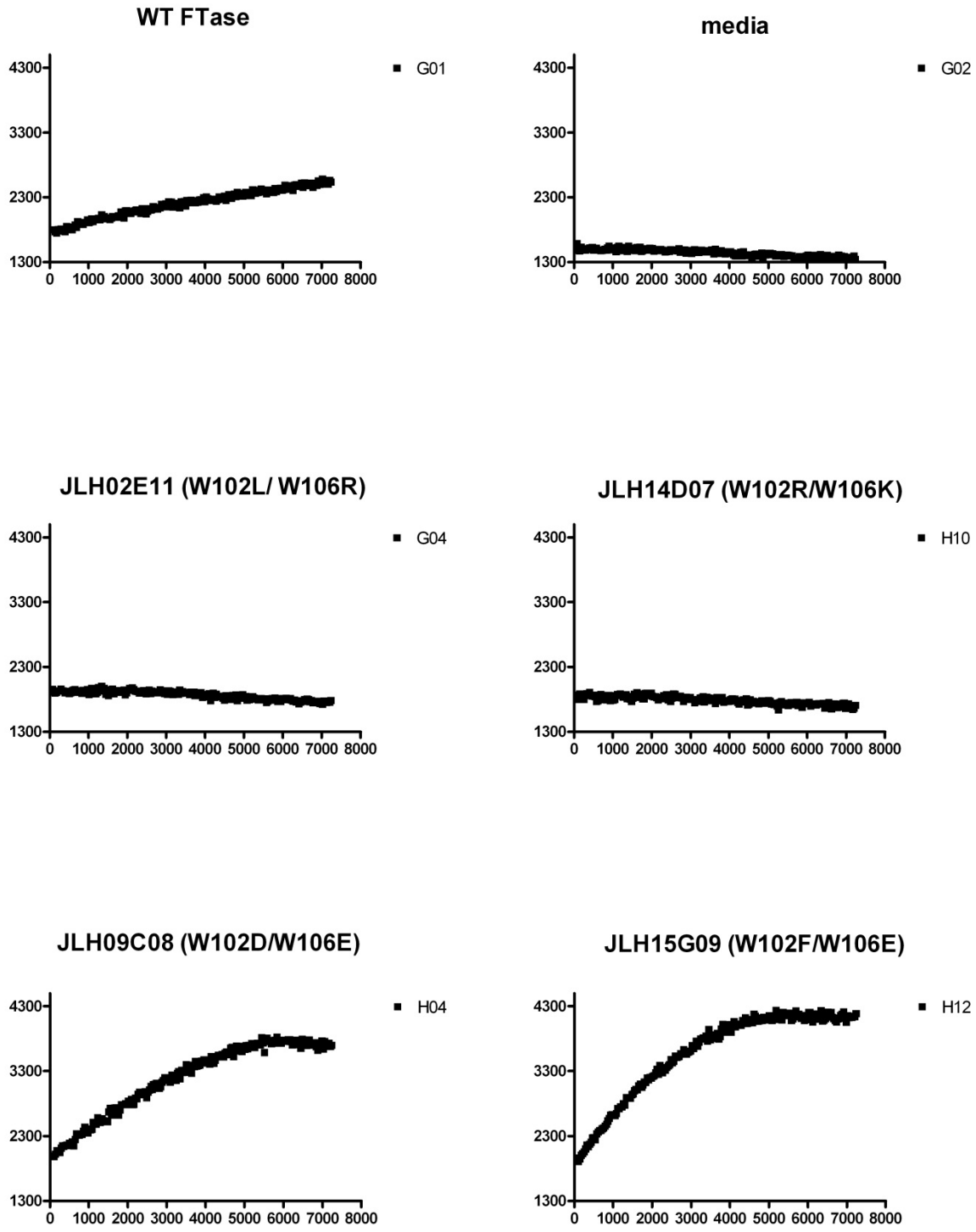

Figure S6. Alignment of protein farnesyltransferase beta subunits.

