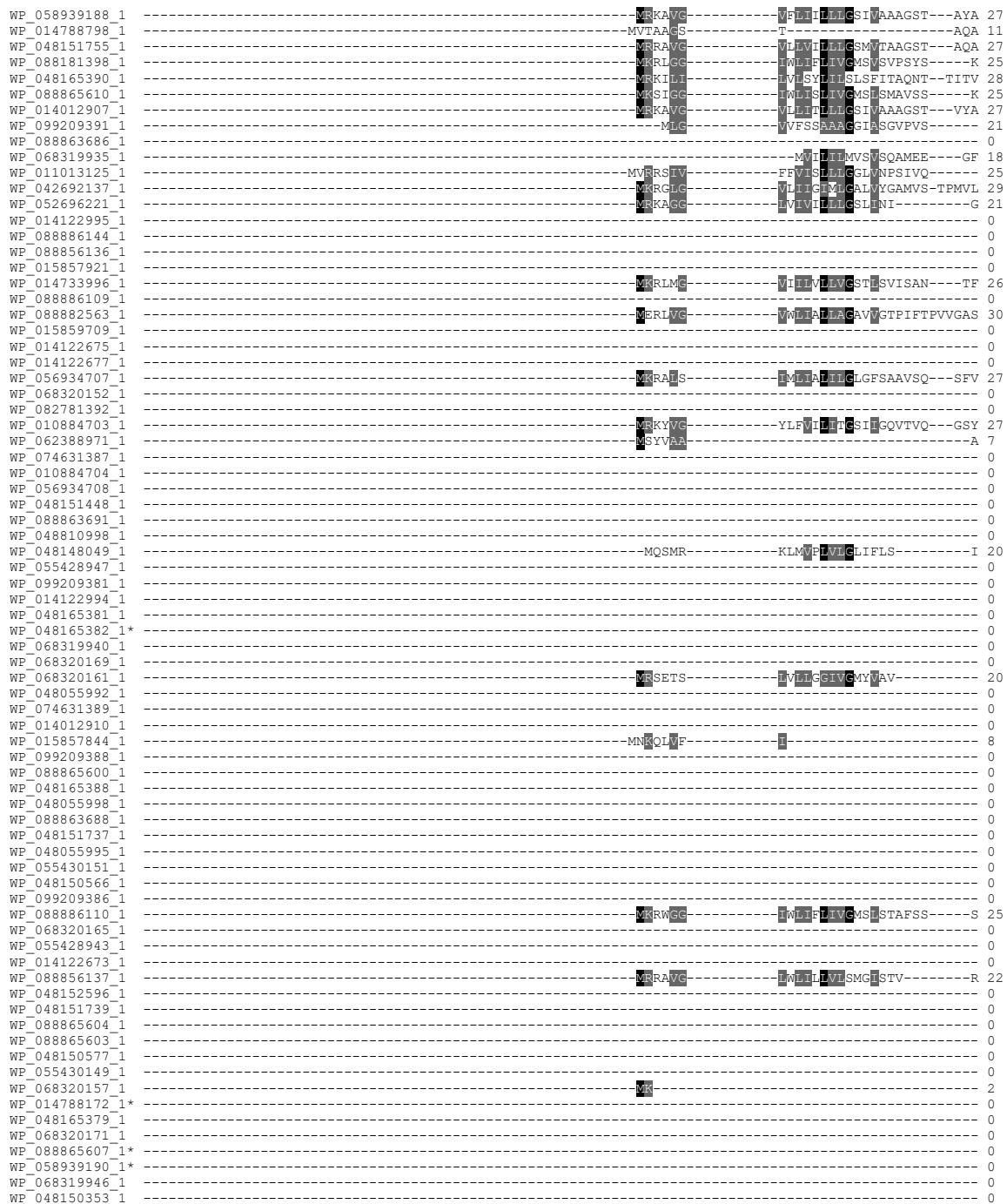


Supplementary Figure S1. Evidence for sequence features of the protein families identified in this work.

A. Thermococcocal 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.



	NVHSQIA	IVLLGAIIVVHIVT	21
WP_048150344_1*	-	-	0
WP_048055999_1	-	-	-
WP_058939188_1	TSVDAQNDPYEKFWIELNRESELVVRNLATGNT-----TLVNEELIQLNSRLGAENAANISALIWOALEELTSGVKYYTAELREMAQNIQNGLPQETV	122	
WP_014788798_1	TSLETRNDPYEKFWIELNREAELVVFNFATGNT-----TLAELLIQNSRLGAENAANISALIWOALEELASGVKYYTAELREMAQNIQNGLPQETV	106	
WP_048151755_1	TSLETQNDPYEKFWIELNKEAEELVVFNFATGNT-----TLAELLIQNSRLGAENAANISALIWOALEELASGVKYYTAELREMAQNIQNGLPQETV	122	
WP_088181398_1	FVAATSDPYEAFWQIILNREAEELVVFNFATGNA-----SLAQELLIQNSRLGAENAANISALIWOALEELASGVKYYTAELREMAQNIQNGLPQETV	120	
WP_048165390_1	NALENENQPYEEFWIILNKEAEELIILKLNTOADQ-----NTAELLIQNSLQKAENAVQISALIWOQNRELPOSGVKYYTAELREMAQNIQNGLPQETV	123	
WP_088865610_1	PVMAVSNSDPQAFWEILNKEAEELVVFNFATGNA-----SLAELLIQNSRLGAENAANISALIWOALEELASGVKYYTAELREMAQNIQNGLPQETV	120	
WP_014012907_1	TTVEAQDQDPYEKFWIELNKEAEELVVFNFATGNI-----VLAELLIQNSRLGAENAANISALIWOALEELASGVKTHYAEELREMAQNIQNGLPQETV	122	
WP_099209391_1	-----ENDAACFQFWNVLYREAHLVGVVNNESANAGHINA-----VLAELLIQNSRLGAENAANISALIWOALEELASGVKTHYAEELREMAQNIQNGLPQETV	116	
WP_088863686_1	MVEVE-KGNL-----TLVPELIQNSRLGAENAANISALIWOALEELASGVKTHYAEELREMAQNIQNGLPQETV	71	
WP_068319935_1	VLASAAEDPKKEFFWDILLYREADLWVOLNKTGGG-----NIAKEELINNSRRGAENAANISSALIWOALEELKSGVKYYTEDELKMAEDIKRNGLPQETV	113	
WP_011013125_1	-----ASTQDPYEEFWIELNREARLWVGEAB-SGN-----TAIINELLIENSKAGENAALISQTQTNQTLQELSAAGVKYYTEDELKEMIEEIKAKGLPQETV	116	
WP_042692137_1	ANEVNGDKAYDFWRIILNDEAMVVAFNFSIYSGPNPAFLAQKLIENSRCGEINSANI-----SACQIVALEELRKGSVKQYYADELRKMAEBIKRNGLPQETV	129	
WP_052696221_1	TVQALSDPQEDFWRIILEKEANLPEAG-SGN-----TAIINELLIQNSHAGENAALISACQIVALEELRKGSVKQYYADELRKMAEBIKRNGLPQETV	115	
WP_014122995_1	-----MSHLNVFIPPGI-----	13	
WP_088886144_1	-----	0	
WP_088856136_1	-----	0	
WP_015857921_1	-----MDYSEDELKQMARIIACNGLPQETV-----	25	
WP_014733996_1	VVAQATEDPYEFWIELNSKEAPLIVVANATGNI-----TIAKELIQLNSRLGAENAANISALIWOALEELASGVKYYTEDELKEMANIEIKRNGLPQETV	121	
WP_088886109_1	-----	0	
WP_088882563_1	GTSTGTTSA-----TPEFWDILNREAEELVVGVE-IGNL-----GLADBLQNSRLGAENAANISALIWOALEELSSGVKYYTEDELKEMANIEIKRNGLPQETV	124	
WP_015859709_1	-----	0	
WP_014122675_1	-----	0	
WP_014122677_1	-----	0	
WP_056934707_1	LAGTODDKAEDFWNLIILNREAPLIVELNSTTIVNBIQ-SLAELLIQNSONGSSNAQISALIWOALEELNSGVKYYTEDELKONAEHIRNGLPQETV	126	
WP_068320152_1	-----	0	
WP_082781392_1	-----	0	
WP_010884703_1	AMAMDDDSNPYEEFWKILLYREAEELVVKVE-NGNI-----SACQELLIENSRKEEENAAANISBHTWISLKELESSGVKYYTEDELKMAEDIAEINGLPQETV	121	
WP_062388971_1	TDSEDTTSVYNAFWDILNREAVILVLEAO-EGNT-----TAACELITNSRECEKNAQISALVWEALEELDSSGVKYYTEDELRCMAQBIKQKGLPSETV	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	PAGAESTDPYEFWIELNSKEAPLIVVANATGNS-----TIAKELIQLNSRLGAENAANISALIWOALEELASGVKYYTEDELKMAEVVSQGLPQETV	115	
WP_055428947_1	-----MPDPPTSACLSGVPLP-----	16	
WP_099209381_1	-----	0	
WP_014122994_1	-----MYFTVKVRNYRPDKIDVVRGFIED-----	23	
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WP_048165382_1*	-----	0	
WP_068319940_1	-----	0	
WP_068320169_1	-----	0	
WP_068320161_1	-----AKSDVKNPQGIIFNG-----	35	
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WP_088865600_1	-----	0	
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WP_099209386_1	-----	0	
WP_088866110_1	QVIAASSDPYEFWDLILNREAEELVVGIE-NGNL-----SLAELLIQNSRLGAENAANISALIWOALEELASGVKYYTAELREMAQNIQNGLPQETV	119	
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WP_055428943_1	-----	0	
WP_014122673_1	-----	0	
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WP_048151739_1	-----	0	
WP_088865604_1	-----	0	
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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	
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WP_048055999_1	-----	0	
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WP_014788798_1	EALKAQGWTDQIQALEEYIVKNADEINPDFNMTFRELEIFSMASFIDVFKYNE-----CANALKTGYWKNIEEAPSTAGLSQ-----VNPIILKRSWIETYASY	200	
WP_048151755_1	EALKAQGWTDQIQALEEYIVKNADEINPDFNMTFRELEIFSMASFIDVFKYNE-----CANALKTGYWKNIEEAPSTAGLSQ-----VNPIILKRSWIETYASY	216	
WP_088181398_1	EALKEQGWTDQIQALEEYIVKNADEINPDFNMTFRELEIFSMASFIDVFKYNE-----CANALKTGYWKNIEEAPSTAGLSQ-----VNPIILKRSWIETYASY	214	
WP_048165390_1	STLKEQGWSDSE-----QALQNYIVONADQITBDFNMTFRELEIFSMASFIDVFKYNE-----CANALKTGYWKNIEEAPSTAGLSQ-----VNPIILKRSWIETYASY	217	
WP_088865610_1	QALRSQGWTDQIQALEEYIVKNADEINPDFNMTFRELEIFSMASFIDVFKYNE-----CANALKTGYWKNIEEAPSTAGLSQ-----VNPIILKRSWIETYASY	214	
WP_014012907_1	EALKEQGWTDQIQALEEYIVKNADEINPDFNMTFRELEIFSMASFIDVFKYNE-----CANALKTGYWKNIEEAPSTAGLSQ-----VNPIILKRSWIETYASY	216	
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WP_088863686_1	NALKEQGWTDQIQALEEYIVKNADEINPDFNMTFRELEIFSMASFIDVFKYNE-----CANALKTGYWKNIEEAPSTAGLSQ-----VNPIILKRSWIETYASY	166	
WP_068319935_1	KALKEQGWTDQIQALEEYIVKNADEINPDFNMTFRELEIFSMASFIDVFKYNE-----CANALKTGYWKNIEEAPSTAGLSQ-----VNPIILKRSWIETYASY	205	
WP_011013125_1	QALKNEQGWSDDEEEEEEQYLIYEADEVKQDFGMSFLTFNFSNAFIRIAFKYNSLQFAFPQKTDITL-----VNPIILKRSWIETYASY	211	
WP_042692137_1	NELKAQGWTDQIQALEEYIVKNADEINPDFNMTFRELEIFSMASFIDVFKYNE-----CANALKTGYWKNIEEAPSTAGLSQ-----VNPIILKRSWIETYASY	229	
WP_052696221_1	RALKEQGWSDDEEYNNLQYILOQAEWVSCDFNMSE-----VNPIILKRSWIETYASY	208	

WP_014122995_1 -----NISNNPDE----DSTAGSFVSAFLQALSDSFIFTGWKYARKEYIWAVEREYWP--TSPSQAPSGTLT---INPLVSTS-SIWSAI 88
 WP_088886144_1 -----0
 WP_088856136_1 -----0
 WP_015857921_1 DELESSGWNDEEIALEEEYIKENTPSITGSFSMSAFLQALSDSFIFTGWKYARKEYIWAVEREYWP--ASPSQAPSGTLT---SNPLVSTS-SIRSAI 116
 WP_014733996_1 SVLREQGWNDEEIKSLEDYIVRHSDDIKDFNMTPLPFLISLAFMVEVGKYNKYEAWALKBARWNTSLTPSSLGDTKM---INPLFYDILWOLYREY 216
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 WP_088882563_1 NALKEQWTDEQIALEEDYIVVONGENITEGFNMTSPLPEITSFIRVFKYNHYESNALEWWKWTTRPIEAPTTNSEDRL---INPLMAVRWWSFYREY 219
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 WP_014122677_1 -----0
 WP_056934707_1 QTLKEQGWSDDEIALEEEYIAENTDBITEDFNLTKFLKDFSCAFIQLVFKYNCEIWALEXWKWEGKANFTGSLPSNEG---INPLIADEWINFYKTY 220
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 WP_082781392_1 -----MPHICQECPKTEI 13
 WP_010884703_1 RALKEQGWSDDEIALEEDYIKNKDNITGDFNMSPLMNFSAFVFKVCFKYABYESNALEWWKWEKGKANFTGSLPSNEG---INPLIAEWINFYKAY 216
 WP_062388971_1 KTLREQGWSDGEIALEONYITONADNITGDFNMSPLMNFSAFVFKVCFKYARKEYETFGLEXWWGSTENFTGNLPQDVS---INPLIAEBWVNFYKAY 196
 WP_074631387_1 -----MILARYTGSKYNNYD 15
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 WP_056934708_1 -----0
 WP_048151448_1 -----0
 WP_088863691_1 -----0
 WP_048810998_1 -----0
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 WP_014122994_1 EDCAVIVKMGESGVYTPARCEKSFSFSY 55
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 WP_055430151_1 -----0
 WP_048150566_1 -----0
 WP_099209386_1 -----0
 WP_088886110_1 DALKAQWTDEQIALEEEYIVVONGENITEDFNMTSPLPEFSMAFISVLFKYNHYESNALEWWKWTPLKLQLGTKGR 196
 WP_068320165_1 -----0
 WP_055428943_1 -----0
 WP_014122673_1 -----0
 WP_088856137_1 EALKAQWTDEQIALEEEYIVVONGENITEDFNMTSPLPEFSMAFISVLFKYNHYESNALE 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 -----IPV 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* -----FAVTICHEFHFSFGES 56
 WP_048055999_1 -----0

 WP_058939188_1 YNYSGDSMDIETFYNSVRGLNKLINALILDRKPKKEKEYEYTKFMPHPPIPAPPRRNITLNGSISKYLHPPSKETEVTKVEKRAPNGLVFTIERTKIVKV 317
 WP_014788798_1 SEGN-----YSKMKSAEKLRLKMDMUVGKTLNKTTELKEH---GDLQLIELRRDV-----YVMWV-LKNGVVFRVYNSADNSS 275
 WP_048151755_1 VEG-----YKMRDSTITLRSMEMLITYSSNSPKQVELAFN---GESITITTCNL-----RGVLW-GHDGSMARIEQEHFDRD 289
 WP_088181398_1 LHS-----YQRMEPAAKTLRQSMNLTGTGGGNVNLLFYERGT---SPSKFQGSV-----GSIVW-VEDQGLLFTVTTRRATAT 285
 WP_048165390_1 SQKD-----YKNNMSVYELKGSMMKLSNEKRNCTLFLRDN-----SILSKQGT-----ESIRW-IKNGGLVITFKSTQITPT 288
 WP_088865610_1 LSGD-----YNNMKSXVYELKGSMMKLSNEKRNCTLFLRDN-----LVTQRCII-----KGINH-TTNGSLVFTLVTTSKGK 284
 WP_014012907_1 SSRD-----YKGMKKARQLRDSMVEPLTGEKISGNLFLKDE-----VVTQTMGI-----KSVNH-TTNGSLVFTVLTIPDGD 286
 WP_099209391_1 LKDN-----VSGGMNSSLKMHIRYIHSIMPLSYSSGTF-----VSGCGVVVQNVRGVGDLS 268
 WP_088863686_1 SQGN-----YQKMEPAIKSLRQDTDLKGWDWNIHKTPIIVYN---NSRLIQLQGR-----TSVQH-IENGGLIFTVTTTAYATRD 239
 WP_068319935_1 SSKT-----IEEKLLAIEKLONKIIETIVKGNVNDY-----IENGGLIFTVTTTAYATRD 239
 WP_011013125_1 LFEG-----IDEKLSTIEKLAKKEVEVTKNSPKGRDGHVIR-----NSFSIVFNKFKRIPIIK 266
 WP_042692137_1 LSC-----VGGMSALDSLAKGMDSIIHSKWTA-----VRDQGLIYLSSGDKVKGSG- 275
 WP_052696221_1 RSKS-----IDDKLSLAIERLERELKLISSGGKLGDGFLVMKITTSPRKLTTLDDETSTK-----TSSVSSLPIRVEIKPVPVKPKPC 286
 WP_014122995_1 LNC-----PGSFVYAVKATKNDVLDATSSAS-----AY-YSNCGIAFSTVTINSNGK 135
 WP_088886144_1 MGMEDSIEALRDSAINFITYQEKFVSLTFLRNGS-----VITKTGT-----GRVEW-TENGSWFTTIVTSPSED 65
 WP_088856136_1 MEVSIONLNEVYKLLLGQSGLITMLLDD-----SGIISKRGQV-----KNITW-VQNGGLIFTTISLTIGST 63
 WP_015857921_1 INQ-----PNSLTVYAVRSTKSDVVDTLYSAS-----IY-YSNCGIGFSMTIDSRK 163
 WP_014733996_1 NSQ-----FDNAETLIEKLAKRAVYLLIFERKRVETPSGEY-----VLISPTYKI-----ISLNW-TKEQGVFTVIKIGSG- 281
 WP_088886109_1 SQKD-----YQGMDPAAEIRESMVRLLMGTGSVNLLSYERTT-----SLSQLPGSV-----DSVKW-SKNGGLIFTVTRARMTS 102
 WP_088882563_1 SQQ-----YENMETAIKSLRDYVWILLMLGNSSGENRMLLYSPG-----TDRLTSLTCVK-----TNVEQ-TENGGLNETVTLTRITGT 292
 WP_015859709_1 -----0
 WP_014122675_1 -----0
 WP_014122677_1 -----MIDRVKFND-----GSESKVLSV-----GTIAY-TGEGSMESEPEFIAPVGN 41
 WP_056934707_1 YTGT-----LEEQLSSINFTQSRTSLLTGSLDRVNSALIPSAT-NSLQILPLNPLL-----KNITY-LNINELIPEETWEFIGQKT 295
 WP_068320152_1 -----0
 WP_082781392_1 -----0
 WP_010884703_1 STNN-----MKGLLKAINEISSLKMKMELFKYEMVEYSSLPSRFQG-----LKNRGYV-----TF---YKGGEVVVITTRNIRYFPN 282
 WP_062388971_1 LERN-----STELEESDEVSSRTVALLTSHSSFKARAELLRNG-----SLILRHETV-----TGVDF-YSNCPAVIKTSSDYDDWR 267
 WP_074631387_1 -----15

