

Table S1. Force constants and equilibrium distances of coordinating atoms to metal centres, as calculated from B3LYP/ Def2-TZVP optimisation of the metal sites.

State	Ligating Bond	Force constant (kCal/mol·Å ⁻²)	Equilibrium Distance (Å)
FU-a _{oxy}	HIS43 (N) – CU2	90.1	1.990
	HIS62 (N) – CU2	82.7	1.993
	HIS71 (N) – CU2	7.4	2.372
	HIS184 (N) – CU1	93.1	1.984
	HIS188 (N) – CU1	89.3	1.982
	HIS215 (N) – CU1	11.5	2.352
FU-a _{deoxy}	HIS43 (N) – CU2	49.9	2.014
	HIS62 (N) – CU2	50.6	2.011
	HIS71 (N) – CU2	49.3	2.018
	HIS184 (N) – CU1	50.4	2.013
	HIS188 (N) – CU1	49.0	2.019
	HIS215 (N) – CU1	50.4	2.012

Table S2. Angles of the metal ion centres and ligating atoms, including force constants, calculated using B3LYP/ Def2-TZVP.

Oxygenation State	Ligating atoms	Force constant (kCal/mol·rad ⁻²)	Angle (°)
FU-a _{oxy}	HIS43 (N) – CU2 – HIS62 (N)	102.61	97.22
	HIS43 (N) – CU2 – HIS71 (N)	32.44	91.30
	HIS62 (N) – CU2 – HIS71 (N)	44.07	93.73
	HIS184 (N) – CU1 – HIS188 (N)	100.00	97.30
	HIS184 (N) – CU1 – HIS215 (N)	25.83	91.99
	HIS188 (N) – CU1 – HIS215 (N)	42.50	93.51
FU-a _{deoxy}	HIS43 (N) – CU2 – HIS62 (N)	2.87	121.86
	HIS43 (N) – CU2 – HIS71 (N)	2.96	118.16
	HIS62 (N) – CU2 – HIS71 (N)	2.98	119.98
	HIS184 (N) – CU1 – HIS188 (N)	2.99	118.33
	HIS184 (N) – CU1 – HIS215 (N)	2.86	122.09
	HIS188 (N) – CU1 – HIS215 (N)	2.95	119.58

Table S3. Mean equilibrium distances and associated variance of coordinating distances from ligating atoms to metal centres, as calculated from molecular dynamic trajectories.

Oxygenation State	Ligating Bond	Equilibrium Distance (Å)	SD (±)
FU-a _{oxy}	HIS43 (N) – CU2	2.03	0.06
	HIS62 (N) – CU2	2.00	0.06
	HIS71 (N) – CU2	2.49	0.15
	HIS184 (N) – CU1	1.97	0.05
	HIS188 (N) – CU1	2.01	0.05
	HIS215 (N) – CU1	2.44	0.14
FU-a _{deoxy}	HIS43 (N) – CU2	2.40	0.14
	HIS62 (N) – CU2	2.33	0.08
	HIS71 (N) – CU2	2.20	0.02
	HIS184 (N) – CU1	2.20	0.02
	HIS188 (N) – CU1	2.27	0.15
	HIS215 (N) – CU1	2.20	0.02

Table S4. Mean binding free energy (ΔG_{bind}) values for FU-a_{deoxy} and FU-a_{oxy} systems calculated using MM/GBSA across internal dielectric constant values ranging from 1 to 5.

Oxygenation State	IDC	ΔG_{bind} (kcal mol ⁻¹)	SD (±)
FU-a _{oxy}	1	-72.77	1.98
	2	-38.36	1.56
	3	-26.89	1.44
	4	-21.16	1.38
	5	-17.72	1.35
FU-a _{deoxy}	1	-0.92	3.04
	2	-1.15	3.04
	3	-1.23	3.04
	4	-1.27	3.04
	5	-1.29	3.04

Table S5. Mean binding free energy (ΔG_{bind}) values for FU-a_{deoxy} and FU-a_{oxy} systems calculated using MM/PBSA across internal dielectric constant values ranging from 1 to 5.

Oxygenation State	IDC	ΔG_{bind} (kcal mol ⁻¹)	SD ($\pm$)
FU-a _{oxy}	1	-80.31	2.112
	2	-42.53	1.649
	3	-29.93	1.514
	4	-23.63	1.451
	5	-19.85	1.415
FU-a _{deoxy}	1	-4.29	2.986
	2	-4.60	3.003
	3	-4.70	3.009
	4	-4.75	3.012
	5	-4.78	3.014

