

Supplementary Figure S1. Evidence for sequence features of the protein families identified in this work.

A. Thermococcal CARDB domain containing proteins. Alignments were colored using http://www.bioinformatics.org/sms2/color_align_cons.html server with default amino acid groups with 20% consensus. Residues corresponding to identified motifs (see details on the Figure 2 and the text) are within signal peptide region are colored red. Sequences that were truncated to alignable only region are denoted by asterisks next to the respective accession.

WP_058939188_1	-----	MRKAVG	-----	VFVHLLILGSI	AAAGST---	AYA	27
WP_014788798_1	-----	MVTAAGS	-----	T-----	-----	AQA	11
WP_048151755_1	-----	MRRAVG	-----	VLVHLLILGSM	TAAGST---	AQA	27
WP_088181398_1	-----	MRRLGG	-----	IMLHLLIVGMS	SVPSYS---	K	25
WP_048165390_1	-----	MRKLEI	-----	IVPSYLLISL	SPTAQNT--	TITV	28
WP_088865610_1	-----	MRSTGG	-----	IMLHSLIVGMS	SMAVSS---	K	25
WP_014012907_1	-----	MRKAVG	-----	VLHLLILGSI	AAAGST---	VYA	27
WP_099209391_1	-----	MLG	-----	VVFSSAAAGSI	SGVPVS---		21
WP_088863686_1	-----		-----				0
WP_068319935_1	-----		-----	MMHLLIMVS	SQAMEE---	GF	18
WP_011013125_1	-----	MVRRSIV	-----	FFVHSLILGGL	NPSIVQ---		25
WP_042692137_1	-----	MRGLGC	-----	VLHLLILGSI	CALYGMVS-	TPMVL	29
WP_052696221_1	-----	MRKAGC	-----	IVHVLILGSL	INI-----	G	21
WP_014122995_1	-----		-----				0
WP_088886144_1	-----		-----				0
WP_088856136_1	-----		-----				0
WP_015857921_1	-----		-----				0
WP_014733996_1	-----	MRRLMG	-----	VHLLHVLIVGST	SVISAN---	TF	26
WP_088886109_1	-----		-----				0
WP_088882563_1	-----	MRRLMG	-----	IMHLLILGAV	STPIPTPVVGAS		30
WP_015859709_1	-----		-----				0
WP_014122675_1	-----		-----				0
WP_014122677_1	-----		-----				0
WP_056934707_1	-----	MRRAIS	-----	IMHLLILGL	GFSAAVSQ---	SFV	27
WP_068320152_1	-----		-----				0
WP_082781392_1	-----		-----				0
WP_010884703_1	-----	MRKYVC	-----	YLFVHLLILGSI	SGQVTVQ---	GSY	27
WP_062388971_1	-----	MSYVAA	-----			A	7
WP_074631387_1	-----		-----				0
WP_010884704_1	-----		-----				0
WP_056934708_1	-----		-----				0
WP_048151448_1	-----		-----				0
WP_088863691_1	-----		-----				0
WP_048810998_1	-----		-----				0
WP_048148049_1	-----	MQSMR	-----	KLMVHLLILG	IFLS-----	I	20
WP_055428947_1	-----		-----				0
WP_099209381_1	-----		-----				0
WP_014122994_1	-----		-----				0
WP_048165381_1	-----		-----				0
WP_048165382_1*	-----		-----				0
WP_068319940_1	-----		-----				0
WP_068320169_1	-----		-----				0
WP_068320161_1	-----	MRSETS	-----	IVHLLISIVGMY	NAV-----		20
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WP_074631389_1	-----		-----				0
WP_014012910_1	-----		-----				0
WP_015857844_1	-----	MNQLVF	-----				8
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WP_088865600_1	-----		-----				0
WP_048165388_1	-----		-----				0
WP_048055998_1	-----		-----				0
WP_088863688_1	-----		-----				0
WP_048151737_1	-----		-----				0
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WP_055430151_1	-----		-----				0
WP_048150566_1	-----		-----				0
WP_099209386_1	-----		-----				0
WP_088886110_1	-----	MRWGC	-----	IMHLLILVGM	STAFSS-----	S	25
WP_068320165_1	-----		-----				0
WP_055428943_1	-----		-----				0
WP_014122673_1	-----		-----				0
WP_088856137_1	-----	MRRAVG	-----	IMHLLILVSMG	STV-----	R	22
WP_048152596_1	-----		-----				0
WP_048151739_1	-----		-----				0
WP_088865604_1	-----		-----				0
WP_088865603_1	-----		-----				0
WP_048150577_1	-----		-----				0
WP_055430149_1	-----		-----				0
WP_068320157_1	-----		-----				2
WP_014788172_1*	-----		-----				0
WP_048165379_1	-----		-----				0
WP_068320171_1	-----		-----				0
WP_088865607_1*	-----		-----				0
WP_058939190_1*	-----		-----				0
WP_068319946_1	-----		-----				0
WP_048150353_1	-----		-----				0

WP_048150344_1* -----NMISQSLA-----FVIMCAITVHVHT----- 21
 WP_048055999_1 ----- 0

 WP_058939188_1 TSVDAQNPYEFKFWELINREAEELVVRLNATNT----TLVNELIONSRLGAENAAITSAITWOALEELKASGVKHYTTABELRMAQNISQNGLPQETV 122
 WP_014788798_1 TSLETRNPYEFKFWELINREAEELVVQFNATNT----TLARELIONSRLGAENAAITSAITWOALEELKASGVKHYTTABELRMAQNISQNGLPQETV 106
 WP_048151755_1 TSLETQNPYEFKFWELINREAEELVVQFNATNT----TLAQELIONSRLGAENAAITSAITWOALEELKASGVKHYTTABELRMAQNISQNGLPQETV 122
 WP_088181398_1 PVAAATSPYEFKFWELINREAEELVVQFNSTGNA----SLAQELIONSRLGAENAAITSAITWOALEELKASGVKHYTTABELRMAQNISQNGLPDET 120
 WP_048165390_1 NALENENPYEFKFWELINREAEELVVKLQNTADO----NTARELIONSRLGAENAAITSAITWOALEELKASGVKHYTTABELRMAQNISQNGLPDET 123
 WP_088865610_1 PVMASVNPYEFKFWELINREAEELVVQFNSTGNA----SLARELIONSRLGAENAAITSAITWOALEELKASGVKHYTTABELRMAQNISQNGLPDET 120
 WP_014012907_1 TTVEAQDNPYEFKFWELINREAEELVVQFNATNT----VLARELIONSRLGAENAAITSAITWOALEELKASGVKHYTTABELRMAQNISQNGLPQETV 122
 WP_099209391_1 -----ENDAYAQFWNVLVEAYLVGVVNESNAGHINA----TARELIDNSRAGEENAAITSAITWOALEELKASGVKHYTTABELRMAQNISQNGLPDET 116
 WP_088863686_1 -----MVEVE-KGNL----TLVPELIONSRLGAENAAITSAITWOALEELKASGVKHYTTABELRMAQNISQNGLPQETV 71
 WP_068319935_1 VLASAAEPYEFKFWELINREAEELVVQFNKTSDG----NLAKELINNSRRGAENAAITSSITWALQELKASGVKHYTTABELRMAQNISQNGLPQETV 113
 WP_011013125_1 ---ASTQNPYEFKFWELINREAEELVGEAS-SENT----TAINELIENSKAENAAITSSITWALQELKASGVKHYTTABELRMAQNISQNGLPQETV 116
 WP_042692137_1 ANEVNGDKAYDDFWILNDEAYLVVAFNESYSGNPNATLAQELIENSRGCEINSAITSAITWALQELKASGVQLYYSABELRMAQNISQNGLPDET 129
 WP_052696221_1 TVQALSQNPYEFKFWELINREAEELVPEAG-SENV----TAINELFONSHAGAENAAITSAITWALQELKASGVKHYTTABELRMAQNISQNGLPQETV 115
 WP_014122995_1 -----MSHLNVDFIPFGI----- 13
 WP_088886144_1 ----- 0
 WP_088856136_1 ----- 0
 WP_015857921_1 -----MDTSPDELRMAQNISQNGLPDET 25
 WP_014733996_1 VVAQATEPYEFKFWELINREAEELVVEARTNT----TLIKELIENSRGAENAAITSAITWALQELKASGVKHYTTABELRMAQNISQNGLPDET 121
 WP_088886109_1 ----- 0
 WP_088882563_1 GTSTGTTSAYEFKFWELINREAEELVVGVE-IGNL----GLAPDLVQNSRLGAENAAITSAITWALQELKASGVKHYYSABELRMAQNISQNGLPDET 124
 WP_015859709_1 ----- 0
 WP_014122675_1 ----- 0
 WP_014122677_1 ----- 0
 WP_056934707_1 LAGTQDDKAYDDFWILNREAEELVVELNSTTVNEIQ--SLALQELIONSRLGAENAAITSAITWALQELKASGVKHYTTABELRMAQNISQNGLPQETV 126
 WP_068320152_1 ----- 0
 WP_082781392_1 ----- 0
 WP_010884703_1 AMAMDDSPYEFKFWELINREAEELVVKVE-NGNT----SAIQELIENSRGCEENAAITSSITWALQELKASGVKHYTTABELRMAQNISQNGLPDET 121
 WP_062388971_1 TDSEDTTSVYNDFWILNREAEELVVEAS-EGNT----TAAQELIENSRGCEENAAITSAITWALQELKASGVKHYTTABELRMAQNISQNGLPDET 101
 WP_074631387_1 ----- 0
 WP_010884704_1 ----- 0
 WP_056934708_1 ----- 0
 WP_048151448_1 ----- 0
 WP_088863691_1 ----- 0
 WP_048810998_1 ----- 0
 WP_048148049_1 PAGAESTPYEFKFWELINREAEELVVEFNATNE----TLAPALINSLDCEINAAITSSITWALQELKASGVQLYYSABELRMAQNISQNGLPDET 115
 WP_055428947_1 -----MPDPPTSAQLSGVLE----- 16
 WP_099209381_1 ----- 0
 WP_014122994_1 -----MYETVKVNRNRPKIDVRFIPI----- 23
 WP_048165381_1 ----- 0
 WP_048165382_1* ----- 0
 WP_068319940_1 ----- 0
 WP_068320169_1 ----- 0
 WP_068320161_1 AKSDVRPEGLIFNGI----- 35
 WP_048055992_1 ----- 0
 WP_074631389_1 ----- 0
 WP_014012910_1 ----- 0
 WP_015857844_1 ----- 8
 WP_099209388_1 ----- 0
 WP_088865600_1 ----- 0
 WP_048165388_1 ----- 0
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 WP_088863688_1 ----- 0
 WP_048151737_1 ----- 0
 WP_048055995_1 ----- 0
 WP_055430151_1 ----- 0
 WP_048150566_1 ----- 0
 WP_099209386_1 ----- 0
 WP_088866110_1 QVIAASSPYEFKFWELINREAEELVVGIE-NGNL----SLAPELIONSRLGAENAAITSAITWOALEELKASGVKHYTTABELRMAQNISQNGLPQETV 119
 WP_068320165_1 ----- 0
 WP_055428943_1 ----- 0
 WP_014122673_1 ----- 0
 WP_088856137_1 PVKALSNPYEFKFWELINREAEELVVEVE-DGNL----SARLELIONSRLGAENAAITSAITWOALEELKASGVKHYTTABELRMAQNISQNGLPQETV 116
 WP_048152596_1 ----- 0
 WP_048151739_1 ----- 0
 WP_088865604_1 ----- 0
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 WP_068320171_1 ----- 0
 WP_088865607_1* ----- 0
 WP_058939190_1* ----- 0
 WP_068319946_1 ----- 0
 WP_048150353_1 ----- 0
 WP_048150344_1* -----TKLGIQWELITLNGI----- 36
 WP_048055999_1 ----- 0

 WP_058939188_1 EALKAGWIDQICALEEYIKNADINEDFNMTAFLEDFSAFIDVAFKYNBYEAWLEKWKWTNPQINMNLGNLL-----INPVIADENLDLIGH 217
 WP_014788798_1 EALKAGWIDQICALEEYIKNADINEDFNMTAFLEDFSAFIDVAFKYNBYEAWLEKWKWTNPQINMNLGNLL-----INPVIADENLDLIGH 200
 WP_048151755_1 EALKAGWSDRQICALEEYIKNADINEDFNMTAFLEDFSAFIDVAFKYNBYEAWLEKWKWTNPQITGGDN-RTL-----EPLLLRGVVEFYRSY 216
 WP_088181398_1 EALKAGWIDQICALEEYIKNADINEDFNMTAFLEDFSAFIDVAFKYNBYEAWLEKWKWTNAOKTQPDANDYL-----INPLAGGENTTLFYRY 214
 WP_048165390_1 STLKEQWSDRQICALEEYIKNADINEDFNMTAFLEDFSAFIDVAFKYNBYEAWLEKWKWTNAGEAPQENHCIA-----INPLIAEENALFYRY 217
 WP_088865610_1 QALKSGWIDQICALEEYIKNADINEDFNMTAFLEDFSAFIDVAFKYNBYEAWLEKWKWSQPAEPPQATNNEM-----INPLIAKENVEFYRAY 214
 WP_014012907_1 EALKTQWIDQICALEEYIKNADINEDFNMTAFLEDFSAFIDVAFKYNBYEAWLEKWKWIHSAPQOTRDNEI-----INPLIAGKALEFYKAY 216
 WP_099209391_1 KELKSGWTEETKALQYIKNADINEDFNMTAFLEDFSAFIDVAFKYNBYEAWLEKWKWAHPKRETRQALKAYGSYPKKI-----IPGISRDVVSFYRAY 216
 WP_088863686_1 NALKSGWIDQICALEEYIKNADINEDFNMTAFLEDFSAFIDVAFKYNBYEAWLEKWKWAHPKRETRQALKAYGSYPKKI-----INPVLANQVVSFYREY 166
 WP_068319935_1 KALKSGWIDRQICALEEYIKNADINEDFNMTAFLEDFSAFIDVAFKYNBYEAWLEKWKWTNPKELPELPGTET-----INPLIAEENMTFM-- 205
 WP_011013125_1 QALKNGWSDRETEEPQYILHEDAVKGFENMSKFLDFSNAFIRAFKYNBYEAWLEKWKWDYQSKPGDTLITRE-----EPPHARENISFYRAY 211
 WP_042692137_1 NELKACWTDDEIKALEEYIKNADINEDFNMTAFLEDFSAFIDVAFKYNBYEAWLEKWKWPNAAKSREDAMRIYGSARKI-----VPPDISQNSSEFYRAY 229
 WP_052696221_1 RALKSGWSDDEEYIKNADINEDFNMTAFLEDFSAFIDVAFKYNBYEAWLEKWKWPNAAKSREDAMRIYGSARKI-----VPPDISQNSSEFYRAY 208

WP_014122995_1 -----NLSNFPD-----DSFAGSSMSAFLOALSDSFPTGWKYAKYETWAVEKEYWP--TSPSQAPSGTLT-----ANPLVSTS--SIRSAI 88
 WP_08886144_1 ----- 0
 WP_088856136_1 ----- 0
 WP_015857921_1 DELRSSCWNDDEIKALEEYIKENNDSTGSSMSAFLOALSDSFPTGWKYAKYETWAVEKEYWP--ASPSQAPSGTLT-----SNPLVSTS--SIRSAI 116
 WP_014733996_1 SVLRREGWNEBEEKSLDDYIRHSDDIKGDFNMTEFLDLSLAFVGVGYKYNKYBWALEKRAKWTNSLTPPSLSGDTKM-----INPLFYDIQLQITREY 216
 WP_08886109_1 -----MDPPAEAPTGNKGEI-----INPALSGDNVILYLRY 31
 WP_088882563_1 NALKREGWIDEDIKALEEYIWNQNGENITEGFNMTSFLDLSLSTFIRVGFKYNYHBSWALEKMKWTRPIEAPTTNSDRL-----INPLMAVRNVSYFYREY 219
 WP_015859709_1 ----- 0
 WP_014122675_1 ----- 0
 WP_014122677_1 ----- 0
 WP_056934707_1 QTLKREGWSDDEIKALQBYIENNDDEITEDFNLRKFLKDFSDAFISVAFKYNKYBWALEKMKWWRNPVDRNTPQGEKM-----INPLLADEINIFYKTY 220
 WP_068320152_1 ----- 0
 WP_082781392_1 -----MPHIQGPCKTKEI----- 13
 WP_010884703_1 RALKREGWSDDEIKALEEYIARKNKDNTGDFNMSBFLNFSRAFKVGVGFKYAKYBWALEKMKWEGKANFTGSLPSNEG-----INPLINELSDVRLAY 216
 WP_062388971_1 KTLREGWSDDEIKALQNYITIQNADNITGDFNMSBFLNFSRAFKVGVGFKYAKYBWALEKMKWGSTENFTGNLPQDVS-----INPLLAEEINIFYKAY 196
 WP_074631387_1 -----MTARVYTGSKYNNY----- 15
 WP_010884704_1 ----- 0
 WP_056934708_1 ----- 0
 WP_048151448_1 ----- 0
 WP_088863691_1 ----- 0
 WP_048810998_1 ----- 0
 WP_048148049_1 ENLRREGWSESEIKALQSYIANNVDEINGDFNMSBFLNFSRAFKVGVGFKYAKYBWALEKMKWNGEGTVPEARARG-----HFGLLSEINIFYKAY 208
 WP_055428947_1 ----- 16
 WP_099209381_1 ----- 0
 WP_014122994_1 -----EFGCAVIVKMGSGVYIIPARGCKSFSSEYIIL----- 55
 WP_048165381_1 ----- 0
 WP_048165382_1* ----- 0
 WP_068319940_1 ----- 0
 WP_068320169_1 ----- 0
 WP_068320161_1 -----FAVAACEFCKQLQSS-----WREPCGIA----- 58
 WP_048055992_1 ----- 0
 WP_074631389_1 ----- 0
 WP_014012910_1 ----- 0
 WP_015857844_1 -----FTLLS----- 14
 WP_099209388_1 ----- 0
 WP_088865600_1 ----- 0
 WP_048165388_1 ----- 0
 WP_048055998_1 ----- 0
 WP_088863688_1 ----- 0
 WP_048151737_1 -----MKET----- 4
 WP_048055995_1 ----- 0
 WP_055430151_1 ----- 0
 WP_048150566_1 ----- 0
 WP_099209386_1 ----- 0
 WP_08886110_1 DALKREGWIDEDIKALEEYIWNQNGENITEGFNMTFLKDFSDAFISVAFKYNKYBWALEKMKWTHPLKLQLGTGKR----- 196
 WP_068320165_1 ----- 0
 WP_055428943_1 ----- 0
 WP_014122673_1 ----- 0
 WP_08886137_1 EALKREGWIDEDIKALEEYIWNQNGENITEGFNMTFLKDFSDAFISVAFKYNKYBWALEKMKW----- 177
 WP_048152596_1 ----- 0
 WP_048151739_1 ----- 0
 WP_088865604_1 ----- 0
 WP_088865603_1 ----- 0
 WP_048150577_1 ----- 0
 WP_055430149_1 ----- 0
 WP_068320157_1 -----WPPV----- 6
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 WP_068320171_1 ----- 0
 WP_088865607_1* ----- 0
 WP_058939190_1* ----- 0
 WP_068319946_1 ----- 0
 WP_048150353_1 ----- 0
 WP_048150344_1* -----FAVTICDFHFSFGES-----CSLA----- 56
 WP_048055999_1 ----- 0