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WP_048151448_1	-----	0
WP_088863691_1	-----	0
WP_048810998_1	-----	0
WP_048148049_1	LEG-----YEGALEC R T L KR R I A STAEDAER-----	-LGS G V L VMGLRWEHIPLN 256
WP_055428947_1	-----	16
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WP_014122994_1	-----	55
WP_048165381_1	-----	0
WP_048165382_1*	-----	0
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WP_068320169_1	-----	0
WP_068320161_1	-----	58
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WP_014012910_1	-----	0
WP_015857844_1	-----	11 L STPAVKA 24
WP_099209388_1	-----	0
WP_088865600_1	-----	0
WP_048165388_1	-----	0
WP_048055998_1	-----	0
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WP_068320171_1	-----	0
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WP_058939190_1*	-----	0
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WP_048150344_1*	-----	56
WP_048055999_1	-----	0
WP_058939188_1	YSDFLIKDIGRSGDADVKSTPEWCPETWITINRTV Y WPSALEAYE S SNIMALLPKKKR G NNNP E DKIINOKQ A EELKOSIG G YMT-----YSTSEIKR 413	
WP_014788798_1	YG-----VYYWPNT A AYE F ASNI A LLPKEL G NNNP P LPM M NQ K VAELKD A E V V-----SREVITNP 342	
WP_048151755_1	GF-----EINL T YYWP G ALEAYK G T S SVLVLV N AMQ G NNNP P LPM M NQ K VAELKD A E V V-----SREVITNP 357	
WP_088181398_1	EV-----ITETKTYYWP N ALRAYK G DN T MD S ILNQ K IAE L KEA K KEIV-----SSKVTRTP 353	
WP_048165390_1	EI-----ITERTTYYWP N ALRAYK G DMGVY A LIK T RY G NNP K VESM L NQ K VAELKEA K V L ISSEIKRSP I KSP 360	
WP_088865610_1	YI-----IWNVTTYYWP D ALY S ESS N ILA V TAIES G NENDELVS I LNQ K VAELKD T M K V L ---ENKVLPN 352	
WP_014012907_1	YL-----IWNATTYYWP N ALAYIAS G NENMETES G OKVAELKD S IKVVIV-----KSESYTRR 354	
WP_099209391_1	FG-----YSCW P SALK A ND T ROVY V LT T MS G NNP E PLK G LNQ K VAELKD A LVVYH-----DETSINPNP 333	
WP_088863686_1	RY-----VIMENK T YYWP K ALK A Y E IGNVY A LV K KNY G NNP E LD M NQ K VAELKD A LT V V-----YSHVSP I K 309	
WP_068319935_1	SI-----RQDSIGTITLP K PK I PSPI P PT T TK Y WP A LEY R TA A IR L LL I KY G ND R LEEM R NR I SP R SE K V V -----FTSPSLIS 344	
WP_011013125_1	CT-----YWNAIK A Y N T L LOVES I LA R Q K LN G NNP E LN X LN H KV E LA R LT E CY G DTGTT P IP K P 329	
WP_042692137_1	-----SYYWP A VE V ROL R RV V VL N AM M LN G NNL D V K AM I N R RE V AE E LK D ALVV-----YSKTI E W 333	
WP_052696221_1	TI-----IYYW N AL K GY N RL R RV V VL N AM M LN G NNL D V K AM I N R RE V AE E LK D ALVV-----VNGGDCSG 348	
WP_014122995_1	TV-----RRY W EN A NAL N AY R TL G LY T LA V AI E K G NNP E PL W GL A RE K Y D E E LY K Y M VL V -----SFSTPNP 199	
WP_088886144_1	GF-----MLNT T YYWP N AL R Y E TS N MT L VR N RC G NN N SE V MLNQ K VAELKD A LV V -----SFSTSTVQ 133	
WP_088856136_1	KV-----KTTR T YYWP N TD A Y R RI E D I NT L LN R RC G NN N SE V MLNQ K VAELKEA I N V III-----NITTWEIP 131	
WP_015857921_1	TV-----RRY W EN A NAL N AY R TL G LY T LA V AI E K G NNP E PL W GL A RE K Y D E E LY K Y M VL V -----SFSTPNP 227	
WP_014733996_1	-----VGIRE T YYWP N AL R Y E MG N VY A LV K SI N LN G NNP E PL R MLNQ K AE G DA I N V V-----YREIIKRP 347	
WP_088886109_1	EV-----ITEKU T YYWP N AL R Y E E I NS V IA L LV K GR N GN N AK D SI I LNQ K VAELKD A LK V IEV-----SSEVT K P 170	
WP_088882563_1	EE-----VVNT T YYWP N AL R Y E IG N VY A LV K GR N GN N BE I DR M NQ K VAELKN A IKV V VR-----SSEVTTRP 360	
WP_015857909_1	-----	0
WP_014122675_1	-----	0
WP_014122677_1	-----	0
WP_056934707_1	EN-----HQASV S CL V K Y RS V TS P G-----ESTITVVP 61	
WP_068320152_1	-----KEIC T Y I YN K NV T RY W K S PL K Y R AI E H S LI A K Q F G NN N VE L W N E K IG E L K D P T V INE-----ESTITVVP 372	
WP_082781392_1	-----	0
WP_010884703_1	YT-----EEVTE Y WP N AL R Y E TR O TY V TV A ISM G NNP E DL R MF K D K ME E REAL V VI N -----341	
WP_062388971_1	NL-----KKV T VD T YYWP N AL R Y E TR O TY V TV A ISM G NNP E DL R WF I LNQ K DE I KEA K V V -----SESVTEKP 336	
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	GT-----FVTIERR Y W N A I ES Y R A LE A E A V I A K V G G N S E K LN G ML A G K VE E LR D S-----311	
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		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_088886110_1		196
WP_068320165_1		0
WP_055428943_1		0
WP_014122673_1		0
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
WP_058939188_1	VSCYDNIKPGQPRPM-----NGADIEETPVVGNTSNDFQEPLNLPWEWL-KERIDMENTFGVLSINGHIVVVRNDASE----IKYHVE	492
WP_014788798_1	QDSIENITLPIINFGEKYGGIDTPVKPAMDSNNILNSQSIEITPSESNETFKEGSRI-LTHINP-DTRSEKINNNVVIPEVESEDY----ATYKVS	435
WP_048151755_1	DYKKLPBSD-PTPI---DPIPEPLKNSIKGVGDTLTPESSSNQIPADEIM-KIASDPGSLREGI-KVDDIEWKPLTSGPNY----VNYRVI	445
WP_088181398_1	IKNPKPITPIKPGDPGIPDRPKPLSSLTGTMGTSTVSDEDTGIVDGVPIQDVL-KERIDPQSSGETMIDTDIAWVDKVNPGE----IKYHVK	447
WP_048165390_1	IPIKPGDPRIPA-----PIPVSPKGYSVSDGQTFEENLGVEVNGVNLIEPEII-REAIIDTQGNIQKITEVKIVWDKNQPGK----WEYHVK	442
WP_088865610_1	IRDDPIRPIEPIYI-----NPKLPQAPVPSLHTSGDGSVETNHIPTEIL-NEAINTEDNIGOKITEVKIVWDKNLPGK----WEYHVK	432
WP_014012907_1	KKDKEPIKPTEPPIYI-----NPKLPVQPVYAGSTEPTISTEFITSIVITPADEIT-TIAINPESDORIEINHHITTPVEVSTDY----ATYKVS	441
WP_099209391_1	NPNFPHPVGKK-----CLWTGSTSKGSGSLKAPSGSFNRKDLLK-KFALDVDSNYGYVIEGVVIVPVEVTGTY----ATYRVW	409
WP_088863686_1	GPIKPEPIKPKPEPI-----KPGDPVMLPLDSATSGESYDSSPDSSLTTKVPDEIE-ALAINPESDWSGRFVIDGVSVEAUDKGTDY----ARYRVW	395
WP_068319935_1	PFNVEKEGKLSV-----EVKEIADEITTSE----WRYHVK	375
WP_011013125_1	IITIPKPKDSDL-----LNDQIA-REPIMVGESECI-VIKAVERNPVEVSEY----ATYHVE	384
WP_042692137_1	KFRPENPPPIIDPC----EKNPLKCRTITSGSSGNSDYLVGSISNLQTSRLTSVDY-DIUDVNSNYGYLSINKVSVVWDVISTK----ATYHVE	421
WP_052696221_1	VSPPEPGILGGS-----TEEALTAGRUEVKSVSRVEPEVAEVDY----ATYRVW	393
WP_014122995_1	VPPKPSMPMIPLDIS---TPSLP---KTSS-----TTTQPVPFKINAIRWRTRDRSNP----IKYHVL	253
WP_08886144_1	VPNEPIYPIEPIPDI---YPIDPKLPVLPVSTESTPEETTAELSESTTVTPADETA-LLBDPNNEEGRNWDSVNEAVEVTSVDY----ATYKVA	222
WP_08886136_1	TESFEP----SPI-----NPKPKPITLSTEISGGS-KMNLNEATTSDQDWIRMLAATGEENEGTBEIKDIHVEPINITSDY----ATYRVW	211
WP_015857921_1	SPPRPRMPMPTLHLS---TPE----PLTS-----TSSQEFPVFRINAVWRWRASHDANP----IKYHVA	279
WP_014733996_1	IYYISISSPIR-----NNIGSVPLDRAAQTSSEPDEI-EKVASGEYSICKVVKDQVLTKIDNGR----ESYNVK	415
WP_088886109_1	ILLLKSTSGTAT-----TSSITGGGEIVVSGVPVDESVL-VELAIDTONDSGT-VIJDVSVVWDKVNPFSS----WEYHVE	239
WP_088882563_1	IKDGSSSDSGSTK-----IADEIE-RLAIDPQSSWGIFRVDDVVEVTHKGTAHYMYKFAMYRV	419
WP_015859709_1		0
WP_014122675_1		0
WP_014122677_1	GDTPNS----KP-----GD-PVKTASVQAYTPADYSTPTAPVIVVMESYGTID-----TSKII	109
WP_056934707_1	VFKSCTSP-----IKPEPPTILEVETSTSTFETSIEDTTOO-----409	0
WP_068320152_1		0
WP_082781392_1		13
WP_010884703_1		13
WP_062388971_1	-----KYERKPWD-LIHLRSSPVTRGRLLISKPVVIDEATPDE----IKYRIK	385
WP_074631387_1	LKIKPSLPPISIEP---PKQFIGTLSSSGGSLSTQSTSEAPTLKPTEV-EKTDQPYTQFCINANA-GVSVIPVEVTDSF----EQYQWV	417
WP_010884704_1		15
WP_056934708_1		0
WP_048151448_1		0
WP_088863691_1		0
WP_048810998_1		0
WP_048148049_1		311
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
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WP_014012910_1		0
WP_015857844_1		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
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WP_068320165_1		0
WP_055428943_1		0
WP_014122673_1		0

WP_088856137_1		177
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WP_048151739_1		0
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WP_088865603_1		0
WP_048150577_1		0
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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	ISMVAKYNSKSKRVRNVSDKTS-----GCIDTGTIS-YLGPDEE-ETWRSKGFSARVSG-----SSRITONVKRITYR PVC--SSP-----ITS 567	
WP_014788798_1	MDITVGASETTNTVIVELEG-----ELKYSKDYG-AIDNGET-ITVESTVSGRVYGD-----YEVEVSKRKRTYQFIT---EYH-----TNS 508	
WP_048151755_1	VHMHTENAAKRNKRINLHDYST-----GRSDSETIS-CDPYID-YNWESKTFSTSIIRNEN--GKIDTAESEIPTTYTPC---DKS-----LG 522	
WP_0888181398_1	VSFRAEENNANNNRVSVKDYTT-----GDSDFGTIS-PILNGCES-HTWNNSKEFT-YTHSSG---GEITVSGCRVETYTPSC---NDV-----ELS 523	
WP_048165390_1	ISFKAEEENNADDTIRINVKDYTH-----GDSDFGTIS-BLNSCOS-YAANNSKRFT-LTHSMD---GEITVSGCRVETYTPSC---GAV-----ELS 518	
WP_088865610_1	VLFKPENNAVNNRNRIDVEDRTT-----GDSDFGTIS-BLNSCES-YIWNNSKKFT-LTHNME---GEITVSGCRVETYTPSC---GDV-----ELS 508	
WP_014012907_1	MDITASKASEVNWKVKLEG-----ELEYSKNG-AIDNGET-ITVESTISGRVYGD-----YEVEVSKRKRTYQFIT---EYR-----TNS 514	
WP_09209391_1	VHFRAVNNVINDKVKFHG-----GILSYQVTQG-YUHPDPDGKVTVSSIVSSRIYNGNA-STUSVACTIVTCKSVP---TPR-----PE 485	
WP_088863686_1	WRYHVEDNAWSNKVTFDG-----ELTDSTSGL-HISPCDS-DSVSESEVSGYVRGS-----CEHVHVCSTVTKRTYTPSS---GPV-----ITS 468	
WP_068319935_1	IILRAKDNDDVYVSKIKING-----GISFEKDVD-IIVHNNEDEIIIEDEISKEVYGEIS---NTVVKVSKVETITYSPIY---GST-----P 449	
WP_011013125_1	VEIBAQNNAYDINVEFDG-----SLEDTEKG-MLNKDEV-KVIKSKV-----GSVIVVAGTVKRTYKSYR---GNA-----PMA 457	
WP_042692137_1	VSFRAEENNANSDVKKINLTD-----SCSDSVKYS-MVHPDPDGTRLWKSKKFTVNFGK-----TQIVVSGCTVKSIVSLSTP---TPL-----PMS 496	
WP_052696221_1	VEVQAVCNAAVSINNEFKG-----ELSDAESG-BIYNEEV-KTAVASGVSGRVYGS-----GSVIVVSCVVRVSESHS---GPV-----ELS 466	
WP_014122995_1	IDYTVTGGQVVYNVVFSLN-----SEEOTITPG-HLDPGSG-TIESGNFTAPGVLDGSLKIVVGEIVTVTRPVV---TPDGGSIILKSTSAPAS 340	
WP_088866144_1	VHLVEDNAWSNINLEFQG-----ELSDFKSMG-HIYPCDS-FVVEESTVSGRVYGS-----DQIVVSGCTVTKRTYTPSS---GQI-----PNS 295	
WP_088856136_1	WYVKNNMDDSTPVEVLMVEG-----KLSDYQ-SI-FIYPKST-ITVTSVPSGKVKYGD---KWWIVVSGCTVTKRTYTLQK---DTQ-----E-- 281	
WP_015857921_1	IDYTVTGGQVVYNVVFSLN-----SEEOTITPG-HLDPGSG-TIESGNFTAPGVLDGSLKIVVGEIVTVTRPVV---GPGGENVVIKSTSSVES 366	
WP_014733996_1	IVLVAESNNIKKNRVE-LKD-SS-----GDKDEKYD-IDYPODGETSIVSKKEFTLNPDNS---KKFRISCVNVAVITYTPGC---GNL-----ITS 492	
WP_088866109_1	VSFRAEEDNAVNNRIRKVKDYTA-----RDSDGTIS-BIUNACES-YTWKSSRFIT-YTHSSG---GEINLSEGEVITYTPSC---GAV-----ELL 315	
WP_088882563_1	WHYHVENNAWSNISVKEKG-----YLEDSKSMA-HISPCEG-GIITSGESE-FIGSGS---GEIVVVMVVKRTYTPSS---GPV-----PEN 492	
WP_015859709_1	-----MIDRVKFND-G-----SESKVLSMDAIVYTCFG--SVESEPEFIAPVGN-A-LQSVSVCIVRIRRSVTPSGGDT-----PNS 67	
WP_014122675_1	-----MTITIND-KLADYYFGGERPWDPMRWFKSS---KNRFEGY-----SYLIRVK-----46	
WP_014122677_1	-----DPGKJDLKJQA-L-----KISEGK-WK-YV-----ARISNS-----NSVFRGFLTFYTIILD---GDH-----L-- 158	
WP_056934707_1	-----Q-----VQIDELAFA-ALSVCDE-----TEQVSCELLVESVTPS-E-----445	
WP_068320152_1	-----MREGNKFEV-VLYFCLN-----15	
WP_082781392_1		13
WP_010884703_1	ITMEPHNNIDRDRDTEVDDTS-----GSSDKGSTD-YITMGEES-KTWFSKQFSIKPSD-----TTVKEEKKRTYTPVC---GDI-----POR 460	
WP_062388971_1	WSPMKAKNKNVTDKRSVHG-----GLSDSGE-----M-HPDGEVDWTSSISDKVRGS---NOIVVSKRKRTYTSNS---GPT-----ITS 491	
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		311
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		24
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WP_048055998_1		0
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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 FKDGQ-----TLSR----ECQDRTI---TRSYESETIDLGFS--LDWSKVDVWVTA---SR---HNVEGESVDTYWKVNCGNSLWVDS-----V 636
 WP_014788798_1 ESSLN-----PDDTPP-TYSTLQ---VEEYSSTIKLQYDP-TKKNIDEVVNTP---QS---GDKENDEQFKLKWSNHNPFSLACSYEKEV 587
 WP_048151755_1 SREDA-----PILS---SCSARTI---TEQYSATFELLS-SS-VDNNLVGHIRLET---SS---DDETDGSVTYKVVWENKNVNAVLNG-----V 591
 WP_088181398_1 KNE-----PFSASL-SCQERTI---TKDYSATIDLTSP---VDWSKVNIIRVEA---SR---DSSTKGESESVTYRVVIVENRGSVKLDD-----V 592
 WP_048165390_1 KNHE-----TLSTSP-SCQERTI---TREYSSSTINLESP---IDWSKVSVIRMET---SR---DRIVEGESVTYRVWENGNCSAPLSD-----V 588
 WP_088865610_1 KNHE-----TLSTSP-NCQERTI---TREYSSSTINLESP---VDWNKVRIRIEA---SK---ESTAGESESVTYRVWENGNCSVPLDD-----V 578
 WP_014012907_1 ESGLN-----LDDTS-S-KYSTROB-VEEYSSTIKLQYDP-TKKNIDEVVNTP---QS---RNVEEGDSVOFKIKWSNHNPFSTVNTNYSLKKEV 593
 WP_099209391_1 GFNAS-----AIGAGI-RNVTV---TEDYHKVINVLKSS---IDPSKVDFSVFT---DPA---SPVLVGTNVKFKIYWWNENSKFVSPNYRLYOC 562
 WP_088863686_1 AGSEP-----TGGTKE-MEI---TREYSSITKLDDV---IDPNKUTVNVIP---GE---TTTHECDNWFVKVHENENGKALSTCTLRATY 542
 WP_068319935_1 -----TLSITS-QSSEEKKTTERTYEETTISLKDPM---IDPKNSVSKLUVV---DP---NPARTWENKJLKLKIRFNDNEKSISCVYVVKIAM 524
 WP_011013125_1 IQT-----TSMSKKTTERTYEETTISLKDPM---IDPKNSVSKLUVV---D---DGRVEESAFTFKARWENDNEVGCISCSCTLSSEPV 527
 WP_042692137_1 NPSQP-----TVSSSS-SSSDVQAVKSYAKTIDENLS---IGPSKVFFELIPV---SK---TE-TESSSVSFTIKIRNENDVPISQWMSFHASY 575
 WP_052696221_1 ASS-----P-ETSMKLL-EVYVYSGTTHLN-DP-IDPKNSVSKLUVV---D---STILEGESVRFMVKHILNENGEEPVKNCYDDESY 541
 WP_014122995_1 IGEPS-----ISGYSDDTIAIRV---KLEYGKTFELLISQ---IDPEKVKVVKWIP---SK---DVEVGDSITFKLRLKHNENTLPIRGYYLYQV 419
 WP_088886144_1 VS-----P-ANDREW-TESYSKTKTLEEEG---IDPSKVYVSVLAQDENGD---GTVKTCEDWTFKVVWENDNDVNTACTCTIRIVY 369
 WP_088856136_1 -----PNNVGP-TSEKRE-IKSYKTFELLISQ---IDPEKVKVVKWIP---SK---DQANHDGIEGETDVFIIIRAKNKGCTCLNNEY 357
 WP_015857921_1 VSEPA-----TLDYDGETTSIRV---KLEYGKTFELLISQ---IDPEKVKVVKWIP---SK---DVEVGDSITFKLRLKHNENTLPIRGYYLYQV 445
 WP_014733996_1 IKDL-----A-ACQDRTT-TREYSEIITDISRDPETYDKVKEFWWP---SP---STVEEKTVLFKIKWVNNDNSQGFTBRYSLNRL 566
 WP_088886109_1 QESPE-----ASSTSP-SCGDR---TKDYSATIDLTSP---VDWSKVNIIRVEA---SR---TSVTEGESVTYRVVIVENNNEVDS-----386
 WP_088882563_1 NSTG-----RKQMEML-IREYSATKLE-DA-IDPNKUTVNVIP---GE---VENECDSDSFVWVIVNNNRKFTVCTCLLTVTY 562
 WP_015859709_1 KPGDPVETTSVQAYTPADYST-PTAPVLI-MESYHTGTHLISD---IDLSKUTVKTIA---NT---TKTECOSVGFIAWRDNNDVKAVNGVSLFLFTV 155
 WP_014122675_1 -----SNGIAVSDV---FTVKEQ---TRLEK---WEKGK---NA---TKTECOSVGFIAWRDNNDSPKAUNGTLSFFRAV 107
 WP_014122677_1 -----PRQV-----VNHT-----RVVIMPNSQISV-----178
 WP_056934707_1 -----445
 WP_068320152_1 -----PL-GCDKEKTIIVERYEDEFVKKQOE-VDTDKNEI-CHYP---SP---EHKTFDODTFYWTITNDNDKEFSEKCTVYAT 86
 WP_082781392_1 -----IIQYSITIDLKED---INPAKTVTVQ---SK---SOKVDEPYFTITVINDNSKDVESDYFTTFC 73
 WP_010884703_1 SGQ-----SLD-ECTEPRTISDYSKVEBVTD---IDPSKVTFNIIA---SK---KKREEDSDYFDEVVNDNNIKLEGKYLEESV 534
 WP_062388971_1 IRD-----494
 WP_074631387_1 -----AN---TGAIATI-LTAV-----32
 WP_010884704_1 -----0
 WP_056934708_1 -----MLKL-----4
 WP_048151448_1 -----0
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 WP_048810998_1 -----0
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 WP_055428947_1 -----16
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 WP_068320161_1 -----0
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 WP_048152596_1 -----0
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 WP_068320157_1 -----0
 WP_0147887172_1* -----6
 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 KYRVTVSLQPFDPKNSGTVTHPANGEKTIILT-KTVAPDSDCTYLARATISWNG---H1KSAASDKIV-----TTGTEV1SDVDVSRNDD 719
 WP_014788798_1 EYIVSENIMESKFEFTGSIISLQCFDDSTVYY-GSITVMPKOTMYEYFKVGD---YMKFNCTIEV-----KPRPDGESPRIKITPLDWSTAR 675
 WP_048151755_1 DYSVVIYPSDSGSWKYSGTVDEVAEVEVIIK-KVTVTEEAETVAVASASI-KWD---GNSKSVKSVTV-----NSETISMVNFSENNTE 673
 WP_088181398_1 KYSVTIFSPNTNSRTYSGTVDQODGEQVIL---RIVTVYDACTYVHVHSI-YWN---GHSKSAEKSSTV-----TSGHTISITGVDVSEVNTDH 675
 WP_048165390_1 EYSISIPFSPNTSKYSDTVNVEANGAVTIL---QITVTEADASTYVAHHSI-YWN---GNSKSASKSVTV-----TSGHTITGVDVSEVNTDH 671
 WP_088865610_1 EYSISIPFSPNTSRTYSDTVNVEPANGEKTIIL---QIVTVTEADASTYVAHHSI-YWN---GHSKTTSKSVTV-----TSGHTITGVDVSEVNTDH 661
 WP_014012907_1 EYMVENNLLIESKFEFTGSIISLQCFDDSTVYY-GSITVMPKOTMYEYFKVGD---YMKFNCTIEV-----PDDDSFSK1ITPLDWSTAR 681
 WP_099209391_1 E---TSPGNSTKTVTGVSIISLGPNSGRITV-FSNTSSTCEFGYCTLYEGO---YSKTSQGTDIVRAT-----PVSGDSWKLIGVSNSNPALK 646
 WP_088863686_1 E---ETSTS VGTVQLNTE ISVEAEDWVTEI---GTVNVEENSTEGYSECCDEGN---G1SKSFSGSITVVRDDNP---PPACGAKIVSITPEEDHARV 631
 WP_068319935_1 E---DSGTIEYTGSIISLGPNSGRITV-FSNTSSTCEFGYCTLYEGO---F1VMDNGS1KVIQDSG---DSSSQTHEIMSVFSEISIPV 606
 WP_011013125_1 E---TSGTGSRSSYQKSEEFNAEGKSTAIVNF-GSFTVTSRSCTSYVYTCRPGQ---HSKSVDEFTV-----RKKSXGSIGITVPIETNLRA 609
 WP_042692137_1 K---DSSYKTHSFDRSGSVTVVAHDTVSISV-GSFTVPMVHCTYCYSSIFREGPNLMSYRDNSEI-WVASSGTPSPSPSAGSRIIVSVSPEBAHKA 670
 WP_052696221_1 P---ITSTETTSIAKFSVSVSAGGSVSET-GRITMYPGVENLSKC-YFN---SISGAFGI---YPATIVY 624
 WP_014122995_1 E---DGPGRKRTVKLGDRVTLANKETEITV-SVVPSEFREYFVFSYAG---LQADRGKIVYIEGVENVNDLKE 502