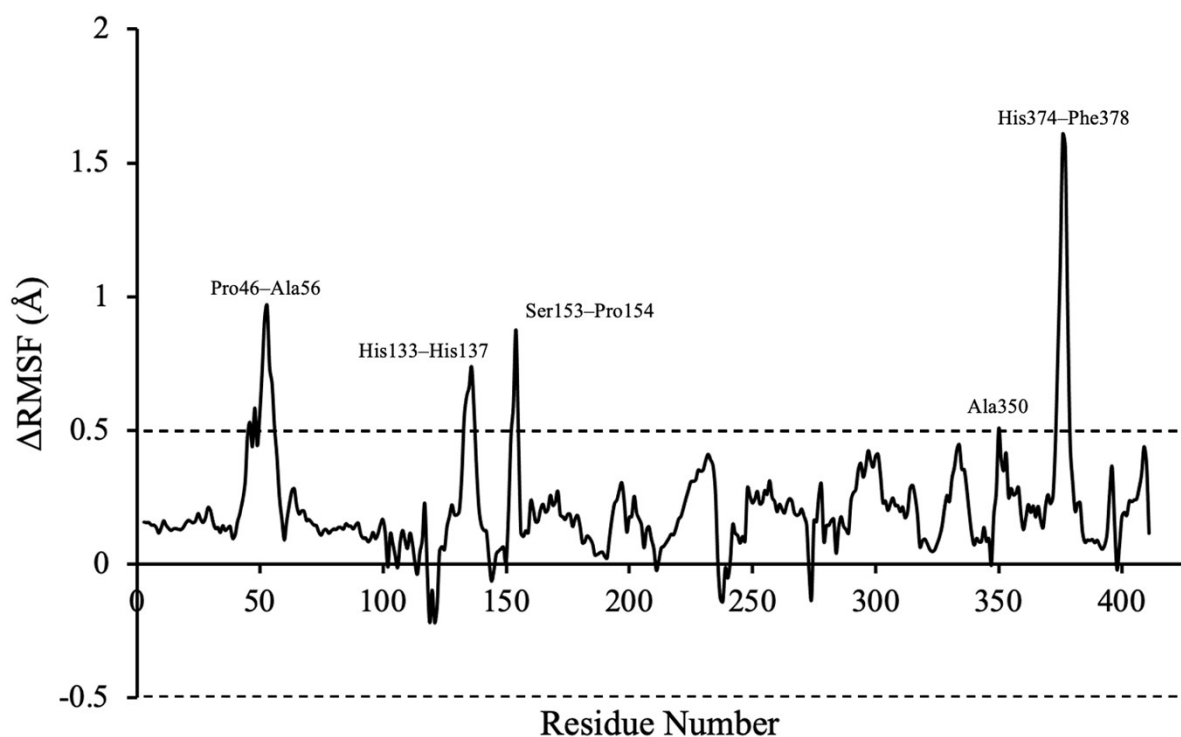


Figure S1. Per-residue differences in root-mean-square fluctuation (RMSF) between FU-a_{deoxy} and FU-a_{oxy} systems, calculated as ΔRMSF (FU-a_{deoxy} – FU-a_{oxy}). Residues with absolute RMSF differences exceeding ± 0.5 Å are highlighted. The dotted line denotes the ± 0.5 Å threshold used to define significant deviations. Major fluctuations are observed in labelled regions.

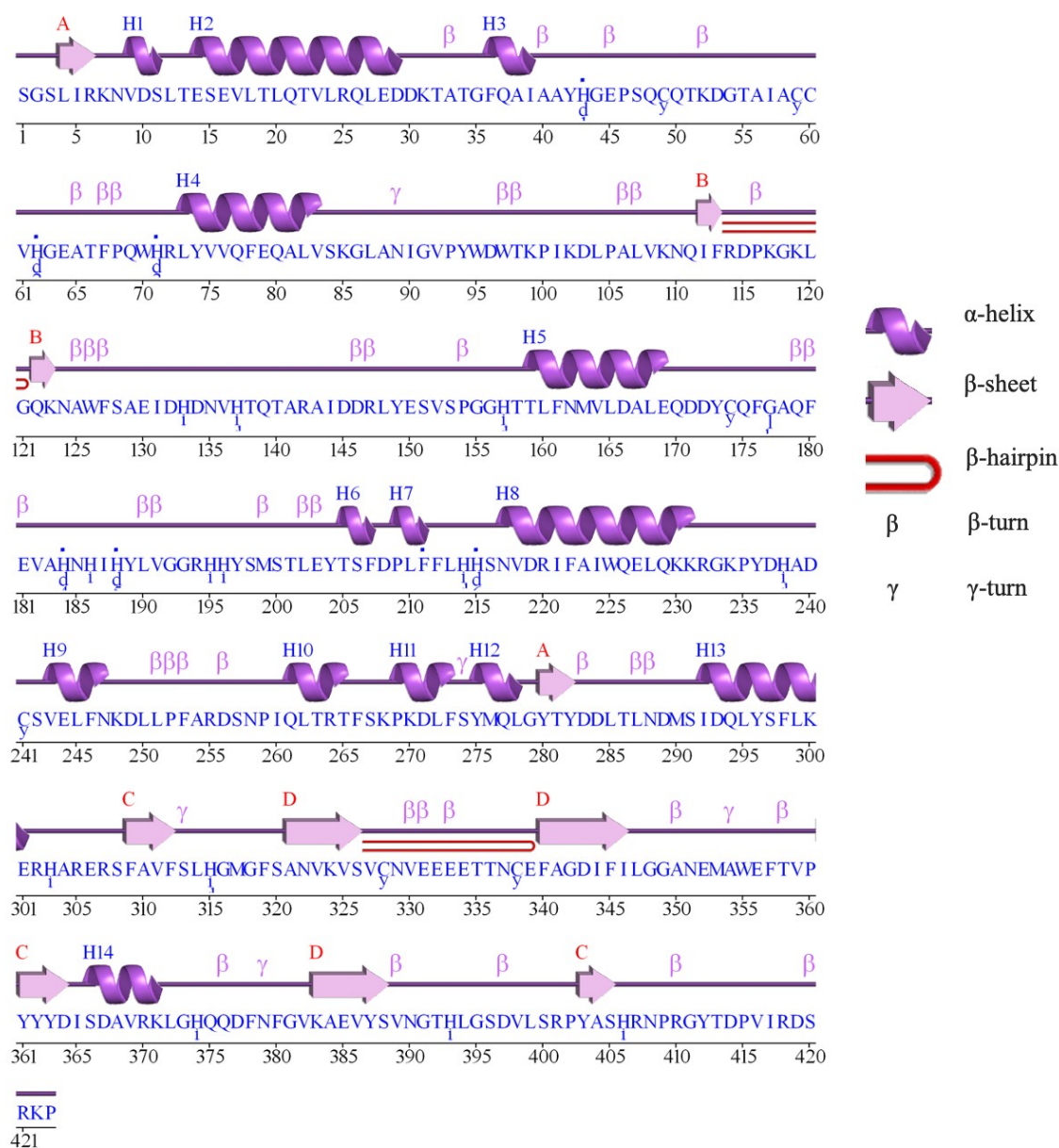


Figure S2. Two-dimensional secondary structure map of the FU-a hemocyanin domain. The structure is divided into two domains: Domain 1 (residues 1–305) and Domain 2 (residues 306–423), as indicated along the sequence. α -helices are depicted as coils, β -sheets as arrows, β -hairpins as loops, and β -turns (β) and γ -turns (γ) are explicitly labelled.