 WP_058939188_1 YNYSGDSMDIETFYSNVRGLNKLINALILDRIKPKPEKEYEYTKFMPHPPIPRPPRNITLNGSKYLHPPSKETEVTKVEKRAPNGGLVFIERTKIVKV 317
 WP_014788798_1 SEGN-----YSKMKSAREKLBDKMYDMVGKTLNKETLTTELKEH--GDLWQLIELRRD-----YVMWW-LKNGGVVFRVYNSADNSS 275
 WP_048151755_1 VEGD-----YKMRDSDIILBESMYEITITYSSNSPKQVELAFFN--GESITITTGN-----RGVLW-GHDGSMARIEQEHFDRD 289
 WP_088181398_1 LHSD-----YQRMPEPAKTLRQSMYNLITGVGGNVNLLFYERGT-----SPSKFQGSV-----GSIVW-VEPDGLLEFVTTRATRA 285
 WP_048165390_1 SQKD-----YKNMSVCKSLKDLTYKILTGSSGEQVTSMLYRTE-----SLSKQGT-----ESIRW-IKNGGLVITFKSTQITFT 288
 WP_088865610_1 LSGD-----YNNMKSRYRLKSMYKLLSNEKRNCTLTFLRDGN-----LVTQRGII-----KGINH-TTNGSLVFTVLVTSKSGK 284
 WP_014012907_1 SSRD-----YKGMEKKRRLRDSMYELLTGEKISGNLTFLKDEK-----VVTQGT-----KSVNH-TTNGSLVFPVLVITPDGD 286
 WP_099209391_1 LKDN-----VSGMNSSKNNIRYIHSLLMPSLYSSGTF-----VSGGVVVQNVHRVGDLS 268
 WP_088863686_1 SQGN-----YQKMEPAKSLRDOTYDLLKGDWINIHKTPIVIYN--NSRLIQLTGR-----TSVQH-IENGGLIFVTVTYATRD 239
 WP_068319935_1 SSKT-----IEEKLLAEKLNKIIETVSKGNVDY-----IENGGLIVEYRSTKERDQ 253
 WP_011013125_1 LFEG-----IDEKLSTERLKAKEVEYIKSNPKGRDGHVIR-----NSNESIVENKFKRIPIIK 266
 WP_042692137_1 LSGD-----VGGMSSANDSAKGMDSILHSHKWA-----VRDGLILVSGDVKSG-- 275
 WP_052696221_1 RSKS-----IDDKLSARRLKERLKLIESGGKLGDFLVKMITTSPRKLTTLDSTSK-----TSSVSSLPIRRVEKPPVPVKKPKC 286
 WP_014122995_1 LNCN-----PGSFVYAKKATKNDVLDLAISSA-----AY-YSNGGLAFSTVTINSNGK 135
 WP_08886144_1 -----MGMEDSSEALRDSAYNFLTQYQEKVSLTFLRNGS-----VITKTGT-----GRVEW-TENGSMVFTTLVTPSPED 65
 WP_088856136_1 -----MEVSNQNLRENYVKLLGQSGPITLMLLDD-----SGIISKRGQV-----KNITW-VQNGGLIFTTISLTIGST 63
 WP_015857921_1 INCN-----PNSLVYAKRSTKSDVVDTHYSAS-----IY-YSNGGLGFSMTVIDSRGK 163
 WP_014733996_1 NSCN-----FDNAETLKKLIRATYLLFEKRVETPSGEY-----VLISPTYK-----ISLWN-TKEGCVFVTVIKTIGSG-- 281
 WP_08886109_1 SQKD-----YQGMDPARETLRESMYRIMGTGGSVNLLSYERTT-----SLSQLPGSV-----DSVKW-SKNGGLFVTIARRMTTS 102
 WP_088882563_1 SQQD-----YENMETAIKSLDDYVYVLLMLGNSSGENRMLLYSPG---TDRLTSLTGK-----TNVEQ-TENGGLMFTVTLTRITGT 292
 WP_015859709_1 ----- 0
 WP_014122675_1 ----- 0
 WP_014122677_1 -----MIDRVKFN-----GSESKVLS-----GTIAY-TGFSSESPEFIAPVNGS 41
 WP_056934707_1 YTGT-----LEEQLSSNKLQSRITYSLITGSLDRVNSALIPSAT--NSLQILPLNPLL-----KNITY-LNNNEETETWEFIOGKT 295
 WP_068320152_1 ----- 0
 WP_082781392_1 ----- 13
 WP_010884703_1 STNN-----MKGLLKAENFSSKMYEFKYEMVEYSSLPFRFGQ-----LKNRGYV-----TF---YKGFVVITTRNIRYFPN 282
 WP_062388971_1 LERN-----STEELESSEVLSRRTYALTSHSSPKARAEILLRNG-----SLILRHET-----TGVDV-YSNGFAVIKTSDDYDWR 267
 WP_074631387_1 ----- 15

WP_010884704_1	-----	0
WP_056934708_1	-----	0
WP_048151448_1	-----	0
WP_088863691_1	-----	0
WP_048810998_1	-----	0
WP_048148049_1	LEGD-----YEGALEGRTLRKRIVAASTAEADAE-----LGSEVLMVGLRWEHIPLN	256
WP_055428947_1	-----	16
WP_099209381_1	-----	0
WP_014122994_1	-----	55
WP_048165381_1	-----	0
WP_048165382_1*	-----	0
WP_068319940_1	-----	0
WP_068320169_1	-----	0
WP_068320161_1	-----	58
WP_048055992_1	-----	0
WP_074631389_1	-----	0
WP_014012910_1	-----	0
WP_015857844_1	-----TLLSTPAVKA-----	24
WP_099209388_1	-----	0
WP_088865600_1	-----	0
WP_048165388_1	-----	0
WP_048055998_1	-----	0
WP_088863688_1	-----	0
WP_048151737_1	-----	4
WP_048055995_1	-----	0
WP_055430151_1	-----	0
WP_048150566_1	-----	0
WP_099209386_1	-----	0
WP_08886110_1	YL-----	196
WP_068320165_1	-----	0
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WP_014122673_1	-----	0
WP_088856137_1	-----	177
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WP_048150577_1	-----	0
WP_055430149_1	-----	0
WP_068320157_1	-----	6
WP_014788172_1*	-----	0
WP_048165379_1	-----	0
WP_068320171_1	-----	0
WP_088865607_1*	-----	0
WP_058939190_1*	-----	0
WP_068319946_1	-----	0
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WP_048150344_1*	-----	56
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WP_058939188_1	YSDFLIKDIGRSGDADVKSTPEVWCPETWITINRTVYYWPSAIEAYEISSNIMALLDEAKKRGNNEBEDIKIINOKWHELKQSECVYMI---YSTSEIKR	413
WP_014788798_1	YG-----VYYWPNATAAYELASNIEALITAKELGNNEBQWRLNDRKTERLRSSQCVYPPKSGNSSDIVTVP	342
WP_048151755_1	GF-----EINLTYYWPSALEAYKLTSDVLVLNAMKQGNNEBPKMLNOKVDELKDALEVTVV---SREVIINP	357
WP_088181398_1	EV-----ITETKTYWPNALRAYKLVNNIYALIRARNGNNTMDSILNOKIAELKEALKVEIV---SSKVTRTP	353
WP_048165390_1	EI-----ITERTYYWPNALRAYELMGVYVALIKTRNYGNNTPKMESMLNOKVDELKEALKVLLISSEIKRSPKSP	360
WP_088865610_1	YI-----IWNVTYYWPNALRAYELSSNIALALTAIESGNNEBQVSIILNOKVDELKDTMKVLLI---ENKVLKNP	352
WP_014012907_1	YL-----IWNATTYYWPNALRAYELDNVLTLTATIASGNNEBQTESILHOKVDELKDSIKVVI---KSESRYTR	354
WP_099209391_1	FG-----YSCYWPSPALKRAYNLTROVVVLWETMSMGNNEBEGKLLNOKVDELKDALVYVYH---DSTINPNP	333
WP_088863686_1	RY-----VIMENKTTYWPNALRAYELIGVYVALMKKNYGNNDPDRMLNOKVDELKDALITVVI---YSHVSPIK	309
WP_068319935_1	SI-----RQDSIGTITLPPKPIPSPIPTPTTNKYWPNALRAYRTAAEIRTLISIKYGNDRKDEEMLNRTISLRLSEIKVYK---TTSPLSIS	344
WP_011013125_1	CT-----YWNALRAYNLTLOVESILKAQKLGNSNEBNYLLNKKVDELARALITACY---GDGTPPIPKP	329
WP_042692137_1	-----SYWPNALRAYROLRRVYVLNAMKLGNNNDVKAMLNREYDELKDALVV---YSKTISEW	333
WP_052696221_1	TI-----IYYW-NALRAYNLTLOVESILTAQKFGNSNEBNYLLNKKVDELADALIRRY---VNGDCSG	348
WP_014122995_1	TV-----RRYSWENALRAYRTLGELYTLAVALEKGNNEBQWGLRREKYDELEKYMKVRLI---STSTPNP	199
WP_08886144_1	GF-----MLNTTTYWPNALRAYELTSNIMTLKARNCGNNEBQWMLNOKVDELKDALKEIIV---STSTSTVQ	133
WP_08886136_1	KV-----KTRRTYYWPNALDAYRLIEDINTLNARSGGNNEBQDWMLNOKVDELKEALNVII---NTTWEIP	131
WP_015857921_1	TV-----RRYSWENALRAYRTLGELYTLAVALEKGNNEBQWGLRREKYDELEKYMKVRLI---STSTPNP	227
WP_014733996_1	-----VGIRETYWPNALRAYELMGVYVTLKXSINLGNNTPTRRMLNOKVDELGDALNVVI---YREIKRP	347
WP_08886109_1	EV-----ITEKTTYWPNALRAYELISNVIALMKARNYGNNAKQDSILNOKIAELKDAIKVIEV---SSEVTKTP	170
WP_088862563_1	EE-----VVNTTTYWPNALRAYELIGVYVTLKARNYGNNAEIDRMLNOKVDELKNALKVVR---SSEVTTRP	360
WP_015859709_1	-----	0
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WP_014122677_1	-----QASVSGIVKIRYRSVTSFG-----	61
WP_056934707_1	EN-----KEICTYIYNKYNVTRYYYWKSPPKAYKRLIRHSLDLAKQFGNNEBQEWQLNEKIGELKDAPTIN---ESTITVVP	372
WP_068320152_1	-----	0
WP_082781392_1	-----	13
WP_010884703_1	YT-----EEVTEYYWPNALRAYNLTROVVYVKAISMGNDCBGRKMKDRMEELREALVYVIN---	341
WP_062388971_1	NL-----KKVTVTDTYYWPNALRAYNLTROVVYVMAVNCGNNDPDRMLNOKVDELKEALKVYV---SESVTEKP	336
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WP_014788798_1	QDSIENITLPIINPGEKYGGITDPVKKPAMDSSNILNSQSIEITPSESNSETFKEGSRI-LTALNP-DTTRSUKINNMVPIPEVSEDEY----ATYKVS 435	
WP_048151755_1	DYKKLPSPD-PITPI-----DPINPEPLKNSIKGVGGTLTPTSESSNQIPVIPADEIM-KISDPGSLBCLIKVDDHEVKPLTSGPNY----VNYRVI 445	
WP_088181398_1	IKNPKPITPIPIKPGDPGIPDPRPKPLSSTLTGMTSTVSDDEDTGITVDGVPIQDVL-KEALDPQSSPCTMTTDAVVDKNNVPGE----VKYHVK 447	
WP_048165390_1	IPIKPGDPRIPIA-----PIPVSPKGYSDVGTQTFEENLGVENVGLIEPEII-REALDTQGNICQKKITEKKVIVDKNQPGK----VEYHVK 442	
WP_088865610_1	IRDDPIRPIEPIYPI-----NPKLPAQPVSSLHTSGDGSVETNHIPTAIL-NEALNTEDNTCQKKITEKKVIVDKNLPKG----VEYHVK 432	
WP_014012907_1	KKDEPIKPTETPIYPI-----NPKLPVQPVYAGSTEEPTISTEPTTSIVTITPADEIT-TIALNPEDSORIETINHHITTPVEVSTDY----ATYKVS 441	
WP_099209391_1	NPNPFPHCVGKK-----CLWGTGSSKSGSGSLKAPSGSFNDRKDLK-KFALDVSNNYCYVVEGGHVTIPVEVTGTY----ATYRWV 409	
WP_088863686_1	GPIKPEPIPIKPEPI-----KPGDPVMLPLDSATSGESYDSSPDSSLTTKVPDEIE-ALALNPEDSMGRFVLDGVSVEAVDKGTDY----ATYRVV 395	
WP_068319935_1	PFNVEKEGKLSV-----EKKRIADEITTSY-----VRYHLK 375	
WP_011013125_1	IITIPKPKDIDL-----LNDQIA-REALMVGESBCLIVTKARVNPVEVTSEY----ATYHVE 384	
WP_042692137_1	KFRPPENPPIIIDPC-----EKNPLKCRITITSGSSGNSDYPLVGSISNLQTSRLTSDY-DIALDVNSNYCYHSTKNVSVVDDVTSTK----ATYHIE 421	
WP_052696221_1	VSPPEPGILGGS-----TEEALTARCEHMKSRFVEPVEVAEDY----ATYRVV 393	
WP_014122995_1	VPPKPSPMPIPLDIS-----TSLP---KTSS-----TTQTPEVKINARVRVTRTRDSNP----KPYHVL 253	
WP_088866144_1	VPNEPIYPIEPIDPI-----YPIDPKLPVLVSTTSPEESTTAELESTTVITPADETA-LLALDPNNEECRFVVDSSNVEAVEVTSY----VYHVA 222	
WP_088856136_1	TESPEP-----SPI-----NPKPITILSTISGGS-KMNLLENLEATTSQDDWIRMLA-KTGEENEETHEKDEHVEPINITSY----VYRWV 211	
WP_015857921_1	SPPRFRPMPTFLHLS-----TPE-----PLTS-----TSSQEPVFRINAMRVVRASHDANP----KRYHVA 279	
WP_014733996_1	IYYISISSPIR-----NNIGSVPLDRRAQRTSSEPDEI-EKVASGEYSICKVIVKDKVQLTKKIDNGR----TSYHVK 415	
WP_088866109_1	ILLKSTSGTAT-----TSSITGGGEVIVSGVPVDESVL-VEALDTQDSSCTEVTIDSVSVVDKNVPSS----VEYHVE 239	
WP_088882563_1	IKDGSSSDSGSTK-----IADEIE-RLALDPQSSWCFRVDDENEVEVTHKGTAYGMYKFAVYRVV 419	
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WP_014788798_1	MDITVSGASATNVTWELEG-T---ELKYSKDG-LIDNGET-ITVESFVSGRVYGD---YMEVSGKIKVTVQFIT---EYH-----TNS 508	
WP_048151755_1	VHMHTENNNAVNNKINLHDYST---GRSDSETTS-CHDPYID-YNWESKTFSTSI RNEN--GKATATGHEBITYTPEC---DKS-----DLG 522	
WP_088181398_1	VSFKAENNNAVNNIRGSKVDYTT---GDSISGTVP-ELNSGGS-HTWNSKFT-YTHSSG--GEITVSGKVEITYTPSC---NDV-----ELS 523	
WP_048165390_1	ISFKAENNNAVNTIRINVKDYTT---GDSISGTLS-ELNSGGS-YAWNSKFT-LTHSMD--GEITVSGKVEITYTPSC---GAV-----ELS 518	
WP_088865610_1	VLFAKANNNAVNNIRIVEDRTT---GDSISGTLS-ELNSGGS-YIWNKSKFT-LTHNME--GEITVSGKVEITYTPSC---GDV-----ELS 508	
WP_014012907_1	MDITASKASVNNKVKKEG-T---ELEYSKNIG-AIANNCT-ITVESISGRVYGD---YMEVSGKIKVTVQFIT---EYR-----TNS 514	
WP_099209391_1	WHFRVNNVNNDKVKFHHG-S---GLSYQVTVG-YVHPDGVKTVSSIVSSRIYNGA--STNSVACVNTVEKSVPTPR-----TTE 485	
WP_088863686_1	VRVHVEDNAVSNKVFDFG-T---ELTISTSLG-ELSPGGS-DSVESVSGYVRGS---GEHHVSCVVKVTVTSSS---GPV-----PTS 468	
WP_068319935_1	ILIRAKDNDVYVSKKRVNG-T---GLSEKDDVD-LLVHNDEDEIIEEISKEVYGEIS--NTVKKRGKVEITYSPIY---GST-----E-- 449	
WP_011013125_1	VEIEAONNAVVDNVEFDG-T---SLEITEKYG-MLNKDSV-KVIKSVSGKVYGS---GSVTVAGGVKIKVTKSYR---GNA-----PMA 457	
WP_042692137_1	VSFRAEHNAVSDNKNLTD-S---SGSDSVKYS-MVHPDGTRLWKSCKFTVNFNGK---TQVTVSGGVKISVLTSTP---TPL-----PMS 496	
WP_052696221_1	VEVQAVGVNAVSSVNVFPG-V---ELSDAESG-ELYENVG-KTVASVSGRVYGS---GSVEVSGVVRVSYESHS---GPV-----ELS 466	
WP_014122995_1	IDYTVTGGOVVVYNVTFNT-G---SEETITPG-LIDPESG--TIESGNFTAPVGVLDGSLKVKVSGVTVTYRPVV---TPDGGSI IKSTSA PAS 340	
WP_08886144_1	VLHLHVEDNAVSNVNEFQG-T---ELSSKSMG-FLYFPGS-FVVESVSGRVYGS---DQNTVSGGVKIKVTVTPSS---GQI-----BNS 295	
WP_088856136_1	VYKKNMMDSTPPEVLLEG-T---KLSDYQ-SI-PHYFKST-ITVTSVPSGKVYGD---KWTVSCGKIKVTVTLQK---DTQ-----E-- 281	
WP_015857921_1	IDYTVSGGOVVVYNVTFNT-G---SEETAVTPG-LIDPESG--TIESGNLTTSVGVLDGSLKVKVSGVTVTYRPVT---GPGGENVVIKSTSSVES 366	
WP_014733996_1	IVLVAESNIVKNIRWEIKD-SS---GDRTEKYD-LIYPOGETSIVSKEFTLNI PDNS--KKRISGNVVMVTVTPGC---GNL-----PTS 492	
WP_08886109_1	VSFKAEDNAVNNIRIKDKDYTA---RDSISGTVS-ELNAGES-YTWKSSRFT-YTHSSG--GEINLSGKVEITYTPSC---GAV-----ELL 315	
WP_088882563_1	WHYHMENNNAVSNISVKFKG-A---YLPSKSMALFLSPGCG-GIITSSESE-FISGS--GEITVSGVVKIKVTVTSSP---GPV-----PTN 492	
WP_015859709_1	-----MIDRVKFN-D-G---SESKVLSMDAIIVYTCGP--SVESPEFIAPVGN-A--LQSVSGVVKIKVRSVTSPPGDT-----BNS 67	
WP_014122675_1	-----MTLITND-KLADYYFGERPDPDRVWFKGS--KNRFEFY-----SYLLKVKK-----46	
WP_014122677_1	-----DPGKIDDKQA-L---KISEGK-VK-YY-----ARISNS--NSVPRGTLTFYTILD---GDH-----L-- 158	
WP_056934707_1	-----CH---VQLDELALR-ALSVGEE-----TEIQVSGEITVSVTIPS---E-----445	
WP_068320152_1	-----MRGKNKFE-VLYPGLN-----13	
WP_082781392_1	-----15	
WP_010884703_1	ITMEAHNNNDVRDEHEVDDTTS---GSSEKGSVD-YLTMGES-KTWFSKQFSIKPSD---TTVKKEGKIKVTVTPVC---GDI-----BQR 460	
WP_062388971_1	VSMAKKNVVDVDRVSHHG-T---GLSDSGEG-MVHPDGEVDWTSISIDKVRGS---NQIVSGKIKVTVTSNS---GPT-----BNS 491	
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WP_014788798_1 ESSLN-----PDDTPP-TYSTLQA-VEEYSSTIKLQYDP-TKNILVEIMTTP---QS---GDKENDFYQFKIRVSNHNPFSITCSYYKKBEV 587
WP_048151755_1 SREDA-----PILS---SCSARTI-TEQYSATFDLS-SS--VDNVLVGKKHET---SS---DDTEGDSVTVYRVVKNNSLPVDC-----V 591
WP_088181398_1 KNE-----PFSASL-SCQERTI-TKOYSATIDLTSP--VDWSKVNRVEA---SR---DSHTKGESVTVYRVVKNNSLPVDC-----V 592
WP_048165390_1 KNHE-----TLSTSP-SCQERTI-TREYSSTINLESP--VDWSKVNRVEA---SR---DRIVEGESVTVYRVVKNNSLPVDC-----V 588
WP_088865610_1 KNHE-----TLSTSP-NCQERTI-TREYSSTINLESP--VDWNKVRIRVEA---SK---ESVITAGESVTVYRVVKNNSLPVDC-----V 578
WP_014012907_1 ESGLN-----LDDTSS-KYSTROA-VEEYSSTIKLQYDP-TKNIDVEIMTTP---QS---RNVEEGDSVQFKIRVSNHNPFSITCSYYKKBEV 593
WP_099209391_1 GFNAS-----AIGAGI-RNVTV---TEDYHVKVNLKSS--IDPSKVDFSVET---DPA---SPVLVGSTNVKFKIRVSNHNPFSITCSYYKKBEV 562
WP_088863686_1 AGSEP-----TGGTKE-MEI---TKEYSSTIKRLDDV--IDPNKITTUNVIP---GE---TTTHEGDNVVEKVRIRVKNNGKALSCTCTIRATY 542
WP_068319935_1 -----TLTSITS-QSSEKKVIVYISKDFELCEHD-IDPKNVSVKLVV---DP---NPARTIMENKVLKIRVKNNEKESISGVYQKQKAM 524
WP_011013125_1 IQT-----TSMSSKTTERTYEETISDADP--VDPSKVSVPLSI---D---GDRVEGSAITFKARVRNDNEVGSGSCTISSEY 527
WP_042692137_1 NPSQP-----TVSSSS--SSSDVQVAVKSYSKITANLS--IGPSKVFFETVP---SK---TEITEGSSVSFTIKIRVNDVPSISGQWSFHASY 575
WP_052696221_1 ASS-----P-ETSMKIL-EVYESTITILN-DP-VDPQKVNVSHIPIDEGDG--STILEGESVKEVYKIRVKNNGEFGVKNCYIDISY 541
WP_014122995_1 IGEPS-----ISGYSDDITAIRVI-KLEYTCTFDLISQ-IDPEKVKVKVIP---SK---DVAEVGDSTIFKIRVKNNGTLPLRGYTYIYQV 419
WP_088886144_1 VS-----P-ANDEREI-TEYSSTITFLEEG-IDPSKVYVSVLAQDENG--GTVKTGEDVTFKIRVNDNDVNAGTCTIRAVY 369
WP_088856136_1 -----PNNVGP-TSEKREI-IKSYSTITLISQ-IDPNKITYDIDKP---QDANHDGILTEGDDVTFKIRVNDNKANIGCTCTINVEY 357
WP_015857921_1 VSEPA-----TLDYGDETTISRVI-KLEYTCTFDLISQ-IDPEKVKVKVIP---SK---DVAEVGDSTIFKIRVKNNGTLPLRGYTYIYQV 445
WP_014733996_1 IKDL-----A-ACQDRTH-TREYSSTIDSRDPEYDVKVKEVVP---SP---STVEEGKTVLFKIRVKNNSQGFTHARYSNRL 566
WP_088886109_1 QESPE-----ASSTSP-SCGDRTH-TKOYSATANLT-SP-VDWSKVNRVEA---SR---TSHTEGESVTVYRVVKNNSLPVDC-----V 386
WP_088882563_1 NSTG-----RKQEMEI-IREYSATIKLE-DA-IDPNKITSVSH-P---GE---VEINEGDSVPEFTVIVNNYNRKPVGTCTIVATY 562
WP_015859709_1 KPGDPVETTSVQAYTPADYST-PTAPVLV-MESYHGTIDLISD-IDLSKITVKTIA--NT---TKVTEGQSVGFANVRNDNVKAVNGVLSFVTV 155
WP_014122675_1 --SNGIAYSDV-----FTYKEQ--TRLEKI--WEACK--NA---TKHTEGQSVGFANVRNDNSPKAVNGVLSFVTV 107
WP_014122677_1 -----PRQV-----VNHT-----RWVIMPNQSQISV----- 178
WP_056934707_1 ----- 445
WP_068320152_1 -----PL-GCDKEKTIVERYSDFEKKQKE-VDTKTEFESTYF---SP---EHPKTFEDTTFYVITVINDKKEISCKCTIYAL 86
WP_082781392_1 -----ILOYSSTIDLEAD-IDPAKVTIVQF---SK---SQVKVDEEYFTVITVINDNSKDNVEGDTFTPC 73
WP_010884703_1 SGO-----SLD-ECTEPTISDEYSKVEWTD--IDPSKVTFNITA---SK---KKHREGESVDEYFTVITVINDNLIKDEGKYIEMSV 534
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WP_048055998_1 ----- 0
WP_088863688_1 ----- 0
WP_048151737_1 ----- 4
WP_048055995_1 ----- 0
WP_055430151_1 ----- 0
WP_048150566_1 ----- 0
WP_099209386_1 ----- 0
WP_088886110_1 ----- 196
WP_068320165_1 ----- 0
WP_055428943_1 ----- 0
WP_014122673_1 ----- 177
WP_088856137_1 ----- 0
WP_048152596_1 ----- 0
WP_048151739_1 ----- 0
WP_088865604_1 ----- 0
WP_088865603_1 ----- 0
WP_048150577_1 ----- 0
WP_055430149_1 ----- 0
WP_068320157_1 ----- 6
WP_014788172_1* ----- 0
WP_048165379_1 ----- 0
WP_068320171_1 ----- 0
WP_088865607_1* ----- 0
WP_058939190_1* ----- 0
WP_068319946_1 ----- 0
WP_048150353_1 ----- 0
WP_048150344_1* ----- 56
WP_048055999_1 ----- 0