WP_088886144_1 E----ISSSDTSARSFSVSVNPEAGGSATETF-GSVHIAWSCTFTYTKCTFED----YERKSFSFGVITMEEDDST---DPTVVKMIDVVPTSWISTARL 456
 WP_088856136_1 E----ISSSDRETKDYITSINVPAQVVEKEFEERTSYHWECHYEHCHVEGQ---YERKNMTGSITVVE-----DGISGGMDI-KVRHDESPQE 440
 WP_015857921_1 P----DGSGKRTRVLGGKUTLCAKNETEVTV-SVPMPEPCRYBYFIVFSYAG--FQAEDRGSILVQR-----EDDECKUYIELGVVVDQDLKE 528
 WP_014733996_1 E-----EGEKSCSGEEFIFCNGEFEKGT-CRKNSKECTYCG-LSELYKNN--YIWDYKGYDTVIR-----ESPKGTRIRINSILWEEVEVK 644
 WP_088886109_1 EYSVTIIFSPSNTSRRTYSGKWDVOPNGELVILE-KVTVTDASTYTTHSI-YWN---GHSKSAETSVTVE-----DQNQKSINGAFSFSSVYYI 473
 WP_088882563_1 P----ETGTQVGTVRNLKEDGVCASGYVERI-GNVSYSSPTECGSKCDEGN--GISKSFSGRVKVV-----DSRTWRRIAGVVDVSSETEVS 642
 WP_015859709_1 P----EENSERLVLGRKTIVLPDENVVQV-GNTVYPOACTYFPTFSPKG--MEVKDGSVVEVRR-----LVLQKNAIKSLQILERNPBE 238
 WP_014122675_1 E----EENSERLVLNRKTVTLPDENVVQV-GNTVYKACTYFPTFSPKG--MEVKDGSVVEVTR-----LVLQKNAIKGLQIFGANEE 190
 WP_014122677_1 -----DLGTVELYLG-----GTYCETGILDEGG----FFKEYGEATVLI-----PVDGEEKKISKVVEGVGPVIFE 235
 WP_056934707_1 -----GTYCETGILDEGG----FFKEYGEATVLI-----PVDGEEKKISKVVEGVGPVIFE 445
 WP_068320152_1 E-----EGTGRYSKDVIWASSSKTFEI-AKVRGKPGTYGCVVFKFG-----FEVSASGSVTVSQDS-----SGSSGSKIKIKQVTFEWSLKV 166
 WP_082781392_1 -----IGRRPIKGHVTSPAGSYGEDTI-GPITCPERCEYCYHMTFYEGP-----YNNTSGGRWVYVNRDNGGN-DDSSSGSKIKIKDRFSETKD 156
 WP_010884703_1 ----- 534
 WP_062388971_1 ----- 494
 WP_074631387_1 ----- 53
 WP_010884704_1 -----M-ATVSYEKSCTVSYSSFSSEG-----GYSKEDSGEIVVARRD-----TGTIGSEKLAGITYIICKNRE 59
 WP_056934708_1 -----VVR-----DKN- 10
 WP_048151448_1 ----- 0
 WP_088863691_1 ----- 0
 WP_048810998_1 ----- 0
 WP_048148049_1 ----- 311
 WP_055428947_1 ----- 28
 WP_09209381_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 ----- 24
 WP_099209388_1 -----MTVEVKP- 8
 WP_088865600_1 ----- 0
 WP_048165388_1 ----- 0
 WP_048055998_1 ----- 0
 WP_088863688_1 ----- 0
 WP_048151737_1 ----- 0
 WP_048055995_1 ----- 0
 WP_055430151_1 ----- 0
 WP_048150566_1 ----- 0
 WP_099209386_1 -----MGDDTMIAKMSRACEWR- 17
 WP_08886110_1 ----- 196
 WP_068320165_1 ----- 0
 WP_055428943_1 ----- 0
 WP_014122673_1 ----- 0
 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

 WP_058939188_1 GDRPRPFDVS-----TRPSSRSLSINVKLEID-----CVKESSRTV-SIGG-NDEST-----TTLW-----PATAGN 775
 WP_014788798_1 GNTVSRFRVQ-----LDSTHNDEARVELIID-----NELPPVQETSVKA-GSSTT-----VTLWYWYVPSSIPIGE 737
 WP_048151755_1 GDSVSEFDFVS-----LKPPTSTSTIVVVKLEID-----GVEKSSRTV-TIHC-GDSMT-----VTLW-----TAQAGE 729
 WP_0888181398_1 GDTVSFDFVS-----LKPVSRSLALTIVVKLEID-----GVEKSSKSL-TIIGA-EGSRV-----VSLW-----TAQAGD 731
 WP_048165390_1 GDSVSEFDFVS-----VAKPVSRSLSVAVKLFID-----DAEKASKTI-TIGS-GGSGV-----VSLW-----TAVAGT 727
 WP_088865610_1 GDTVSEFDFVS-----VRNPISRSRIVVVKLEID-----GVEKSSKTI-TIGG-GSSKE-----VTLW-----ARAGF 717
 WP_014012907_1 GNTVFRFRVQ-----LDSTYKDRREAKHEIJD-----DELSPVHTETSVKGS-GSSTM-----VTLWVNVPASFPIGE 743
 WP_099209391_1 GKEVYKPFVK-----LKNYMKEKVNQVSVSISVG-----SSRKYRTV-GVPS-GTVTV-----VTFW-----VPSSAGD 703
 WP_088863686_1 GDTWMEFVVK-----VKSSYMPSTSLSKIKLID-----GELIKTVSE-SIDG-NSEKT-----FILEW-----KANKLGP 688
 WP_068319935_1 SNIANVIVVK-----VKT-STAIVKWLIMID-----GEKVAQSEC-QV-NGERN-----FILEW-----RPOASGE 659
 WP_011013125_1 GEIVTRKVE-----VTSYSSGGSNVVKLEID-----DVEVDSTSA-YPP-DSTKT-----LTLW-----SAESE 665
 WP_042692137_1 GDTVURKPNVK-----IDSSSISSTORIVVKLEID-----DELKDSKEL-NVSE-TSGAS-----VTLW-----IAVAGE 725
 WP_052696221_1 GDVMEFRHY-----VIFLEDSISNPVITHESD-----DN----- 659
 WP_014122995_1 YETVNFRTV-----LGNTYPTAEDIKALMID-----GRVVDDEKVN-GNSA-NSENK-----VVLW-----SSAERGD 559
 WP_088886144_1 CGSVEFSDV-----LKNTYPVDKSVKWLIMID-----GTVVDVVEV-TVIA-GRSTG-----VLLWVNVPDDFPNGE 516
 WP_088856136_1 DQWVKEFVWD-----VSNMNASSEVEVRLIID-----NTLIDSVKV-KUDP-QKERT-----FVLW-----SAVAGD 496
 WP_015857921_1 YETVNFRTV-----LGNTYPTAEDIKALMID-----GRVVDQKSV-EMLA-NSENK-----VVLW-----YSAERGD 585
 WP_014733996_1 NRQYNPVKE-----VKEFYDTSEKLVKLEID-----CKEIDSAQK-VVSC-NSAEE-----FSLW-----VPSTGCE 701
 WP_088886109_1 GDIIVTFHY-----ITTSKQLSDPITVTEID-----NGQKIVEKT----- 509
 WP_088882563_1 GDIIVNEFVM-----IKNPFSVSKNVTVKLEID-----GNEKSKRENE-WIGG-GSSSEI-----VTLW-----TAQAGG 698
 WP_015859709_1 HDDWDIIVYPYVFRVLVPESVNESSVKNNFGPDALVPVSLNSEOGNIELSVVSDVTKTS-DIVF-GDSIKISCPENIR-PFYVSEH-RNAKAGD 328
 WP_014122675_1 HDDWVIIIVYPYVYVSFVPDSVAKNTVFRNNEGPDALVPVSLNSEQEDLELSVVVRDVTKTS-SIVF-GNSVKLDGSGNIKNIDPFYVFEH-RNAKAGD 283
 WP_014122677_1 SDSVEFNVT-----VVSMSMRSTDISIKLIVDGKYG-SELAYWNNE-TYES-HSMKT-----FILEW-----DGLBS 295
 WP_056934707_1 ---VEMFKV-----VTVKAENAQAATNINYIID-----GNKEY----- 474
 WP_068320152_1 QDNVKVFRVK-----VTSYSSKTKVKEVIVVVD-----GKTVNQVDE-VVSE-GKERE-----FILEW-----TPTGAGE 223
 WP_082781392_1 GDTVTFVVK-----VTSYSSSSKARVILVLEID-----GSEADSVAC-SVSA-GSTGE-----FSLW-----GAEGAE 212
 WP_010884703_1 ----- 534
 WP_062388971_1 ----- 494
 WP_074631387_1 GDSVSEFDFVS-----IKNPFSVSKNVTVKLEID-----GVEKSSRSI-TIGC-GSTGS-----VALW-----TPTGAGE 109
 WP_010884704_1 GEFVSEFVNV-----VTSYSSSSKARVILVLEID-----KEKIGEASE-FWGV-NWSWT-----FKLW-----RAKECK 115

WP_056934708_1	-----S-----CEVVYSEEM--A[TPEYLLDSE-----YIFTW--SNVKAGE	43
WP_048151448_1	-----A-----MPP	0
WP_088863691_1	-----MPP	3
WP_048810998_1	-----	0
WP_048148049_1	-----	311
WP_055428947_1	GDSVSVHET-----VTFLDLNCAQCPFD[E]TV-----D	56
WP_099209381_1	-----	0
WP_014122994_1	-----	55
WP_048165381_1	-----	0
WP_048165382_1*	MVTI[N]-----AVAGE	12
WP_068319940_1	-----	0
WP_068320169_1	MPIFF[TK]-----GRIRDIA	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	-----	0
WP_055430151_1	-M-----VTE[P]W-----TAOAGE	12
WP_048150566_1	-----	0
WP_099209386_1	-----	17
WP_088886110_1	-----	196
WP_068320165_1	-----	0
WP_055428943_1	-----	0
WP_014122673_1	-----	0
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
WP_058939188_1	HNNRVEVWECGKLEDSRS-----GSIE-VNS[EDSDPS]P[C-----SN-GEY[T]A	817
WP_014788798_1	HKV[V]RVWSRDTTSNSEYIADAITLSN-PDNPDDEKHTI-----NI-GGLENI	785
WP_048151755_1	HDNRIEAWEDCKLED-----SRSG-TIRVISES-DPCP-----EG-E-Y[T]A	767
WP_088181398_1	HEHRIEVMECGKLEA-----SRSG-GIVS[DPTPSAC-----LS-GVPLEG	770
WP_048165390_1	H[K]YRIEVME[G]K-----L-EASRSGC-[V]GG-----AP-SDS[ENV	760
WP_088865610_1	HDNRIEAWEDCKLED-----SRSG-TIRVISES-DPCP-----EG-E-Y[T]A	755
WP_014012907_1	HSVVKV[K]MSRHVSNSD-----PWDL-EAS[E]KS[T]PQN-----LN-D-RGI	782
WP_099209391_1	YAHNVQAHSTSNGN-----NSIL-EDSRICD[V]WL-----PS-H-EP[AV	739
WP_088863686_1	VNVITQOLYLNS-----DEEE-KPEDENKTT[V]HV-----SG-DNLGR	724
WP_068319935_1	HEHVVLYERWANN-----KYLO-RN[E]S[E]KLIIVAS-----AD-S-Q[E]T	696
WP_011013125_1	HSE[E]IKLYNQGV-----K-VE[E]KKSEELNVSS-----VE-Y-GLSG	697
WP_042692137_1	HSY[V]VKV[Y]R[V]NG-----QELW-EDSRSKINHIS-----GS-NTS	759
WP_052696221_1	KTYOGA[V]TRDK-----	671
WP_014122995_1	HSPRIEVNR[IT]GNV-----NLGK-VD[Y]S[CN]TAF-----DGDG[V]	594
WP_08886144_1	HSV[K]IQAFSRLNLDNSD-----SWNP-EDSE[TS]SINV[ER-----PK-DLLGK	556
WP_088856136_1	HDRRIEVWED[G]K-----L-EASRSEG[V]WSG-----APSNPL[ENV	530
WP_015857921_1	HHYVIEVNRTQGDI-----NLGK-VD[Y]S[CN]TAF-----DGDG[V]	620
WP_014733996_1	HDV[V]VKV[Y]E[V]LG-----NQKE-[QRAERRD[V]V[V]V-----SG-REG[E]P	737
WP_088886109_1	-----	509
WP_088882563_1	HGN[IT]EV[L]P-----	709
WP_015859709_1	LEV[V]VG[H]ISGTE-----V-IDSKT-[V]R[HI]-----NE-GDG[T]G	359
WP_014122675_1	YE[V]VG[H]IRGTE-----V-IDKKT-[V]R[HI]-----SE-GDD[T]G	314
WP_014122677_1	YT[Y]RIELLYSYGG-----Y-VDSK[V]E[L]VLP-----YSARDKLKV	329
WP_056934707_1	-----	474
WP_068320152_1	YGV[V]VLYE[K]SANN-----VYLK-KDSRCS[R]I[V]VTR-----IN-S-P[E]SV	260
WP_082781392_1	HSM[V]VKLYSVD[E]KNG-----KEAL-EDSE[DS]SIP[V]SR-----VV-N-GLSA	250
WP_010884703_1	-----	534
WP_062388971_1	-----	494
WP_074631387_1	HEHRIEVWECGK-----L-EASRSGR[L]VSG-----AP-GSS[ENV	142
WP_010884704_1	HYMRUVVLYR[NG]D-----AEEY-EDGETE[EL]VAS-----LD-Q-Q[E]AV	151
WP_056934708_1	YTA[E]PKVLYNCE-----V-KDSRCS[R]I[V]T-----A-DND[T]G	74
WP_048151448_1	-----MCTWLED-----RSLGKRP[E]SKRRSVP[V]AVSTRGFSLQWTAVQGEHSYGVKLFEV[LG]QELEVDSREGEVSVASK-NQL[E]AV	76
WP_088863691_1	AIGPTR[W]CIT-----RSPK[K]REEC[G]ELDVGNHNW[R]VEVL[DGT-----IKASKSGSLSVSKQA-ANL[E]DV	63
WP_048810998_1	-----	0
WP_048148049_1	-----	311
WP_055428947_1	-----	56
WP_099209381_1	MVDI[T]WEND-----NAFPRA[V]NKCVR-----CYGL-SHE[E]AV	30
WP_014122994_1	-----	55
WP_048165381_1	-----	0
WP_048165382_1*	HEHRIEVWECGKLEA-----SKS[E]-SIRVNSN[EDS]QK-----SG-SNTIN[E]	51
WP_068319940_1	-----	0
WP_068320169_1	HGV[V]VLYE[K]TAN-----NRFVRRDSAD[H]V[P]SE-----E-NEGMS[E]	63
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	-MKKSYNSN-	11
WP_048165388_1	-I-QG-	0
WP_048055998_1		6
WP_088863688_1		0
WP_048151737_1		4
WP_048055995_1		0
WP_055430151_1	HEMRIEAWESGK-----T-EASRSGSV	33
WP_048150566_1		0
WP_099209386_1		17
WP_088886110_1		196
WP_068320165_1		0
WP_055428943_1		0
WP_014122673_1	-M-EN-	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
WP_058939188_1	--WDE-VSPT-KMVEEG--K-VHVKIVMASY-C 841	
WP_014788798_1	--KLL-AYPT-ELEGGG-E-VYIQCIAWN-TDG-SL--Pv 816	
WP_048151755_1	--WDE-VSPT-BMVEEG-K-VHVKIVMASY-C 791	
WP_088181398_1	--HDE-VYDE-GVEAGD-S-VSHHTITVTNLDPNCAGGFPNIELVDDSG-AL-W-WP 817	
WP_048165390_1	--VDT-AYPT-ELEGGS-T-VVETIKAWN-TA--PL 791	
WP_088865610_1	--WDE-VSPT-BMVEEG-K-VHVKIVMASY-C 779	
WP_014012907_1	--KDV-AYPT-ELEGGG-E-VYIQCIAWN-YDG-SM--Pv 813	
WP_099209391_1	--KDE-ATPT-ELKGGG-T-VVETIKAWN-FAS-DG--NV 770	
WP_088863686_1	--IWF-NVAR-EVTQCT-T-VFEDVTVEN-RGNYPAYDV-PI-R-VY 761	
WP_068319935_1	--RHY-ASPR-ELNGGG-E-VHESVKVN-DR-V-SL 727	
WP_011013125_1	--WDE-VVFN-PLEAGN-N-VVIIITVKN--SENYKQTLPIELV-DD-T-GN 738	
WP_042692137_1		759
WP_052696221_1		671
WP_014122995_1	--SFT-WWR-TLDGGG--K-VVETEVVR-VYRP--DK--Dv 625	
WP_088886144_1	--Wp-NVNG-TWVQGT-V-VHDFVIVEN-KEDYPAYNV-PI-R-VF 593	
WP_088856136_1	--EWE-VYDQ-IDYGGG-T-VFVKIVAWN-FME-NP--NV 561	
WP_015857921_1	--SFT-WWR-TLDGGG-R-VVETLKLRV-YHS--K-Y-DF 650	
WP_014733996_1	--KDE-AFPT-ELEGGG-E-VFELMVWV-N--Y 760	
WP_088886109_1		509
WP_088882563_1		709
WP_015859709_1	--RFLTGESCAHNLT-TVTOQTFMNITLAADYYGEILKN-EYVPPEVWYL-YDS-PS--E-GI 411	
WP_014122675_1	--RFLTGGSCAHNL-TVTOQTFLNITLAADYYGKLKN-EYVPPEVTRYT-YQS-PR--GI 365	
WP_014122677_1	LGR-E-LS-S-TRYIICK-TEKAVKIKLW-TRP-KS--G 364	
WP_056934707_1		474
WP_068320152_1	--RHY-AYPT-ELEGGG-E-VTIVLVEVWN-YGN-DR-V-SL 291	
WP_082781392_1	--WFE-VVFN-PVEARN-N-VVIIITVKN--SENYKQTLPIELV-GN-T-GN 291	
WP_010884703_1		534
WP_062388971_1		494
WP_074631387_1	--VDT-AFPT-ELEGGG-E-VYIQCIAWN-YDG-SL--Pv 173	
WP_010884704_1	--SD-VFPT-ELEGGG-R-VFETVGLRN-FDY-NA--Pv 182	
WP_056934708_1	--IDS-ANITNDVSVCV-K-AREFTLVRN-DEN-APRYSIPVR--VY 112	
WP_048151448_1	--VMR-AFPT-ELEGGG-T-VVITVVRN-FDA-GA--U-SL 107	
WP_088863691_1	--APT-AWPNV-ELEGGG-L-VFLOQHVWN-HAN-SA--U-SV 94	
WP_048810998_1		18
WP_048148049_1	M-VMETVVRN-YRP--DK-U-DV 311	
WP_055428947_1		311
WP_099209381_1	--KDE-VTPT-EIKGGG-T-VVETVKAWN-FAS-AL-W-WP 64	
WP_014122994_1		55
WP_048165381_1		17
WP_048165382_1*	-NEITDFACMPK-EVG-EYEWRLDRD-K-VSCTVTLQKGPEIQIAPRVV-IDDIE-102	
WP_068319940_1		0
WP_068320169_1	--RHY-VGNR-E-GS-E-V-EDV-VEN-RGQ--EI-VYPPVVRVY 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