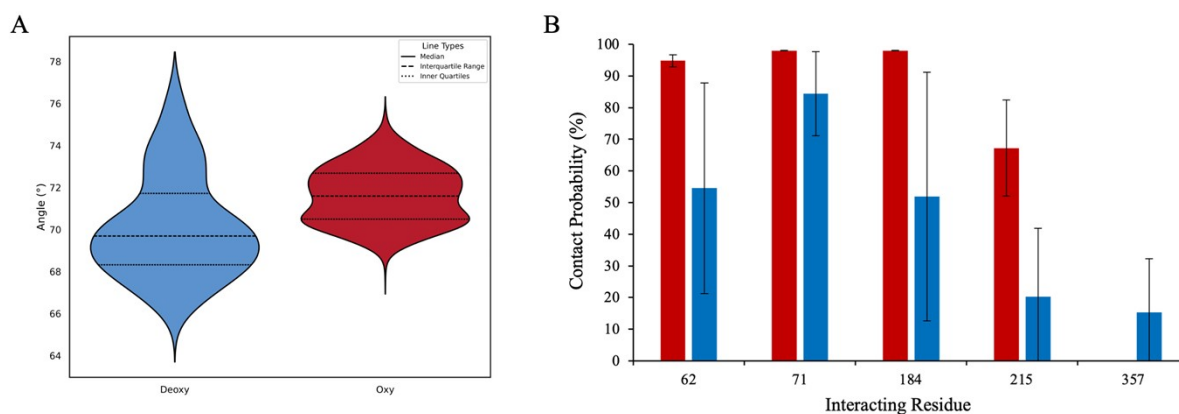


Figure S3. Structural and Functional Insights into Domain Rotation and Phe67 Residue Interactions. (A) Violin plot illustrating the inward rotation of domain II relative to domain I in the oxygenated (FU-a_{oxy}) and deoxygenated (FU-a_{deoxy}) states. (B) Interaction data showing the π - π stacking interactions of Phe67 with coordinating histidines, highlighting the differences between the oxygenated (FU-a_{oxy}, red) and deoxygenated (FU-a_{deoxy}, blue) states.

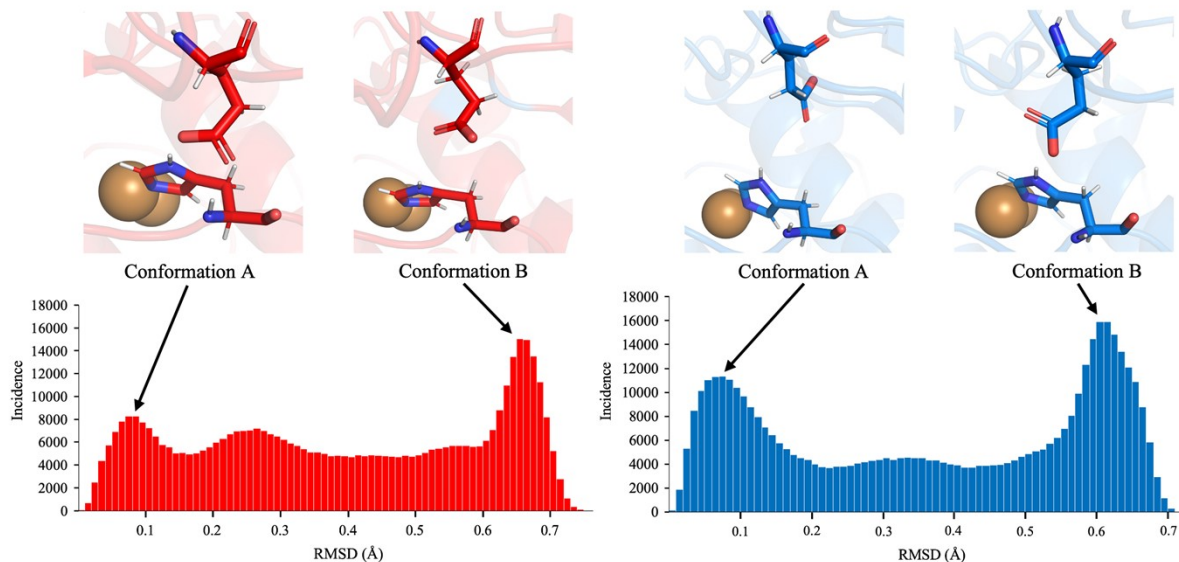


Figure S4. Comparison of Glu352 side-chain conformations in FU-a_{oxy} (red) and FU-a_{deoxy} (blue). Conformation A (low RMSD) and Conformation B (high RMSD) represent the dominant states identified from side-chain heavy-atom RMSD analysis.

Table S6. Sequence conservation in the interaction network shown in Figure 6. *From visual inspection of the 3D structure alignment of octopus (PDB 1JS8) and horseshoe crab (PDB 1OXY) hemocyanin.

Amino acid residue	Conservation in functional units of SLH and KLH	Conservation in FU-a of molluscan hemocyanins	Notes
His43	Full	Full	Coordinates Cu1
His62	Full	Full	Coordinates Cu1
Phe67	Full	Full	Structurally conserved in horseshoe crab*
His71	Full	Full	Coordinates Cu1
His184	Full	Full	Coordinates Cu2
Leu202	Full	Full	
Glu203	Glu, Asp, His, Arg	Glu or Asp	
Gly316	No	No	
Gly318	No	No	
Gly348	Full	Full	
Gly349	Gly, Asp	Full	Asp in FU-c only
Glu352	Full	Full	
Trp355	Trp, Phe	Full	Phe in FU-d only

Table S7. Protein sequence alignment (Clustal Omega) of the eight functional units (FUa – FUh) of slipper limpet hemocyanin (*Crepidula fornicata*; SLH1; GenBank accession number WCA44164.1) and keyhole limpet hemocyanin (*Megathura crenulata*; MecerH1; UniProtKB/Swiss-Prot accession number Q10583.2), along with the protein sequence of *Enteroctopus dofleini* Odg from PDB 1JS8. FUa of SLH is shown in bold, and the key residues participating in the interaction network shown in Figure 6 are highlighted in yellow.