WP_058939188_1 KYRVTVSLPQFDPKNYSYVTHPANGKEKTLT-KVVAPEDSGGTYLARITISNG---HTKSASDKVIV-----TTGTHVTSVDVSPRNDD 719
WP_014788798_1 EYIVSENIMESKFKEFTGSLQGFDDSTVYV-GSHTYKPKGTYRKEEYFKVGO---YYKKFNGTIEV-----KPRPDGESPRIKITPLDWBSTARR 675
WP_048151755_1 DYSVVIPIYSDSGWKYKSGVVDVPAEEVTHIK-KVTVTEEAGTYVASASI-KWD---GNSKSVKKSIVV-----NSETISMNVDFSENNTE 673
WP_088181398_1 KYSVTIPFSPPTNSRTYSYGVVDQDGEQVILE-RVTVYIDAGTYVVAHASI-KNN---GHKSKEKSVTV-----TSGTHTSGVDVSEVYNPTH 675
WP_048165390_1 EYISISIPFSPPTNSRTYSYGVVDVPAEAVTILE-QTVTEEDASTYVVAHASI-KNN---GNSKSAKSVTV-----TSGTHTTIGVDVSEVYNPTH 671
WP_088865610_1 EYISISIPFSPPTNSRTYSYGVVDVPAEAKETILE-QTVTEEDASTYVVAHASI-KNN---GHSKITSKSVTV-----TSGTHTTIGVDVSEVYNPTH 671
WP_014012907_1 EYIMVENNLESKFKEFTGSLQGFDDSTVYV-GSHTYKPKGTYRKEEYFKVGO---YYKKFNGTIEV-----PDDDSFSIKITPLDWBSTARR 681
WP_099209391_1 E---TSPGNSFTKTVTGSLSGPNSGRTHIV-FSNITSGTSGFGSSTLYFGG---YSKTSQGLDVRRAT-----PVSGDSIKITLGSMSNPNAKV 646
WP_088863686_1 E---ETSTSVGTVQLNTEHSVPAEDDVTETI-GVNNYNSGTGSGSECDGNG---GSKTSFGSGVTVVRDDNPD---PPAGCAIKTVSHTPEPDHARV 631
WP_068319935_1 E---DSGTIEYTGSGVTVNGGTEKVILL-EPHEYSKFGYSYLSFSGEGD---FLVMNDSIKRVIDQSG---DSSSQTEIEMSVSEFSPSIRV 606
WP_011013125_1 E---TSGTSRSSYQKSEFNAECKSTALVNF-GSVTVSRSGTSGYVTVCKEGG---HSEKSVDCGFTV-----RKSSGSGHGTITVTIENLRA 609
WP_042692137_1 K---DSSYKTHSFDRSGSVTVQAHDTVSLGV-GVTVYVPHGGTYCYSGIFKFGPNLMYSRDNSSSEIYVVASGTPSPSPPTPSAGSVIRVSVSEPEAHKA 670
WP_052696221_1 E---ITSTETSIKAFQSSFTSAGGSVSETM-GEHTYEPGNNLKKC-YFN---QYSKTVSGVTVISAERGS---RSISGAFGL-----YBATIYV 624
WP_014122995_1 E---DGPGRKTVKLGGRVTLCKANKETEIV-STVPSSEPSRYEYEVVFSIAG---LQALDRSGVIVQR-----EDDFKRYTEGVNEDLKE 502

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WP_088886144_1	P-----ISSSDTSARSFVSNNPAGGSATETF-GSVHMAWSGTFHNTKCTEDC-----YKSFSGSVTVVEEDDST-----DPTVVKMIDVVPSTWSESTARL	456
WP_088856136_1	P-----ISSSDRETCKDYITSNNPAGQVVEKEFEERTSNHWEGTFFHMECHCVGCG-----YFNMTGSLTVVE-----DGISGGMDI-KWRHDPESPOE	440
WP_015857921_1	P-----DGSQKRTVRLGGGKLTLCANKETETV-STVFPFEPKGVYVFPVFSVAG-----FOAEDRCGVLYQR-----EDDFCKVYIEGVYDDPLRKE	528
WP_014733996_1	P-----EGEKSCSGEFTFENGFEFEKGT-CKNHSKFCGYCGLGELSXYK-----YIMDYKCTTVIR-----ESPKCTFENSLLWEPEVPRV	644
WP_088886109_1	P-----EYSVTIPFSPSTNSRTYSKGQDVQPNGELVLE-KVTVTIDASTYTHASTI-TMN-----GHSKSAEHEVTVIS-----DQNDQKSINGAFSFSFSVVI	473
WP_088882563_1	P-----ETGTQVGTVRLNKEKGVGASGYVVERI-GNVYSSSFGTFCGSKCDGNN-----GISKFSFGSVRV-----DSRTVIRAGVDVSPETVVS	642
WP_015859709_1	P-----EENSERLVLGRKTVINPDENVVTVQV-GNVTVPQAGTYEVFATFSKGG-----MEVKDSCGSVEVRR-----LVLQKNIAKSLQQLPRNREE	238
WP_014122675_1	P-----EENSERLVLNKRKTVINPDENVVTVQV-GNVTVLKGAGTYEVFATFSKGG-----MEVKDSCGSVEVTR-----LVLQKNIAKSLQQLPRNREE	190
WP_014122677_1	P-----DLGTVEYLGS-----GYTGTAILDEGG-----FPEYGGSEVTVLI-----PVDGSGDKSKVEVGEVPIFE	235
WP_056934707_1	P-----EGTGRYSKDVTFPSSSSKTFEI-ARKVYCKPCTCYGCGVFKGCG-----FEVSASGCVTVSQDS-----SGSSGSLKTKQVTFPESLPRV	166
WP_082781392_1	P-----IGRRPIKGHTVSPAGSYGEDTI-GFVPCPEHSGYCHHHTFYSGP-----YNTLSGSLVTVNRDNGGN-----DDSSGSLKTKDARFSETPRD	156
WP_010884703_1	-----	534
WP_062388971_1	-----	494
WP_074631387_1	-----M-ATVSSKSGTYVSSSFSFGCG-----GYSKDSEHVVARRD-----TVTLCTHSTGTGVDSFVNETH	53
WP_010884704_1	-----	59
WP_056934708_1	-----	10
WP_048151448_1	-----	0
WP_088863691_1	-----	0
WP_048810998_1	-----	0
WP_048148049_1	-----	311
WP_055428947_1	-----GHLEVYPEWVEA	28
WP_099209381_1	-----	0
WP_014122994_1	-----	55
WP_048165381_1	-----	0
WP_048165382_1*	-----	0
WP_068319940_1	-----	0
WP_068320152_1	-----	0
WP_068320161_1	-----	58
WP_048055992_1	-----	0
WP_074631389_1	-----	0
WP_014012910_1	-----	0
WP_015857844_1	-----	24
WP_099209388_1	-----MTVEVKET	8
WP_088865600_1	-----	0
WP_048165388_1	-----	0
WP_048055998_1	-----MEVRRP	6
WP_088863688_1	-----	0
WP_048151737_1	-----	4
WP_048055995_1	-----	0
WP_055430151_1	-----	0
WP_048150566_1	-----MGDDTMNAKMSRAGEWR	17
WP_099209386_1	-----	196
WP_088886110_1	-----	0
WP_068320165_1	-----	0
WP_055428943_1	-----	0
WP_014122673_1	-----	177
WP_088856137_1	-----	0
WP_048152596_1	-----	0
WP_048151739_1	-----	0
WP_088865604_1	-----	0
WP_088865603_1	-----	0
WP_048150577_1	-----	0
WP_055430149_1	-----	6
WP_068320157_1	-----	0
WP_014788172_1*	-----	0
WP_048165379_1	-----	0
WP_068320171_1	-----	0
WP_088865607_1*	-----	0
WP_058939190_1*	-----	0
WP_068319946_1	-----	0
WP_048150353_1	-----	56
WP_048150344_1*	-----	0
WP_048055999_1	-----	0
WP_058939188_1	GDRVREDDVS-----LNPPSSRSRLNVKLEID-----GVKESSRTV--SICG--NDEST-----TILTW-----TATAGN	775
WP_014788798_1	GNTVSEKVO-----LDSTHNDREARVLEID-----NELPPVQTVETSVKA--GSST-----VTLTWVPPSSHPICE	737
WP_048151755_1	GDSVREDDVS-----LNPTSTSRDVLVLEID-----GVKESSRTV--TLHG--GDSMI-----VTLTW-----TAAAGE	729
WP_088181398_1	GDSVSEDDVS-----LNPPVSRBALVLEID-----GVKESSKSL--TICG--EGSRV-----VSLTW-----TAAQAG	731
WP_048165390_1	GDSVSEDDVS-----VNPPVSRSRDVLVLEID-----DAEKASKTL--TIGS--GSGSV-----VSLTW-----TAVAGT	727
WP_088865610_1	GDTVSEDDVS-----VNPPISRSRLVLEID-----GVKESSKTL--TICG--GSSKE-----VTLTW-----TAAAGE	717
WP_014012907_1	GNTVSEKVO-----LDSTKDDREARVLEID-----DELSPVHTVETSVKA--GSSTM-----VTLSSNVPSAPPICE	743
WP_099209391_1	GKEVRETV-----LNKKKEKKNVPSVSG-----SSWRKRYTV--GVFS--GGTVT-----VFTW-----VPSSAGD	703
WP_088863686_1	GDTVMESVR-----VKSSPSTSRSLVLEID-----GELIKTVSG--SIDG--NSEKT-----FTLAW-----KANKIGP	688
WP_068319935_1	SNLANVIVK-----VKT--STARVTVLEID-----GEKVASQEG--QV--NGERN-----FILPW-----RPOASGE	659
WP_011013125_1	GEIVNEKVE-----VNNSSSSGNNVSVLEID-----DVEVDSTA--YLPF--DSTKT-----LTLQW-----SREAGE	665
WP_042692137_1	GDTVSEKVK-----IDSSSSSTQRLVLEID-----DELKDSKEL--NVG--TSGAG-----VTLRW-----TAVAGE	725
WP_052696221_1	GDTVMCHYT-----VIPLEDSISNPVLEID-----DN-----SLITIK	659
WP_014122995_1	YEVVNEHTV-----LGNTPTAEDLRLVLEID-----GRVVDKNN--GISA--NSENK-----VVERW-----SSERKGD	559
WP_088886144_1	GDSVEPSVD-----LNNTVPDVSRRVLEID-----GTVVDVVEV--TVIA--GRSTG-----LLEHNVMPDDFFICE	516
WP_088856136_1	DGVVKEVVD-----VSNNAASSREVVREID-----NTLIDSVKG--KVDP--QKERT-----FVLEW-----SRAAGD	496
WP_015857921_1	YEVVNEHTV-----LGNTVPTAEDLRLVLEID-----GRVVDQKSV--EHLA--NSENK-----VVERW-----YSERKGD	585
WP_014733996_1	NRQVNEKVE-----VNNEEDTSRLVLEID-----GKEIDSAQK--VVSQ--NSAEE-----FSLTW-----VPSTSGE	701
WP_088886109_1	GDTVNEHYV-----ITTSKGQLSDPTVLEID-----NQKIVIEKT	509
WP_088882563_1	GDVNEHDVY-----LNPPSVSRNVVLEID-----GNEKSRENH--WIGS--GSSEL-----VTLTW-----TAAAGG	698
WP_015859709_1	HDDVDITVYPYVYVFLVPESNVESVFKNNCPDALVPSLNSEQGNIELSVVVDVKTS--DIVF--GDSIKISPENIR--PFYVSHW--RNAKAGD	328
WP_014122675_1	HDDVITVYPYVYVSVFVPSVAKNTVFNNCPDALVPSNSEQDLELSVVVDVKTS--SLVF--GNSVKLDSGNIKNIDPFYVFRW--RNAKAGD	283
WP_014122677_1	GDSVEENVT-----VNSSRSTSLRLVLDGKYG--SELAYVWNG--TVES--HSMKT-----FSLTW-----DELSS	295
WP_056934707_1	--VBEVKV-----VTVKAENAAQATINNYID-----GNKEY	474
WP_068320152_1	QDNVVKRVK-----VNSSSSKRNVREVID-----GKTVNQVDS--VVSQ--GKERE-----FILSW-----TPTGAGE	223
WP_082781392_1	GDTVSEKVK-----VNNNTDDKNVRLVLEID-----GSEADSVAG--SVSA--GSTGE-----FSLHW-----GAEAGE	212
WP_010884703_1	-----	534
WP_062388971_1	-----	494
WP_074631387_1	GDSVSEDDVS-----LNPPVSRSRNVKLEID-----GVKESSRSL--TICG--GSTGS-----VALTW-----TAAAGE	109
WP_010884704_1	GEFISELNN-----VNSSSSQRRVLEID-----KEKIGEASQ--EVGQ--NSWST-----FKLKW-----KAKGKG	115