WP_048152596_1	-----	0
WP_048151739_1	--ME-- WYK-WVEAGD --S-- VSYHIVT --LDPNCAHGPFNIELVDDSGAK----W-----WP 46	
WP_088865604_1	-----MT HIVTVT --LDPKCAQGPFNKLVDDSGAK----W-----WP 33	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	NA--L--PDVGCG-KINLLYLE--G-SVY--IYDKEIH--TFD-TN--TNGNYLLVD--ETKVIE--EFDNEVSG--G 898	
WP_014788798_1	KG--F--LEVDGD-VIKRNEAK--I-PAS--AEDQIL--KLR--X--FA--GVG--HTIKVFLD--863	
WP_048151755_1	SA--L--FDVGGD-TIDDLYLG--G-SVY--UDGKEIH--SFD-TN--ANGNYLLVG--RTRVID--EFDNEVSG--G 848	
WP_088181398_1	KK--D--MDYGCS-GCYIYQF--R-AIK--IYAGKTM--SEW-TD--FNNIDQATT--LYLVG--GTLASAKI--874	
WP_048165390_1	SG--F--VEDEDG-AVVKR-DGFAC-RIP--FNA-NYT--LTA--FS--LD--VYGVG--NHTKLFID--842	
WP_088865610_1	SA--L--FDVGGD-TIDDLYLG--G-SVY--UDGKEIH--SFD-TN--ANGNYLLVG--KTRVID--EFDNEVSG--G 836	
WP_014012907_1	RG--F--LENGK--RENID--K--I-PIS--BNGDPII--TLR--RN--IVGVG--VHTIKVFLD--859	
WP_099209391_1	HF--K--VTKGDS-AVIKEFN--R-FVP--KG--GNY--VNV--FS--LK--VYGVG--KHTPLTS--818	
WP_088863686_1	YA--M--QTEPGE-FSDSIYFE--R-SPR--EIEGGAQ--YYA--FN--SIWSDGFDNI--TLSNVG--AYYFILYVN--818	
WP_068319935_1	KG--F--VSDGCG-AVVKNDW--T-GVP--FNA-NYT--VTT--FT--LT--VYGVG--EPKYKLFID--776	
WP_011013125_1	VW--W--PHEDYY-GNY--GNY--FSN--G-YLT--HYANKTA--RIT--AT--IGPLTQNTT--LTLKEG--GQMADEV--795	
WP_042692137_1	-----	759
WP_052696221_1	-----YEGYA--YYK--ED--RAGTYRITL--KVNLIP--IFSKNJKVN--706	
WP_014122995_1	RG--F--LEDEDG-AVVKMGG--S-GVYTIPARREKSF--SFS--MTV--YGVG--NHTKLFID--675	
WP_088886144_1	YT--Y--QTPNGE-FSDPIRVERN-PRQ--JDELGVN--LTW--FN--MT--LTNLG--KYYFILYVN--644	
WP_088856136_1	SFTSADTIHKF--VITNEE-TVKEFN--S-YVP--EGGVKYN--VAN--FT--YT--FYGVG--NHTFLTD--617	
WP_015857921_1	ED--N--SNBPLP-DIMSTSP--T-VTYHIKIVDQN--GIVIK--NFn--WDIPDKAGVYTLWISGPILYRTG--NHTFKLWVD--720	
WP_014733996_1	-----	760
WP_088886109_1	-----YYCWT--I-SPD--SHBEPRT--TYV--FN--KAGTYRITL--KVNLIP--IVSKTLEK--554	
WP_088882563_1	-----	709
WP_015859709_1	HWTSPIRV--E--EKA--IK--FDN--V--PPT--YVEQCYAQEFRGW--FG--FH--FDNPG--VYHBFLYVN--463	
WP_014122675_1	FYSG--VVW--F--NRDGIK--FND--L--PLV--WV--NOYAFERFDW--FG--LH--FNDPG--MVVLYFDVN--417	
WP_014122677_1	--WEGHDV--E--IVDPER--VWVNPYK--G--RAF--EGRPRDKV--TGEGGM--YTDGILR--LHYCFNATLSTLLPVVNHN--TFLEND--435	
WP_056934707_1	G--PFD--IAGCESI--TKT--LP--VG--	492
WP_068320152_1	KG--F--VSDGCG-AVVKNDW--T-GVP--FNA-NYT--VTT--FT--LT--VYGVG--EPKYKLFID--340	
WP_082781392_1	VW--W--PHEDYY-GNY--GNY--FSN--G-DLT--HYANKTA--RIT--AT--IGPLTQNTT--LTLKEG--GYQMASKYV--348	
WP_010884703_1	-----	534
WP_062388971_1	-----	494
WP_074631387_1	KG--F--IEV--GD-RKNIETK--I--PAN--ANEDSIL--ALS--MN--IVGVG--EPKYKLFID--220	
WP_010884704_1	RG--F--WVDEDG-AIIKNED--R--I--PAKGVK--NIT--FS--YL--VYGVG--NHTKLFID--228	
WP_056934708_1	YV--Y--TSPGGMWHSNINVKE--R-EVD--FDPGGEY--QGW--FD--FT--FANPG--TYKFILYVN--162	
WP_048151448_1	SG--F--VEDESC-AIIKRD--D--GFEGR--I--PAKGVK--NIT--FG--YT--VYGVG--EPAFRVFLD--156	
WP_088863691_1	KG--F--IEDEEG-AVIKEFN--D--GYEGR--I--PAKGVK--NLT--FT--YN--LAGVG--NHTKLFID--143	
WP_048810998_1	RG--F--IEDEAS-AVVKMGG--SGVYT--I--PAPEEK--SFS--FS--YT--LYGIA--NHTKLFID--68	
WP_048148049_1	-----	311
WP_055428947_1	RK--D--MDYGCS-GCYIYQF--G-AIK--IYAGKTM--SEW-TD--FNNIDQATT--LYLVG--GQPLASAKI--121	
WP_099209381_1	HF--K--VTEGEG-AVVKEF--N--RFVPK--GACNY--VDA--FS--LK--VYGVG--KTTYI--106	
WP_014122994_1	-----	67
WP_048165381_1	SC--F--VEDEDG-AVVKR-DGFAC-RIP--FNA-NYT--LTA--FS--LD--VYGVG--NHTKLFID--68	
WP_048165382_1*	-----	102
WP_068319940_1	-----MERK--SE--CSDG--ILLYKLFID--19	
WP_068320169_1	YS--YEAFDGFPS--KPLVFER--Q--PKE--IFPCETY--KDW--FK--MT--ITNPG--KHEFTLYVN--148	
WP_068320161_1	-----	58
WP_048055992_1	-----MG--NHTKLFID--11	6
WP_074631389_1	-----MKTGD--Q--	0
WP_014012910_1	-----	24
WP_015857844_1	-----	8
WP_099209388_1	-----	17
WP_088865600_1	-----WRD--IVE--	0
WP_048165388_1	-----	6
WP_048055998_1	-----	0
WP_088863688_1	-----	4
WP_048151737_1	-----	0
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	-----W--	4
WP_088856137_1	-----	177
WP_048152596_1	-----	0
WP_048151739_1	EN--D--T--EYGDS-MRQYEF--TN--G-VLK--IYAGKTL--SEW-SK--PKPVTQNTV--LYLVG--GIVLASTKI--97	
WP_088865604_1	SK--D--T--EYGCS-GCYIYQF--G-TIK--IYAGKTM--SEW-VN--FSKISQGTT--LYLVG--GIVLASTKI--90	
WP_088865603_1	-----	0
WP_048150577_1	-----	0
WP_055430149_1	-----	0
WP_068320157_1	-----	6
WP_014788172_1*	-----	0
WP_048165379_1	-----MRR--KYTYKLFID--12	
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 --NHNKLKLTKNT--N---GLLDYIKTKT--D-SVSV-----R-----V-----IPSEYSLPEIIS-CSN-LNF----- 946
WP_014788798_1 --NHGEPNGEGEYWSEVRVEVKG--K---MASSYLQCTR-E-VVPG-----E-----K-------WTCVSWNPHE-TL-OSL----- 920
WP_048151755_1 --NHNITLKLKNT-----S-----GLLDYIKTKT-D-SVSV-----R-----V-----SEPEYSLEIETIS-CSG-LNF----- 896
WP_088181398_1 --NVKQD-----G-----PIKASMECKP-T-VIPL-----D-----G-----SMTCTVHFBLKS-VDT-VTL----- 915
WP_048165390_1 --NYDGCPNGAEEHWSEVKVEVKB-----W-----KADLKEFEDD-G-VVIG-----E-----N-----DVDDECILYLLRTNPDDS-VQV----- 905
WP_088865610_1 --NHNITLKLKNT-----G-----GLLDYIKTKT-D-SVSV-----R-----G-----IPPEYPLIEIS-CGN-LNF----- 884
WP_014012907_1 --NHGEPNGAEHHWSEATVEKSMNGTE-----EIQNSFECDN-P-KFWA-----N-----G-----IEYRATIVCAKFVNMP----- 921
WP_099209391_1 --ISGEVEK-----STTVEVEP--K-----QOKASMECSN-M-VLSA-----K-----K-GNVLLDNTCIVYFTNPHE---D-VGW----- 874
WP_088863686_1 --GEIBDDVKITVEPN-----G-----SVAAAMECNP-E-FVSE-----N-----D-----DSVTCNFKVKNLG-NAP-LNF----- 869
WP_068319935_1 --NYDGCPNGKGEHHWSEVTVEVREMNGT-----EIQNSFECDD-----YTFP-----K-----D-HAYRATISCRVYEHNSNSRDE-IRDIABL----- 851
WP_011013125_1 --KVLGRVN-----W-----ELSRVSFND-L-VIKV-----G-----GTLDYKGTATCIVVELRNPF-RSG-VAI----- 844
WP_042692137_1 --H-----WEITIPECEPE-K-VSIP-----G-----E-----EWCIVVWNPH-SAN-IDV----- 794
WP_052696221_1 --NL-----P-----PTCHLICSN-E-VVPL-----G-----E-----EVCNIIKKNLSSLAD-VPY----- 745
WP_014122995_1 --NTDGCPNGNGEHWDEGTWVN-----G-----NLIANASMECKP-A-VISY-----T-----G-----SFTSCRTTINOC-DSD-VAI----- 735
WP_08886144_1 --GEIBDEKITVTSN-----S-----SVWAMMECED-T-IPV-----D-----E-----LSCCHIHILNS-SDD-VSI----- 693
WP_088856136_1 --WGS-----BTHTRTRVEVKBT-----G-----NLASMDCNP-T-TVPL-----D-----S-----SITCTIHLCLKN-ADT-VTL----- 670
WP_015857921_1 FIYNEECKP-GLEIPEEQREAKWEVIB-----YNS-----D-RIN-----K-----G-----E----- 746
WP_014733996_1 -----P-----EIAISIECNP-E-PVPL-----G-----B-----TVICNIIKKNLSSLAD-VPY----- 770
WP_088886109_1 --TP-----P-----EIAISIECNP-E-PVPL-----G-----B-----TVICNIIKKNLSSLAD-VPY----- 593
WP_088882563_1 -----P-----EIAISIECNP-E-PVPL-----G-----B-----TVICNIIKKNLSSLAD-VPY----- 709
WP_015859709_1 --GEFFD-----FIVNVVTFD-G-----FVLAAMMEC-----E-DAVPLV-----D-----DEDCIVVHIIINNA-LED-IPV----- 512
WP_014122675_1 --NKNPD-----YLTVNTTBCG-----G-----FWRAAMMECSNODCIVV-----G-----E-----TGNNHLYCTVYVKNDS-PVD-VPV----- 473
WP_014122677_1 --GHK-----VAASKLTIVLDNP-----VRAAKMCKP-A-VVPL-----G-----R-----SFRCTVHFBLGN-ADT-VTL----- 485
WP_056934707_1 -----S-----YFTSIPSNA-Q-EVPL-----S-----KTIKVYTFWKWCGINSAPCGEVV-LSA----- 535
WP_068320152_1 --NYDGCPNGKGEHHWSEVRVEVKB-----W-----CASEKLEFCDG-K-VIIG-----K-----D-----DVDDECILYLLRTNPDDS-VQV----- 403
WP_082781392_1 --EVNSNS-----Q-----LIMSKASSED-I-KFPL-----S-----D-YAYRATVSCIVYHLNLR-NQ-EVYIEHISV----- 400
WP_010884703_1 -----P-----EIAISIECNP-E-PVPL-----G-----B-----TVICNIIKKNLSSLAD-VPY----- 534
WP_062388971_1 -----P-----EIAISIECNP-E-PVPL-----G-----B-----TVICNIIKKNLSSLAD-VPY----- 494
WP_074631387_1 --NYDGCPNGKGEHHWSEVGVVEVKG-----S-----WVSPNLQCTR-E-VVPG-----E-----K-----WTCVSWNPHE-TLSS-LTL----- 279
WP_010884704_1 --NYDGCPNGKGEHHWSEVSKTIEVKB-----G-----FVAMSMSYP-T-TVPL-----D-----S-----SITCTVHFBLKS-PAT-VTL----- 288
WP_056934708_1 --GQED-----EKVIVVNSQ-----G-----SISSEWVMSGP-E-FVFE-----D-----V-----NSVSCRDVENLGC-ETD-EDI----- 213
WP_048151448_1 --NYDGCPNGKGEHHWAEVTVMEVKB-----NGRELKQVGFECDD-----P-EFNW-----N-----GIE-----YRASIVCRRAFTVNP-----O----- 219
WP_088863691_1 --NYDGCPNGAEEHWSEVNVAVAVEVKM-----KGSELKQVGFECND-----P-EFNW-----K-----GTE-----YRASIVCRRAFTVNP-----O----- 206
WP_048810998_1 --NTDGCPNGNDEEKWKKVKEVKBI-----KGIGLKQVGECDN-----L-YFKP-----D-----MCN-----YRAKLACKFVLYNGY-N-FSL----- 134
WP_048184049_1 -----P-----EIAISIECNP-E-PVPL-----G-----B-----TVICNIIKKNLSSLAD-VPY----- 311
WP_055428947_1 --NIKON-----G-----FVNASMECKP-A-IVPL-----D-----G-----SITCTVHFBLKS-ADT-VTL----- 162
WP_099209381_1 --TAS-----TGPGEEEKSTTIVV-EVT-----NGTKPEQVFCEDN-----P-EFNW-----N-----GIE-----YRATIVCRRAFTVNP-----O----- 165
WP_014122994_1 --NTDGCPNGNGEKKWRKKVKEVKI-----S-----SVYALIQCPO-S-VPON-----D-----E-----RPQCKIKWMNT-NKV-FST----- 128
WP_048165381_1 --NYDGCPNGAEEHWSEVRVEVKSV-----G-----NVIASMECEP-V-IVPL-----D-----E-----SITCTVHFBLKS-ADT-VRR----- 128
WP_048165382_1* -----P-----EIAISIECNP-E-PVPL-----G-----B-----TVICNIIKKNLSSLAD-VPY----- 102
WP_068319940_1 --NYDGCPNGKGEHHWSEVREVEVK-----S-----QQTAFYVDCSN-L-VLSA-----E-----RGN-----LIDMSCEVYFTNP-----D-VEW----- 82
WP_068320169_1 --GEWD-----EETTTTSK-----A-----SHERAMMECAP-----E-FVSD-----D-----V-----NSITCIPNWNNS-SAS-VEV----- 199
WP_068320161_1 -----W-----MVALIYSLA-F-AISK-----K-----H-----SL-HIV----- 81
WP_048055992_1 --NYDGCPNGKGEHHWSEVREVEVKM-----NGTELKQVSEFSD-----L-YFPL-----R-----DXE-----YRATIVCRVYVNP-----S-MKA----- 77
WP_074631389_1 -----KRVHSEFCDP-----L-HFPL-----N-----MCN-----YRATIVCRVYVNP-----S-YDL----- 44
WP_014012910_1 --MEVKS-----W-----RADLKEFCD-----E-VVPL-----E-----N-----DVDDECILYLLRTNPES-VQV----- 45
WP_015857844_1 -----D-----KVMASMTCMD-T-SIEP-----G-----G-----AFLCDNDFKLLNPNET-ATL----- 61
WP_099209388_1 -----G-----SVIANSMTCMD-S-AIPY-----D-----G-----SITCKITLINTC-KRS-ISV----- 44
WP_088865600_1 -----MCP-----E-FVSE-----D-----V-----DSVSCRIEVENLD-SMP-VDI----- 48
WP_048165388_1 -----MCPE-----Q-PPL-----G-----E-----AEVCBWWRKVNL-LSTAAGY----- 31
WP_048055998_1 -----S-----SIASMECKP-S-VVPL-----D-----G-----SITCTVHFBLRQ-PDT-VTL----- 42
WP_088863688_1 -----MVC-----P-----A-IVPL-----D-----S-----SITCTVHFBLRS-ANT-VTL----- 30
WP_048151737_1 -----S-----NVIASMECKP-T-VIPN-----D-----G-----SITCTAHTFBLKS-TDT-VTL----- 40
WP_048055995_1 -----MKEM-----DGTGKQVGFECDD-----Y-YFPL-----K-----NGB-----YIAPITCKAIYNP-----S----- 43
WP_055430151_1 -----P-----EIAISIECNP-E-PVPL-----G-----B-----TVICNIIKKNLSSLAD-VPY----- 33
WP_048150566_1 -----MCP-----E-VVPG-----D-----K-----WTCVSWNPHE-TLSS-----L----- 28
WP_099209386_1 -----CLS-----L-CFP-----G-----B-----TVICNIIKKNLSSLAD-VPY----- 26
WP_088886110_1 -----P-----EIAISIECNP-E-PVPL-----G-----B-----TVICNIIKKNLSSLAD-VPY----- 196
WP_068320165_1 -----M-----NGTELKQVGFECND-----P-EFH-----D-----NIE-----YRASIVCAFYVNP-----Q----- 40
WP_055428943_1 -----M-----NGKELKQVAFECSD-----T-YFTKIVTGVNLESAKNILLN-----YOAEMKCFATIVNP-----D-KKH----- 55
WP_014122673_1 -----P-----EIAISIECNP-E-PVPL-----G-----B-----TVICNIIKKNLSSLAD-VPY----- 14
WP_088856137_1 -----P-----EIAISIECNP-E-PVPL-----G-----B-----TVICNIIKKNLSSLAD-VPY----- 177
WP_048152596_1 -----P-----EIAISIECNP-E-PVPL-----G-----B-----TVICNIIKKNLSSLAD-VPY----- 11
WP_048151739_1 -----KMSKT-----V-AADY-----I-----L-----SETAAH---VDP-NTA-ESF----- 125
WP_088865604_1 -----NVRQE-----G-----FVNASMECKP-T-VIPL-----D-----G-----SITCTVHFBLKE-PTT-ITV----- 131
WP_088865603_1 -----P-----EIAISIECNP-E-PVPL-----G-----B-----TVICNIIKKNLSSLAD-VPY----- 0
WP_048150577_1 -----P-----EIAISIECNP-E-PVPL-----G-----B-----TVICNIIKKNLSSLAD-VPY----- 0
WP_055430149_1 -----P-----EIAISIECNP-E-PVPL-----G-----B-----TVICNIIKKNLSSLAD-VPY----- 0
WP_068320157_1 -----S-----NVIASMECMD-S-AIPY-----D-----G-----SITCKVILVNKE-KTS-VTL----- 42
WP_014788172_1* -----P-----EIAISIECNP-E-PVPL-----G-----B-----TVICNIIKKNLSSLAD-VPY----- 0
WP_048165379_1 --NYDGCPNGAEEHWSEVKVEVKM-----NGTELKQVSEFSD-----P-EFNW-----N-----GIE-----YRATIVCAFYVNP-----Q----- 75
WP_068320171_1 -----P-----EIAISIECNP-E-PVPL-----G-----B-----TVICNIIKKNLSSLAD-VPY----- 0
WP_088865607_1* -----P-----EIAISIECNP-E-PVPL-----G-----B-----TVICNIIKKNLSSLAD-VPY----- 0
WP_058939190_1* -----P-----EIAISIECNP-E-PVPL-----G-----B-----TVICNIIKKNLSSLAD-VPY----- 0
WP_068319946_1 -----MRVEVKBV-----S-----NVIASMECEP-E-VVPL-----D-----B-----SITCTVHFBLKS-SDT-VTL----- 44
WP_048150353_1 -----P-----EIAISIECNP-E-PVPL-----G-----B-----TVICNIIKKNLSSLAD-VPY----- 0
WP_048150344_1* -----W-----MVALIYSSA-T-ITLK-----R-----H-----SC-HNG----- 79
WP_048055999_1 -----MVKP-----S-----QQTAFYVDCSD-L-ALS-----K-----RGD-----LVIDMSCEVYFTNP-----D-KEW----- 45
WP_058939188_1 -----NFEASNYYT-----QGSY-----VSPIECLKFRNAGDTQVVK-----E-----I-----S-----AD-ISVSPDLEKTIPDHIAVSN----- 1007
WP_014788798_1 -----TLKIVMFGT-----KKW-----DVDLSVKMV-----K-----G-----P-----T-----TLPFTSIIQVEIR----- 960
WP_048151755_1 -----NFKASRYYT-----QGSY-----VSSLECTLKFRNVDVPEV-----E-----L-----S-----TE-ISVSPDLEKAWPDHTTVSN----- 957
WP_088181398_1 -----NLEEVDFGG-----KKW-----PNGPSSVTN-----K-----R-----T-----V-----PTMQEDITITIN----- 959
WP_048165390_1 -----KISCIDVGG-----AKW-----PSDFKEVTL-----K-----D-----T-----IK-VT-----ENDDDDETH-KITI----- 949
WP_088865610_1 -----NFEASNYYT-----QGNY-----VSPIECLKFRNIESARIYV-----E-----I-----S-----TE-ISVSPENLEVQDIAVPN----- 945
WP_014012907_1 -----QENVEFINAVS-----VSEW-HTD-----NSDFRSISSL-----S-W-----T-----VE-Y-----PTVIQSSETATIIF----- 968
WP_099209391_1 -----KVTIVDMDAYI-----LHNH-YTKEIT-----PFTBEVLT-----E-----V-----P-----SR-R-----TGVIRLFHDILST----- 925
WP_088863686_1 -----EVTDVYFAG-----GQY-----DSGRKEDNFIV-----P-----K-----P-----RS-LDL-----GPNSLGVFAETI----- 914
WP_068319935_1 -----NSYSLGLENMPAGSLN-----TGEW-----SNPSSFTIP-----A-----O-----T-----TK-TV-----HFNUPLEISPMI----- 903
WP_011013125_1 -----ELDESVISID-----F-----PYDHSNGV-----L-----D-----T-----T-----TIKEGETGNYIIF----- 885
WP_042692137_1 -----TARJRMDC-----ELIDISRFLG-----N-----T-----N-----PR-LN-----PGRKEFRIGWNIN----- 833
WP_052696221_1 -----AFTKRMDSL-----E-----D-----T-----SR-AI-----STNLIIDV-HPAKF----- 775
WP_014122995_1 -----SVASVDFGTL-----R-----P-----V-----C-----GANTGINV-----L-----A-----S-----V-----P-----DKTIVVHIDL----- 780
WP_088886144_1 -----QVTKVMMFGG-----Y-----P-----V-----C-----GENWKAVV-----Y-----T-----G-----TI-----KRHSEGHTVIGIDV----- 738