SLH1_FUh	-----TGDVTRYEVSALSIAQVTNLRDALYKQLQNDHGPNGFEAIASFHGA	45
MecerH1_FUh	-----EDILVRKNIHSLSHHEAEELRDALYKQLQNDHGGYEHIAFGHY	45
SLH1_FUa	----- SGSLIRKNVD SLT ESEVLT LTQTVLRQLEDDKTATG FQAIAAY GE	45
MecerH1_FUa	MLSVRLILVVLALANAENLVRKSVEHLTQEETLDLQAALRELQMDSSSIGFQKIAAAHGA	60
SLH1_FUd	-----EVQASSHVRRNLEDLTGEAESLSRSLRDMEDG---SFDARFHHY	45
MecerH1_FUd	-----EVTSANRIRKNIENLSLGELESRLAAFLIEINDG---TYESIAKFHGS	45
SLH1_FUf	-----EVAPNRIRHDLTHLSERDIRSLKSSIRDLQLDDSDNGYQNIASFHGA	47
MecerH1_FUf	-----HLSLNKVRHDLSTLSERDIGSLKYALSSQLQADTSADGFAAIASFHGL	47
SLH1_FUg	-----IAGVGVRKDINTLTAAEMENLRDALGRVQAGTGRITYDNVVSAGHY	46
OcdH1	-----AIIRKNVNSLTPSDIKELRDAMAKVQADTSIDGYQKIASYHGI	43
MecerH1_FUg	-----MAGHGVRKEINTLTAEVDNLKDMARAVMADHGPNGYQAIAAFHGN	46
SLH1_FUb	-----SNVVRKDIELLTDEEVYALRQAMHRFQNDTSIDGYQAVAEFHGL	44
MecerH1_FUb	-----INDLTREEVLNLEAFHKFQEDRSVDGYQATAEYHGL	37
SLH1_FUc	-----EDDDHVRNDIVTLTAAEQEQNVDRDAFQGLKNDKSVAGYNQIAAFHGL	46
MecerH1_FUc	-----PRSLIRKNVDRLSPPEMNLRLKALALLKEDKSAGGFQQLGAFHGE	46
SLH1_FUe	-----RLVRKSVLSLSPAERRSLVLAAMRSLQEDSSADGFQSLASFHAL	43
MecerH1_FUe	-----VMIRKIDITQLDKRQQLSLVKALESMDKADHSSDGFQAIAASFHAL	43
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SLH1_FUh	PGLCPENA-TDHYACCRHGMPAFPHWHRLLTQVFERALKDKG-AVVGVPYWDWTRPAKAM	103
MecerH1_FUh	PNLCPEKG-DEKYPCCVHGMSIFPHWHRLHTIQFERALKKHG-SHLGIPYWDWTQTISL	103
SLH1_FUa	PSQCQTKDGT-AIACCVHGEATFQWHR LYVVQFEQALVSKGLANIGVPYWDWTKPIKDL	104
MecerH1_FUa	PASCVHKD-T-SIACCIHGMPTFPHWHRRAYVVHMERALQTKR-RTSGLPYWDWTEPITQL	117
SLH1_FUd	PGLCEHD-GH-KAACCVHGSFAFPHWHRLYVEQVENSLLSHG-SAVSVPYWDWTQPIKKL	102
MecerH1_FUd	PGLCQLN-GN-PISCCVHGMPTFPHWHRLYVVVENALLKKG-SSVAVPYWDWTKRIEHL	102
SLH1_FUf	PALCPSPPEAA-EYACCVHGMPTFPHWHRLYTVEMEDAMVRHG-SSVALPYWDWTMPITQL	105
MecerH1_FUf	PAKCNDSHNN-EVACCIHGMPTFPHWHRLYTLQFEQALRRHG-SSVAVPYWDWTKPIHNI	105
SLH1_FUg	PPQCTH-DGH-KVACCQHGMAFPMWHRLFTQMEVALSWEG-AKVGIPYWDWTEAFTEL	103
OcdH1	PLSCHYNGT-AYACCQHGMMVTFPNWHRLLTQKQMEDALVAKG-SHVGIPIYWDWTTFANL	101
MecerH1_FUg	PMCPMPDGG-KYSCCTHGMATFPHWHRLYTLQKQMEDALTAHG-ARVGLPYWDGTAAFTAL	104
SLH1_FUb	PAKCPHPDAAVRYACCVHGMATFPHWHRLFVVEVEDELRSRG-LEIGIPYWDWTRPNAHI	103
MecerH1_FUb	PARCPRDAKDRYACCVHGMPIFPHWHRLFVTQVEDALVGRG-ATIGIPYWDWTEPMTHI	96
SLH1_FUc	PNWCPSTQAERYACCTHGMATFPHWHRLLTQVQENGLIANG-LHSGLPYWDWTLPMSTL	105
MecerH1_FUc	PKWCPSPPEASKKFACCVHGMSPVPHWHRLYTVQSENALRRHG-YDGLPYWDWTSPLNHL	105
SLH1_FUe	PPLCPYPEATKRFACCIHGMATFPHWHRLYTVQFEDALRRHG-ALVGIPYWDWTVVNSRL	102
MecerH1_FUe	PPLCPSPAASKRFACCVHGMATFQWHRLYTVQFQDSLKKHG-AVVGIPYWDWTLPRSEL	102
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SLH1_FUh	PSLFTDSY-----DNNPFQTYRMTFNDQY--IQRDV-SEELFNHPSEGDVESLHFQ	151
MecerH1_FUh	PTFFADSG-----NNNPFKYHIRSINQD--TVRDV-NEAIFQQTKFGEFSSIFYL	151
SLH1_FUa	PALVKNQIFRDPKGLGQKNAWFSAEIDHNVHTQTARAI-DDRLYESVSPGGHTTLFNM	163
MecerH1_FUa	PSLAADPYVIDSQGKAHTNYWYRGNIIDL--DKTNRAV-DDRLFEEKVKPGQHTLMS	174
SLH1_FUd	PALINDATYYDSRAHAKLENPFWRKIPGTDY--TSRDP-RPDLFDS-----DYFLNN	153
MecerH1_FUd	PHLISDATYYNSRQHYYETNPFHHGKIETHENEI--TTRDP-KDSLFS-----DYFYEQ	153
SLH1_FUf	PDLFTSETYYDAWRDEVANPFARAYIKVAGGY--TVRDP-QAQLKQLSRDQGHSAFLDL	162
MecerH1_FUf	PHLFTDKEYYDVRNKMVPNPFARGYVSHDTY--TVRDV-QEGLFHLTSTGEHSALLNQ	162
SLH1_FUg	PALVREEE-----NNPFHHGRIPGTDTV--TTRAP-RPQLFRDPEHGDESFFYRQ	150
OcdH1	PVLVTEEK-----DNSFHHAHIDVANTD--TTRSP-RAQLFDDPKGDKSFFYRQ	148
MecerH1_FUg	PTFVTDEE-----DNPFFHHGHIDYLGVD--TTRSP-RDKLFNDPERGSEFFYRQ	151
SLH1_FUb	PALANDVSYEDANTHQQLHNPFDHAPIAFLGE--KTTRQV-QDDLSESEPEFGDHTSLFDG	160
MecerH1_FUb	PGLAGNKTYVDSHGA-SHTNPFHSSVIAFEENAPHTKRQI-DQRLFKPATFGHHTDLFNQ	154
SLH1_FUc	PSIVLNATYVHPKTGESVANPLYSGQVDGHD---TTRSV-RQELFEQPKFGHMTKIAEK	160
MecerH1_FUc	PELADHEKYVDPEDGVEKHNPWFDGHIDTVDKT--TTRSV-QNKLFEQPEFGHYTSIAKQ	162
SLH1_FUe	PDFIAESVWDDPLFHANFSNPWAGADIEFDNSAV--VRDVNMDRISQKGPKGYDTWSWKQ	160
MecerH1_FUe	PELLTVSTIHDPETGRDIPNPFIGSKIEFEGENVHTKRDINRDLFQGSTKETHHNWFIEQ	162
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SLH1_FUh	ALETLEETNYCDFEVQYEMLHNAVHELIGGNTYSMSTLEYSADFPPFMVHHASIDRIWQ	211
MecerH1_FUh	ALQALEEDNYCDFEVQYELHNEVHALTGAEEKYSMSTLEYSADFPYFMHHASLDKIWI	211
SLH1_FUa	VLDALQDDYCDYCFEAQFEVAH NHIIHYLVGGRHHYSMTLE YTSFDPLFLHHSNVDRIFA	223
MecerH1_FUa	VLDALQDEDFCKFEIQFELAHNAIHYLVGGKHYSMANLEYTAYDPIFFLHHSNVDRIFA	234
SLH1_FUd	ALLALEQTSYCDFEVQFEILHNLHSLFLGGRGKYSLSLSDYSAFDPVFFLHHANVDRIWA	213
MecerH1_FUd	VLYALEQDNFCDFEIQLEILHNLHSLFLGGRGKYSMSNLDYAAFDPVFFLHHATDRIWA	213
SLH1_FUf	VLLVLEQTDYCDFEVQFEVVHNAIHYLVGGRQLYSMSSEYTSYDPIFFVHHSFVDKIWA	222
MecerH1_FUf	ALLALEQHDYCDFAVQFEVMHNTIHYLVGGPQVYSLSSLHYASYDPIFFIHHHSFVDKQWA	222
SLH1_FUg	VQLALEQRDYCDFEVQFEVIHNAIHSWIGGTSPYGMSTLEYSAYDPVFFIHHHSNVDRQFA	210