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Clustal-W alignment of protein farnesyltransferase beta subunits
59 total sequences

W102: 96% conservation
W106: 100% conservation

Homo_sapiens                    -----RLVLQREKHFHYLKRGLRQ-LTDAYECLDASRPWLCYWILHSLEL 113
Pan_troglodytes                 -----RLVLQREKHFHYLKRGLRQ-LTDAYECLDASRPWLCYWILHSLEL 67
Macaca_mulatta                  -----RLILQREKHFHYLKRGLRQ-LTDAYECLDASRPWLCYWILHSLEL 113
Bos_taurus                      -----RLVLQREKHFHYLKRGLRQ-LTDAYECLDASRPWLCYWILHSLEL 113
Rattus_norvegicus               -----RLVLQREKHFHYLKRGLRQ-LTDAYECLDASRPWLCYWILHSLEL 113
Mus_musculus                    -----RLILQREKHFHYLKRGLRQ-LTDAYECLDASRPWLCYWILHSLEL 113
Canis_lupus_familiaris          -----RLILQREKHFHYLKRGLRQ-LTDAYECLDASRPWLCYWILHSLEL 113
Xenopus_laevis                  -----QLVLERESHAHYLRKGLRY-LSDSYECLDSSRPWICYWIVHSMAL 98
Xenopus_tropicalus              -----QLVLEREPHTHYLRKGLRY-LSDSYECLDSSRPWLCYWIVHSMGL 98
Danio_rerio                     -----QPALLREQHYHYLKKGLRH-LSDAYECLDASRPWLCYWILHSLEL 98
Esox_lucius                     -----QPTLLRDQHYQYLKKGLRH-LSDSYECLDASRPWLCYWILHSLEL 98
Drosophila_melanogaster         -----LTQIFRLEHQYYLDAMLRR-LPSNYECLDSSRAWCVYWILQAAQL 100
Anopheles_gambiae               -----LPKLLRGDHARYLQLSLER-LSTAYESLDSSRPWMVYWILNAASI 100
Aedes_aegypti                   -----LPKLLRTEHARYLETSLER-LSCGYECLDSSRPWLVYWIMNAASV 97
Arabidopsis_thaliana            ---------------------------------DANRPWLCYWILHSIAL 43
Oryza_sativa                    -----MLELWREQHVEYLTRGLKH-LGPSFHVLDANRPWLCYWIIHALAL 136
Pisum_sativum                   -----I-----------------------------RPWLCYWIIHSIAL 58
Ricinus_communis                -----MLELQRDKHMEYLTRGLKQ-LSSSFCVLDANRPWLCYWILHSIAL 87
Nicotiana_glutinosa             -----HLETSTEKHFDYLTRGLRK-LGPSFSVLDANRPWLCYWILHSIAL 76
Catharanthus_roseus             -----YLELQRDNHIEYLTNGLKK-LGPSFTVLDANRPWLCYWILHPIAV 83
Triticum_aestivum               -----MLELWRDQHVKYLTKGLRH-LAPSFHVLDANRPWLCYWMVHGLAL 105
Caenorhabditis_elegans          -----------QKHASYLLRYLKN-CPSSYATLDASRSWMCYWGVNALKI 101
Naegleria_gruberi               ------LVLFIEEHTKFAKKGLRT-LPSYFDSLDASRPWFCFWCCNALSM 93
Plasmodium_falciparum           ------LQLEKQLHFKFCLDIFFL-KNMKLISLEASKPWIFYWCIHSIHI 463
Leishmania_major                ---YTEPRLYRAAHVHFLMENLSV-APQGFSSLYPSRPWIVYWALQAADV 132
Leishmania_infantum             ---YTEPRFYRAAHVHFLMENLSV-TPQGFSSLYPSRPWIVYWALQAADV 132
Leishmania_braziliensis         ---CEWPRFHRAAHVRFLMENLNA-APQGMSGLYPSRPWIVYWALQAADV 135
Trypanosoma_brucei_brucei       ---GIVHSLNRESHEKYLKSRLVK-LPEYAQRLYNAQPWMVYWTLQAAEM 109
Trypanosoma_cruzi               ---DHLPRLHRELHDSYVQGRFLF-LGESTQGLYSSQPWLAFWALQAADV 111