WP_056934708.1	-----S-----	GEVVYSEEM--A--TPEYLDSE-----	Y--FTW--	SN--KAGE	43
WP_048151448.1	-----	-----	-----	-----	0
WP_088863691.1	-----	-----	-----	-----MPP	3
WP_048810998.1	-----	-----	-----	-----	0
WP_048148049.1	-----	-----	-----	-----	311
WP_055428947.1	GDSEVSVH--T	V--NLDLNCAQ--PFT--E--V	D	-----	56
WP_099209381.1	-----	-----	-----	-----	0
WP_014122994.1	-----	-----	-----	-----	55
WP_048165381.1	-----	-----	-----	-----	0
WP_048165382.1*	-----	-----	-----	-----MVT--RW--	12
WP_068319940.1	-----	-----	-----	-----	0
WP_068320169.1	-----	-----	-----	-----	26
WP_068320161.1	-----	-----	-----	-----	58
WP_048055992.1	-----	-----	-----	-----	0
WP_074631389.1	-----	-----	-----	-----	0
WP_014012910.1	-----	-----	-----	-----	0
WP_015857844.1	-----	-----	-----	-----	24
WP_099209388.1	-----	-----	-----	-----	8
WP_088865600.1	-----	-----	-----	-----	0
WP_048165388.1	-----	-----	-----	-----	0
WP_048055998.1	-----	-----	-----	-----	6
WP_088863688.1	-----	-----	-----	-----	0
WP_048151737.1	-----	-----	-----	-----	4
WP_048055995.1	-----	-----	-----	-----	12
WP_055430151.1	-----	-----	-----	-----	0
WP_048150566.1	-----	-----	-----	-----	17
WP_099209386.1	-----	-----	-----	-----	196
WP_088866110.1	-----	-----	-----	-----	0
WP_068320165.1	-----	-----	-----	-----	0
WP_055428943.1	-----	-----	-----	-----	0
WP_014122673.1	-----	-----	-----	-----	0
WP_088866137.1	-----	-----	-----	-----	177
WP_048152596.1	-----	-----	-----	-----	0
WP_048151739.1	-----	-----	-----	-----	0
WP_088865604.1	-----	-----	-----	-----	0
WP_088865603.1	-----	-----	-----	-----	0
WP_048150577.1	-----	-----	-----	-----	0
WP_055430149.1	-----	-----	-----	-----	6
WP_068320157.1	-----	-----	-----	-----	0
WP_014788172.1*	-----	-----	-----	-----	0
WP_048165379.1	-----	-----	-----	-----	0
WP_068320171.1	-----	-----	-----	-----	0
WP_088865607.1*	-----	-----	-----	-----	0
WP_058939190.1*	-----	-----	-----	-----	0
WP_068319946.1	-----	-----	-----	-----	0
WP_048150353.1	-----	-----	-----	-----	0
WP_048150344.1*	-----	-----	-----	-----	56
WP_048055999.1	-----	-----	-----	-----	0
WP_058939188.1	HNRRVEVWEG--KLEDSRS-----	GSIE--VNSDES--DPS--PC-----	-----	SN--GEY--TA	817
WP_014788798.1	HKVTIVRVNSRDSTTSNSEYIADAITLSN--P--NPDD--EKDHTI--	-----	-----	NI--GGL--ENI	785
WP_048151755.1	HDNRIEAWED--KLED-----	SRSE--TIRVISES--DPCP-----	-----	EG--E--YMTA	767
WP_088181398.1	HEMRIEVWEGCKLEA-----	SRSE--GIIVSDPPTSAC-----	-----	LS--GVPLEG	770
WP_048165390.1	HKMRIEVWEGCK-----	-----EASRSG--GIIVSG-----	-----	AP--SDS--ENV	760
WP_088865610.1	HDNRIEAWEDCKLED-----	SRSE--TIRVISES--DPCP-----	-----	EG--E--YMTA	755
WP_014012907.1	HSVKVWMSRHRVNSND-----	PWDL--EASETKS--IT--QN-----	-----	LN--D--RFGI	782
WP_099209391.1	YANNVQAHTSNNG-----	NSIL--E--SRIC--D--DLG-----	-----	PS--H--EPAV	739
WP_088863686.1	VNVIT--LLYLSN-----	DEEE--KFEDEKMT--VHV-----	-----	SG--DNL--GR	724
WP_068319935.1	HEMVVYLYERWANN-----	KYLO--RNS--SG--IT--VAS-----	-----	AD--S--Q--AT	696
WP_011013125.1	HSMEIKLYNQCV-----	K--VEKKKG--IDNVSS-----	-----	VE--Y--GLSG	697
WP_042692137.1	HSMTVKVIRLNG-----	QELW--E--SRSG--K--NLIS-----	-----	GS--NTS--	759
WP_052696221.1	KTYOGAVITRDK-----	-----	-----	-----	671
WP_014122995.1	HSNRIEVNRIT--GNV-----	NLGK--VDTYS--GN--TF-----	-----	DGD--GVV	594
WP_088866144.1	HSVKIQAFSRNLDSND-----	SWNP--E--SE--FG--SNWER-----	-----	PK--DLL--CK	556
WP_0888656136.1	HDNRIEVWEDCK-----	-----EASRSG--GIIVSG-----	-----	APS--NPL--NV	530
WP_015857921.1	HEHYIEVNRIT--GDI-----	NLGK--VDTYS--GN--TF-----	-----	DGD--GVV	620
WP_014733996.1	HDVLVRYVEVIG-----	NQKE--QRAERRDT--V--V-----	-----	SG--REG--LP	737
WP_088866109.1	-----	-----	-----	-----	509
WP_088862563.1	HCNRIEVLEDC-----	-----	-----	-----	709
WP_015859709.1	LEVTVG--ISGTE-----	V--I--SK--V--RH--I-----	-----	NE--GDG--TC	359
WP_014122675.1	YEVTVG--IRGTE-----	V--L--KK--V--YH--I-----	-----	SE--GDD--TC	314
WP_014122677.1	YTRIEEL--SY--G-----	Y--V--SKV--G--L--LP-----	-----	YSARD--KLK--V	329
WP_056934707.1	-----	-----	-----	-----	474
WP_068320152.1	YGMIVVYLYEKSANN-----	VYLK--K--SRSG--IT--WTR-----	-----	IN--S--P--SV	260
WP_082781392.1	HSHEVRKLYSVDEKNG-----	KEA--E--SED--GS--E--WSR-----	-----	VV--N--GLSA	250
WP_010884703.1	-----	-----	-----	-----	534
WP_062388971.1	-----	-----	-----	-----	494
WP_074631387.1	HEMRIEVWESCK-----	-----EASRSG--GIIVSG-----	-----	AP--GSS--ENV	142
WP_010884704.1	HYRVVIVRVNGD-----	AEEY--E--GE--IC--E--VAS-----	-----	LD--Q--Q--AV	151
WP_056934708.1	YTAERKLYN--E-----	V--K--SEIR--DLTVE-----	-----	A--DND--TG	74
WP_048151448.1	-----	-----	-----	-----	76
WP_088863691.1	AIGPTRVVCIT-----	RRRP--KREECGELDVGNHNNRVEVLDGT--	-----	LKASKSGSLSVSKQA--ANL--EDV	63
WP_048810998.1	-----	-----	-----	-----	0
WP_048148049.1	-----	-----	-----	-----	311
WP_055428947.1	-----	-----	-----	-----	56
WP_099209381.1	-----	-----	-----	-----	30
WP_014122994.1	-----	-----	-----	-----	55
WP_048165381.1	-----	-----	-----	-----	0
WP_048165382.1*	HEMRIEVWESCKLEA-----	SKS--SIRVNSN--DSQK-----	-----	SG--SNT--NA	51
WP_068319940.1	-----	-----	-----	-----	0
WP_068320169.1	HCMIIVYLYEK--AN-----	NRF--RR--SAD--G--E--SE-----	-----	E--NEG--MS	63
WP_068320161.1	-----	-----	-----	-----	58
WP_048055992.1	-----	-----	-----	-----	0
WP_074631389.1	-----	-----	-----	-----	0
WP_014012910.1	-----	-----	-----	-----	0