WP_08886136_1 -----NLEEVDFGG-----KKW-----P|GPSSVRVN-K-Q-T-M-L-----PTM|QGDLTITIN-----714
 WP_015857921_1 -----PTT-----KKAF-M-----GCDNMKLSAE-K-S-N-LV-L-----DMKCEVYFTNPTDV-----784
 WP_014733996_1 -----A-----ARTAKTIDDD-K-D-T-SR-HI-----STNIKDI-EPARF-----770
 WP_088886109_1 -----K-----LKW-----DSKICITISVS-R-----
 WP_015859709_1 -----QVTKVTSG-----YFWW-D-----GENWEAVKVN-Y-V-T-GI-SV-----KGNSEGIVGDIDV-----557
 WP_014122675_1 -----R-----R-----R-----DRHDAVIDD-Y-VDGGIT-CM-TV-----KROSMCHISVHVDL-----523
 WP_014122677_1 -----NLKEIDFGG-----RRW-----P|GPSSVCVE-A-Q-R-IT-LS-----ETNMRTEFTITLTI-----529
 WP_056934707_1 -----P-----PAGCCTAAE-T-B-T-VT-KOIE-----LFDVDVSVSDETVK-----568
 WP_068320152_1 -----K-----KSETYWGG-----AKW-----PSNFCHIVS-K-E-V-UR-VT-----PYD|DDETH-EITI-----447
 WP_082781392_1 -----EDYSLGGLERLPGLGSLG-----VERW-----LSP-PEFTIK-P-W-E-TR-RI-----VFSUPLTVSSYI-----452
 WP_010884703_1 -----P-----POGRST-----
 WP_062388971_1 -----P-----POGRST-----
 WP_074631387_1 -----E-----EVAFGT-----KKW-----DIGLSSVETV-K-Q-P-----TILT|PSGTIO-EIK-----499
 WP_010884704_1 -----N-----NLEEVDFGG-----KRW-----P|GPSSVVK-E-K-T-IT-L-----ETNMRDLTITI-----332
 WP_056934708_1 -----G-----WITNIYFAG-----G-----DKSSADNIVI-FSPG-C-S-LT-L-----NPYSTGFRTB-----258
 WP_048151448_1 -----S-----NNVVEISIVNVSTW-----TIDNQALENS-L-C-HTWVE-----ENV|HGSETATII-----264
 WP_088863691_1 -----S-----NDISLNAVAARWE-----HDNDFPNS-L-C-PWVVD-----EDTRRSSESTIT-----251
 WP_048810998_1 -----E-----EVNGKIN-EKMNASVLN-----KM-----L-----SDSLVLSIN-----BHT|SAQYFAINTSTAYF-----181
 WP_048148049_1 -----K-----YAPMEFSLV-----K-Q-P-----P-IR-NR-----327
 WP_055428947_1 -----N-----NLEEVDFGG-----KKW-----P|GPSSVTVN-K-Q-T-VI-L-----PTM|QEDLTITIDI-----206
 WP_099209381_1 -----S-----KTIYLNSVSVEW-----RDNNSDFQS-L-S-SSWVVS-----ETV|VKSSETISIT-----210
 WP_014122294_1 -----R-----RITRNVFGN-----NVIW-N-----GDTDTAATID-Q-V-S-IT-V-----BPHGVNNVSIITFV-----172
 WP_048165381_1 -----N-----NLVEVFGR-----KRW-----P|GPSSVTVN-K-Q-T-IT-L-----PTM|QEDLTITIDI-----172
 WP_048165382_1 -----*-----
 WP_068319940_1 -----R-----RITDVVT-E-ARILK-----CQ-IQE-----I-T-PEFSD-L-----TPV|PAKCTERLOVNF-----127
 WP_068320169_1 -----G-----WITNIYFAG-----G-----DRSSDNNLVN-P-N-P-SS-L-----NPALOEHSRQFOI-----244
 WP_068320161_1 -----K-----KLNLRREFGG-----KKW-----P|GPSSVTVN-K-Q-T-VT-L-----PTM|QEDLTITITV-----125
 WP_048055992_1 -----P-----KVKDIAVLEYSLGELEDVPAGSLGTGK-----S-NPNSFTL-----P-Q-ETKII-----F-NLPLEISQCPIS-----137
 WP_074631389_1 -----K-----KVTGNISSDINVSILN-----KM-----L-----OLPLSGS-----SSPVYID-----EKT|PAQGYTTTISTAHF-----96
 WP_014012910_1 -----R-----RISGIDFGG-----AKW-----PSEFKGHTIS-K-D-T-IR-VT-----PND|DDEIH-KINT-----89
 WP_015857844_1 -----R-----RKLKRYEED-----KBIW-----BPGPSRGTV-----P-V-N-SK-FHLG-----PHDIEGSIATITF-----107
 WP_099209388_1 -----S-----SVSSVDFGT-V-----HNEW-A-----K-YQRGEBVK-----P-T-K-IT-L-----BPHDKIDW-KIDL-----89
 WP_088865600_1 -----W-----WITBVYFAG-----GKLY-----DRTEDCNJHA-PNPE-----S-IM-L-----NPDXSEFFT-TIP-----93
 WP_048165388_1 -----S-----SVTKLDD-----KRW-----DMDTSSV-----I-S-S-VI-----MVKDV-----PSF-----61
 WP_048055998_1 -----S-----SLOEVDFGG-----KRW-----P|GPSSVTVN-K-Q-T-VI-L-----PTM|REDLTITI-----86
 WP_088863688_1 -----N-----NLKEVDFGG-----KRW-----P|GPSSVTVN-K-Q-T-VI-L-----PTM|QEDLTITI-----74
 WP_048151737_1 -----N-----NLKEVDFGG-----KRW-----P|GPSSVTVN-K-Q-T-VI-L-----PTM|QEDLTITIDI-----84
 WP_048055995_1 -----*-----EDASITKITMNE-----RVDSDLEERA-L-S-VPWAS-----A-----BEAPACGTYSTV-----87
 WP_055430151_1 -----L-----LEDIYFAG-----KFW-----GVNDNSVKEPITSR-R-T-VI-V-----ANSENDMMGFEIIF-----80
 WP_048150566_1 -----T-----TLKEVWGT-----KRW-----DVLISSVN15-K-C-P-----TLP|PSREVKEFF-----68
 WP_099209386_1 -----P-----P-----KRW-----P|GPSSVTVS-G-Q-T-VI-L-----PTM|QDDLTTITI-----64
 WP_088886110_1 -----*-----
 WP_068320165_1 -----E-----EAVSLNSVSVEW-----HDNSEFMSS-L-D-SSWTV-----Y-----EV|LOSSKITTIV-----85
 WP_055428943_1 -----T-----TEELIHFQP-----IATPTALDVGKE-----FNC-----I-S-S-NVVT-----PHNY|LIK-----97
 WP_014122673_1 -----P-----P-----GKLY-----DSSEGNNIVV-----PAP-----V--LS-----NPGSSGFTT-----53
 WP_088865137_1 -----K-----K-----K-----SQ-----NTSEAVFV-----N-P-Q-VS-LG-----PTNVEGSVTT-----177
 WP_048152596_1 -----K-----KLCIYING-----KLVW-----SSKISFDP-----145
 WP_048151739_1 -----R-----QLGSIRFSG-----KRL-----P-----FVDENGEDP-----153
 WP_088865604_1 -----N-----NLKAVKF GG-----KRW-----P-----MCIVNHP-----K-P-K-AT-ID-----ITNMRDLTTITL-----28
 WP_088865603_1 -----P-----MSFPRVVS-----D-K-S-T-TF-----FAHRSGYHFKS-----29
 WP_048150577_1 -----P-----P-----K-----P-----MSFPRVVS-----D-K-S-T-TF-----FAHRSGYHFKS-----29
 WP_055430149_1 -----*-----
 WP_068320157_1 -----S-----SVTSVDFGT-V-----QNEW-A-----R-SYQWGEHV-----P-H-F-IT-----BYNGDKDIDW-KIDL-----87
 WP_014788172_1 -----*-----
 WP_048165379_1 -----ENVLLNSLSVNEW-----HEDNNSPFRS-L-A-----PRGRLS-----I-----PA-----109
 WP_068320171_1 -----*-----
 WP_088865607_1 -----*-----
 WP_058939190_1 -----*-----
 WP_068319946_1 -----SLOEVDFGG-----KKW-----P|GPSSVTVN-K-H-H-Y---QN-----PV|S|EVKHS-----83
 WP_048150353_1 -----P-----P-----K-----P-----MSFPRVVS-----D-K-S-T-TF-----FAHRSGYHFKS-----0
 WP_048150344_1 -----N-----
 WP_048055999_1 -----H-----HITDVIT-E-ARILI-----Y-----PRDYT-----RV-----66
 WP_058939188_1 -----N-----NVPNGB-----AI-----P-----VQHQSKAT-TID-RQML-LRVDGTM-----ATLYI-GYMI-----EGINGANKI-----1057
 WP_014788798_1 -----P-----DDEPAN-----YYFG-----ERP-----WDPVDRV-SY-KDRL-AGTYYK-----KFLIFE-NNVI-----AEDLVMVK-----1012
 WP_048151755_1 -----F-----DMKPG-----F-----T-----IQIQRDTV-TID-RQML-LRVDGTT-----ATLYL-DYTV-----EGMINGVSKI-----1007
 WP_088181398_1 -----D-----DDELAB-----YYFG-----F-----PIY-RTY-IDKF-AGHSYLL-----KABES-DF-----994
 WP_048165390_1 -----P-----DENFAB-----YYFG-----IHP-----L-----FPW-HSY-VDKL-AATEPWE-----IVVHF-E-----986
 WP_088865610_1 -----P-----NVNPGB-----IT-----P-----IQIQRGKAI-TID-RQML-LRVDRTT-----ATLYL-DYTI-----DGIINGVSKI-----995
 WP_014012907_1 -----P-----KQTAHT-----G-----DLP-GDY-ITIS-LKIVVSP-----O-NENDMIF-TGI-----1009
 WP_099209391_1 -----P-----SCVGLK-----GK-----T-----DCVTEVVO-ANB-TILV-DGKETV-----D-----SHCREWY-L-----969
 WP_088863686_1 -----P-----NDELOK-----R-----LDI-QDQNL-GTP-VAIK-BRJHPP-----K-PMACVQ-MNPR-----PVT-----960
 WP_068319935_1 -----P-----SNADAT-----EV-----LKD-GEF-ITVE-IPYVLEY-----S-YDENNTWT-H-----938
 WP_011013125_1 -----P-----KNTSD-----FTAF-----ARY-----W-----I-RGY-YLP-LVTFEP-----K--MSRGNNF-EYS-----925
 WP_042692137_1 -----P-----DIAQNE-----PN-----SF-LDB-LDSE-LVTKENC-----G-HVYVSKCQ-VEKWW-----LPTPHAFSIE-----881
 WP_052696221_1 -----P-----SKRCAF-----VWV-----RMTAEK-K-SDV-PRLT-PRTGWS-----C-EGTCYI-TLKR-----ADTPHYLKVT-----832
 WP_014122995_1 -----P-----EG-LAQ-----TIG-----DKY-----V-ARNF-JEH-SYM-----ITCINF-DN-----811
 WP_088886144_1 -----P-----DGLS-----RVEG-----DGY-----YIYLFDG-CQF-KHBT-INVIR-----N-----DTRWL-----780
 WP_088856136_1 -----P-----NDELAD-----YYFG-----H-----W-C-Y-THKLETHSYR-----E-AYL-FGL-----747
 WP_015857921_1 -----P-----P-----DN-----P-----TRADI-----794
 WP_014733996_1 -----P-----P-----CER-----P-----C-----C-ENCYCHY-TLER-----VDTPHYLKLK-----680
 WP_088886109_1 -----P-----TCKLAF-----VWV-----P-----RMHEALGT-NDV-RDIT-PRINTW-----C-ENCYCHY-TLER-----VDTPHYLKLK-----680
 WP_088882563_1 -----P-----P-----V-----Y-SFH-SRFL-----732
 WP_015859709_1 -----P-----DGLAB-----YYFG-----DGY-----YIYLEDGCQF-MAHM-ITVDSL-----ANKHH-TL-----599
 WP_014122675_1 -----P-----SK-LSD-----EIMG-----RVD-----KYLYFYDDEGKLP-BLYM-VSUGL-----GKNTQ-NV-----565
 WP_014122677_1 -----P-----NDIAN-----YYFD-----H-----W-C-Y-THKLETHSYR-----E-VHL-TNL-----562
 WP_056934707_1 -----P-----VNBPGC-----F-----T-----T-TNN-MTSS-KTFNLV-----E-----593
 WP_068320152_1 -----P-----DENFAB-----YYFG-----IHP-----L-----FPW-HSY-VDKL-ATEDRPWE-----IVVHF-E-----484
 WP_082781392_1 -----P-----SGSDAT-----EW-----LKN-CEK-TNPK-FEYVLY-----S-IDRK-WH-H-----487
 WP_010884703_1 -----P-----RRR-----
 WP_062388971_1 -----P-----P-----C-----C-----499
 WP_074631387_1 -----P-----DDFAN-----YYFG-----ERP-----WDPIDRVE-SY-KDRL-AGTYYK-----KFLIED-BNVT-----AEDLVMVK-----369
 WP_010884704_1 -----P-----NDELAN-----YYFG-----ERP-----W-IST-GSY-KDRL-VGYSYLV-----KAEF-N-----368
 WP_056934708_1 -----P-----NDELQ-----RV-----P-----VLDSDNP-GTP-WAVK-AYNLNTQ-----E-P-MFTQ-MNPR-----301