Entamoeba_histolytica           ------NPEIHIKWLTLSIH--KP-LPSGFMSLDSSTPWILYWTLNPLRL 84
Brugia_malayi                   -------------YENVTTEYLR--MSG------------IYWCLQAMDI 63
Encephalitozoon_cuniculi        -------------FLYYLTEPFR--LNT------------IYWSVNALSM 83
Toxoplasma_gondii               ------AKLRTSAHIAFAQRYLEKPFGNGMMELDASRCWLVYWMVHALDL 211
Saccharomyces_cerevisiae        ------------FHKMYLDVAFEISLPPQMTALDASQPWMLYWIANSLKV 119
Schizosaccharomyces_pombe       -----------QKHLKYLTKMLDP-LPSPFTVLDASRAWMVYWELSSLAI 69
Schizosaccharomyces_japonicus   -----------DAHIKFLESSLKP-FPAPYTVLDASKTWIIYWELVSLAL 67
Candida_albicans                -----------DAHLKYILSSLIDPMPSGYQVLDVNHSWMIYWLLNSYYL 205
Candida_dubliniensis            -----------DAHLKYILSSLTNPMSSGYQVLDVNHSWMIYWLLNSYYL 214
Pichia_stipitis                 ------------LHLAYVRKSLQSQLPHYYNSLDANHPWMMYWLANPQSL 125
Pichia_pastoris                 ------------QHRSFVKYFLETNLPAGFIALDASHTWMIFWLVNSFLL 124
Kluyveromyces_lactis            -------------SHKMFLEYWLNNPLPSGFKSLDASQPWLLYWIGNAFKT 118
Dictyostelium_discoideum        ------NIIEKKKILNFLMNGIEK-IPMSHQGLDSSKVWISFWILNGMDM 96
Eremothecium_gossypii           ------------AHQKLVEWPLRSPMPAQFTTLDAAQPWVLYWTANALTL 119
Aspergillus_fischerianus        -----------KDHIEYLYDSLED-YPASFVALDASRPWMVYWALAGLCL 164
Aspergillus_fumigatus           -----------KDHLEYLYDSLED-YPASFVALDASRPWMVYWALAGLCL 164
Aspergillus_clavatus            -----------DDHVAYLFDSLED-YPASFVAMDASRPWMVYWALAGLSL 164
Aspergillus_oryzae              -----------DDHIAYLYDSLED-YPGSFVALDASRPWMVYWALAGLAL 102
Aspergillus_flavus              -----------DDHIAYLYDSLED-YPGSFVALDASRPWMVYWALAGLAL 102
Magnaporthe_grisea              ----------RKKHVRFLRNMLRQ-LPAPFIAADASRPWFLYWSLNAMAI 110
Neurospora_crassa               ----------REKHIKFLKQSLGP-LPGRFVAVDASRPWYLYWCLSGLTM 145
Blastomyces_dermatitidis        -----------DEHVSFLYDSLES-YPERFVGLDSSRPWMVYWALAGLHF 227
Histoplasma_capsulatum          -----------DAHISFLYDSLES-YPERFVGLDSSRPWMVYWALTGLYL 241
Paracoccidioides_brasiliensis   -----------DAHISFLYDSLES-YPDRFVGLDSSRPWMVYWALAGLHM 198
Coccidioides_posadasii          -----------DVHVAYLYDALEE-YPGKFVGLDASRPWMMYWALTGLYL 104
Penicillium_marneffei           -----------DQHIEYLYDSLED-YPEGFVTMDSSRPWMSYWALAGLTL 99
Penicillium_stipitatum          -----------DEHIEYLYDSLEL-YPAGFVAMDSSRPWMSYWALAGLTL 154
Microsporum_canis               -----------QLHVDYLLDALGQ-YPASFVGLDASRPWMVYWALAGLAL 143
Verticillium_albo-atrum         ----------SKNHTVSHKQLGK--LPAPYLIADASRPWFLFWSLNGLAL 103
Pyrenophora_tritici-repentis    -----------QRHEAMLKKILGD-YPSGAAAMDAARPWLVYWALQSMTA 142
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