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WP_015857844_1 ----- 24
WP_099209388_1 ----- 8
WP_088865600_1 --MKKSYNSN-- --Q-- 11
WP_048165388_1 ----- 0
WP_048055998_1 ----- 6
WP_088863688_1 ----- 0
WP_048151737_1 ----- 4
WP_048055995_1 ----- 0
WP_055430151_1 --E--R--I--E--A--W--E--S--K-- --E--A--S--R--S--G--M-- 33
WP_048150566_1 ----- 0
WP_099209386_1 ----- 17
WP_088886110_1 ----- 196
WP_068320165_1 ----- 0
WP_055428943_1 ----- 0
WP_014122673_1 ----- 3
WP_088856137_1 ----- 177
WP_048152596_1 ----- 0
WP_048151739_1 ----- 0
WP_088865604_1 ----- 0
WP_088865603_1 ----- 0
WP_048150577_1 ----- 0
WP_055430149_1 ----- 0
WP_068320157_1 ----- 6
WP_014788172_1* ----- 0
WP_048165379_1 ----- 0
WP_068320171_1 ----- 0
WP_088865607_1* ----- 0
WP_058939190_1* ----- 0
WP_068319946_1 ----- 0
WP_048150353_1 ----- 0
WP_048150344_1* ----- 56
WP_048055999_1 ----- 0
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WP_058939188_1 --WLE-- --V--S--P--T--K--M--V--G--E-- --K-- --V--H--K--I--M--A--S--Y-- --C-- 841
WP_014788798_1 --KLL-- --A--Y--P--T--E--L--E--G--G--G-- --E-- --V--L--O--V--K--A--M--N-- --D--G-- --S--L-- --I-- --P--V-- 816
WP_048151755_1 --WLE-- --V--S--P--T--E--M--V--G--E-- --K-- --V--H--K--I--M--A--S--Y-- --C-- 791
WP_088181398_1 --HLE-- --V--Y--E--E--G--V--E--A--G--D-- --S-- --V--S--V--H--I--V--I--N--L--D--P--N--C--A--Q--G--P--F--N--I--E--L--V--D--D--S--G-- --A--L-- --W-- --W--P-- 817
WP_048165390_1 --VLT-- --A--Y--P--T--E--L--E--G--G--G-- --T-- --V--L--O--V--K--A--M--N-- --G--N-- --T--A-- --I-- --P--L-- 791
WP_088865610_1 --WLG-- --V--S--P--T--E--M--V--G--E-- --K-- --V--H--K--I--M--A--S--Y-- --C-- 779
WP_014012907_1 --KLV-- --A--Y--P--T--E--L--E--G--G--G-- --E-- --V--L--O--V--K--A--M--N-- --D--G-- --S--M-- --I-- --P--V-- 813
WP_099209391_1 --KLE-- --A--T--P--T--E--L--E--G--G--G-- --D--G-- --T-- --V--H--K--I--M--A--S--Y-- --D--G-- --I-- --N--V-- 770
WP_088863686_1 --LNP-- --N--V--A--R--E--M--V--G--E-- --T-- --V--H--K--I--M--A--S--Y-- --R--G--N--Y--P--A--V--D--V-- --P--I-- --R-- --V--Y-- 761
WP_068319935_1 --RLY-- --A--S--P--R--E--L--I--N--G--G--G-- --E-- --V--H--S--V--R--V--W--N-- --G--N-- --D--R-- --V-- --S--L-- 727
WP_01013125_1 --WLE-- --V--V--E--N--P--I--E--A--G--N-- --N-- --V--S--V--H--I--M--K--N-- --S--E--N--Y--K--Q--T--L--P--I--E--L--V-- --D--D-- --T-- --G--N-- 738
WP_042692137_1 ----- 759
WP_052696221_1 ----- 671
WP_014122995_1 --SFT-- --V--M--R--T--L--D--G--G--G-- --K-- --V--H--K--I--M--A--S--Y-- --P--R-- --D--K-- --I-- --D--V-- 625
WP_088886144_1 --LNP-- --N--V--N--G--T--W--V--Q--E-- --V-- --V--H--K--I--M--A--S--Y-- --K--E--D--Y--P--A--M--N--V-- --P--I-- --R-- --V--F-- 593
WP_08886136_1 --EWE-- --V--Y--Q--I--L--I--G--G--G-- --T-- --V--H--K--I--M--A--S--Y-- --P--R-- --N--P-- --I-- --N--V-- 561
WP_015857921_1 --SFT-- --V--M--R--T--L--D--G--G--G-- --K-- --V--H--K--I--M--A--S--Y-- --P--R-- --N--P-- --I-- --N--V-- 561
WP_014733996_1 --KLE-- --A--T--P--T--E--L--E--G--G--G-- --E-- --V--H--K--I--M--A--S--Y-- --P--R-- --N--P-- --I-- --N--V-- 561
WP_088886109_1 ----- 509
WP_088882563_1 ----- 709
WP_015859709_1 --RFLTGESQ--H--N--L--T--V--T--Q--G--F--F--M--N--I--T--L--A--D--Y--Y--G--E--L--K--N-- --E--V--H--K--I--M--A--S--Y-- --P--R-- --N--P-- --I-- --N--V-- 411
WP_014122675_1 --RFLTGESQ--H--N--L--T--V--T--Q--G--F--F--M--N--I--T--L--A--D--Y--Y--G--E--L--K--N-- --E--V--H--K--I--M--A--S--Y-- --P--R-- --N--P-- --I-- --N--V-- 365
WP_014122677_1 LGR--E-- --L--S--S-- --T--E--Y--I--C--K-- --T--E--K--V--H--K--I--M--A--S--Y-- --P--R-- --N--P-- --I-- --N--V-- 364
WP_056934707_1 ----- 474
WP_068320152_1 --RLY-- --A--Y--P--T--E--L--E--G--G--G-- --E-- --V--L--O--V--K--A--M--N-- --G--N-- --D--R-- --V-- --S--L-- 291
WP_082781392_1 --WFE-- --V--V--E--N--P--I--E--A--G--N-- --N-- --V--S--V--H--I--M--K--N-- --S--E--N--Y--K--Q--T--L--P--I--E--L--V-- --G--N-- --T-- --G--N-- 291
WP_010884703_1 ----- 534
WP_062388971_1 ----- 494
WP_074631387_1 --VLT-- --A--Y--P--T--E--L--E--G--G--G-- --E-- --V--L--O--V--K--A--M--N-- --D--G-- --S--L-- --I-- --P--V-- 173
WP_010884704_1 --SLD-- --V--F--E--A--E--L--E--G--G--G-- --R-- --V--H--K--I--M--A--S--Y-- --P--R-- --N--P-- --I-- --N--V-- 182
WP_056934708_1 --LIS-- --A--N--I--T--N--D--V--S--Y--C-- --K-- --V--H--K--I--M--A--S--Y-- --D--E--N-- --A--P--R--Y--S--I--P--V--R-- --V--Y-- 112
WP_048151448_1 --VMR-- --A--F--E--T--E--L--E--G--G--G-- --T-- --V--L--O--V--K--A--M--N-- --D--A-- --G--A-- --I-- --S--L-- 107
WP_088863691_1 --ALT-- --A--W--E--V--E--L--E--G--G--G-- --L-- --V--L--O--V--K--A--M--N-- --H--A--N-- --S--A-- --I-- --S--V-- 94
WP_048810998_1 ----- 18
WP_048148049_1 ----- 311
WP_055428947_1 ----- 64
WP_099209381_1 --KLE-- --A--T--P--T--E--L--E--G--G--G-- --T-- --V--H--K--I--M--A--S--Y-- --D--G-- --S--M-- --I-- --P--V-- 61
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WP_048165382_1* --NLEITDFACM--K--E--V--C--L--Y--E--W--R--L--D--R--D-- --K-- --V--S--V--H--I--M--K--G--P--E--I--Q--I--A--P--R--V--V-- --I--D--D--I--E-- --E--I-- --V--Y--P--V--R--V--Y-- 102
WP_068319940_1 ----- 0
WP_068320169_1 --KLV-- --V--G--N--R--E--L--S-- --E-- --V--H--K--I--M--A--S--Y-- --R--G--Q-- --E--I-- --V--Y--P--V--R--V--Y-- 97
WP_068320161_1 ----- 58
WP_048055992_1 ----- 0
WP_074631389_1 ----- 0
WP_014012910_1 ----- 0
WP_015857844_1 ----- 24
WP_099209388_1 ----- 8
WP_088865600_1 ----- 11
WP_048165388_1 ----- 0
WP_048055998_1 ----- 6
WP_088863688_1 ----- 0
WP_048151737_1 ----- 4
WP_048055995_1 ----- 0
WP_055430151_1 ----- 33
WP_048150566_1 ----- 0
WP_099209386_1 ----- 17
WP_088886110_1 ----- 196
WP_068320165_1 ----- 0
WP_055428943_1 ----- 0
WP_014122673_1 ----- 3
WP_088856137_1 ----- 177
```

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WP_048152596_1  ---ME---VYRK-WVEAG---S-VSVY-TVNTN---LDPNCAHGPFNIELVDDSGAK---W---WP 0
WP_048151739_1  ---ME---VYRK-WVEAG---S-VSVY-TVNTN---LDPNCAHGPFNIELVDDSGAK---W---WP 46
WP_088865604_1  ---ME---VYRK-WVEAG---S-VSVY-TVNTN---LDPNCAHGPFNIELVDDSGAK---W---WP 33
WP_088865603_1  ---ME---VYRK-WVEAG---S-VSVY-TVNTN---LDPNCAHGPFNIELVDDSGAK---W---WP 0
WP_048150577_1  ---ME---VYRK-WVEAG---S-VSVY-TVNTN---LDPNCAHGPFNIELVDDSGAK---W---WP 0
WP_055430149_1  ---ME---VYRK-WVEAG---S-VSVY-TVNTN---LDPNCAHGPFNIELVDDSGAK---W---WP 0
WP_068320157_1  ---ME---VYRK-WVEAG---S-VSVY-TVNTN---LDPNCAHGPFNIELVDDSGAK---W---WP 6
WP_014788172_1*  ---ME---VYRK-WVEAG---S-VSVY-TVNTN---LDPNCAHGPFNIELVDDSGAK---W---WP 0
WP_048165379_1  ---ME---VYRK-WVEAG---S-VSVY-TVNTN---LDPNCAHGPFNIELVDDSGAK---W---WP 0
WP_068320171_1  ---ME---VYRK-WVEAG---S-VSVY-TVNTN---LDPNCAHGPFNIELVDDSGAK---W---WP 0
WP_088865607_1*  ---ME---VYRK-WVEAG---S-VSVY-TVNTN---LDPNCAHGPFNIELVDDSGAK---W---WP 0
WP_058939190_1*  ---ME---VYRK-WVEAG---S-VSVY-TVNTN---LDPNCAHGPFNIELVDDSGAK---W---WP 0
WP_068319946_1  ---ME---VYRK-WVEAG---S-VSVY-TVNTN---LDPNCAHGPFNIELVDDSGAK---W---WP 0
WP_048150353_1  ---ME---VYRK-WVEAG---S-VSVY-TVNTN---LDPNCAHGPFNIELVDDSGAK---W---WP 0
WP_048150344_1*  ---ME---VYRK-WVEAG---S-VSVY-TVNTN---LDPNCAHGPFNIELVDDSGAK---W---WP 56
WP_048055999_1  ---ME---VYRK-WVEAG---S-VSVY-TVNTN---LDPNCAHGPFNIELVDDSGAK---W---WP 0

WP_058939188_1  NA-----L-PVGGD-KTNLLYL--G-SVY---LDGKRIH---TFD-TN---TNGNYLLVD---ETKYLE---HFDWPSVVG- 898
WP_014788798_1  KC-----G-LEVGD-RKNIETK--R-PAS---ANGDSIL--KLR-VN---FA---CVC---THSIKLFID- 863
WP_048151755_1  SA-----L-PVGGD-TDLLYLG--G-SVY---LDGKRIH---SFD-TN---ANGNYLLVG---RTRVID---HFDWPSVVG- 848
WP_088181398_1  RK-----D-MYGCSS-CCSYVTON--R-ADK---YVAGKTM---SEW-TD---FNNIDQATT---LYLKVG---GKPLASAKI- 874
WP_048165390_1  SC-----G-VEDEDC-AVVKRNDGFA--R-IP---ANAQNYT---LTA-SS---LD---VYGLG---NHTFKLFID- 842
WP_088865610_1  SA-----L-PVGGD-TDLLYLG--G-SVY---LDGKRIH---SFD-TN---ANGNYLLVG---KTRVID---HFDWPSVVG- 836
WP_014012907_1  RC-----G-LEINGK-RENIDAK--R-PIS---ANGDPIT---TLR-RN---ANGNYLLVG---TVSVG---VHTIKLFID- 859
WP_099209391_1  HF-----K-VTVGCG-AVVKEFN--R-FVP---KCAQNYSS---VNV-SS---LK---VYVVG---KHTYVLTIS- 818
WP_088863686_1  YK-----Y-OTFEGE-FSDSIFN--R-SFR---EIEGGAQ---YYA-EN---SIWSDGFNI---TSSNVG---AYYVLTLYN- 818
WP_068319935_1  KC-----G-VSTGCG-AVVKNDW--T-GVP---ANAQNYT---VIT-ET---LT---VYVVG---HHTKLFID- 776
WP_011013125_1  VW-----W-PHELYY-SVNYSSN--G-YLT---YANKTA---RIT-AT---IGPLTQNTT---LTLKLG---GYQMASEVD- 795
WP_042692137_1  ---ME---VYRK-WVEAG---S-VSVY-TVNTN---LDPNCAHGPFNIELVDDSGAK---W---WP 759
WP_052696221_1  ---ME---VYRK-WVEAG---S-VSVY-TVNTN---LDPNCAHGPFNIELVDDSGAK---W---WP 706
WP_014122995_1  RG-----G-LEDEDC-AVVKMGG--S-GVYTIPARREKSF---SFS-MTV---YGVG---NHTFKLFID- 675
WP_088886144_1  YT-----Y-OTFNGS-FSDPIRVFERN-PRQ---DGLGVN---LTW-EN---MT---LTNLG---KYYPFLLYN- 644
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WP_015857921_1  KD-----N-SNGLPL-DIMSTSP--T-VTYHIKIVDQMSIVIK---NFN-MDIPDKAGVYTLWISGPIYRTG---NYTFKLFID- 720
WP_014733996_1  ---ME---VYRK-WVEAG---S-VSVY-TVNTN---LDPNCAHGPFNIELVDDSGAK---W---WP 760
WP_088886109_1  ---ME---VYRK-WVEAG---S-VSVY-TVNTN---LDPNCAHGPFNIELVDDSGAK---W---WP 554
WP_088882563_1  ---ME---VYRK-WVEAG---S-VSVY-TVNTN---LDPNCAHGPFNIELVDDSGAK---W---WP 709
WP_015859709_1  HWTSPIRV--G-EKQ-IK-----FDM--V-PPT---YVEGQYAEFRGW--G--FH-----FNDPS---VYHFLYLYN- 463
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WP_014122677_1  -WEGHDV--G-LEVDEG-VWVWPYK--G-REF---EGPRVVK---TGEQNM---YTDGILR--LHY-FNATLSTLLPVVNHVTFYVLEVD- 435
WP_056934707_1  ---ME---VYRK-WVEAG---S-VSVY-TVNTN---LDPNCAHGPFNIELVDDSGAK---W---WP 492
WP_068320152_1  KC-----G-VSTGCG-AVVKNDW--T-GVP---ANAQNYT---VIT-ET---LT---VYVVG---HHTKLFID- 340
WP_082781392_1  VW-----W-PHELYY-SVNYSSN--G-YLT---YANKTA---RIT-AT---IGPITQNTT---LTLKLG---GYQMAKSV- 348
WP_010884703_1  ---ME---VYRK-WVEAG---S-VSVY-TVNTN---LDPNCAHGPFNIELVDDSGAK---W---WP 534
WP_062388971_1  ---ME---VYRK-WVEAG---S-VSVY-TVNTN---LDPNCAHGPFNIELVDDSGAK---W---WP 494
WP_074631387_1  KC-----G-LEVGD-RKNIETK--R-PAS---ANGDSIL--ALS-VN---FA---CVC---THSIKLFID- 220
WP_010884704_1  RC-----G-LEVDEDC-AVVKNDW--T-GVP---ANGKGYK---NLT-ET---YN---LYGLG---NHTFKLFID- 228
WP_056934708_1  YV-----Y-TSDGCVWHSVINWKE--R-EVD---FDPFGEY---QGW-ED---FT---FANPC---TYRFLYLYN- 162
WP_048151448_1  SC-----G-VEDESS-AVVKRI--D-GFECR---FANGVK---NLT-EG---YT---VYVVG---AHAFRWFID- 156
WP_088863691_1  RC-----G-LEDEDC-AVVKRI--D-GFECR---FANGVK---NLT-ET---YN---LYGLG---NHTFKLFID- 143
WP_048810998_1  RC-----G-LEDEAG-AVVKMGG--S-GVYT---FANGVK---NLT-ET---YN---LYGLG---NHTFKLFID- 68
WP_048148049_1  ---ME---VYRK-WVEAG---S-VSVY-TVNTN---LDPNCAHGPFNIELVDDSGAK---W---WP 311
WP_055428947_1  RK-----D-MYGCSS-CCSYVTON--R-ADK---YVAGKTM---SEW-TD---FNNIGQATT---LYLKVG---GKPLASAKI- 121
WP_099209381_1  HF-----K-VTVGCG-AVVKEFN--R-FVFPK---KCAQNYSS---VDA-SS---LK---VYVVG---KHTYVLTIS- 106
WP_014122994_1  SC-----G-VEDEDC-AVVKRNDGFA--R-IP---ANAQNYT---LTA-SS---LD---VYGLG---NHTFKLFID- 67
WP_048165381_1  SC-----G-VEDEDC-AVVKRNDGFA--R-IP---ANAQNYT---LTA-SS---LD---VYGLG---NHTFKLFID- 68
WP_048165382_1*  ---ME---VYRK-WVEAG---S-VSVY-TVNTN---LDPNCAHGPFNIELVDDSGAK---W---WP 102
WP_068319940_1  ---ME---VYRK-WVEAG---S-VSVY-TVNTN---LDPNCAHGPFNIELVDDSGAK---W---WP 19
WP_068320169_1  YS-----G-EAPDC-EGG-KPILVFER--Q-PKE---LFPGETY---KDW-ER---MT---LTNPG---KHTFLYLYN- 148
WP_068320161_1  ---ME---VYRK-WVEAG---S-VSVY-TVNTN---LDPNCAHGPFNIELVDDSGAK---W---WP 58
WP_048055992_1  ---ME---VYRK-WVEAG---S-VSVY-TVNTN---LDPNCAHGPFNIELVDDSGAK---W---WP 11
WP_074631389_1  ---ME---VYRK-WVEAG---S-VSVY-TVNTN---LDPNCAHGPFNIELVDDSGAK---W---WP 6
WP_014012910_1  ---ME---VYRK-WVEAG---S-VSVY-TVNTN---LDPNCAHGPFNIELVDDSGAK---W---WP 0
WP_015857844_1  ---ME---VYRK-WVEAG---S-VSVY-TVNTN---LDPNCAHGPFNIELVDDSGAK---W---WP 24
WP_099209388_1  ---ME---VYRK-WVEAG---S-VSVY-TVNTN---LDPNCAHGPFNIELVDDSGAK---W---WP 8
WP_088865600_1  ---ME---VYRK-WVEAG---S-VSVY-TVNTN---LDPNCAHGPFNIELVDDSGAK---W---WP 17
WP_048165388_1  ---ME---VYRK-WVEAG---S-VSVY-TVNTN---LDPNCAHGPFNIELVDDSGAK---W---WP 0
WP_048055998_1  ---ME---VYRK-WVEAG---S-VSVY-TVNTN---LDPNCAHGPFNIELVDDSGAK---W---WP 6
WP_088863688_1  ---ME---VYRK-WVEAG---S-VSVY-TVNTN---LDPNCAHGPFNIELVDDSGAK---W---WP 0
WP_048151737_1  ---ME---VYRK-WVEAG---S-VSVY-TVNTN---LDPNCAHGPFNIELVDDSGAK---W---WP 4
WP_048055995_1  ---ME---VYRK-WVEAG---S-VSVY-TVNTN---LDPNCAHGPFNIELVDDSGAK---W---WP 0
WP_055430151_1  ---ME---VYRK-WVEAG---S-VSVY-TVNTN---LDPNCAHGPFNIELVDDSGAK---W---WP 33
WP_048150566_1  ---ME---VYRK-WVEAG---S-VSVY-TVNTN---LDPNCAHGPFNIELVDDSGAK---W---WP 0
WP_099209386_1  ---ME---VYRK-WVEAG---S-VSVY-TVNTN---LDPNCAHGPFNIELVDDSGAK---W---WP 17
WP_088886110_1  ---ME---VYRK-WVEAG---S-VSVY-TVNTN---LDPNCAHGPFNIELVDDSGAK---W---WP 196
WP_068320165_1  ---ME---VYRK-WVEAG---S-VSVY-TVNTN---LDPNCAHGPFNIELVDDSGAK---W---WP 0
WP_055428943_1  ---ME---VYRK-WVEAG---S-VSVY-TVNTN---LDPNCAHGPFNIELVDDSGAK---W---WP 0
WP_014122673_1  ---ME---VYRK-WVEAG---S-VSVY-TVNTN---LDPNCAHGPFNIELVDDSGAK---W---WP 4
WP_088856137_1  ---ME---VYRK-WVEAG---S-VSVY-TVNTN---LDPNCAHGPFNIELVDDSGAK---W---WP 177
WP_048152596_1  ---ME---VYRK-WVEAG---S-VSVY-TVNTN---LDPNCAHGPFNIELVDDSGAK---W---WP 0
WP_048151739_1  EN-----D-TVYGDS-MRVEYETN--G-VLK---YVAGKTL---SEW-SK---PKPVTQNTV---LYLKIS---GKV--- 97
WP_088865604_1  RK-----D-TVYGCS-CCSYVTON--R-ADK---YVAGKTM---SEW-VN---FSKISQGT---LYLKVG---GKVLASTKI- 90
WP_088865603_1  ---ME---VYRK-WVEAG---S-VSVY-TVNTN---LDPNCAHGPFNIELVDDSGAK---W---WP 0
WP_048150577_1  ---ME---VYRK-WVEAG---S-VSVY-TVNTN---LDPNCAHGPFNIELVDDSGAK---W---WP 0
WP_055430149_1  ---ME---VYRK-WVEAG---S-VSVY-TVNTN---LDPNCAHGPFNIELVDDSGAK---W---WP 0
WP_068320157_1  ---ME---VYRK-WVEAG---S-VSVY-TVNTN---LDPNCAHGPFNIELVDDSGAK---W---WP 6
WP_014788172_1*  ---ME---VYRK-WVEAG---S-VSVY-TVNTN---LDPNCAHGPFNIELVDDSGAK---W---WP 0
WP_048165379_1  ---ME---VYRK-WVEAG---S-VSVY-TVNTN---LDPNCAHGPFNIELVDDSGAK---W---WP 12
WP_068320171_1  ---ME---VYRK-WVEAG---S-VSVY-TVNTN---LDPNCAHGPFNIELVDDSGAK---W---WP 0
WP_088865607_1*  ---ME---VYRK-WVEAG---S-VSVY-TVNTN---LDPNCAHGPFNIELVDDSGAK---W---WP 0
WP_058939190_1*  ---ME---VYRK-WVEAG---S-VSVY-TVNTN---LDPNCAHGPFNIELVDDSGAK---W---WP 0
WP_068319946_1  ---ME---VYRK-WVEAG---S-VSVY-TVNTN---LDPNCAHGPFNIELVDDSGAK---W---WP 0
WP_048150353_1  ---ME---VYRK-WVEAG---S-VSVY-TVNTN---LDPNCAHGPFNIELVDDSGAK---W---WP 0
WP_048150344_1*  ---ME---VYRK-WVEAG---S-VSVY-TVNTN---LDPNCAHGPFNIELVDDSGAK---W---WP 56
WP_048055999_1  ---ME---VYRK-WVEAG---S-VSVY-TVNTN---LDPNCAHGPFNIELVDDSGAK---W---WP 0

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[illegible]

WP_088856136_1	NLEEVDFGC	KKVM	PIGPSSRVN	K	D	N	ML	LI	PTMGGDTITIN	714	
WP_015857921_1	PTT	KKAF	GDNMKLSAE	K	E	N	LV	L	DMKCEYFENPTD	784	
WP_014733996_1										770	
WP_088886109_1			ATTAKTDD	K	D	N	SR	LI	STNIRKDI	623	
WP_088882563_1		KKVM	DSKIGTISVS	N						723	
WP_015859709_1	GVTRKTFSG	YEVM	GENWEAKRVN	Y	V	N	GT	SV	KGNSGEIVG	557	
WP_014122675_1	RLTRKVMGG	YEIWGE	DRHYDAVDII	Y	VDGGL	N	GM	TV	KRQSMGHSVHVDI	523	
WP_014122677_1	NLEKIDFGC	RRVM	PIGPSSVGV	A	O	R	IT	LS	PTNMRSTF	529	
WP_056934707_1			PACCGETAER	T		N	VA	KIE	LFDVDVSVSDHVK	568	
WP_068320152_1	KISEYVYGC	KKVM	PSNFEGLIVS	K	D	V	IK	VI	YDDEDETH	447	
WP_082781392_1	EDYSLG	LEKIPGSLG	LSPOEERIK	P	W	E	TR	RI	VFSPLVYVSSVIF	452	
WP_010884703_1			PGGRST						YFKKFHGNVSDP	555	
WP_062388971_1			EPYER							499	
WP_074631387_1	EEVAFGT	KKVM	DIGLSSVETV	K	D	P			TLTPSSTT	317	
WP_010884704_1	NLEEVDFGC	KKVM	PIGPSSVIVK	E	K	N	IT	LI	PTNMODDITITIT	332	
WP_056934708_1	WITNIYFAC	GEIY	DKSSADNLVI	PSP		N	IT	LI	NPYSTGTFTFTIF	258	
WP_048151448_1		NNVEISIVNKKVM	TIDNOAENS	L	E	HTWEVE	Y		PTNHHGSPETATII	264	
WP_088863691_1		NDISLNAVAKRV	HTDNDFTNS	L	E	FWVVVD	Y		PDTRSSSESTII	251	
WP_048810998_1	EVNGKIM	KMNASVLN	LG			SDSIVSN			HTLSGQIFA	181	
WP_048148049_1			YAPMHSIV	K	D	P	LR	NR		327	
WP_055428947_1	NLEEVDFGC	KKVM	PIGPSSVTN	K	D	N	VI	LI	PTNMODDITITIT	206	
WP_099209381_1		KTIYLNVS	RDDNSDFTQS	L	S	SSWVVE	Y		PTVTKSSEITIT	210	
WP_014122994_1	RTTRKVFEGN	NVIV	GDITVATIT	O	V	S	IT	VI	PTNHHGSPETATII	172	
WP_048165381_1	NLEVEVEGR	KKVM	PIGPSSVTN	K	D	N	IT	LI	PTNMODDITITIT	172	
WP_048165382_1										102	
WP_068319940_1	RLTVDVT	E-ARILK				I-T	PEFSD	LI	TPTPAKGTGR	127	
WP_068320169_1	WITNIYFAC	GEIY	DRSSDNLVI	P	N	P	SE	LI	NPAIDHRSRQFOI	244	
WP_068320161_1	KNLREFGC	KKVM	PIGPSSVTN	K	D	N	VI	LI	PTNMODDITITIT	125	
WP_048055992_1	KMKDIAWIEYSLGEEDVPAGSLGTGR		SINPSSFTS	P	D	ETKIT	F		NLPEISSQ	137	
WP_074631389_1	KVTGNINSDINVSILN	KV	LQPSGS			SSPVSYD			PKTIPAGGATITSTAHF	96	
WP_014012910_1	RISGLDVG	KKVM	PSBEFKGHTS	K	D	N	LR	VI	PNBDDDEIHTITIT	89	
WP_015857844_1	KKKVYFED	KEIV	PSGPRSTVI	V	P	N	SK	FHLG	PHDIEGSAITIT	107	
WP_099209388_1	SVSSVDFGT	V-ENAW	KBYQRGLVVK	P	I	K	IT	LI	PHDDEIHTITIT	89	
WP_088865600_1	WITDIYFAC	KKVM	PRTECNLLA	PNP		S	LM	LI	NPYSEIHTITIT	93	
WP_048165388_1	SVVTKLDD		DMDESSV			S	VI	LI	MVKDY	61	
WP_048055998_1	SLOEVDFGC	KKVM	PIGPSSVTN	K	D	N	VI	LI	PTNMODDITITIT	86	
WP_088863688_1	NLEEVDFGC	KKVM	PIGPSSRVN	K	D	N	VI	LI	PTNMODDITITIT	74	
WP_048151737_1	NLEEVDFGC	KKVM	PIGPSSVTN	K	D	N	VI	LI	PTNMODDITITIT	84	
WP_048055995_1		EDASITKITMN	RYDSQDIERA	L	S	VPWSAS	A		SEALPGGYGVIT	87	
WP_055430151_1	EEIYFAC	KKVM	GVNDSDVK	PITSK	R	N	VI	LI	ANSENDDMGFTIT	80	
WP_048150566_1	TLKEVAFGT	KKVM	DVLDSSNIV	K	D	P			TLTPSSTT	68	
WP_099209386_1	FKC	KKVM	PIGPSSVTN	K	D	N	VI	LI	PTNMODDITITIT	64	
WP_088886110_1										196	
WP_068320165_1		EAVSLNSVS	HTDNEFMSS	L	D	SWTVE	Y		BEVTCSSKIAITIV	85	
WP_055428943_1	TEEFILGCP	IATPTALDVGRKE	FNGE	I	S	S	NVVI		PHNYVTHK	97	
WP_014122673_1	FAC	KKVM	DSSEGGNLV	PAP	V	LS	LI		NPGSSSTF	53	
WP_088856137_1										177	
WP_048152596_1	KLECYINQ	KKVM	NLSSEAVRI	N	P	Q	VS	LG	PTNVEGSVTITIT	57	
WP_048151739_1	DECSRISC	KKVM	PSKLSDDP							145	
WP_088865604_1	NKAKKEGC	KKVM	FVDENGEDP							153	
WP_088865603_1			MCHVNP	K	P	K	AT	LI	PTNMODDITITIT	28	
WP_048150577_1			MSHRRVVS	D	K	S	IT	LI	PAHRSSEYHVKFS	29	
WP_055430149_1										0	
WP_068320157_1	SVTSVDFGT	V-QN	RYQWGV	KV	P	N	IT	LI	SYNGERET	87	
WP_014788172_1										0	
WP_048165379_1		ENVLLNSLS	HTDNF	PTRS	L	N	PRGR	LI	PA	109	
WP_068320171_1										0	
WP_088865607_1										0	
WP_058939190_1										0	
WP_068319946_1	SLOEVDFGC	KKVM	PIGPSSVTN	K	H	Y	QN		PV	83	
WP_048150353_1										0	
WP_048150344_1	N									80	
WP_048055999_1	HTDVT	E-ARILI				Y	PRDYT		RV	66	
WP_058939188_1	NNNPF	AT	VOQSKRT	TDD	ROM	RVVDGTM	AT	LI	EGIINGANKI	1057	
WP_014788798_1	DDDFAN	YFG	WDPVDRVF	SSY	KDR	AGYTYK	KFTFE	NNVI	AEDLYMVK	1012	
WP_048151755_1	DKKFGC	TI	IQQDRTV	TDD	ROM	RVVDGTT	AT	LI	EGMINGVSKI	1007	
WP_088181398_1	DDELAD	YFG	PLYRTV	DKF	AGHSYLI		KAES	EE		994	
WP_048165390_1	DENFAE	YFG	FWWHSY	VDKL	ATEPWE		IVHFF	S		986	
WP_088865610_1	NNNPF	TI	IQRGKAL	TDD	ROM	RVVDRTT	AT	LI	DGLINGVSKI	995	
WP_014012907_1	KNTAHT	GLIT	DLE	CDY	HS	LYVWSP	N	ND	IF-TGI	1009	
WP_099209391_1	SEVLEK	CHK	DGVTVFQ	RNE	TID	DKPTV	D	SHRENY	L	969	
WP_088863686_1	NDELOK	RI	LDQDNL	GRP	VAK	ARHPPE	K	P	MCVQ-MNPR	960	
WP_068319935_1	SWADAT	BYV	PKD	GER	ITVE	HPYILGY	S	YDENT	IT-H	938	
WP_011013125_1	KAWTSD	STAF	W				K	MSRGNF	EVS	925	
WP_042692137_1	DIAONE	BYV	SE	IDE	ILSE	IVTKENC	G	HRVSKCQ	VKKW	881	
WP_052696221_1	SEKIAE	YVVP	RMTEA	KL	SDV	RDT	PRTGWS	C	EDGTCY	TLKR	832
WP_014122995_1	EG-LAO	TLWG	DKY								811
WP_08886144_1	DCWSE	YVFP	YIYLF	DC	QOP	KHH	N	DTRR	L	780	
WP_088856136_1	NDELAD	YFG	W	G	THK	LETHYR	E	ATL	GL	747	
WP_015857921_1		NN								794	
WP_014733996_1										774	
WP_088886109_1	CKIAE	YVVP	RM	REALGL	NDV	RDLT	PRINTW	C	ENGYCHY	TLER	680
WP_088882563_1											732
WP_015859709_1	DCWLAB	YVVG	YIYLF	DC	QOP	MAHM	INDVLO		ANKHH	TL	599
WP_014122675_1	SK-SE	YVVG	YKYLEYDDE	KPK	LYM	VSG	EQ		SNKTO	NV	565
WP_014122677_1	NDELAN	YVFP	W	G	THK	LEPFIY		E	PHL	TNL	562
WP_056934707_1	VNEPVG	YVFP	TL	TNI	MTSS	KTNLDV					593
WP_068320152_1	DENFAE	YVFP	L	FWW	HSY	VDRK	ATDRPWE		IVHFF	S	484
WP_082781392_1	SESDAT	BYV	PRN	GEY	TNIK	FEYTLGY	S	IDRK	WH	H	487
WP_010884703_1	RRR										558
WP_062388971_1											499
WP_074631387_1	DENFAN	YVFP	WDPIDRVF	SSY	KDR	AGYTYK	KFTFE	NNVI	AEDLYMVK	369	
WP_010884704_1	NDELAN	YVFP	W	EST	GSY	KDR	AGYTYK		KAEN		368
WP_056934708_1	NDELQB	YVFP	VDLSDINP	GRP	VAK	ARIL	TD	P	MCVQ-MNPR	301	

[illegible]

[illegible]

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WP_048151739_1 ----- 162
WP_088865604_1 ----- 157
WP_088865603_1 HR-----HED-----RDV-----P-H-YDENNITGG-- 146
WP_048150577_1 HW-----E-EKMA-----GFTF-EITKRW----- 140
WP_055430149_1 AG-----MFGGF-S-----Y-VKHWI--YVLENF--IPE-----N-APG-DNNITIGD-- 128
WP_068320157_1 ----- 124
WP_014788172_1* ----- 45
WP_048165379_1 ----- 109
WP_068320171_1 FG-----HSHWIT--D-----L--GL----- 99
WP_088865607_1* ----- 20
WP_058939190_1* ----- 54
WP_068319946_1 ----- 83
WP_048150353_1 ----- 81
WP_048150344_1* ----- 80
WP_048055999_1 ----- 67

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B. arCOG14201 family proteins. Alignments were colored using http://www.bioinformatics.org/sms2/color_align_cons.html server with default amino acid groups with 100% consensus. Conserved histidines are highlighted by red.