Ocdoh1	IALALEQTDFCDFEIQFEIGHNNAIHSWVGSSPYGMSTLHYTSYDPLFYLHHSNTDRIWS	208
MecrH1_FUg	VLLALEQTDFCQFEVQFEITHNAIHSWTGGLTPYGMSTLEYTTYDPLFWLHHANTDRIWA	211
SLH1_FUb	ILLAFEQTDFCDFEVQFEVVHNAHPFLVGGFGAYTLATLHYSAFDPIFYLHHSNVDRLLWA	220
MecrH1_FUb	ILYAFEQEDYCDFEVQFEITHNTIHAWTGGSEHFSMSSLHYTAFDPLFYFHHSNVDRLLWA	214
SLH1_FUc	VMLAFEQDNFCDFEIQYEIAHNYIHALVGGNETYSMASLRYTAYDPIFFLHHSNTDRIWA	220
MecrH1_FUc	VLLALEQDNFCDFEIQYEIAHNYIHALVGGAQPYGMASLRYTAFDPLFYLHHSNTDRIWA	222
SLH1_FUe	YLYALEQENFCDFEVQFEIAHNAHLHAWMGSEVHSMALHLYASYDPVFILHHSNTDRIFA	220
MecrH1_FUe	ALLALEQNTNYCDFEVQFEIMHNGVHTWVGGEKPYGIGHLHYASYDPLFYIHHSQTDRIWA	222
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SLH1_FUh	IWQSLQKLRHKPFNYASCASRSLYKPLEPFSYTSL-NADPLTLNNAQPVHIFDTA-KFHY	269
MecrH1_FUh	IWQELQKRRVKPAHAGSCAGDIMHVPLHPFNYESV-NNDDFTRENSLPNAVVDSDH-RFNY	269
SLH1_FUa	IWQELQKRRGKPYDHADCSVELFNKDLLPFARDSN--PIQLTRTFSKPKDLFSYM-QLGY	280
MecrH1_FUa	IWQRLQELRNKDKPAMDCAQELLHQKMEPFSWEDN--DIPLTNEHSTPADLFDYC-ELHY	291
SLH1_FUD	IWQALQKIRGLPFDESDCALNMGTPHPFDDKEE-NQFDLTNKYSRPIDAFDYNSRHFY	272
MecrH1_FUD	IWQDLQRFKRKPYREANCAIQLMHTPLQPFDKSDN-ND-EATKTHATPHDGFQYQNSFGY	271
SLH1_FUf	VWQELQKRRGMNYDRADCAVNFNMNRMHPFDWEAL-NPDVTRTREHSLPQSVWKYE-DLGY	280
MecrH1_FUf	VWQALQEKRGPLPSDRADCAVSLMTQNMRFPHYEIN--HNQFTKKHAVPNDFVKYE-LLGY	279
SLH1_FUg	IWQALQKYRGLPYNTANCEINKLVKPLKPFNRDDN--PVTTRHYSKAIDAFNYD-QYGY	267
Ocdoh1	VWQALQKYRGLPYNTANCEINKLVKPLKPFNLDTN--PNAVTKAHSTGATSFDYH-KLGY	265
MecrH1_FUg	IWQALQEYRGLPYDHANCEIQAMKRPLRPFSDPIN--HNAFTHSNAKPTDVFEYS-RFNF	268
SLH1_FUb	IWQQLQIKRGLPYK-AHCASSLTQEVLPKFGPPFPWNNDHKTFFENARPTNIYDYEAVLDY	279
MecrH1_FUb	VWQALQMRHRKPYR-AHCAISLEHMHLPKFAFSSPLNNEKTHANAMPNKIYDYNVNLHY	273
SLH1_FUc	IWQALQKYRGKPYNSANCAIAEMRKPLQPFQAQTSLTNPDPYVTRDHSPTFDVFNYSFHY	280
MecrH1_FUc	IWQALQKYRGKPYNVANCAVTSMREPLQPFGLSANINTDHVTKEHSVPFNVFDYKTNFNY	282
SLH1_FUe	LWQELQKYRGRDANEVNCALMLKEPLKPFSSFGSPYNLNPTTTTLYSKPEDAFDYKGFYK	280
MecrH1_FUe	IWQSLQRFRGLSGSEANCAVNLMTPLKPFSSFGAPYNLNDHTHDFSKPEDTFDYQ-KFGY	281
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SLH1_FUh	HYDSLDLNGHGVHELHDMIEDMQATSRIFAGFVLSGISTSARVHVDVTRGED--T----	322
MecrH1_FUh	KYDNLNLHGHNIEELEEVLRSLRLKSRVFAGFVLSGIRTTAVVKVYIKSGTDSDD----	324
SLH1_FUa	TYDDLTLNDMSIDQLYSFLKERHARERSFAVFSLHGMGFSANVKVSVCNVEEE--ETTNC	338
MecrH1_FUa	DYDTLNLNGMTPEELKTYLDERSRRARAFASFRLLKGGGSANVFVYVCIPDDNDRNDDHC	351
SLH1_FUD	HYDTLKFNSWTIPQLEQVLEKQSRDRVFAGFLLHNIIGTSADVEIDVCVATGNGA-KSCN	331
MecrH1_FUD	AYDNLLELNHYSIPQLDHMLQERKRHRDRVFAGFLLHNIIGTSADGHVFVCLPTGEHT-KDCS	330
SLH1_FUf	HYDNTQIGGKSIEELEELIKKQSHPRVFAGFQLHGLGTSADVELSVCKSQNSC-----	334
MecrH1_FUf	RYDNLIEGGMNLHEIEKEIKDKQHHRVVFAGFLLHGIRTSADVQFQICKTSEDC-----	333