WP_048151448_1	-F--KNTART---GLLAIEKDLE-GSY-ISVS-LRVVISP-----C-NDD-I-AP-----T-	304
WP_088863691_1	-F--RNTAHT---SLHTEMDL-GVY-ASIS-LTVVISP-----C-HDD-V-HE-----T-	291
WP_048810998_1	EISKSSLPLRLRVLSGAG-IFPYWEAAAN---DIRVETEFP-CAT-IPIE-ITVVPF-----D-RIC-IQ-RF-----T-	242
WP_048148049_1	-NKEFVN----YYLD-----YPL-INK-YGYM-TKYSYLL-----VAKIS-DGLR-----	327
WP_055428947_1	--F-KNTAHT---GLTTTEKDL-GAM-VTMY-LKVVISP-----C-DND-I-IS-----T-	242
WP_09209381_1	-LIFG-D-----PFP-NYKL-PPEVSPY-----VKVVF-T-----	250
WP_014122994_1	-NG-TAT-LIFG-D-----PFP-NYKL-PPEVSPY-----VKVVF-T-----	202
WP_048165381_1	-NDELAN----YYFG-K-----PVY-RTY-IDKFG-ACHSYLL-----KTRSE-EL-----	207
WP_048165382_1*	-D-----I-----	102
WP_068319940_1	-HDTLPSA-GSIC-KS-----VSIGDL-GVS-VFVE-VDLILWNGKTYVVD-----SCNTWSLY-----K-	180
WP_068320169_1	-MM-----	255
WP_068320161_1	-NDELAB----YYFG-H-----G-C-----ASATEV--VLQ-----W-GYT-HRLL-ETPSYLL-----EVHLA-GL-----	158
WP_048055992_1	-C-----ASATEV--VLQ-----W-GYT-HRLL-ETPSYLL-----EVHLA-GL-----	149
WP_074631389_1	KISKPDIFLI-GDIFPYWEAARN---DIOVE-CIY-CAR-VEVK-LIHVPF-----D-KLG-IR-RF-----T-	126
WP_014012910_1	-DENFAE-YYFG-IP-----R-FP-HSY-VDKL-AME-PWE-----I-VEHF-E-----	139
WP_015857844_1	-NNEMAP-CYFG-K-----PVL-DDM-RDKF-GGRNYK-----T-AUV-----	119
WP_09209388_1	-RKLADQ-FN-----GN-DHP-AYFK-AEHKSYM-----B-PVYVVK-MNPR-----	136
WP_088865600_1	-NGELQK-RV-----P-----VD-TSD-TDI-GTP-PAIK-AYLNQR-----C-ENGDCHY-TLER-----VDT-----P-	112
WP_048165388_1	-TCKLAB-VVVP-DE-----KMAKAEL-NDV-ROLT-PKNTTW-----E-EAKS-SI-----	121
WP_048055998_1	-NKBLAN-YYFG-K-----PFM-RTY-IDEF-ADHSYLL-----KAVTS-GCVA-----SSDIVEIR-----	121
WP_088863688_1	-NDELAN-YYFG-K-----LGW-GSY-SPLR-VGKSYLL-----E-EAKS-EL-----	119
WP_048151737_1	-DDELAN-YYFG-K-----PIV-KTY-IDEF-AGHSYLL-----E-EAKS-EL-----	133
WP_048055995_1	-F-STTAKVYGTLDGIN-IKDLW-GLS-TIII-ILYDHW-----E-GTSEELIS-SE-----E-	123
WP_055430151_1	-NDNLAP-KLT-ANY-F-LS-PG-GSY-YKYL-LTPGGQP-----AIYRVAVLS-T-----	120
WP_048150566_1	-BDFAN-YYFE-ERP-WDPVDRFL-SY-KORF-AGYIYKV-----RFFD-NNVT-----SETLVMVK-----	112
WP_09209386_1	-NDBLAN-YYFG-ERP-W-----PSD-GSY-KORF-VGAYAE-----KAEVS-NNIV-----AGDIVEIT-----	196
WP_088861110_1	-D-----I-----	125
WP_068320165_1	-F-KNTAHT---GLITTEKDL-GAH-VLIS-LRVVISP-----C-NDD-I-IF-----T-	136
WP_055428943_1	-F-TSSAEV---PLTVEELGLW-GSV-YLPLQ-LPYTILKT-----S-QET-F-FF-----R-	97
WP_014122673_1	-KDELQK-KV-----P-----VDSLSDMNE-GRP-VAIK-VYINQKR-----B-PVMMHIE-MNPM-----D-	109
WP_088856137_1	-DNELAP-SYSG-K-----PFP-DSY-LNKL-ACRTFPI-----TATID-G-----	75
WP_048151739_1	-TA-FP-----W-NAGIKPFI-LEH-----	68
WP_088865604_1	-I-----W-EL-----	37
WP_088865603_1	-NRDFAN-YYLD-YF-----L-----D-SYKL-TGYSYV-----I-PVDA-BIPQVSDVVYLTGS-----A-	91
WP_048150577_1	-ESLSD-FRAL-ANY-W-----VY-GV-YLPL-VTMRPH-----V-EF-MNNA-----PKS-Y-----	162
WP_055430149_1	-MDNSN-NP-GTP-TAKF-AYINQKR-----B-PVMMHIE-MNPM-----PVT-----	177
WP_068320157_1	-RMLQD-FN-----CS-SHV-VYKF-AYPTSYC-----	100
WP_014788172_1*	-D-----I-----	109
WP_048165379_1	-F-----I-----	35
WP_068320171_1	-MDNSN-NP-GTP-TAKF-AYINQKR-----B-PVMMHIE-MNPM-----D-----	0
WP_088865607_1*	-P-----I-----	28
WP_058939190_1*	-ML-TRADGIT-----ATLYI-DYTI-----EGMINGANKI-----	83
WP_068319946_1	-WP-----I-----	4
WP_048150353_1	-MDPM-----	80
WP_048150344_1*	-H-----	67
WP_058939188_1	V-----KGVTEITIGINVDT-RTADADYCYD-TAT-----IFPSFKVIIKAT-----K-----IAK-----IMKTSGKETC-----V-----1113	
WP_014788798_1	D-----RGIIIDEVKNFYNDI-KDDINACKYV-AAT-----YFLIKGSKC-----I-----ATK-----AKRKGGLS-----I-----1064	
WP_048151755_1	V-----KGIAESTLRSVNO-GIVVADYIAD-LLL-----LIEGCPKVSSKIT-----K-----WEP-----VLDKPEGDA-----I-----1063	
WP_088181398_1	N-----SVSVDKILYKDF-RSGCFKADY-CSP-----TCI LISTAO-----I-----VVE-----SNPVGWIAF-----A-----1046	
WP_048165390_1	N-----APPISTFQLKNS-CTEI TEDAVEY-GGS-GTFVVTIEI EKAGYIITEA-----T-----ESG-----QIAVEGSRLF-----G-----1048	
WP_088865610_1	V-----KGVIQSIQIGINVDT-KDWDADYD-YD-TV-----IFPSFKVIIKAT-----K-----IAK-----TAKTAGKLG-----V-----1051	
WP_014012907_1	D-----DININGQDN-KDVTIDVGTN-VIII-----VGA-----MAGI-----T-----ILK-----LARNEVUSA-----F-----1055	
WP_099209391_1	D-----VTA-YADTITVWPGG-KVTEBIE-TDL-VAN-----VGV-----DIAVGA-----T-----IGT-----LILPGACTVA-----G-----1021	
WP_088863686_1	F-----GDVARDAYHAKVLL-KDEVITYGTFD-GAT-----AGGYLDRYVG-----V-----PPE-----VGGPVGAMA-----L-----1013	
WP_068319935_1	F-----SGEDYDIOVKMDT-KWVETIDYVLS-GVM-----A-----I-----DPE-----TAISFSVGSF-----K-----983	
WP_011013125_1	K-----YEKYKISTQIQVKI-SETIYIWA-SA-DIG-----SFTT GGECH-----R-----GIV-----VAFKDGKRM-----T-----977	
WP_042692137_1	IYNDNQ-----LDSSETT-VTTCYGN-YYEKKFMMEYY-VAP-----LASCATGAAT-----A-----IAE-----VSVSAGISAAA-----K-----941	
WP_052696221_1	VRLGSD-----YRNLEGIMARYIG-SKYWNNEADE-GIK-----KGAIM-----G-----IAP-----VGLAYAPKEY-----L-----886	
WP_014122995_1	H-----Y-PNSDVVSFYEESSIEKHREI---GS-----IIGGEIGGVIA-GAITEGSATEE-GIV-----TGAALGAILGDKISSG-----878	
WP_088886144_1	G-----VTVTYSVGDDEKGG-KI-ERADYILIK-SQ-----VAGGASTVLC-----V-----IAI-----GGNPTIGLIIA-----G-----834	
WP_088865136_1	S-----Y-PNSDWIT-TGCE-EDWDRKATs-LGA-----DVGGSIIVAVA-----G-----NPMSL-TF-----V-----795	
WP_015857921_1	PSRL-----	824
WP_014733996_1	-D-----I-----	774
WP_088886109_1	IRLNNSG-----YMSLEGVITARYTG-SKYVNEDANK-C-----IGTAS-----T-----MIT-----IPIAVSWKPA-----W-----732	
WP_088882563_1	-W-----YVMTIYPCD-KECG-AKEEIDPYDIT-CAB-----LGGBELTVAF-----V-----I-G-----SEIISTEGV-----L-----732	
WP_015859709_1	S-----QVVTMIE-----VGI-ERDSIDYDSI-GLS-----VIGGIIIVISF-----V-----I-V-----ISFGEIAIGV-----I-----614	
WP_014122675_1	S-----Y-PNSDWIT-TEKK-EDWDRKATs-LFA-----DF1GGAIAVFAT-----A-----S-----NPMSL-PF-----V-----620	
WP_014122677_1	S-----GKSKREDLILTPTCE-TKNDQSASVN-----	620
WP_056934707_1	TAG-----APPISAFRILKNS-GISPEDVVEY-GGS-GTFIATEI ERAGYIITER-----T-----GIG-----KVAVVGSKF-----G-----546	
WP_068320152_1	N-----ENSAISDFRILKNS-GISPEDVVEY-GGS-GTFIATEI ERAGYIITER-----T-----GIG-----KVAVVGSKF-----G-----532	
WP_082781392_1	Y-----ENSAISDFRILKNS-GISPEDVVEY-GGS-GTFIATEI ERAGYIITER-----T-----GIG-----KVAVVGSKF-----G-----532	
WP_010884703_1	-D-----ENSAISDFRILKNS-GISPEDVVEY-GGS-GTFIATEI ERAGYIITER-----T-----GIG-----KVAVVGSKF-----G-----532	
WP_062388971_1	-D-----ENSAISDFRILKNS-GISPEDVVEY-GGS-GTFIATEI ERAGYIITER-----T-----GIG-----KVAVVGSKF-----G-----532	
WP_074631387_1	I-----RGD-DEVKFNFYNDE-KDNTIA-NYNA-AM-----YFLIKGGEK-----I-----EKA-----GAKRGGGLT-----A-----421	
WP_010884704_1	B-----SIT-TDAAIT-SSSTEIDETA-VK-----T-CVGVSAE-----E-----VASS-----HAGCDEIVAS-----G-----420	
WP_056934708_1	B-----EKGVLKEV-KDVIYVKNEN-DPW-----PSNKNVAV-----I-----IIT-----EKSWEINPA-----344	
WP_048151448_1	C-----T-----DTINIRQDN-KDVIYVKG-----I-GADPMAGITIA-----K-----IAKNGEVIAKAKN-WP-----Y-----358	
WP_088863691_1	C-----Y-----DTINIRQDN-KDVIYVKG-----I-GADPMAGITIA-----K-----IAKNGEVIAKAKN-WP-----Y-----338	
WP_048810998_1	F-----I-----ESTY-EVDQ-TAVVTDVATD-V-----F-ITYEIKKAT-----P-----IADIEFIIONALINKPP-----S-----293	
WP_048148049_1	-I-----I-----	327
WP_055428947_1	V-----SDVWQLSDPINVQF-PEPKARKFYG-IAKTIKSAYDD-KS-----GIGILET-----V-----TVK-----GGKEELAWILH-----Y-----304	
WP_099209381_1	C-----T-----GLIHTRQDN-SDVAIDVGTN-LV-----IGGEVXVIVIS-----K-----LIRMGEMIKGISELAP-----V-----304	
WP_014122994_1	N-----LPPNSDDEVETEEN-SIVQTIV-YG-TAAISGATIGMVAAYGGGGII-----A-----GAL-----SGGSVGAVGQ-----A-----264	
WP_048165381_1	N-----Y-PVSVDVITIILYKDF-RSETEKADY-CSP-----A-----IPII STAO-----I-----VVE-----SNPVGWIAF-----A-----259	
WP_048165382_1*	-D-----I-----	102
WP_068319940_1	A-----I-----KNVKIKTDI-INVTDLVGE-IT-----GLAGAVAGI-----I-----A-----GAK-----IGAALGSVVP-----G-----229	
WP_068320169_1	A-----I-----EPISDVITIVEDE-----KDWKDVAVG-LAADFAGGAVVUVIAGTNFSE-----S-----FVA-----TLAGAATTE-----Y-----255	
WP_068320161_1	T-----B-----EPISDVITIVEDE-----KDWKDVAVG-LAADFAGGAVVUVIAGTNFSE-----S-----FVA-----TLAGAATTE-----Y-----218	
WP_048055992_1	CSV-----Y-----CNVLVKMDF-KHIAADYMLT-VAM-----AV-SWTLLKAP-----C-----KVKIGK-EFNFAGIL-----G-----229	
WP_074631389_1	H-----Q-----SSAYEVH-IAVADIADE-T-----YIYTKLGSKV-----P-----IANKIFIEDAINKUPP-----G-----200	
WP_014012910_1	N-----APPISAFRILKNS-CTEI TEDAVEY-GGS-GTFVVTIEI ERAGYIITER-----T-----GPG-----SLAVVGSK-----G-----188	
WP_015857844_1	B-----GIPS-PVSAQIKIRN-TGLWLSFW-LEY-----LIVLVYLISIAN-----S-----EST-----KNFPVGSLL-----V-----194	

WP_099209388_1 -----N-----GVVWSDILTIKDISSPQNAFLIVE-AGG-----IVGGILGGVIVSAM-----I-----TKN--PEVPIKAVAA-----S 175
 WP_088865600_1 -----EKGITEEV-CDYIAKGKSE-DSW-----GAAETAT-----I-----IVT-----KIAVETNPS-----S 179
 WP_048165388_1 -----HYLKLKIRLDSGEVNILEGITARYTC-SKYNNEDANG-CIK-----KGAIM-----I-----IAP-----LGLAEPPVEY-----M 172
 WP_048055998_1 -----S-----YPSDVITVVYKDT-RSGSEKAIDY-GSI-----AEBIASVAL-----L-----VVK-----ESNPNGWGVF-----I 173
 WP_088863688_1 -----D-----RSPGLEKEVETLTK-GGSIAQYVLE-KVAKHAGQLETVASGSLGRAT-----V-----VSK-----FFGLGLWL-----A 183
 WP_048151737_1 -----N-----YPSDVITVTPYNG-DETONAINH-GLT-----LEIIGFVRTA-----S-----SDP-----VGILITLGVY-----G 173
 WP_048055995_1 -----C-----S-----DEVTHADW-NDVWIDYGGDALIA-----IAIAYAAPAVI-----V-----SATGWKGAAKKAGVSI-----L 188
 WP_055430151_1 -----C-----QIITYDNCIP-----NTVNV-TCY-----EIVGSSSSGAGV-----I-----IAF-----UNIDVGTLLT-----V 170
 WP_048150566_1 -----B-----RGIIINEKNEYNDI-KDDIILAKYT-AVA-----YELKSKSEK-----I-----STK-----MAKRAGGILS-----I 172
 WP_099209386_1 -----B-----TSPSTGEKIEATAVK-VNGIANS-LQ-KVAEHAGQLETVASGSLERKVA-----K-----TP-----ILNLNSWFT-----R 174
 WP_088886110_1 -----B-----
 WP_088886165_1 -----C-----T-----DFVNLIKQDN-KDVWVGWTN-LAI-----IGDIDKAGITII-----R-----LVRSRMETMKALKS-----WP-----Y 179
 WP_055428943_1 -----C-----Y-----GSGRTQSN-EWVPADET-TIT-LVF-----L-----KGSNKVI-----V-----WDRNA-WEV-----SR-----R 180
 WP_014122673_1 -----L-----GDFSLPEKEIATG-----GSGIAGALTY-FAS-----NEEAFLAGA-----I-----TPA-----GIEALSAYVS-----S 148
 WP_088856137_1 -----M-----KNPAGTAGIFRUVKKLG-YWDLILKE-TIL-YMS-----MLGIGIVF-----F-----EPT-----WCHSLGAGIF-----S 143
 WP_048151739_1 -----M-----
 WP_088865604_1 -----M-----
 WP_088865603_1 -----C-----LDNLETKVRAYNT-ITTEKNTFED-----IKSGLGVGLET-----S-----TAK-----GIKE-LAWILK-----Y 126
 WP_048150577_1 -----N-----YTR-SHVILKTS-NDVYVWVWVWID-LGS-----FIWSEFAAGEST-----K-----EVI-----IAAKAGKRAK-----T 121
 WP_055430149_1 -----N-----GDVVKMYSEAKWV-KELVGTFTD-VRS-----IAGGAGATKGI-----V-----KFL-----PKKGE-----SSE-----S 91
 WP_068320157_1 -----I-----IVVHLNN-GITTSR-----
 WP_014788172_1* -----M-----NLEGGITARYTC-SKYNNEDANG-CIM-----KGATM-----A-----FSP-----LLSGLATFS-----45
 WP_048165379_1 -----M-----MNLEGGITARYTC-SKYNNEDANG-CIM-----KGATM-----A-----FSP-----LLSGLATFS-----109
 WP_068320171_1 -----M-----GDFSLPEKEIATG-----GGCIAGALTY-FIT-----NEGATLVER-----I-----TPA-----EMGSEGRICF-----86
 WP_088865607_1* -----M-----GDFSLPEKEIATG-----GGCIAGALTY-FIT-----NEGATLVER-----I-----TPA-----EMGSEGRICF-----20
 WP_058939190_1* -----V-----KGVAKMDISMSVYC-GHIVADNNOV-----M-----KGATM-----T-----FSP-----LLSGLATFS-----54
 WP_068319946_1 -----M-----
 WP_048150353_1 -----M-----ERGIIKDV-CDYVWNELEN-DPW-----GSSKVA-----M-----IIT-----EKISMETNPF-----47
 WP_048150344_1* -----M-----
 WP_048055999_1 -----M-----
 WP_058939188_1 -----I-----DKFVNSIPNIP-----K-N-IVLDELIISNT-----1139
 WP_014788798_1 -----LL-----IGADPH-----DWIFGP-----NPD-----T-G-I-DNNNVVGG-----1092
 WP_048151755_1 -----LS-----
 WP_0888181398_1 -----LT-----S-LPKLG-KA-----A-----SEI-QWIF-EWGVNE-----FP-----E-----E-DNNNAVGG-----1083
 WP_048165390_1 -----YA-----GLLLEL-AD-----I-----TEEAIFYF-GWKOPR-----D-----DNDGFV-----1081
 WP_088865610_1 -----LT-----F-----DKFVNDIPNIP-----K-N-IVLDELIISNV-----1077
 WP_014012907_1 -----KN-----SWPYLISFFRW-----A-W-PKLN-----1075
 WP_099209391_1 -----AT-----GAIVVGBFTNF-----G-G-YVLHNIGCIP-----1047
 WP_088863686_1 -----Y-----R-----WWDVLHSPVPEV-----Y-H-C-DNNIICG-----1039
 WP_068319935_1 -----FS-----GSKITM-----KLFDPWAFVW-----N-G-FLKPYIIEHT-----1014
 WP_011013125_1 -----VW-----EFKVA-----QAFREIILKKW-----
 WP_042692137_1 -----VT-----AITSWI-----VEV-----Y-N-ILKQHLLGDSN-----965
 WP_052696221_1 -----GA-----MIVEM-----PA-----S-EPVKTIT-OIFFEDICQ-----G-I-WKEINFEG-----925
 WP_014222995_1 -----VV-----SLL-----DFIDDSNFKLQDIPNDS-V-----DNDSVVCG-----911
 WP_088886144_1 -----IG-----FGAIVL-TT-----V-----CYSTY-----KGATAPCTCS-----E-----E-DNNLIICGG-----872
 WP_088856136_1 -----AT-----FIGGVA-----TTEYVVKPLGTFLWD-----LWGEY-----YWGTHE--PGE-----E-B-N-DNNSIICGG-----843
 WP_015857921_1 -----
 WP_014733996_1 -----
 WP_088886109_1 -----F-----VSG-SA-----N-SNFSDLV-EKSFKDFID-----F-T-KNAYKSICG-----770
 WP_088882563_1 -----
 WP_015859709_1 -----LL-----LV-----P-----I-----IVNGY-----RCATA-----TPICS-----V-E-DNNLIICGG-----685
 WP_014122675_1 -----VL-----GL-----G-----I-----AIDEY-----RTFSABPRICS-----LYE-B-DNNLIICGG-----648
 WP_014122677_1 -----AI-----FLAGVA-----TTEYVVKPLGTFLWD-----LWGEY-----Y-----GE-----641
 WP_056934707_1 -----
 WP_068320152_1 -----YV-----GILFFI-TD-----I-----V-----PEIYFYGCKQP-----R-D-S-DNDGFV-----579
 WP_082781392_1 -----IL-----GKVN-----KLGIDFWAFLW-----N-G-LIKPYIIEHT-----563
 WP_010884703_1 -----
 WP_062388971_1 -----
 WP_074631387_1 -----AL-----LVLDIH-----DWIFGP-----KPN-----T-G-I-DNNNVVGG-----449
 WP_010884704_1 -----ML-----EK-----
 WP_056934708_1 -----VWTF-T-----W-----IWSAY-----ITFTTP-----INE-----D-V-G-DNNIIVGDEQ-----378
 WP_048151448_1 -----GV-----SFFR-----W-----CWSQI-----NN-----372
 WP_088863691_1 -----VV-----QFVR-----EA-----W-----GNDND-----352
 WP_048810998_1 -----JR-----QKVSPITNPL-----L-----QQISI-----NW-----LA-----N-W-MKEK-----TEWRG-----328
 WP_048148049_1 -----
 WP_055428947_1 -----HT-----
 WP_099209381_1 -----IA-----DBIHR-----R-----Y-----CWR-----
 WP_014122994_1 -----LV-----DGSEN-----WF-----K-----IPEKVLRYKHKTGTPD-----N-G-S-DNNNVVGG-----305
 WP_048165381_1 -----LT-----S-LPKLG-KA-----A-----SEI-QWIF-EWGVNE-----FS-----E-----E-DNNNAVGG-----296
 WP_048165382_1* -----
 WP_068319940_1 -----AGTVTGAIVGIGVFIGG-----I-----EK-----L-----CNP-----257
 WP_068320169_1 -----
 WP_068320161_1 -----VI-----KPGT-----IW-----D-----IVGNIAW-GESNPE-----A-----G-E-B-DNNNVVGG-----254
 WP_048055992_1 -----VI-----YKVK-----KE-----Y-----LELT-----
 WP_074631389_1 -----VK-----EVKVK-----I-----CQCSV-----NW-----LA-----N-W-MKEK-----TEWRG-----231
 WP_014012910_1 -----YV-----GLLLV-----SD-----I-----PEEAY-----FYGW-----RQ-----R-D-S-DNDGFV-----221
 WP_015857844_1 -----VE-----S-----GFVGVSIARIA-----S-G-LOWNLYKVGY-----219
 WP_099209388_1 -----W-----IGTATT-----WA-----I-----VTSWSKI-YA-----UTGIS-----G-D-CNNAVVGG-----215
 WP_088865600_1 -----VW-----T-----Y-----TWALI-----ESMK-----LPP-----E-----TP-----DNNLIVGDET-----213
 WP_048165388_1 -----GT-----PKPVKTTII-----QVLFVKSIGO-----S-I-WKEINFEG-----211
 WP_048055998_1 -----LT-----S-LPKLG-KA-----V-----SEI-QWIF-EWGVSR-----FP-----E-----E-DNNNVVGG-----210
 WP_088863688_1 -----RD-----VI-----NW-----NWRAP-----TP-----S-D-CNNNVVGG-----206
 WP_048151737_1 -----VT-----HENDO-----WI-----LEP-----I-----NEHFP-----E-----E-DNNNVVGG-----205
 WP_048055995_1 -----AA-----EILN-----EA-----K-NW-----IT-----NW-----S-----
 WP_055430151_1 -----GG-----ILLIYF-----PS-----KAPSLLLGA-----T-----E-DNNLIICGG-----200
 WP_048150566_1 -----LL-----IGADPH-----DWIFGP-----NPD-----K-G-N-DNNNVVGG-----200
 WP_099209386_1 -----RD-----F-----NWRAP-----TP-----S-D-CNNNVVGG-----197
 WP_088886110_1 -----
 WP_068320165_1 -----VV-----SFFR-----W-----NPKL-----DS-----193
 WP_055428943_1 -----VF-----SVDYI-----T-----C-----190
 WP_014122673_1 -----LGII-----IG-----F-----I-----YL-----YE-----TPK-----IPP-----S-DSC-DNNLIVGDES-----183
 WP_088856137_1 -----
 WP_048152596_1 -----FG-----LVVYLA-----KMA-----S-E-FQWILRYCG-----165

WP_048151739_1	-----	162
WP_088865604_1	-----	157
WP_088865603_1	HR-----LIED-----	146
WP_048150577_1	AW-----EILKMA-----	140
WP_055430149_1	AG-----MFGF-----S-----	128
WP_068320157_1	-----Y-----V-----W-----I-----E-----	124
WP_014788172_1*	-----	45
WP_048165379_1	-----	109
WP_068320171_1	F-----HSW-----D-----	99
WP_088865607_1*	-----L-----S-----	20
WP_058939190_1*	-----	54
WP_068319946_1	-----	83
WP_048150353_1	V-----T-----Y-----G-----A-----L-----I-----	81
WP_048150344_1*	-----ESMK-----P-----LPS-----	80
WP_048055999_1	-----E-----NLC-----DNN-----I-----V-----G-----E-----P-----	67

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	MWFPRVHNILTFLYLRVLLFVSLVNGFITKNSKMLISLGVLAYFSIRLEIHHYQNKLSLGDRRFVPALEVLNLFAVGFLLPVLSYINRANFI	RNHLIL 100
WP_014012911_1	MELRVHNLITFLYLPILLTSFMEFLINRNSRALITYVVGYLAYLAIRLEIHHYTHKWSAARDPEEVNLILLYNLAVGFLLPTILAYSTKATLIRNIMI	100
WP_068319950_1	MDEARVHNILTFLYLPILLLAGFVNEMFLINRNSKALVLYAYLAIRLEIHHYTHKWSAARDPEEVNLILLYNLFTAGFLPLTILAYSTEETIIRNLLI	100
WP_014733997_1	MDEARVHNILTFLYLPILLFGSFVNGFWINGNSQMLIWAIGLYLTYFAIRLEIHQEHKKWGAARDTREVKALVISLNVVVGFLPLTIAAHSTKANFRNLMV	100
WP_048165389_1	MNKVRVHNILTFLYLPILLFGSLLYGFENNSQMLIWAIGYLWVSAIRLEIHHYHHKWSAAGNTFVHTLVLISLUVVVGFLPLTILAYSTMDFSRNIMI	100
WP_068320155_1	MLGVGVLIYAMAWLILIEKIKITERRLLIISLGLSPVIGMTGGGLEPPIFALLALWTYLIVKHNLVYAEKNNG-----	172
WP_014012911_1	MIVVVLVLYVPISRMIVLILGRGFILISFESSSVIFIFITQNILEPVLISLWTLVLLKHDLVAYTQERSVS	173
WP_068319950_1	MIVFLVLYAPISRMVGKLS-RGEILVLSIVSSPVIFITQNILEPVLISLWTLVLLKHDLYT-----T-----TKY-----	164
WP_014733997_1	IFIACAFIYATTWRRIIDKLSEDRKGHFLVLLIKKSISLEPPILFALLSLWACLILKHSLAAYATKGL-----	171
WP_048165389_1	FLVCAFIYVTIWIVDKKISEHGLLVVSLVLSVLLITKSISLEPPILFALLSLWTLVLLKHDLVSYAK-----	168