```

WP_068320155_1 MDWERVNLTFLYLPVLIIFVSLVVGFTITRNSKMLIYSGLYLAMFSSIRLEIHRYQNRSLHGDRRFVRALIVLQLFVAGFLLEPMVLSYNNRANFIRNII 100
WP_014012911_1 MDEIRVNLTFLYLPVLIILTFSEFMFEFTNNKNSRALLIVVGYLLANLAIRLEIHRYTHRWSEARDPEVIKILLIYNLLAVGFLLEPMVLSYNNRANFIRNII 100
WP_068319950_1 MDEARVNLTFLYLPVLIILTFSEFMFEFTNNKNSKALVMIIGYLLANLAIRLEIHRYTHRWSEARDPEVIKILLIYNLLAVGFLLEPMVLSYNNRANFIRNII 100
WP_014733997_1 MDEARVNLTFLYLPVLIIFGSFVVGFTINGNSOMLIYALGYLLATFAIRLEIHRYTHRWSEARDPEVIKILLIYNLLAVGFLLEPMVLSYNNRANFIRNII 100
WP_048165389_1 MAKWRVNLTFLYLPVLIIFGSLLMGFTINENSOMLIYALGYLLAMFSSIRLEIHRYHHRWSEARDPEVIKILLIYNLLAVGFLLEPMVLSYNNRANFIRNII 100

WP_068320155_1 LDGVGVLIYAMAWLLEHETERRRLIISLGSLVIGMTGGGLEPLIFALIALWYTLVVKHNLVPAEKNNNG- 172
WP_014012911_1 LIIIVLVLYVPISRMVRLGRGFILSFSSLVIFIIQNNLEPTIFALLSLWYTLVVKHDLVAYTQERSVS 173
WP_068319950_1 LIIIVLVLYVPISRMVRLGRGFILSFSSLVIFIIQNNLEPTIFALLSLWYTLVVKHDLVAYTQERSVS 173
WP_014733997_1 LIIIVLVLYVPISRMVRLGRGFILSFSSLVIFIIQNNLEPTIFALLSLWYTLVVKHDLVAYTQERSVS 173
WP_048165389_1 LIIIVLVLYVPISRMVRLGRGFILSFSSLVIFIIQNNLEPTIFALLSLWYTLVVKHDLVAYTQERSVS 173

```

C. Alpha 2-macroglobulin family proteins. Alignments were colored using http://www.bioinformatics.org/sms2/color_align_cons.html server with default amino acid groups with 90% consensus. Conserved motif involved in thiol bond formation is highlighted by red. Proteins were truncated before the alignment, for each accession the starting amino acid of the respective sequence fragment is indicated above the alignment

```

WP_083755773_1 776
WP_013799567_1 1991
WP_018154498_1 307
WP_013866661_1 674
PKL61212_1 910
WP_048104849_1 931
CVK34051_1 946
WP_015591433_1 1290
WP_004075953_1 233
WP_004040593_1 238
WP_042684179_1 763
WP_050459351_1 1367
WP_008096231_1 1354
WP_004967133_1 1367
WP_007275935_1 1367
WP_081457886_1 1272
WP_058566553_1 1217
WP_058826100_1 1217
WP_050459478_1 1217
WP_008095939_1 1217
WP_049967566_1 1217
OLS27023_1 700
OLS16413_1 1041
WP_011499743_1 717
WP_048206237_1 717
WP_015053894_1 719
WP_023844962_1 719

WP_083755773_1 -----PVNVSNPGSNNLTVKVLSINTI-----DKNISNNEKTVQFNVGIAADISRVSGIPKN--NVLASGGEYQITAFYINV-SIPETYTSKIVT-- 82
WP_013799567_1 -----TFNESGTHNITITITPIGK-----DRNVADNTKTSIVTVKEIKADIEKVGYPYN--NVQADGEYWDVYVNV-SVPSYTTKINT-- 80
WP_018154498_1 -----TFNESGAHNITITITPIGK-----DRNVADNTKTSIVTVKEIKADIEKVGYPYN--NVQADGEYWDVYVNV-SVPSYTTKINT-- 80
WP_013866661_1 -----VIDPYNHIDEQNENNKLVRKVIIVENPYFKITGK-----YCPTV-----VKEGNYFYGIYKKT-NYKTNYTYLYNNYNH 68
PKL61212_1 -----DDVT-----DGNVARSIVIDNYDELTNQNKYWGYYGYNNSVLKNEYFYGTGYFTA-NQAGMVNATVAITY 68
WP_048104849_1 -----ITGDNVT-----GNNIASRPVIDSYELNVTEQNKRYWNANWGYDRSVLRDEHLWGTGYFTA-NQSGMVNATVAITY 71
CVK34051_1 -----TGDNVT-----GNNIASRPVIDSYELNVTEQNKRYWNANWGYDRSVLRDEHLWGTGYFTA-NQSGMVNATVAITY 70
WP_015591433_1 -----DTITA-----NNVYTHPTITLKEPHLD-----AWRMYYP--RKVMMGREFWIGSYVNV-TAPGKVNATVTV 58
WP_004075953_1 -----WTPGAEGLYLVNITVTSSEDAVK-----GRPSDEKSNIAIDYQLDIIG-----DHAYG-YSSARVDNWFYFVRVEA-NKAGNVILNNA-- 77
WP_004040593_1 -----PATAGTYTLKVNVTSDTGLPVV-----GTTTAERSVTARTYTLLEVY-----DYVYG-YSSARVDNWFYFVRVEA-NKAGNVILNNA-- 76
WP_042684179_1 -----HSNTTDPYP-----ANNVYTRTIRVREYSID-----AWYMIYP-TYGVYEGRYFRGARLNT-TAPGYVNATVTV 65
WP_050459351_1 RETAVFTRNHTFATGRHTLVASVADPDAP-----RGNADRDVTTSQPYELR-----GRLSA-ADPVQVGRNVTYGRGYS-NYESNVTANLSL-- 81
WP_008096231_1 RETAVFTRNHTFATGRHTLVASVADPDAP-----RGNADRDVTTSQPYELR-----GRLSA-ADPVQVGRNVTYGRGYS-NYESNVTANLSL-- 81
WP_004967133_1 RESVVLTRNHTFATGRHAVVATVDDPDAP-----RGNSDRDVTTSQPYELS-----GRLSA-ADPVQAGQNVTYGRGYS-NYESNVTANLSL-- 81
WP_007275935_1 RESVVLTRNHTFAAGRHAVVATVDDPDAP-----RGNSDGDATTSQPYELS-----GRLSA-ADPVQAGQNVTYGRGYS-NYESNVTANLSL-- 81
WP_081457886_1 -----RAPHTYNSGGDYTVTATVDDAVPF-----DNNEAAKTIEVKAFDNLDAE-----DISVPTD-----ATNGTFTTATARFQT-NYPTTVNATL 79

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WP_058566553_1 -----THNFATGGDKVVRASVSDGVFP-----DNNESTKDVTVKPYTSLIEDD-----DVSVPST-----VNNSTVTVLAEFNT-NYPSNVNVTSL-- 77
WP_058826100_1 -----THRFATGGDKVVSASVSDGVFP-----DNNVSTKDVVRVKPYSLIENG-----DVSVPST-----VNNSTVTVLAEFNA-NHPSDVNVTSL-- 77
WP_050459478_1 -----THSFATGGDKVVTASVSDGVFP-----DNNESTKDVVRVKPYTSLIDDE-----DVSVPST-----VNNSTVTVLAEFNA-NYPSDVNVTSL-- 77
WP_008095939_1 -----THSFATGGDKVVTASVSDGVFP-----DNNESTKDVVRVKPYTSLIDDE-----DVSVPST-----VNNSTVTVLAEFDA-NYPSDVNVTSL-- 77
WP_049967566_1 -----THSFATGGDKVVTASVSDGVFP-----DNNESTKDVVRVKPYTSLIDDE-----DVSVPST-----VNNSTVTVLAEFDA-NYPSDVNVTSL-- 77
OLS27023_1 -----GDHKFEIKSPDSITRYKIF-VIACNETHGVEERSIVKNIPTSTLNPSD-----MTLGDRITPTVLENLSNEIKDKITHSINS 80
OLS16413_1 -----TGWEQEIVLPDNI GEWVRLTVTKGSGGAVIKS-SFNTQLPFVEISKPAI-----MQDDIVGKGVFYN-YHDELVRANVTI-F 78
WP_011499743_1 -----DDNGLATLDLNAPDSITKWRHL-AVSSGPEGIGISEAGLTVFQDFFDPLPYA-----VIRGEEFPVQVQVYN-YLDMQPNVKITLSG 82
WP_048206237_1 -----DEDEGLASLDLNAPDSITTWRLH-AVSSSGPEGIGISEAGLTVFQDFFDPLPYA-----VIRGEEFPVQVQVYN-YLDMQPNVKITLSG 82
WP_015053894_1 -----DEEGLASLELTAPDSITTWRLH-AVSSGPEGIGISEAKLVFQDFFDPLPYS-----VIRGEEFPVQVQVYN-YLDRQPNVKITLSG 82
WP_023844962_1 -----DEDEGLASVDLNAPDSITTWRLH-AVSTGPEGIGISESSLTVFQDFFDPLPYS-----VIRGEEFPVQVQVYN-YLDRQPNVKITLSG 82