SLH1_FUg	QYDNLNFHGMTISQLDEMLEKKKQEDHVFANFMLHGIQTSADVVFDLCDAGKGC-----	321
Ocdoh1	DYDNLNFHGMTIPELEEHLKEIQHEDRVFAGFLLRTIGQSADVNFDVCTKDGEC-----	319
MecrH1_FUg	QYDNLRFHGMTIKKLEHELEKQKEEDRTPFAAFLHLHGIRKSADVSVFDCVNHGDEC-----	322
SLH1_FUb	TYDSLQFGGMTVDQLEHYLHERKTQNRDFVGIALLHNIIGVSAWVTLSLQVEGGEP-----	333
MecrH1_FUb	TYEDLTFGGISLENIEMKHENQQEDRIYAGFLLAGIRTSANVDIFIKTDSVQ-----	327
SLH1_FUc	HYDNLDFNGMSVAQLQREVIRRRGLERAFAGFMLHGVKKSCLVFDICKPDGTC-----	334
MecrH1_FUc	EYDTLEFNGLSISQLNKLEAIKQSDRVFAGFLLSGFKKSSLVKFNICTDSSNC-----	336
SLH1_FUe	EYDTLELQGLDVQRLQDYINKEHEHDRVFAGFLLSGIGQSAHASFSVCKANGEC-----	334
MecrH1_FUe	IYDTLEFAGWSIRGIDHIVRNRQEHRSRVFAGFLLGFGTSATVDFQVCRTAGDC-----	335
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SLH1_FUh	VSVGNFYVLGGSSEMPWAYERIYKLDMTAASKLGLSSE--STF-----HFKLTVTKYD	374
MecrH1_FUh	EYAGSFVILGGAKEMPWAYERLYRFDITETVHNLNLTD--HV-----KFRFDLKKYD	375
SLH1_FUa	EFAGDIFILGGANEMAEWFTVPPYYDISDAVRKLGHQD--FNF-----GVKAEVYSVN	390
MecrH1_FUa	EKAGDFFVLGGPSEMKWQFYRPLFLDLSPTVHKMGMKLD--GHY-----TVKAELFSVN	403
SLH1_FUD	HPAGKFAILGGEYEMPFTFDRLYKYDISDTVRLGLRLDSAADF-----DVQIKIFAYN	385
MecrH1_FUD	HEAGMFSILGGQTEMSFVFDRLYKLDITKALKKNGVHLQ--GDF-----DLEIBITAVN	382
SLH1_FUf	VSAGVIFILGGKLEMPWAFDRFLKLDITDTHLDMGIEPE--DVFDTPAPFFLSYEVHAVN	392
MecrH1_FUf	HGGQIFVLGGTKEMAWAYNLFKYDITKALHALDAHITPE--DVFPSEPPFIKVSVTAVN	391
SLH1_FUg	NFAGTFAILGGPLEMPWSFDRFLKYDVTSVFKQMLRDP--SEY-----SFRVSLTAVN	373
Ocdoh1	TFGGTFCILGGEHEMFWAFDRFLKYDITTSLKHLRLDAH--DDF-----DIKVTIKGID	371
MecrH1_FUg	HFAGTFAILGGEHEMPWSFDRFLFRYDITQVLKQMHLEYD--SDF-----TFHMRIDTS	374
SLH1_FUb	YQVGKIAVLGGEKEMPWRFDRLFKVEITSALQKLGLSYD--DDF-----NVHLDITDVT	385
MecrH1_FUb	HKAGTFAVLGGSKEMKWGDRVFKFDITHVLKDLDTAD--GDF-----EVTVDITEVD	379
SLH1_FUc	TKSGEFYLLGDENELPWEYDRLYKYEITHELEDMGLEPQ--DRF-----DVQYHVYDLK	386
MecrH1_FUc	HPAGEFYLLGDENEMPWAYDRVFKYDITEKLHDLKLHAE--DHF-----YIDYEVFDLK	388
SLH1_FUe	TAAGDFDILGGSAMPWRFDRLYKYEITDVLEKKGLDVH--DSF-----NITVSLTALD	386
MecrH1_FUe	EDAGYFTVLGGEKEMPWAFDRLYKYDITETLTKMNLRHD--EIF-----QIEVTITSYD	387
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SLH1_FUh	GTALNV-TFPDPVIVKRAANSQHDVVLVPLSVANQLPPKIVVRQGTQVVFHASESGV-SS	432
MecrH1_FUh	HTELDASVLPAPIIVRRPNNAVFDIEIPIGKDVNLPPKVVVKRGTKIMFMSVDEAVTTP	435
SLH1_FUa	GTHLGSVDLSRPHYASHRNPGRYTDPIVRDSR-----KP-----	423
MecrH1_FUa	GTALPDDLLPHPVVVVHHPEKGFDPVPVKHHQ-----SANLLVRKN-----	443
SLH1_FUD	GSYIDASLLHRPTIIFEPGQGQTDQDDVGHVE-----R-----	417
MecrH1_FUD	GSHLDSHVIHSPTILFEAGTDSAHTDDGHT-----P-----	414
SLH1_FUf	GTTPLPLSTISPPTLVFQPAEGAAAEHSSYS-----	422
MecrH1_FUf	GTVLPASILHAPTIIYEPGLDHHDHSSSS-----	421
SLH1_FUg	GTQLDSRLIEAPSVSVFVPGNKGSKTSAHE-----DPVPLD-----	410
Ocdoh1	GHVLSNKYLSPTTVFLAPAKTTH-----	394