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	-----PVNVSNPGSNNLTVKVLINTI-----DKNISNNEKTQFNVKGIAADISRVSGIPKN-----NVAASGGEYQITAFYNV-SIPETYTSKV----- 82	
WP_013799567_1	-----TFNESGTHNITITITPIGTK-----DRNADNTKTISVTKEIKADIKEVGLPYN-----NVAQADGEWIDDVYNYV-SVPSYYT	IKN----- 80
WP_018154498_1	-----TFNESGAHNITITITPIGTK-----DRNADNTKTISVTKEAKADIKEVGLPYN-----NVAQADGEWIDDVYNYV-SVPSYYT	IKN----- 80
WP_013866661_1	-----VIDPYNHIDEQNENNKLVRKVIVENPYFKITGK-----YCPTV-----REGNYFYVGIYYKT-NYKNTYIYDNYH	68
PKL61212_1	-----DDVT-----DGNAVASRIVIDNDYDELTNQNKEYWGYWGYNNSLKNEYFVLTGYFTA-NQAGMVATTAITY	68
WP_048104849_1	-----ITGDNTV-----GNNIASRPIVIDSYELNTEQNKRYWNAWGYDRSLRDEHLWLGTYFTA-NQSGMVDTAITY	71
CVK34051_1	-----TGDNTV-----GNNIASRPIVIDSYELNTEQNKRYWNAWGYDRSLRDEHLWLGTYFTA-NQSGMVDTAITY	70
WP_015591433_1	-----DTITA-----NNVYTTHPITLKEFHLD-----AWRMYPP--RKMMGREFWIGSYVNV-TAPGKVNTAKV-----	58
WP_004075953_1	-----WTPGAEGGLYLVNITSEDAVK-----GRPSDEKSINAIDYQLDIIG-----DHAYG-YSSRVDWNWYFYFRVEA-NKAGNVNINNA-----	77
WP_004040593_1	-----PATAGTTLKVNTISDTGLPVV-----GTTAAERSVTARTVTLLEVY-----DVYVG-YSRBAVGDWFYLSWYVKP-SESGNVDNTA-----	76
WP_042684179_1	-----HSNTTDPYP-----ANNVYTRTIRVREYSID-----AWYMIYP-TYGWEGRYFRVGARLNT-TAPGYVNATTVDP	65
WP_050459351_1	-----RETAVFTRNHTFATGRHTLVASVADPDAP-----RGNAADRDTVTSQPYELR-----GRLSA-ADPQVGRNVTVYGRGYS-NYESNVTANSL-----	81
WP_008096231_1	-----RETAVFTRNHTFATGRHTLVASVADPDAP-----RGNAADRDTVTSQPYELR-----GRLSA-ADPQVGRNVTVYGRGYS-NYESNVTANSL-----	81
WP_004967133_1	-----RESVVLTRNHTFATGRHAAVATVDDPDAP-----RGNSDRDRTTSQPYEELS-----GRLSA-ADPQAGQNVTVYGRGYS-NYESNVTANSL-----	81
WP_007275935_1	-----RESVVLTRNHTFATGRHAAVAVSVDDPDAP-----RGNSDGDATTSQPYEELS-----GRLSA-ADPQAGQNVTVYGRGYS-NYESNVTANSL-----	81
WP_081457886_1	-----RAPHTYNSGGDYTVATVDAVPF-----DNNEAKTIEVKAFDNLAE-DISVPTD-----TNTGTTTATARFQT-NYPTVNMTEL-----	79

WP_058566553_1 -----THNFATGGDKVVRASVSDGVPF----DNNESTKDVTKPYTLSIEDD--DVSVPST-----VNNNSTVTVAEFT-NYPSNVNATLSSL-- 77
WP_058826100_1 -----THRATGGDKVVSASVSDGVPF----DNNVSTKDVRVKPYLSIENG--DVSVPST-----VNNNSTVTVAEFTA-NHPSDVNTLSSL-- 77
WP_050459478_1 -----THSFATGGDKVVTASVSDGVPF----DNNESTKDVTKPYTLSIDDE--DVSVPST-----VNNNSTVTVAEFTA-NYPSDVNTLSSL-- 77
WP_008095939_1 -----THSFATGGDKVVTASVSDGVPF----DNNESTKNVTKPYTLSIDDE--DVSVPST-----VNNNSTVTVAEFTA-NYPSDVNTLSSL-- 77
WP_049967566_1 -----THSFATGGDKVVTASVSDGVPF----DNNESTKNVTKPYTLSIDDE--DVSVPST-----VNNNSTVTVAEFTA-NYPSDVNTLSSL-- 77
OLS27023_1 -----GDHKFEIKSPDSITRYKIF-VIACNETHFGVEERSIVVNKNPIFSTLNPSD--MTLGDRITLPTVLNLNSNEILKDTTSINS 80
OLS16413_1 -----TGWEQEIVLPDNGIEWVVLRTKGGSGAVIKS-SFNTPOLPFFVEISKPAI-MQODDIV1KGVFYN-YHDELVRANVTI-F 78
WP_011499743_1 -----DDNGLATLDLNAPDSITKWRLH-AVSSCPPEGIGISEAGLTVFQDFPDLPY---WIRGEFFVQVQVYN-YLDMPQNVKTLSG 82
WP_048206237_1 -----DEDGLASLDLNAPDSITTWRLH-AVSSCPPEGIGISEAKLRVFDQFFIDLPDLYS---WIRGEFFVQVQVYN-YLDREQNVRKTLSG 82
WP_015053894_1 -----DEEGLASLELTAPDSITTWRLH-AVSSCPPEGIGISEAKLRVFDQFFIDLPDLYS---WIRGEFFVQVQVYN-YLDREQNVRKTLSG 82
WP_023844962_1 -----DEDGLASVDLNAPDSITTWRLH-AVSTGPPEGIGISESSLTVDQDFPDLPYS---WIRGEFFVQVQVYN-YLDTEQDVKKTLSG 82

WP_083755773_1 SNG-----IEVIS-----NNETKSYYVSLRSEIFTI-RAKNVSKE-----NISIEIQY-NEKLLKETIP-----LK 139
WP_013799567_1 TKG-----IQIIG-----DSEKTRYTWRYGTWYFKI-KAVDISDE-----NISIEIFDNNNNKLANKTLTG-----IK 139
WP_018154498_1 TRG-----IQIIG-----DSEKTRYTWRYGTWYFKI-KAVDISNE-----SISIEIFDNNNNKLANKTLTG-----IK 139
WP_013866661_1 -----TIFNSQSGWIKNDTLCYTYPTGWSRSI-WIKMKAHLNTDNKECINGTLLNLNTLNLTKLNLSCC-----IEW 136
PKL61212_1 PNGBTVDLTDNSVFFFYYYY---PAQNPVYAYDSEWNSVSYWIQPKQLGTF--NYSITLEA-KGQSAV-VNGT-----IKV 138
WP_048104849_1 PNGBTPD--GESAFEHYYYY---PAQNPVYAYDSEWNSVAWYVTPRQLGDF--NYSITLKA-RGESAV-VNGT-----IKV 138
CVK34051_1 PDGTPV---DESFAFHPPY---PAQNPVYAYDSEWNSVAWYVTPRQLGDF--NYSITLKA-RGESAV-VNGT-----IKV 137
WP_015591433_1 PDG-----LLVNGNTGWNTDARIERFLWGKWNWFGEF-RLKAQKVGEYGNGTKEINITFTG-DKRDVE-INSSSAVDQVPDY-----KLIV 137
WP_004075953_1 PEG-----FEIYGG---ENQTK-ILYNSNINYYVY-HMRTSNGNYVY-S-WSMRSSRPGTLAAG--SISLTASA-NGKTASAKASTHD-----IR 138
WP_004040593_1 PAG-----VEVNG---GANVTOQMSGGYNNVSY-WSMRSSRPGTLAAG--SISLTASA-NGKTASAKASTHD-----VII 138
WP_042684179_1 ASG-----ITVY---HATKRAYTRGSVPTVY-CLKCGDVALGY-NMTMFTFEA-YGKSAT-ISTTDAQWNVSPYGTSPHGPVO 139
WP_050459351_1 PAG-----LEFAPG-----ETATKY--DTDRTYFEW-TVVATANRDAYT-----DLELNLSA-RGENET-ATER-----LTW 139
WP_008096231_1 PAG-----LEFAPG-----ETATKY--DTDRTYFEW-TVVATANRDAYT-----DLELNLSA-RGENET-ATER-----LTW 139
WP_004967133_1 PAG-----LEFADG-----ETATKH--DTDRTYFEW-TVVAAEANRDAYT-----DLELNLSA-RGETET-ATER-----LTW 139
WP_007275935_1 PAG-----LEFAAG-----ETATKH--DTDRTSYFEW-TVVAAEANRDAYT-----DLELNLSA-RGETET-ATER-----LTW 139
WP_081457886_1 PDG-----LELVAS--ENASKDPVAPASATGGTAAM-KVRVNTTEDVSDA--QVNVTTKA-HQGTSS-ASTT-----LNL 140
WP_058566553_1 PSG-----LELVDG--QTAEKQVRATNGNSAAV-KVRGNTTADIDA--QIDVTVEA-FGESET-ASAT-----TNV 138
WP_058826100_1 PAG-----LELAAG--QSAEKQVRSSAKGGSVAV-KVRGNTTADIDA--QIDVTVEA-FGQSDT-ASAT-----TNV 138
WP_050459478_1 PAG-----LELVDG--QRAEKQVRSSAKGGSVAV-KVRGNTTADIDA--QLDVTVEA-FGQSDT-ASAT-----TNV 138
WP_008095939_1 PAG-----LELVDG--QRAEKQVRSSAKGGSVAV-KVRGNTTADIDA--QLDVTVEA-FGQSDT-ASAT-----TNV 138
WP_049967566_1 PAG-----LELVDG--QRAEKQVRSSAKGGSVAV-KVRGNTTADIDA--QLDVTVEA-FGQSDT-ASAT-----TNV 138
OLS27023_1 NEB-----LKIHSN--LIQKLKELKANEKVNVY-DIEASKVGDV--DLSTLLESKYFTEYSELQP-----LV 140
OLS16413_1 VDG-----VEILA--KNEQNVNVIPLSFLQVTV-AVYAKEPGRH-NVTITAVG-TGVITGNIYTQDGIQKT-----IR 141
WP_011499743_1 AEW-----FELVG---DDVVEVGVANDSVTSHS-TIRTPTRVGVQ---TVELTQGT-TEKADA-IRKT-----VII 139
WP_048206237_1 ADW-----FDLVLG--EDVVMVSVDANSVTHASF-TIRTPTRVGVQ---EVELTQGT-TEKADA-VRKT-----VII 139
WP_015053894_1 AEW-----FDIVN---DDVQEVTVEANSVGVQAS-TIRTPTRVGVK---IIEITQGT-TEKADA-VRKD-----VII 139
WP_023844962_1 ANW-----FKIIG---DDVQTVDGNGAGYISF-TISPTKVGKQ---IVEITQGT-TERADA-VRKD-----VII 139

WP_083755773_1 MDNPVVIKYSNITTNEVS---TLDFOI-FETTEYDIERRLDYIAMIGESGRTLNCDYLARYP--HC 230
WP_013799567_1 TDHPVEIKYSNITCTNSSA---NLTFMFNTTCKYDVRHIEYVMVGEQGRILKGCEIYLAEP--HC 230
WP_018154498_1 TDHPVEIKYSNITCTNSSA---NLTFRVPEIYKSYNTTNEVS---NLTFRVPEIYKSYNTTNEVS---KQISLVLVLAQGEGRVLEGLDWLQVYP--YC 230
WP_013866661_1 QOQVIMKNSNITKLNGND--NKSFSNLTVNATPIRKVGTIELDGGSDGAIFKCLYFLNKPIAWN 232
PKL61212_1 REPNDIKVMMNTTMVTPES--SKTIAFPVFRTPSP-GQNQVLLLAAGDGRTLQCLTSIIYGP--HC 231
CVK34051_1 REPNDIKVMMNTTLVTPES--SKTIAFPVFRTPSP-GQNQVLLLAAGDGRTLQCLTSIIYGP--HC 231
WP_015591433_1 WPTIKLRLSYNTTILSDTSNEMTFTKIDTSNVTTF--QKISLVLVLAQGEGRVLEGLDWLQVYP--YC 230
WP_004075953_1 YVPSMVEMSVNSIGTEVSDGS-SADFIFNTI-HNTNNTYR-NSTVIAQLAQGPRTISLGVLNGVY--YC 233
WP_004040593_1 WIPSIQVKSVDVSADS-SDFMTYNTI-HNTNNTYD--NRTTTIAQSGARTRLGLYLVRYP--YC 233
WP_042684179_1 IVQTVEVKDDNTLQLNTQ-Q-SNMNTQFVNVTTFD--QSGKIDIIAGLQRMICITYLRGY-HC 231
WP_050459351_1 ERPKTRVVTDAANVNTGTG--SDSATLTLRNETTYE--HGVTISTHGLDGRTLQCLDWLQVYP--YC 230
WP_008096231_1 ERPKTRVVTDAANVNTGTG--SDSATLTLRNETTYE--HGVTISTHGLDGRTLQCLDWLQVYP--YC 230
WP_004967133_1 ERPKTRVVTDAANVNTGTG--GSDTTLALRNETTYE--HDLTITTHGLDGRTLQCLDWLQVYP--YC 230
WP_007275935_1 ERPKTRVVTDAANVNTGTG--GSDTTLALRNETTYE--HDLTITTHGLDGRTLQCLDWLQVYP--YC 230
WP_081457886_1 SVPKIRLTLDTNATTLSGGS---DNVTDSLASSATTYD--HTNVTVQAGSQGRTLAGLEYLFTYP--YC 230
WP_058566553_1 TVPKVRYTTTNTTLEASAG-ETQSALNISDATTYE--HTLNVTQAGTDGRTLQCLDWLQVYP--YC 230
WP_058826100_1 TVPKVRYTTTNTTLEASAG-ETQSALNISDATTYE--HTLNVTQAGTDGRTLQCLDWLQVYP--YC 230
WP_050459478_1 TVPKVRYTTTNTTLEASAG-ETQSALNISDATTYE--HTLNVTQAGTDGRTLQCLDWLQVYP--YC 230
WP_008095939_1 TVPKVRYTTTNTTLEASAG-ETQSALNISDATTYE--HTLNVTQAGTDGRTLQCLDWLQVYP--YC 230
WP_049967566_1 TVPKVRYTTTNTTLEASAG-ETQSALNISDATTYE--HTLNVTQAGTDGRTLQCLDWLQVYP--YC 230
OLS27023_1 SPGPIPHPELFPRSLQKANQKWLGEELLNGT--IQLNITOQAYETI-QKSSLTIAPGLQNLASSYERLVG 231
OLS16413_1 EPNGVLRSQKLGKWLGEELLNGT--IQLNITOQAYETI-QKSSLTIAPGLQNLASSYERLVG-YC 231
WP_011499743_1 EAEGVTRTIEVDNGILKNGT---VELDTPAIVPD-SEKVLVSFTPSIVTAQITGVDLLGMP--YC 231
WP_048206237_1 EAEGVTRTIEVDNGILKNGS---VELDTPAIVPD-SEKVLVSFTPSIVTAQITGVDLLGMP--YC 231
WP_015053894_1 EPEGATERELGVNLNGNS---VMDLVTLPDGIVPD-SGKVLVSFTPSIVTAQITGVDNLGMP--YC 231
WP_023844962_1 EAEGTTRTIEVDNGILKNGSS---VELDTPAIVPD-SEKILVSFTPSIVTAQISGVDLLGMP--YC 231

WP_083755773_1 FDNMVSSIIKIL---TTEERKPRIFIDGYA---WGLVGSY---SEKPIHTCWLYGLTTLKMN--GHVNNTYLDN--G-----LK 298
WP_013799567_1 FDSMVNNIIERL---TTGIRKPKV---ISNNEYAWGLWSSL-YPKPIHTGWLYGLTTLNMS--GYAVDMKYIEN--G-----LR 299
WP_018154498_1 FGSVNNSNIERL---TTGTRNKEPV---ISSYETYAWGLWSSL-YPKPIHTGWLYGLTTLNMS--GYAVDMKYIEN--G-----LR 299
WP_013866661_1 LNKTCKVKNVKSIEIDTI--IS---RQRNDSQWQWCHG---KSSVVFSMSIYTMSLAYND---HDFRGI--SGNASKEKAVIENG 305
PKL61212_1 QTIOQTMONLDRMNAFPNGDNAQQLAGQFYGRDRSGWW-NGKDTWSTPSMFYTRVNVITEILKKD--MDADPGFWNV--DANMD--GIDLNASN 320
WP_048104849_1 KTRVTAQMNLGHM-NATGYN---AQASQGWA-WCT-TPSTMFYTRVNVITEIL--MDNDPAFWWDV--DASMN--GIDLNASN 307
CVK34051_1 TVRTVAKQMLDHHMPNDGYNQAOLAGQSYGDGSSGWW-NKTSAWSTPSMFYTRVNVITEILRDRD--NDAAFPNVN--DANMS--NIDLNASN 318
WP_015591433_1 SARVNKSIMMEVQSL--AKGGVR--GQHNDGWSMTCGN--PKGDGFYTRVNVITEIL--MASVGLRMAEEDDFVGYLVKNNLTTHVSSSSVNKGKFNFNDT 319
WP_004075953_1 RNRANESVERINVL--VNGKLR--GQHDDGGTSWLGSSSEASSSSYASITLAKINRTDED--1RHLNGKISS--GTVQPTNTVNFML 318
WP_004040593_1 RSRANESVERGGSISV--VKGALR--GQHDDGGTSWLGSSSEASSSSYASITLARVNESGED--LNRLLTCKISK--NATVNPNTVNFML 318
WP_042684179_1 S-SLNSTVAREVQRL---QYGALKPKANGAWSMTCGP-YSPDSVFTTALYALSVTHERMS--TVNTYSTIG-----VSVNDTLLDKGM 308
WP_050459351_1 TGQINASVGAVARL--TTGQD---AQHENGSWSMTCGP--PDCDVFYTRVAFGFTSAVGN--PVQSRAPV--RADLD--RIDANAT 308
WP_008096231_1 TGQINASVDAVARL--TTGQD---AQHENGSWSMTCGP--PDCDVFYTRVAFGFTSAVGN--PVQSRAPV--RADLD--RIDANAT 308
WP_004967133_1 SDRNDNSVGAVARL--TTGQD---AQHENGSWSMTCGP--PDCDVFYTRVAFGFTSAVGN--PVQSRAPV--RADLD--RIDANAT 308
WP_007275935_1 SDRNDNSVGAVARL--TTGQD---AQHENGSWSMTCGP--PDCDVFYTRVAFGFTSAVGN--PVQSRAPV--RADLD--GIDANAT 308
WP_081457886_1 QRGRANDTIEVEKLI-GTNQASSLIWPDLAQNEGSWSMTCGP-YAFYDEGDLYYTAALQGVTSVAND--EVQGTRAEV--SDDIQ--TVNASRSE 318
WP_058566553_1 RDRANSTISAISKL--ADEPTPGTYFVNISQHDNGAWSMYGN--PRGDLFYTRVAFGFTSAVGN--VALQGASAISD--AVQSNRTDV--NASLK--RINQSGA 315
WP_058826100_1 RDRANSTISAISKL--ADEPTPGAYFNISQHDNGAWSMYGN--PRGDLFYTRVAFGFTSAVGN--VALQGASAISD--TQVSNRTDV--NKSLO--NINQSGA 315
WP_050459478_1 RDRANSTISAISKL--ADEPTPGAYVNISQHDNGAWSMYGN--PRGDLFYTRVAFGFTSAVGN--VALQGASAISD--AVQSSRTDV--NKSLO--NINQSGA 315
WP_008095939_1 RDRANSTISAISKL--ADEDTPGAYVNISQHDNGAWSMYGN--PRGDLFYTRVAFGFTSAVGN--VALQGASAISD--TQSSRTDV--NKSLO--NINQSGA 315
WP_049967566_1 RDRANSTISAISKL--ADEDTPGAYVNISQHDNGAWSMYGN--PRGDLFYTRVAFGFTSAVGN--VALQGASAISD--TQSSRTDV--NKSLO--NINQSGA 315
OLS27023_1 KNLITNMQAISLDRY--TSKF-----LNEKEGGEGLWWDGN--NPSPVFTSLAISVICKISPF--VVNPDPDIFTGA-----RD 296
OLS16413_1 KELNMMITSLSRSL--YS-----FRHYDGGFGWWHND--NSNIYMASVLYGLNKTIVET--GIVVDEEEILQ-----AK 295
WP_011499743_1 AKALTFTTGYQRE-LT-----FMHSDGSGFSAFGEES-DGEGLSILWTSEVLSQFSGR-D--LTTIDENIVRE--A-----RE 296
WP_048206237_1 AKAQTYIITGYQRE-LT-----FRHSDGAFSAFGEES-DPEGLSILWTSEVLSQFSGR-D--VTTIDENILSE--A-----RD 296
WP_015053894_1 AKAEMYIITGYQRE-LT-----YRHSQDGSFAFGEES-DPEGLSILWTSEVLSQFSGR-D--LTTIDEGLAE--S-----RG 296
WP_023844962_1 AKAEMYIITGYQRE-LT-----YRHSQDGSFAFGEES-DENGSLWLSEVLSQFSGR-D--VTTIDENILSE--A-----RD 296