WP_083755773_1 SNG-----IEVIS-----NNETKSIVYSLRSEIFTI-RAKNVSKNE-----NISIEIQ-NEKLLKKETIP-----LKI 139
WP_013799567_1 TKG-----IQIIG-----DSEKTRYTWRYGWTYFKI-KAVDISNDE-----NISIEIFDNNKLLANKTLTG-----IKI 139
WP_018154498_1 TKG-----IQIIG-----DSEKTRYTWRYGWTYFKI-KAVDISNDE-----NISIEIFDNNKLLANKTLTG-----IKI 139
WP_013866661_1 -----TIFNSSQWGIKNDTLKGYTYPTGWWSRSI-WIKMKALHNTDNKECINGTLILNTLNGTLIKNLSCC-----IBV 136
PKL61212_1 PNGTPTVDLDNSVEFEFYIY-----PAQYPVYAYDSEWNSVWYIYQPKLGTF-----NYSITLKA-KGQSAY-VNGT-----IKV 138
WP_048104849_1 PNGTPTD-----GESAEFHHHY-----PAQNPPVYAYDSEWNSVWYIYTPRQLGDF-----NYSITLKA-RGESAY-VNGT-----IKV 138
CVK34051_1 PDCTFPV-----DESAFEHFHY-----PAQNPPVYAYDSEWNSVWYIYTPRQLGDF-----NYSITLKA-RGESAY-VNGT-----IKV 137
WP_015591433_1 PDG-----LLVWNGTGWNDAKIERFLWGKKWNVFPG-RLKAVKVGEGYNGTTEINITFTG-RDKVDE-INSSSAVDQVPDY-----KLI 137
WP_004075953_1 PEG-----FEIYGG-----ENQTK-YLNSNYNYVYVY-LHMRTSPNGNYAGD-----DFTFMNSA-NGKSDS-IGRD-----IRI 138
WP_004040593_1 PAG-----VEVWG-----GANVTQWMSGGYNYVYVY-WMRSRPGTGLAAG-----SISLTASA-NGKTSKASTHD-----VLI 138
WP_042684179_1 ASG-----ITVY-----HATKRAYTRGSPYDTVYVY-LCKGDVAGLY-----NMTMTFEA-YGKSAT-ISTTDAQWNVSPYGTTRYSPHGPVQ 139
WP_050459351_1 PAG-----LEFAPG-----ETATKY-----DTDDRTYFEW-TVVATANRDATY-----DLELNLSA-RGENET-ATER-----LTV 139
WP_008096231_1 PAG-----LEFAPG-----ETATKY-----DTDDRTYFEW-TVVATANRDATY-----DLELNLSA-RGENET-ATER-----LTV 139
WP_004967133_1 PAG-----LEFADG-----ETATKH-----DTDDRTYFEW-TVVAANRDATY-----DLELNLSA-RGETET-ATER-----LTV 139
WP_007275935_1 PAG-----LEFAAG-----ETATKH-----DTDDRTYFEW-TVVAANRDATY-----DLELNLSA-RGETET-ATER-----LTV 139
WP_081457886_1 PDG-----LELVAS-----ENASKDVPASATGGTAAM-KVRVNTTEDVSDA-----QNVVTTKA-HGQTSS-ASTT-----LNI 140
WP_058566553_1 PSG-----LELVGD-----QTAEKQVRATNGGSAAM-KVRGNITADIDDA-----QIDVTVEA-FGESDT-ASAT-----TMN 138
WP_058826100_1 PAG-----LELAA-----QSAEKQVRSSAKGGSVAM-KVRGNITADIDDA-----QIDVTVEA-FGQSDT-ASAT-----TMN 138
WP_050459478_1 PAG-----LELVGD-----QRAEKQVRSSAKGGSVAM-KVRGNITADIDDA-----QIDVTVEA-FGQSDT-ASAT-----TMN 138
WP_008095939_1 PAG-----LELVGD-----QRAEKQVRSSAKGGSVAM-KVRGNITADIDDA-----QIDVTVEA-FGQSDT-ASAT-----TMN 138
WP_049967566_1 PAG-----LELVGD-----QRAEKQVRSSAKGGSVAM-KVRGNITADIDDA-----QIDVTVEA-FGQSDT-ASAT-----TMN 138
OLS27023_1 NEN-----LKHSN-----LIQKELKELKANEKVVNVY-DIEASKVGDV-----DLSTLLESKYFTEYSELQTP-----LYI 140
OLS16413_1 VDG-----VEILA-----KNEQNVVIPSNFLTQVTV-AVYAKEPGTH-----NVTITAVG-TGVTITGNIYTDGIQKT-----IRI 141
WP_011499743_1 AEW-----FELVG-----DDVVEVGVDSANSVTHVSF-TIRTPRVGVQ-----TVELTGQT-TEKADA-IRKT-----ITV 139
WP_048206237_1 ADW-----FDLVG-----EDVVMVSDANSVTHASF-TIRTPRVGVQ-----EVELTGQT-TEKADA-VRKT-----VITV 139
WP_015053894_1 AEW-----FDIIV-----DDVQVTVVANSVGVASY-TIRTPRVGRK-----IEITGQT-TEKADA-VRKD-----ITV 139
WP_023844962_1 ANW-----FKIIG-----DDVQVTVVDSNGAGYISF-TISPTKVGQ-----IVEITGQT-TERADA-VRKD-----ITV 139

WP_083755773_1 MDNPVVIKYSNITTTNESV---TLDFQFETTEYDIERRLDYIAMIGESRTNGIDYLARYE---HGHEGOTTSPMVASYVKKYC-QDNNIFTNVN-- 230
WP_013799567_1 TDHPVEIKYSNITCTNSSA---NLTFMFNTTKYDVDRHIEYMMVGEQRIKKEHYLAEPY---HGHEGOTTSPMVASYVKKYC-EQNNISTNID-- 230
WP_018154498_1 TDHPVEIKYSNITYNSSA---NLTFMFNTTEYDIDRHVEYVVMIGEQRVKKEHYLTGYE---HGHEGOTTSPMVASYVKKYC-QDNNISTNID-- 230
WP_013866661_1 PQQGVIMKSSNITKLNGND--NKSFNLTYNATPIR-VCKGTIELDGGSDAIFKGYFLNKNINAWGFIQIASPTLANIYQKKYVYDMNIDDDGA-L 232
PKL61212_1 REPINVDIKVMNTTMVNTPE--SKTLAPPFVTRTPSE-GQNVKILLAAGADERTQGLTSHIGYP--HGHEGOTTSPMFAVARRVKQYVYERGAALDPEIN-- 231
WP_048104849_1 REPINVDIKVMNTTLVNTDES--SKTMTFPFNKRTPE--GRNVQILLASAGADERTQGLTSHIGYP--HGHEGOTTSPMFAVARRVKQYVYERGAALDND-- 231
CVK34051_1 REPINVDIKVMNTILVNTET-GDVTMTFPFNKRTPE--GRNVQILLASAGADERTQGLTSHIGYP--HGHEGOTTSPMFAVARRVKQYVYERGAALDND-- 231
WP_015591433_1 WVPITKLRSYNTTILSDTSNEMTKTIDTSNVTTFS--QKISLVVLAGOGEVRCGLDYLVOYE--YGVVEGOTTSSRLLAGHTDWYV-RTKGYDPDVT-- 230
WP_004075953_1 YVPSMEVNSIGTEVVSDGS-SADFIINTHTNNTNR--NSTVIVAQQLGAQRTTSCGGLVGYE--YGVVEGOTTSSKMMASINVKNYVLCGRDDPDDFDRI 233
WP_004040593_1 WIPSIQVKSVDSSVSDASDS-TFDMTYNTHTNNTYD--NRTTITAQSGARTTSCGGLVRYE--YGVVEGOTTSSQLASINVKNYVLCRDPKPSFASI 233
WP_042684179_1 IQVTEVKDDNSTLTQNTQ--SKNMTYDFNVVTFD--QSGKDIETAGGLORMTGLTYLRYE--YGVVEGOTTSPALIAARIEAYDYNDYGLDAANN-- 231
WP_050459351_1 ERPKTRVVDTAAVNFTGTG--SDSALTIRNETTYE--HGVITSTHLGTDERTQGLDYLVEYE--HAHVVEGOTTSPMLGALYTQYV-RRNPAPGGYD-- 230
WP_008096231_1 ERPKTRVVDTAAVNFTGTG--SDSALTIRNETTYE--HGVITSTHLGTDERTQGLDYLVEYE--HAHVVEGOTTSPMLGALYTQYV-RRNPAPGGYD-- 230
WP_004967133_1 ERPKTRVVDTAAVNFTGTG--GDSSTLIRNETTYE--HDLITSTHLGTDERTQGLDYLVOYE--HAHVVEGOTTSPMLGALYTQYV-RRNPAPGGYD-- 230
WP_007275935_1 ERPKTRVVDTAAVNFTGTG--GDSSTLIRNETTYE--HDLITSTHLGTDERTQGLDYLRYE--HAHVVEGOTTSPMLGALYTQYV-RRNPAPGGYD-- 230
WP_081457886_1 SVPKIRLTDTNATLSSGS--DNVTVLSSATTYD--HTLNVTVQAGSDERTQGLDYLFTYE--YGVVEGOTTSMQMSAIRTQYV-RSGDIPNNYV-- 230
WP_058566553_1 TVPKVRYTTTNTATTLESAG-ETQSLALNLSATTYD--HTLNVTVQAGSDERTQGLDYLFSYE--YGVVEGOTTSMQMSAIRTQYV-RNGDIPSNYV-- 230
WP_058826100_1 TVPKVRYTTTNTATTLESAG-ETQSLALNLSATTYD--HTLNVTVQAGSDERTQGLDYLFSYE--YGVVEGOTTSMQMSAIRTQYV-RNGDIPSNYV-- 230
WP_050459478_1 TVPKVRYTTTNTATTLESAG-ETQSLALNLSATTYD--HTLNVTVQAGSDERTQGLDYLFSYE--YGVVEGOTTSMQMSAIRTQYV-RNGDIPSNYV-- 230
WP_008095939_1 TVPKVRYTTTNTATTLESAG-ETQSLALNLSATTYD--HTLNVTVQAGSDERTQGLDYLFSYE--YGVVEGOTTSMQMSAIRTQYV-RNGDIPSNYV-- 230
WP_049967566_1 TVPKVRYTTTNTATTLESAG-ETQSLALNLSATTYD--HTLNVTVQAGSDERTQGLDYLFSYE--YGVVEGOTTSMQMSAIRTQYV-RNGDIPSNYV-- 230
OLS27023_1 SPFGIPHELFPSKLQVMEIETEEAFTLG-----IVNLFPGVEIAAECEVSELAAYE--YGVVEGOTTSASTIPNIAIARYLESNDKLTDDIK-- 231
OLS16413_1 EPNGVLRSSQKLGGELLNGT--LQNLITOYAEATIIYQ--KSSLTITAPGILQNLASSYERLVGYE--YGVVEGOTTMSRVLTPTLVQVYVLERGELEDDETE-- 231
WP_011499743_1 EAEVGTVREIVDNGILKNGT--VELDATPDAIVPD-SEKVLISFTSPSIVATITGCDLLGMC--YGVVEGOTTMMFLFSTDDEVLRVLEKATGQNPPEV-- 231
WP_048206237_1 EAEVGTVREIVDNGILKEGS--VELDTTPEGIVPD-SEKVLISFTSPSIVATITGCDLLGMC--YGVVEGOTTMMFLFSTDDEVLRVLEKATGQNPPEIE-- 231
WP_015053894_1 EPEGATREIVDNGILNNGS--VMDVTPDGVIPD-SGKVLISFTSPSIVATITGCDLLGMC--YGVVEGOTTMMFLFSTDDEVLRVLEATGQNPGLK-- 231
WP_023844962_1 EAEVGATREIVDNGILSSGS--VELDTTPADIVSD-SEKVLISFTSPSIVATITGCDLLGMC--YGVVEGOTTMMFLFSTDDEVLRVLEKATGQNPPEVR-- 231

WP_083755773_1 ---FDNMVSSGIKLL--TTEERKPRIFIDGYA-----WGLVGSY---SEKPIHGGVLYGLTTAKMN---GHVNVNNTYLDN---G-----AK 298
WP_013799567_1 ---FDSMVNNGIERLL--TTGIRKPKV-----ISNNEYAAGLWGLS---YKPIHGGVLYGLTTAKMS---GYAVDMKYIEN---G-----BR 299
WP_018154498_1 ---FGSNVNNCIERLL--TTGNTKPEV-----ISSYEYAGLWGLAS---YPNPIHGGVLYGLTTAKMN---GYDVNMNTHIEN---G-----BR 299
WP_013866661_1 LNKTKKNVVKICIDTI--IS-----RQRNDGSGQWVCHG---KSSVVFSAKSIYTMSLAYND-----HDFRGI---SGNASKEKAVIENGK 305
PKL61212_1 -QTIIQTMQNALDRMNAFNGDNAQQLAGQPYGDRSGGMA-MKDTWSTPSMFYTFYVNYVITEKKD---MDADPGFWNV---DANMD--GIDLNASN 320
WP_048104849_1 KTVRTAMONALGHM-NATGYN-----AQASGGMA-MCT--WSTPSMFYTFYVNYVITEEL---MDNDPAFWDV---DASMN--GIDLNASN 307
CVK34051_1 -TTVRTAMQKALDHMPDPGNYAQQLAGQSYGDGSGGMA-MCTSAWSTPSMFYTFYVNYVITEELR---NDAAFWNV---DANMS--NIDLNASN 318
WP_015591433_1 SARVNSIMMVGQSL--AKGGVR-----GQHDNGSSMSMGNN--PKGDGFYDIALASYGLGRMAEDDVFGYLVKNLTTTHVYSSSVNKGKFNFDNY 319
WP_004075953_1 RNRANESVERGINSVL--VNGKLR-----GQHDGGSGLMGYGSSEASSSSYAAVTLAKINRTDED---LRHLNGKISS---GGTVQPNVNFMDLK 318
WP_004040593_1 RSRANESVERGINSVL--VKGALR-----GQHDGGSGLMGYGSSEASSSSYAAVTLARVNESGD---LNRLLTGKISK---NATVNPNGTVNFMDLK 318
WP_042684179_1 -SSLNSTVARGVQRL-----QYGALKPKKANGATSMVGP-YSPDSVVFTHALYALSSRMS---TVNYSTIGT-----VSVNDTLLDKGM 308
WP_050459351_1 TGQINASVVGAGVARL--TTGQD-----AQHENGSSMSMGND--PDGDVFYDIALALFGTSAAGND---PVQSARAPV---RADLD--RIDANATVA 308
WP_008096231_1 TGQINASVVGAGVARL--TTGQD-----AQHENGSSMSMGND--PDGDVFYDIALALFGTSAAGND---PVQSARAPV---RADLD--RIDANATVA 308
WP_004967133_1 SDRINDSVGAGVARL--TTGQD-----AQHANGSSMSMGND--PDGDVFYDIALALFGTSAAGND---PVQSARAPV---RADLD--RIDANATVA 308
WP_007275935_1 SDRINDSVGAGVARL--TTGQD-----AQHANGSSMSMGND--PDGDVFYDIALALFGTSAAGND---PVQSARAPV---RADLD--GIDANATVA 308
WP_081457886_1 RQRANDTIEIGVEKL--GTNQASSLWPLDAQNEGDSMSMGAFYDEGLDYTAALQGVTSAGND---EVQGTAEV---SDDIQ--TVNASRSIE 318
WP_058566553_1 RDRANSTISAGISKL--ADEPTPGAYFNISQHDNGATSMYGNN--PRGDLFYDIALQGVSAAGND---AVQSNRTDV---NKSLO--NINQSGAIL 315
WP_058826100_1 RDRANSTISAGISKL--ADEPTPGAYFNISQHDNGATSMYGNN--PRGDLFYDIALQGVSAAGND---AVQSNRTDV---NKSLO--NINQSGAIL 315
WP_050459478_1 RDRANSTISAGISKL--ADEPTPGAYFNISQHDNGATSMYGNN--PRGDLFYDIALQGVSAAGND---AVQSNRTDV---NKSLO--NINQSGAIL 315
WP_008095939_1 RDRANSTISAGISKL--ADEPTPGAYFNISQHDNGATSMYGNN--PRGDLFYDIALQGVSAAGND---AVQSNRTDV---NKSLO--NINQSGAIL 315
WP_049967566_1 RDRANSTISAGISKL--ADEPTPGAYFNISQHDNGATSMYGNN--PRGDLFYDIALQGVSAAGND---AVQSNRTDV---NKSLO--NINQSGAIL 315
OLS27023_1 -KNLITNMQGLDRY--TSKF-----LNEKEGEGGLMDGN---NPSVFHSLAISVIGKSPF---VNVPPDIFTGA-----RD 296
OLS16413_1 -KELNNMITSQRL--YS-----FRHYDGGEGWGHND---NSNIYMSVLYGLNKIVET---GIVVDEEIILO-----AKK 295
WP_011499743_1 -AKALTFITTYGRL--LT-----FMHSDGSESAGES-DGEGSLWLAQVLSQFSGAR-D---LTTIDENIVRE---A-----DE 296
WP_048206237_1 -AKAQTYIITTYGRL--LT-----FRHSDGSESAGES-DGEGSLWLAQVLSQFSGAR-D---VTTIDENILSE---A-----AD 296
WP_015053894_1 -AKAEMYIITTYGRL--LT-----YRHSDGSESAGES-DGEGSLWLAQVLSQFSGAR-D---LTTIDEGILAE---S-----AG 296
WP_023844962_1 -AKAEMYIITTYGRL--LT-----YRHSDGSESAGES-DGEGSLWLAQVLSQFSGAR-D---VTTIDENILSE---A-----AD 296