MecrH1_FUg	GKQLPSDLIKMPTVEHSPGGKHHKHHEDHH-----	405
SLH1_FU b	GKKWAEDTFHHNTIIHVPGE G HEDPG-----	411
MecrH1_FU b	GTKLASSLIPHASVIREHARVKFDKV-----	405
SLH1_FU c	NTDLGDDVFGKAVIIYSAGQGHQKGHEEDYL----E-----	418
MecrH1_FU c	PASLGKDLFKQPSVIEPRIGHHEGEVYQA-----	418
SLH1_FU e	GSALSSSLLPTPSVIFEPKSRTTELH-----	412
MecrH1_FU e	GTVLDSGLIPTPSIIYDPAHHDISSH-----	413

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SLH1_FU h	LREVGSYTNSVHCAIPPGQANLYDLDVAYSLEAGDYYFTSSDKTKCQ Q G-SRIQITVDDE	491
MecrH1_FU h	MLNLGSYTAMFKCKVPPFSFHAFELGKMYSVESGDYFMTASTTELCNDNNLRIHVHV D DE	495
SLH1_FUa	-----	423
MecrH1_FU a	-----	443
SLH1_FU d	-----	417
MecrH1_FU d	-----	414
SLH1_FU f	-----	422
MecrH1_FU f	-----	421
SLH1_FU g	-----	410
Ocd o H1	-----	394
MecrH1_FU g	-----	405
SLH1_FU b	-----	411
MecrH1_FU b	-----	405
SLH1_FU c	-----	418
MecrH1_FU c	-----	418
SLH1_FU e	-----	412
MecrH1_FU e	-----	413

Table S8. Sequence alignment of selected molluscan hemocyanins. Slipper limpet hemocyanin type 1 (*Crepidula fornicata* ; CrfoH1; GenBank accession number WCA44164.1) is shown in bold text with the key residues participating in the interaction network (FUa only) shown in Figure 6 highlighted in yellow. Key (sequence accession number and organism): APCA; CAD88977.1; *Aplysia californica*. Coas; AYO86684.1; *Cornu aspersum*. EuscH1; AIL00900.1; *Euprymna scolopes*. HaasH1; XP_067664054.1; *Haliotis asinina*. HacRH1; XP_071088435.1; *Haliotis cracherodii*. HadishaH1; AYD59980.1; *Haliotis discus hannai*. HadivH1; ACU00134.1; *Haliotis diversicolor*. HarubH1; ANE23704.1; *Haliotis rubra*. HarufH1; XP_046359783.2; *Haliotis rufescens*. HeluHaD; AEO51767.1; *Helix lucorum*. HepoHaN; AYO86687.1; *Helix pomatia*. LijaH2; XP_064608055.1; *Liolophura japonica*. LisaH1; DAZ89886.1; *Littorina saxatilis*. LystH1; AYO86691.1; *Lymnaea stagnalis*. MecrH1; Q10583.2; *Megathura crenulata*. MetuMH; AGX25261.1; *Melanoides tuberculata*. NunuH1; AH10286.1; *Nucula nucleus*. OcvuHA; CAI9741816.1; *Octopus vulgaris*. PhacH1; WGL47534.1; *Physella acuta*. PocaH1; DAZ89889.1; *Pomacea canaliculata*. RaveH1; DAD54775.1; *Rapana venosa*. SeofH1; ABD47515.1; *Sepia officinalis*. SemaH; AGV74427.1; *Sepiella maindroni*. TopaH1; BAS69907.1; *Todarodes pacificus*. H1; type 1 or type 1-like. H2; type 2 or type 2-like. HA; A-type. MH; mega-hemocyanin. HaD; alphaD. HaN; alphaN.