WP_083755773_1 MLI-----GS--WE--SDYAY-YMRDD-----FSSNALITISLQQVNVTD--NNEIKPEIFNATNKSVRVIISQINN----- 366
 WP_013799567_1 MLVH---SONSD-----GS--WN--TGYTY-YMRDE-----FSSNALITISLAQTYNLTT--NETLKQEIFNATNKSVRYLISQNID----- 366
 WP_018154498_1 MLVN---SONDD-----GS--WN--TGWYT-YMRDE-----YSSNALITISLAQTYNTT--NETLKQEIFNATNKSVRYLISQTVY----- 366
 WP_013866661_1 MLI-----GS--WRAIBGAHE-YIRQT-----IPLTAWTMTSLAEDARTD--NNTLKSEINNSLEKGANFLKQNLT----- 374
 PKL61212_1 MLIQ---KOKDE-----GY--W---SDWG-YISND-----VEWTGFISENLLAGEYYPYL--NETMKGAVNVNLSLEKSCAHLILAYDYST----- 386
 WP_048104849_1 MLIQ---KOKREGVANGS--WS--DWGY--ISND-----VEWTGFISENLLANEYYPYL--NKTMKIEVNASLDRSCNWLLTHNYTNE----- 377
 CVK34051_1 MLIQ---GRKEE-----GR--WS--DWGY--ISND-----VEWTGFISENLLANEYYPYL--NNTMKGAVNALSRLKSCNWLLQNYEDEDYKEK----- 388
 WP_015591433_1 MFAQAANRNET---TGAIIWEPWPGHTHW--FFQGH-----LPVTSWIMVSHYOLINEGLINSSAKQVANQTMANVTKYLIVSVCNSDGGWNQWGAQDPP 407
 WP_004075953_1 MFNK---NHKTE-----SGTMYWEWEAPVCHSWTSQS-----NTPFVMLIHSMINETCEVKGEYKDMLRNMEPATKVYVNNINTGRISG----- 395
 WP_004040593_1 MFLVNPDPSS-----GT--WT--WSAGVCHAWTP-----TSNTGFVMLIHDMIRQQGTESEPYATYMTKNMQNATRPFVQNQAADGSWGG----- 396
 WP_042684179_1 MFLVS---QONAD-----GS--WT--GRGSVDYLRSN-----NTMTAWLRLSVMQCVYPA--DATNQSAINTSISKGFAYLLSTQNSDGGWDGKPTGSTA 387
 WP_050459351_1 MFLAD---EQAAD-----GR--IR--NDKF--YFDDD-----AAMTGTFLVALDQAGPY--NATAAAQADQLRQDAASYLVTAQRADGAWGDGS----- 380
 WP_008096231_1 MFLAD---EQAAD-----GR--IR--NDKF--YFDDD-----AAMTGTFLVALDQAGPY--NATAAAQADQLRQDAASYLVTAQRADGAWGDGS----- 380
 WP_004967133_1 MFLAD---EQAAD-----GR--IR--NDKF--YFDDD-----AAMTGTFLVALDQAGPY--NATAAAQADQLRQDAASYLVTAQRADGAWGDGT----- 380
 WP_007275935_1 MFLAA---EQAAD-----GR--IR--NDKF--YFDDD-----AAMTGTFLVALDQAGPY--NATAAAQADQLRQDAASYLVTAQRADGAWGDGS----- 380
 WP_081457886_1 MFLSD---HQRAD-----GS--VP--ATDY--FLRDQ-----FSSTGYTMVAFDRAEPLH--NSSATQADFDRVDAAEFLIEENQNSDGSWAERSQSDI 396
 WP_058566553_1 MFLAD---KORND-----GS--VR--PNGY--FLRD-----TSATAVTTVAIDRAGDLD--NATAQTADEFSDVDAAVHIEERQNSDGSWEAG----- 387
 WP_058826100_1 MFLAD---KORND-----GS--VR--PSGY--FLRDD-----ASATAYTTVAIDRAGDLD--NATAQTAANEFSVDAAVYIIEQNSDGSWEAG----- 387
 WP_050459478_1 MFLAD---KORNN-----GR--VR--PSGY--FLRDD-----TSATAVTTVAIDRAGDLD--NATAQTAANEFSVDAAVYIIEQNGDGSWEAG----- 387
 WP_008095939_1 MFLAD---KORNN-----GR--VR--PSGY--FLRDD-----TSATAVTTVAIDRAGDLD--NATAQTAANEFSVDAAVYIIEQNGDGSWEAG----- 387
 WP_049967566_1 MFLAD---KORNN-----GR--VR--PSGY--FLRDD-----TSATAVTTVAIDRAGDLD--NATAQTAANEFSVDAAVYIIEQNGDGSWEAG----- 387
 OLS2023_1 MFLSS---KONED-----GS--YE--SSKG--VHNQ-----FPAT--LSNLNSMATAVYAH-----QALGVGTDPQPAIEWLKQIETEDELKS----- 360
 OLS16413_1 MFLLD---KOSSS-----CK--WT--SDWY--NIND-----LPFTAFVTRLSTIA-----NKSLLTDYCTVMSLAHDFFETQWN----- 356
 WP_011499743_1 MIGS---YCKED-----GS--WE--AVFG--VIHEDMMGGVSGTYALTAYTTLALDEYYGA-----PIVMENARSYEAELDK----- 361
 WP_048206237_1 MIIIS---HOKED-----GS--WE--SVGF--VIHQDMQMGGLSGYALTAYTTLALDEYYGA-----DEVMDSALTYEEDNLDA----- 361
 WP_015053894_1 MIES---HOLAD-----GS--WE--PVFGF--VIHQDMQMGVGSGTYALTAYTTLALDDYGSAN-----PVVMADARKYEDNLAT----- 361
 WP_023844962_1 MIES---YQED-----GS--WE--QVGF--VIHQDMQMGVGSGTYALTAYTTLALEEYGSAN-----PVVMSKAQOYIILEDNLAG----- 361

WP_083755773_1 --DDDIYKLGYKAWLNSAYNMG-----INDSDVFNAIDLNTVVKIISAWADENQ-----EKST-----Y---FTGTT-----SISIYG-----VASES 435
 WP_013799567_1 --KNNIYDLGFKAWLSEAYNMG-----INDSEVKDAQNQTIKDUGNWINEHN-----NANI-----SI--FRGTS-----SISVYG-----VASES 435
 WP_018154498_1 --ENNIYDLGFKAWLSEAYNMG-----INDSEVKAEALNIIAGNWKNEHK-----NDEB-----SI--FRGTS-----SISVYG-----VASES 435
 WP_013866661_1 --KTEEISMALMNLR-----TGFNWNATSGNMMSLATLKLKNQK-----SSDGH--WNPDLWSGW-----YEP-----ET 432
 PKL61212_1 --NADTQALSYAIIGLAIARDH-----GIGDAGEIDAEIDAKTRLLGKRM-----VTCSLESYWD-----DQN-----LDTY-----EP 449
 WP_048104849_1 --DTQALSYAIIGLVAIRDHG-----GIGDAGEAEINTVDDLGKELLKCR-----DRVGS-----YWE-----DSY-----GINTY-----EP 437
 CVK34051_1 --DTGALSYAIIGLVAIRDH-----GIGDABEEINTVDDLGKQLYNKS-----TLSCESELYWS-----DSS-----RNDTY-----ES 451
 WP_015591433_1 --AKPSKDAITALSVGLVQTLGTPS-----DEVNRQSDIENAEIKGVWLNNLYTSA-----PDKVY-----WPLAS-----WINDNYG-----RKSEA 481
 WP_004075953_1 --DDKNMATALSMLNLEAFGITS-----ADVSQEALDTAKTTPRELYIEAQ-----KEDOS-----WST-----GSKY-----GSNTG-----RITES 463
 WP_004040593_1 --SDKAMATALGLWLQLSYGTSNS-----DDVTQAQIDTAKANATAWLVLANQ-----NADCS-----WDA-----DSSY-----GYSNG-----RTTES 463
 WP_042684179_1 --YQSNAYATTGLVLYLTLATSNNN-----NWVNNTQVNAITN-----TALVLAQQLSSDVSRYAKKS-----FYP-----VSDRVAGHS-----SRVG-----VYTERA 469
 WP_050459351_1 --TPNTMSTMALAVNGLEA-----SGVETAPVQVTAIDDRGLWLLDNQ-----ADSGA-----WSQ-----RRSA-----SISDVG-----TTSET 442
 WP_008096231_1 --TPNTMSTMALAVNGLEA-----SGVETAPVQVTAIDDRGLWLLDNQ-----ADSGA-----WSQ-----RRSA-----SISDVG-----TTSET 442
 WP_004967133_1 --DPNTMSTMALAVNGLEA-----SGVETAPVQVTAIDDRGLWLLDNQ-----ADSGA-----WTE-----RRSA-----SISDVG-----TTSET 442
 WP_007275935_1 --TPNTMSTMALAVNGLEA-----SGVETAPVQVTAIDDRGLWLLDNQ-----ADGGA-----WTE-----RRSA-----SISDVG-----TTSET 442
 WP_081457886_1 --SQRKPQATALLRLATVNEASAQRQVNQQTDT-----DLSTAIDNSQWLIDNQ-----NADCS-----WDA-----YRNSF-----FUSNNG-----EVTRA 470
 WP_058566553_1 --SREAQATAYAVCALAAVNDSDTLRTQVNSELSSGSVSMALDS-----HQLVLANQ-----HDLGS-----WTG-----YTNSP-----YNSNTG-----EKARA 462
 WP_058826100_1 --TKEAQATAYAVCALAAVNDSDTLRTQVNSELSSGSVSMALDS-----HQLVLANQ-----QADGS-----WAG-----YTNSP-----YNSNVG-----EKARA 462
 WP_050459478_1 --SKQAQATAYAVCALAAVNDSDTLRTQVNNELSSGSVSMALDS-----HQLVLANQ-----REDGS-----WAG-----YTNSP-----YNSNTG-----EKARA 462
 WP_008095939_1 --SREAQATAYAVCALAAVNDSDTLRTQVNNELSSGSVSMALDS-----HQLVLANQ-----REDGS-----WAG-----YTNSP-----YNSNTG-----EKARA 462
 WP_049967566_1 --SREAQATAYAVCALAAVNDSDTLRTQVNNELSSGSVSMALDS-----HQLVLANQ-----QEDGS-----WAG-----YTNSP-----YNSNVG-----EKARA 462
 OLS2023_1 --DPTVIALLSDMLK-----DLKPLVILDK-IPKTVILLENTLIE-----NDKGS-----WS-----KGSALS-----SEVET 419
 OLS16413_1 --SSYVAALTLESFY-----NTPYSTLLESNLJQHLQNEYVLD-----PKLGI-----YWT-----DLKKG-----KALG-----KDIET 415
 WP_011499743_1 --QDDPYALAIGTIAL-----QKLESDRADESMKEL-----LAKE-----DENGV-----YWG-----YDDVM-----PEPEYGGYGFHPISSKNVET 430
 WP_048206237_1 --QDDPYALAIGTIAL-----EKLESERADEAREKLA-----MAKE-----DENGM-----YWG-----YDDVM-----PEPEYGGYGYIPVSSSKNVENT 430
 WP_015053894_1 --QKDPYALAIGTIAL-----QKLDSPFAKDNLNLLA-----ISKQ-----DHDT-----YWG-----YGDGPVMP-----EHGGYDFMVSSSKNVENT 431
 WP_023844962_1 --QDDPYALAIGTIAL-----QKLDSSM-----DEALIE-----LA-----ISKQ-----DEDCM-----YWG-----YGDGDVRLP-----EHGGYGFIAPISSSKNVENT 431

WP_083755773_1 YMISSICHHNSKD-----IINNDA-----YSLKLNSHLVSIYISIY-----CGSGCJGSKTSQYELRLAITLE-----RPEAVDNMTIDWVNVN-----ST-----L 508
 WP_013799567_1 IIVASICQCQAKAD-----IIDNDE-----YITLNNMLNIYISRY-----CGSGCJGSKTSQYELRLAITLE-----NATNTNNIQITVVKD-----GN-----K 509
 WP_018154498_1 IIVASICQCOKANG-----IINNSE-----YGTLSNSMLNIYISRY-----CGSGCJGSKTSQYELRLAITLE-----TATNTNNIQITVVKD-----GN-----E 509
 WP_013866661_1 ITCYSILAHYA-G-----YPNNNS-----VNSAGMDLYLTHFNPG-----WG-----WGSIKQDQATAVQVLIIV-----NPVNELNSNSVYV-----GN-----L 503
 PKL61212_1 ITASAVLAHEA-G-----VDATEL-----SGGVSHLIGNRGRSYSISG-----WGSRTSAAWINLTNV-----PPANMD-----FIVDEIJKS-----PAGATVNS 527
 WP_048104849_1 ITASAILAINKA-G-----ISADEL-----SGGISHLIGNRGRSYSISG-----WGSRTSAAWINLTNV-----PQKPV-----FTVDEIJKS-----GDTGSVWS 515
 CVK34051_1 ITASAVLAHNR-----MSADEL-----SGGITHLIGNRGRSYSISG-----WGSRTSAAWINLTGV-----PQKPGV-----FAVDEIJKRVDGDTPLVLP 530
 WP_015591433_1 ITAYAIIALNESRSMNNLNFTLDSNSN-----TIAKAVNLYLWSVYRGH-----CG-----EGYTAQSTQALHALHTL-----QVPPMNETTWTNID-----NGA-----V 562
 WP_004075953_1 ITAYALAINAT-----ITGDTN-----TITDGINWLNYQYENQ-----CG-----WGYTAQWQIAIDALITC-----QGSVKTSGTVS-----DID-----SGSIV-----K 537
 WP_004040593_1 ITAYVLAJNAT-----G-----IKAADDT-----ITQKGVNWLNQYESG-----CG-----WGYTAQWQIAIDALIH-----QFISVSSGTVDWSID-----GTHI----- 535
 WP_042684179_1 ITAYALIGNAT-----G-----LDSSNT-----TIADGRKLYLYGIYQSD-----CG-----WGYTKSSAVINALTKE-----IIPGGTIDLNITVWQID-----GT-----N 541
 WP_050459351_1 ITAYALMAINAT-----G-----LENINA-----SVQAGQTYLVTVYD-----CG-----WGYTRALALAINLTLLG-----QGGSTPTHDV-----VTFG-----TESTPALV 519
 WP_008096231_1 ITAYALMAINAT-----G-----LENNTNA-----SVQAGQTYLVTVYD-----CG-----WGYTRALALAINLTLLG-----QGGSNFTHDV-----VTFG-----TESTPALV 519
 WP_004967133_1 ITAYALMAINAT-----G-----LENNTNA-----SVQAGQTYLVTVYD-----CG-----WGYTRALALAINLTLLG-----QGGSNFTHDV-----VTFG-----TESTPALV 519
 WP_007275935_1 ITAYALMAINAT-----G-----LENNTNA-----SVQDGQTYLVTVYD-----CG-----WGYTRALALAINLTLLG-----QGGANPNTHDV-----VAFG-----TESNPALV 519
 WP_081457886_1 ITCHSILAINNETGQ-----VTTQGTSDAADSVEDATDLYGVYD-----CG-----EGNTRAGV-----INALTTA-----DQRGVTPQTV-----VAFG-----G-----V 546
 WP_058566553_1 ITNAIIIAINAAEG-----YTAANN-----DTVSDGVGVLYLYGIYQG-----CG-----EGNTRAGV-----IDALTTA-----DQRNAGSQTV-----VAFN-----ST-----V 535
 WP_058826100_1 ITNAIIIAINDAAG-----YTTATNS-----FTVSDGVGVLYLYGIYQG-----CG-----EGNTRAGV-----IDALTTA-----DQRNAGSQTV-----VAFN-----SS-----V 535
 WP_050459478_1 ITNAIIIAINAAEG-----YTAASN-----DTVSDGVGVLYLYSIYQG-----CG-----EGNTRAGV-----IDALTTA-----DQRNAGSQTV-----VAFN-----ST-----V 535
 WP_008095939_1 ITNAIIIAINAAEG-----YTAASN-----DTVSDGVGVLYLYSIYQG-----CG-----EGNTRAGV-----IDALTTA-----DQRNAGAQTV-----VAFN-----ST-----F 535
 WP_049967566_1 ITNAIIIAINAAEG-----YTAAGN-----DTVSDGVGVLYLYSIYQG-----CG-----EGNTRAGV-----IDALTTA-----DQRNAGAQTV-----VAFN-----ST-----V 535
 OLS2023_1 ITSYALAIIAHENT-----YPAEIL-----NIFETGANELINTRSS-----CG-----MFTDRQNLWNTLALGEIASKMEQNANVGTINWKLN-----GE-----V 494
 OLS16413_1 ITSTALRVLATI-D-----YGTNAI-----LIQEAIQWVSKQKR-----WG-----WYSADISAPQIAFISLSEYESKAIL-----GDVDYIIN-----GN-----N 487
 WP_011499743_1 ITAYATLAI-----IETNDP-----RASSSLKWIQAQRNSN-----CG-----ESS1QD1VMAFRALMTA-----AAATAGRDVDATI-----VTFV-----GDGV-----E 499
 WP_048206237_1 ITAYATLAI-----IEVNDFP-----AASSSSLKWIQAQRNSN-----CG-----ESS1QD1VMAFRALMTA-----AAATAGRDVDATI-----VTFV-----GDGE-----E 499
 WP_015053894_1 ITAYATLAI-----IDARNP-----VASSSSLKWIQAQRNSN-----CG-----ESS1QD1VMAFRALMSA-----ASASAGRDVDATI-----VTFV-----ADNT-----T 500
 WP_023844962_1 ITAYATLAI-----IEANNP-----SATSSSLKWIQAQRNSN-----CG-----ESS1QD1VMAFRALMSA-----ASASAGRDVDATI-----VTFV-----ADGT-----E 500

WP_083755773_1 IDSTIILNNSNPKVYVGKY-INDSHLT-----PGS-----HTISFNFSKN-AKIVCGELISOTT 558
 WP_013799567_1 IDTITVNAATNPKFIGKY-YNNNTLLT-----SGE-----HNTIEEFSGD-SKILCGVLMSTSOTT 559
 WP_018154498_1 INTITVNAATNPKFIGKY-YNNNTLLT-----SGK-----HEIAFEFSGS-SKILCGVLMSTSOTT 559
 WP_013866661_1 ITNVSLSLTKTPHAVVNI-PSSNLA-----GN-----HKITLKSTGS-GKVVASLLIKQWV 552
 PKL61212_1 RNDIPFQNQASFSTIFIHEL-TEEELDILYLYGFGATN-----GTATVVISGKTDADPDPNVALSVS1DSFQV 590
 WP_048104849_1 CMGIEFNETSFGEFERTL-SIDEINLYLGSSVFD-----DTAKVIISNKKNDAAASDNPGLK1VS1DSFQV 578
 CVK34051_1 QKRIEFNETSFGEFERTL-LIGELDALYLGSGELN-----DTAKVIISNKS DAGAKNPKSLSI1DSFQV 593
 WP_015591433_1 VKDFTVNSTNPKVIIVL-TPDELDNAVNSNGTSE-----NTNRRHVTNVTRVSGDSLIVS1V1VSENECV 624
 WP_004075953_1 NVALSADAQTQRVEVTL-TEDEMKL1TMSGGTRTRGIFTGNPFGEVRYTVDV1LTDG-GFV1VSENTOWA 605
 WP_004040593_1 CTEINVADATNPKDEYL-TADQMAAMMANGTETR-YPVPVYSTKEHLDVDRGTT1LVS1S1S1 601

WP_042684179_1 VTTIHLTNTPKATIPL-WGERTNNSSPLGAGN-----HTVTVYQTGT-GTSIVGVSVSITV 596
WP_050459351_1 TKTIDVDSTDALDSVEL-TDSELQTLRDNADGP-----ITVQVDTTGT-GVIVVGENDOLV 574
WP_008096231_1 TKTIDVDSTDALDSVEL-TESELQTLRDNADGP-----ITVQVDTTGT-GVIVVGENDOLV 574
WP_004967133_1 TKTIDVDSTDALDSVEL-TESELQTLRDNADGP-----ITVQVDTTGT-GVIVVGENDOLV 574
WP_007275935_1 TKTIDVDSTDALDSVEL-TESELQTLRDNADGP-----ITVQVDTTGT-GVIVVGENDOLV 574
WP_081457886_1 TKTASVDSSTTDTVTF-STSELQOFRDEGTGK-----IELEAQNSDS--LVIIGWESVGV 600
WP_058566553_1 SKNVTVDGNTPTAVVSF-TTDELETLRQ--TGS-----ITLTAEINSTR---VVGAESEOLV 586
WP_058826100_1 TKEWSVDGNTPTATVTF-TTDELDLRE--TGT-----ITLTVDNSTR---VVGAESEOLV 586
WP_050459478_1 TKDVTVDGNTPTATVSF-TTDELETLRE--TGD-----ITLTIEINSTR---VVGAESEOLV 586
WP_008095939_1 TEDVTVDGNTPTATVSF-TTDELETLRE--TGT-----ITLTVENSTQ-TFVVVGESEOLV 588
WP_049967566_1 TKDVTVDGNTPTATVSF-TTDELETLRE--TGT-----ITLTIEINSTR---VVGAESEOLV 586
OLS27023_1 IAISEFINKEN-KYYKIYDVRNIFLDKFT--TGS-----NKVEVFLGE-GTGHIAIEIRKWY 547
OLS16413_1 IASHKYLNDTPPEVSTYKLDDFMK----DGE-----NFLNIVRQGS-GKVLVYLITEQL 537
WP_011499743_1 IKGLRITSENYYDVNNIIEVPEGVEVLEMELESGS-----GELNYQLVRRFNVILFEIIEHEQI 556
WP_048206237_1 LKSERVTSENYDVNNIIEVPDGVESVNMTLEGS-----GELNYQLVRRFNVILPEIIEHBEI 556
WP_015053894_1 VRSIDVNCSRNFVVQIVEIPENTSQARLEMEGT-----GELSYQLVRRFNVILPEVTPQKEI 557
WP_023844962_1 ISSMEVNQQNFVVQIEIPDDVSTVTLSLEG-----GDLNYQLVRRFNVILPDVVEQBEI 557