WP_083755773_1 MLIT--KOKTD---GS--WE--SDYAY-YMRDD-----FSSNALITISLQOVYNVTD--NNEIKPEIFNATNKSVRLISQNNN----- 366
WP_013799567_1 MLVN--SONSD--GS--WN--TGYTY-YMRDE-----FSSNALITISLAQTYNLTT--NETLKQEIFNATNKSVRLISQNNID----- 366
WP_018154498_1 MLVN--SONDD--GS--WN--TGWTY-YMRDE-----YSSNALITISLAQTYNITT--NETLKQEIFNATNKSVRLISQTVY----- 366
WP_013866661_1 MLIS--NOSSD---GS--WRAIPGAHE-YIRQT-----IPLTAWTMTSLAEARDATD--NNTLKSEINNSLEKGANFLKQNL----- 374
PKL61212_1 MLIQ--KOKDE--GY--W--SDWG-YISND-----VEWTGFTISENLAGEYPYL--NETMKGAVNLSLEKSCANLADYDYST----- 386
WP_048104849_1 MLIQ--KOKREGVANGS--WS--DWGY--ISND-----VEWTGFTISENLKNEYPYL--NKTMKIEVNASLDRSCNMLTHNYTNE----- 377
CVK34051_1 MLIG--ROKEE--GR--WS--DWGY--ISND-----VEWTGFTISENLANEYPYL--NNTMKGAVNASLRKSCNMLDQNYEEDYKEK----- 388
WP_015591433_1 MFAQANRNET--TCAIWWEFQWQTHW-FFQGH-----LPVTSWIMVSHYQLINEGLINSSAKQVANQTMANVTKLVSVQNSDGGWNQWGAKDDP----- 407
WP_004075953_1 MFNK--NHKTE--SC--TMYWEWEAPVCHSWTSQS-----NTPFVMLIHSMINETCEVKGKEYKDYMLRNMENATKLVWNNINTGRISG----- 395
WP_004040593_1 MFYLNPDNPSS--CT--WT--WSAGVCHAWTP-----TSNTGFMVLHDMIRQGGTISEPYATYMTKNMNQATRFVFNQQAADSGSWGGS----- 396
WP_042684179_1 MLVS--QONAD---GS--WT--GRGSDYLRSN-----NTMTAWVLRSLMQCVPYA--DATNQSAINTSISKGFAPLSTQNSDGGWGDKPTGSTA----- 387
WP_050459351_1 MLAD--EOAAD---GR--IR--NDKF-YFDDD-----AAMTGFTLVALDQAGPY--NATAAATADQLRGDAASVLTVAQRADGAWGDGS----- 380
WP_008096231_1 MLAD--EOAAD---GR--IR--NDKF-YFDDD-----AAMTGFTLVALDQAGPY--NATAAATADQLRGDAASVLTVAQRADGAWGDGS----- 380
WP_004967133_1 MLAD--EOAAD---GR--IR--NDKF-YFDDD-----AAMTGFTLVALDQAGPY--NATAAATADQLRGDAASVLTVAQRADGAWGDGT----- 380
WP_007275935_1 MLAA--EOAAD---GR--IR--NDKF-YFDDD-----AAMTGFTLVALDQAGPY--NATAAQTADRLRGDAASVLTVAQRADGAWGECS----- 380
WP_081457886_1 MLSD--HORAD---GS--VP--ATDY-FLRDD-----FSSTGYTMVAFDRAEPLH--NSSATQTAEDFRVDAAEVLHENQNSDGSWASDRSQSDI----- 396
WP_058566553_1 MLAD--KORND---GS--VR--PNGY-FLRDR-----TSATAYTTVAIDRAGDDL--NATAQTADEFSVDAAVHLIERQNSDGSWEAG----- 387
WP_058826100_1 MLAD--KORND---GS--VR--PSGY-FLRDD-----ASATAYTTVAIDRAGDDL--NATAQTAANFESVDAAVHLIEQQNSDGSWEAG----- 387
WP_050459478_1 MLAD--KORNN---GR--VR--PSGY-FLRDD-----TSATAYTTVAIDRAGDDL--NATAQTAANFESVDAAVHLIEQQNGDGSWEAG----- 387
WP_008095939_1 MLAD--KORNN---GR--VR--PSGY-FLRDD-----TSATAYTTVAIDRAGDDL--NATAQTAANFESVDAAVHLIEQQNGDGSWEAG----- 387
WP_049967566_1 MLAD--KORNN---GR--VR--PSGY-FLRDD-----TSATAYTTVAIDRAGDDL--NATAQTAANFESVDAAVHLIEQQNGDGSWEAG----- 387
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OLS16413_1 FLDD--KOSSS---GR--WT--SDYW-NIND-----LFFTAFTVRLGLSTIA--NKSLLTDYGTVMSLAHFETQWVN----- 356
WP_011499743_1 WIGS--YOKED---GS--WE--AVGF-VIHEDMMGGVSGTYALTAYVTALDEYGYAA-----PIVMENARSYEAELDK----- 361
WP_048206237_1 WIES--HOKED---GS--WE--SVGF-VIHQDMMGGVSGTYALTAYVTALDEYGYAP-----DEVMDSALTYEDNLDA----- 361
WP_015053894_1 WIES--ROLAD---GS--WE--PVGF-VIHQDMMGGVSGTYALTAYVTALDEYGSAN-----PVMMDARKYEDNLAT----- 361
WP_023844962_1 WIES--YQOED---GS--WE--QVGF-VIHQDMMGGVSGTYALTAYVTALDEEYGSAN-----PVMMSKAQOYEDNLAG----- 361

WP_083755773_1 --DDDIYKLGKAWVLSNAYNMG-----INDSDVFNAINDTVVLSAWADENQ-----EKSVT---YG--FTGTT---SYSIYG-----VASES 435
WP_013799567_1 --KNNIYDLGFKAWVLSNAYNMG-----INDESVKDAINQTIKIDGNWINEHN-----NANVI---SL--FRGTS---SYSVYG-----VASES 435
WP_018154498_1 --ENNIYDLGFKAWVLSNAYNMG-----INDESVKEAINNETIIAGNWKNEHK-----NDEAI---SL--FRGTS---SYSVYG-----VASES 435
WP_013866661_1 --KTEESMSMIAINLR-----TGFNWNAINSGMNSDAPKLLKNQ-----SSDGH--WNPDLSWGWV---YMEP-----ET 432
PKL61212_1 --NADTQALSAYIIGLVAIRDH-----GIGDAEAINETVDDIKGELLKR-----DRVGS--YWE---DSY---GNTY-----EP 449
WP_048104849_1 --DTQALSAYIIGLVAIRDH-----GIGDAEAINETVDDIKGELLKR-----DRVGS--YWE---DSY---GNTY-----EP 437
CVK34051_1 --DTGTLALSAYIIGLVAIRDH-----GIGDAEAINETVDDIKGELLKR-----DRVGS--YWE---DSY---GNTY-----EP 437
WP_015591433_1 AKPSDAISALSVMGKLYGTFPS-----DEVNRSQIDENAELEKGVAWLLNNTYSAA--PDKVY--WHH--PLASP--WMDNYG-----RKSEA 481
WP_004075953_1 --DDKNMATALSLMGLCAFGITs-----ADVQEAIDTAKTITAREYLIEAQS-----KEDGS--WST---GSKY---GMSNTG-----RTES 463
WP_004040593_1 --SDKAMATALGLMGLQSYGTNS-----DDVTQAQIDTAKANETAWLVANQ-----NADGS--WDA---DSSY---GMSNG-----RTES 463
WP_042684179_1 YTGQSNAYTTGLVLYLATSNNTT-----NWVNNTTQVQNAITNTETAWLVAHQLSDDVSRYAKKES--FYP--VSRDVAHGSSTRVG-----VYTRA 469
WP_050459351_1 --TPNTMSTALAVMLEA-----SGVETAPVTAIDDCRAWLLDNQ-----ADSCA--WSQ---RRSA--SSSDVG-----TTSSET 442
WP_008096231_1 --TPNTMSTALAVMLEA-----SGVETAPVTAIDDCRAWLLDNQ-----ADSCA--WSQ---RRSA--SSSDVG-----TTSSET 442
WP_004967133_1 --DPNTMSTALAVMLEA-----SGVETAPVTAIDDCRAWLLDNQ-----ADSCA--WTE---RRSA--SSSDVG-----TTSSET 442
WP_007275935_1 --TPNTMSTALAVMLEA-----SGVETAPVTAIDDCRAWLLDNQ-----ADSCA--WTE---RRSA--SSSDVG-----TTSSET 442
WP_081457886_1 --SQKQATATALALRLGLATVNESAAALQRVNQOTDT--DLSTALDNGSQWLIDNQ-----NADGS--WDA--YRNSF--FMSNG-----EVTRA 470
WP_058566553_1 --SREAQATAYAVOALAAVNDSDTLRTQVNSLSSGNSMALDSEVQWLVANQ-----HDDGS--WTG--YTNSP--YMSNTG-----EKARA 462
WP_058826100_1 --TKEAQATAYAVOALAAVNDSDTLRTQVNSLSSGNSMALDSEVQWLVANQ-----QADGS--WAG--YTNSP--YMSNVG-----EKARA 462
WP_050459478_1 --SKQAQATAYAVOALAAVNDSDTLRTQVNSLSSGNSMALDSEVQWLVANQ-----REDGS--WAG--YTNSP--YMSNTG-----EKARA 462
WP_008095939_1 --SREAQATAYAVOALAAVNDSDTLRTQVNSLSSGNSMALDSEVQWLVANQ-----REDGS--WAG--YTNSP--YMSNTG-----EKARA 462
WP_049967566_1 --SREAQATAYAVOALAAVNDSDTLRTQVNSLSSGNSMALDSEVQWLVANQ-----QEDGS--WAG--YTNSP--YMSNVG-----EKARA 462
OLS27023_1 --DPTVIALLLDSIAMLK-----DKLPKEIVOK--IPKVTLELLTINIE-----NDKGS--YWS-----KGSALS-----SEVET 419
OLS16413_1 --SSYVAALITLESFY-----NTPYSTFPEESNLIOHQLNEYVLD-----PKLCI--YWT-----DLKKGYKALG-----KDIEI 415
WP_011499743_1 --QDDPYALAIPTIAL-----QKLESDRDESMERKLA--LAKE-----DENGW--YWG--YDDVM--PEPYEGYGGYGFHPHISKNVET 430
WP_048206237_1 --QDDPYALAIPTIAL-----QKLESDRDESMERKLA--LAKE-----DENGW--YWG--YDDVM--PEPYEGYGGYGFHPHISKNVET 430
WP_015053894_1 --QKDPYALAIPTIAL-----QKLDSPEDKALMNLAL--ISKQ-----DDHET--YWG--YGDGPVPMPEHGGYGFDMVPSSKNVET 431
WP_023844962_1 --QDDPYALAIPTIAL-----QKLDSPEDKALMNLAL--ISKQ-----DEDCM--YWG--YGDGPVRLPVEHGGYGFAPSSKNVET 431

WP_083755773_1 VAISSICCHNSKD-----IINDDA-----YSKLNSHVLSIYSIY--GSGGGS--KSTGYELRA--TLE---RPEAVDNMTIDVYVN--ST----L 508
WP_013799567_1 IAVASICCKQKAD-----IINDNE-----YITLNNMNLINYSRY--GSGGGS--KSTGLALRA--TESG--NATNTNNIQTIVKVD--GN-----K 509
WP_018154498_1 IAVASICCKQKANG-----IINNSE-----YITLNNMNLINYSRY--GSGGGS--KSTGLALRA--TESG--TATNTNNIQTIVKVD--GN-----E 509
WP_013866661_1 TGSYIALALHYA-G-----YPNNDs-----NVSAGMDYLLTHFNPG--WG--WGSRTKQATAVQTVII--NPNVNLNSNVSYYVD--GN-----L 503
PKL61212_1 TGSYIALALHYA-G-----VDATL-----SGGSVSHLLNCRAGRSYSG--WGSRTSAVINTITNVV--PFANMD--FTVDMEIKS--PAGATVMS 527
WP_048104849_1 TGSYIALALNKA-G-----ISADEL-----SGGSHLLNCRAGRSYSG--WGSRTSAVINTITNVV--PQKPEVA--FTVDMEIVR--GDGTSVMS 515
CVK34051_1 TGSYIALALNRS-G-----MSADEL-----SGGITHLLNCRAGRSYSG--WGSRTSAVINTITNVV--PQKPGV--FTVDMEIVR--GDGTSVMS 530
WP_015591433_1 TSYAIALALNESRSMNNLNTVLDSSNA-----TIAKAVNYLVSVYRGH--GS--GYTASTQAALHA--TLL---QVVPMMETTITINID--NGA---V 562
WP_004075953_1 TSYAIALALNAT-G-----ITGDNT-----TITDGINWLVNQYEG--GK--WGYTASQAALHA--TLC---QGSVKTSGTIVS--DID--SGSIV--K 537
WP_004040593_1 TSYTVALALNAT-G-----IKADDT-----TIQKGDRDESMERKLA--LAKE-----DENGW--YWG--YDDVM--PEPYEGYGGYGFHPHISKNVET 535
WP_042684179_1 TSYALALALNAT-G-----LDSSNT-----TIAQGRXYLYGYQSD--GS--WGYTASQAALHA--TLC---QGSVKTSGTIVS--DID--SGSIV--K 537
WP_050459351_1 TSYALMALNAT-G-----LENTNA-----SVQAGQTYLVTVYDDR--GS--WGYTASQAALHA--TLC---QGSVKTSGTIVS--DID--SGSIV--K 537
WP_008096231_1 TSYALMALNAT-G-----LENTNA-----SVQAGQTYLVTVYDDR--GS--WGYTASQAALHA--TLC---QGSVKTSGTIVS--DID--SGSIV--K 537
WP_004967133_1 TSYALMALNAT-G-----LENTNA-----SVQDGQTYLVTVYDDR--GS--WGYTASQAALHA--TLC---QGSVKTSGTIVS--DID--SGSIV--K 537
WP_007275935_1 TSYALMALNAT-G-----LENTNA-----SVQDGQTYLVTVYDDR--GS--WGYTASQAALHA--TLC---QGSVKTSGTIVS--DID--SGSIV--K 537
WP_081457886_1 TSHSIALALNETQG-----VTTQGTSDAADSVEDATDYLVGYDSD--GS--FENRATGVAIDATTA--DQRGVTPTQVTVTVG--G-----V 546
WP_058566553_1 TGNAILALNAEAG-----YTAANN-----DTVSDGVGYLVGYIQQG--GS--FENRATGVAIDATTA--DQRNAGSQTVTWEIN--ST-----V 535
WP_058826100_1 TGNAILALNDAAG-----YTAASN-----GTVSDGVGYLVGYIQQG--GS--FENRATGVAIDATTA--DQRNAGSQTVTWEIN--SS-----V 535
WP_050459478_1 TGNAILALNAEAG-----YTAASN-----DTVSDGVGYLVGYIQQG--GS--FENRATGVAIDATTA--DQRNAGSQTVTWEIN--ST-----V 535
WP_008095939_1 TGNAILALNAEAG-----YTAASN-----DTVSDGVGYLVGYIQQG--GS--FENRATGVAIDATTA--DQRNAGSQTVTWEIN--ST-----F 535
WP_049967566_1 TGNAILALNAEAG-----YTAAGN-----DTVSDGVGYLVGYIQQG--GS--FENRATGVAIDATTA--DQRNAGSQTVTWEIN--ST-----V 535
OLS27023_1 TSYALALALHTEN-----YPAEIL-----NIFETGANFLINTRSS--G--WPTTRDILMLTAL--GEIASKMEQNAVNGTIN--KLN--GE-----V 494
OLS16413_1 TSTALRLALATI-D-----YGTNAI-----LIQEAIOVIVSKQR--WG--WYSTADISAAIQAFISLSEYESKAIL--GDVDDIIN--GN-----N 487
WP_011499743_1 TSYATIAL-----IETNDP-----RASSSLKWIATAQORNNS--GG--ESSQDVMVAFRA--MTA---AASAGRVDVATHTVTS--GDGV---E 499
WP_048206237_1 TSYATIAL-----IEVNDP-----AASSSLKWIATAQORNNS--GG--ESSQDVMVAFRA--MTA---AASAGRVDVATHTVTS--GDGE---E 499
WP_015053894_1 TSYATIAL-----IDARNP-----VASSSLKWIATAQORNNS--GG--ESSQDVMVAFRA--MTA---AASAGRVDVATHTVTS--ADNT---T 500
WP_023844962_1 TSYATIAL-----IEANNP-----SATSSLKWIATAQORNNS--GG--ESSQDVMVAFRA--MTA---AASAGRVDVATHTVTS--ADGT---E 500

WP_083755773_1 IDS--ILNNSNPKYVGKY--INDSHLT-----PGS-----HTISFNFSKN--AKVCG--LIS--OTT 558
WP_013799567_1 IDTVNATNPKFVGKY--YNNLTLL-----SGE-----HNITEFSGS--SKLCCGLVSTOTT 559
WP_018154498_1 INTTVNATNPKFVGKY--YNNLTLL-----SGK-----HEIAFEFSGS--SKLCCGLVSTOTT 559
WP_013866661_1 ITNLSLTKTHPAVVNI--PSSNLAI-----GN-----HKITLKSTGS--GRVVAS--ELIKOW 552
PKL61212_1 RNDPFPNQASPSFHEHL--TEEELDTLYGFGATN-----GTATVVISGKTADADPNVAKLSVSDSFEQV 590
WP_048104849_1 CMGEFNETSGFERTL--SIDELNLYGSSVDP-----DTAKVVISNKNDAASDNPGKLSVSDSFEQV 578
CVK34051_1 QKRGEFNETSGFHEHTL--LIGELDLYGSGELN-----DTAKVVISNKNDAAGAKNPSKLSISDSFEQV 593
WP_015591433_1 VKDITVNSNPKVILVL--TPDELNAVNSNGTSE-----NTNRRHITVNVTVRSVSDSIVSVENEQTV 624
WP_004075953_1 NVASDSAGTGRVEVTL--TEDEMKTLSMGSTRGITGMPFGEVRYHTVDVLTLDG--GPVIVS--ENTOWA 605
WP_004040593_1 --CTINVDATNPKDEYTL--TADQMAAMMANGTETR--YPPVYSTVKEHLVDVDRGTGGTGLVSVENSORA 601

WP_042684179_1 VTTHTLTNTNPKATIPL-WGERTNSSSPLGAGN-----HTVTVYQTGT-GTSLVGVSVSQTV 596
 WP_050459351_1 TKTDVDSTDALDSVEL-TDSELQTLRDNADGP-----ITVQVDTTGT-GVTVVVGENDOLV 574
 WP_008096231_1 TKTDVDSTDALDSVEL-TESELQTLRDNADGP-----ITVQVDTTGT-GVTVVVGENDOLV 574
 WP_004967133_1 TKTDVDSTDALDSVEL-TESELQTLRDNADGP-----ITVQVDTTGT-GVTVVVGENDOLV 574
 WP_007275935_1 TKTDVDSTDALDSVEL-TESELQTLRDNADGP-----ITVQVDTTGT-GVTVVVGENDOLV 574
 WP_081457886_1 TKTSVDSSTTTDTVTF-STSELQQFRDEGTGK-----IELEAQNSDS--LVVIGVESVQVV 600
 WP_058566553_1 SKNTVVDGNTPTAVVSF-TTDELETLRQ--TGS-----ITLTAEINSTR---VVVGGESEOLV 586
 WP_058826100_1 TKEVSVDGNTPTATVTF-TTDELDTLRE--TGT-----ITLTVDNSTR---VVVGGESEOLV 586
 WP_050459478_1 TKDVTVDGNTPTATVSF-TTDELETLRE--TGD-----ITLTINSTR---VVVGGESEOLV 586
 WP_008095939_1 TEDVTVDGNTPTATVSF-TTDELETLRE--TGT-----ITLTVENSTQ--TVVVGGESEOLV 588
 WP_049967566_1 TKDVTVDGNTPTATVSF-TTDELETLRE--TGT-----ITLTINSTR---VVVGGESEOLV 586
 OLS27023_1 IASEFINKEN-KYYKIYDVRNIFLDKFT--TGS-----NKVEVFLEGE-GTCHIADEIRKWI 547
 OLS16413_1 IASIKYLNDDTTPVSTYKLDDEFMK-----DGE-----NFLNIVRQGS-GRVLYLTTEOTL 537
 WP_011499743_1 IKGSRITSENYDVVNIIIEVPEGVEVLEMELSGS-----GELNYQLVRRFNVLPEVIEHBI 556
 WP_048206237_1 LKSRVTSSENYDVVNIIIEVPGVESVNMTLEGS-----GELNYQLVRRFNVLPEVIEHBI 556
 WP_015053894_1 VRSIDVNSRNFDVVQIVEIPENTSQARLEMEGT-----GELSYQLVRRFNVLPEVTPQKEI 557
 WP_023844962_1 ISSIEVNQQNFDDVQIIIEIPDDVSTVTLSEGT-----GDLNYQLVRRFNVLPEVTPQKEI 557