CoasHaN	-----MSQ--LWF--LISLGLLVWVC-QATLIRKKNVDHLSQQDVLNLQKALRDVFD	46
HepoHaN	-----MSQ--LWF--LISLGLLVWVC-QATLLRKNVDHLSQQDVLNLQKALRDVFD	46
HeluHaD	-----MAP--TIV--WLA-FTFMLVCSNALLVRKDVHDLTPPEEVLNLQKALREVSK	46
APCAH1	-----MVG--YLG--QALMALLLLALSNAALVRKSDQLTSEEIILNLQKSLREVND	47
LystH1	-----MAL--LWS--FLALALFVLSFGDAALVRKNVDNLSEEDIINLQKTLRDVAD	47
PhacH1	-----MAR--LLP--LLALALYVLSFSEAVLRKSDVSLSSEDIILNLQKSLRAVAD	47
PocaH1	-----MLD--CRVFLFLWLLHLQVVLTAQSLVRKDVATLSSEEIILALQKSLRLLEV	49
MetuMH	-----MVT--PRFALALLAFVCQVAFVTGSLIRKKNVENLSSQEILSLQTSRLALAA	50
LisaH1	-----MTS--SALTALFVALAHVALTSGSLRRKNVASLSETEVLSLQTYLRQLED	49
CrfoH1	----- MTT--FCGPLALLVLWCQLLLASGSLIRKKNVDSLTESEVLTQLQTVLRQLED	49
RaveH1	-----MTS--PRVTGTLFLCLAYLCFATGSLRKNVDTLTQEILRFQNTLLELEK	49
OcvuHA	MAPTRSPWLLGATILCIISI-----FVPVITNGKFVRKNVDLSLTQDEVVSLQVALYSMQK	55
TopaH1	-----NLLRKNVDTLTPDEIILNLQVSLRAMQD	27
EuscH1	MR-----RLNHLPLLLCLAVILTLWMSGSNVTNGNLVRKNVDTLSEEEIISLQVALRSMQD	55
SeofH1	MR-----HLNHLPLLYLTVILTFWMSGDLTVYGLIRKNVDTLSDHEIILNLQIALRNMQD	55
SemaH	MR-----HLNHLPLLYLTVILTFWMTGLDVTYGLIRKNVDTLSDHEIILNLQIALRNMQD	55
LijaH2	-----	0
NunuH1	-----MRLPLIFLALG-----IQVCIVHPLLRKDVDSLTTAEVLALQEALKEVQE	46
MecrH1	-----MLSVRLL-IV-----VLALANAENLVRKSEHLETLQEETLDQAALRELQM	44
HacrH1	-----MGFVPLFL-VA-----LVALAGAENVIRKDAHLTADEIQALHGALHAITD	45
HarufH1	-----MGVVQLFL-VA-----LVALAGAENVIRKDAHLTADEIQALHGALHAVVN	45
HadishaH1	-----MGVVQLFL-VA-----LVALAGAENVIRKDAHLTADEIQALHGALHAVIG	45
HadivH1	-----	0
HaasH1	-----MWLVQFL-VA-----LAAVAGADNVVRKDVSHLTDDEVQALHGALHDLTE	45
HarubH1	-----MWLVHFL-VA-----LTTGAGADNVVRKDVSHLTDDEVQALHGALHDLTE	45
CoasHaN	DSSSKGFDAI-AAHYGYPPQCKDG-DRDVACCVHGDNLNFPWHRLYTVQIEQALAEKGL-	103
HepoHaN	DNSSKGFDAI-AAHYGYPPQCKDG-DRAVACCLHGDNLNFPWHRLLTVQIEQALHEKGL-	103
HeluHaD	DTSSKGFDAI-AAHYGYPPKCKHG-SKDVACCVHGEPTFPQWHRLYAVQMEQALKEKGL-	103
APCAH1	DTSNLGYAAI-ASYHGYPTQCKDG-DRDIACCLHGSVPFPQWHRLYVVQMEQALKAKGL-	104
LystH1	DKSAKGYAAI-AAHYGYPAQCKDANNRPVACCVHGMFPFPQWHRLYVVQLEQALKEKGL-	105
PhacH1	DTSDKGYAAI-AAHYGYPTQCKHG-DKDVACCIHGMVFPQWHRLYVVQMEQALKEKGL-	104
PocaH1	DKGVTGFQSL-AAIHGEPSCSNGDNTSVACCVHGMATFPQWHRLYVVQLEQALVGEGLV	108
MetuMH	DESASGFKAV-AAHYGEPSCMEDNDGVAIACCLHGMVFPQWHRLYVVQFEQLLVNKGSL-	108
LisaH1	DKSETGFQSLVAAHYGEPSCMEDAEGHPVACCIHGMATFPQWHRLYTVQFEQALVQRGLS	109
CrfoH1	DKTATGQAI-AAHYGEPSCQTKDGTAIACCVHGEATFPQWHRLYVVQFEQALVSKGLA	108
RaveH1	DNSDHGFQAI-GAFHGEPSGCQTKESAIACCVHGEATFPWHRAYTAQFEQLLVKEKGLA	108
OcvuHA	DEGPTGFQAI-SAYHGEPADCKAADGSTVVCCLHGMPTFPLWHRLYLVQFEQAMASHGS-	113
TopaH1	DEGASGYQAI-SAYHGEPADCKAADGSTVVCCLHGMPTFPMWHRLYLVQFEQALVAHGS-	85
EuscH1	DDGATGYQAI-SAYHGEPADCKAADGSSIVCCLHGMPTFPLWHRLYIVQFEQALAAHGS-	113
SeofH1	DEGATGYQAI-SAYHGEPADCKAADGSTVVCCLHGMPTFPMWHRLYMVQFEQAVAGHGS-	113
SemaH	DDGATGYQAI-SAYHGEPADCKAADGSTVVCCLHGMPTFPMWHRLYMVQFEQAVAGHGS-	113
LijaH2	-----MEDGTKIACCIHGMFPFPHWHRLYVAQIEQSLVKHGS-	37
NunuH1	DTGPTGYQAI-AAHYGYPGDLCAHDGHKMACCIIHGMPTFPQWHRLLFTTQMEQALRQKGL-	104
MecrH1	DSSSIGFQAI-AAAHGAPA-SCVHKDTSIACCIHGMPTFPHWHRAYVVMERALQTKRR-	101
HacrH1	ASGPLSFREI-TSYHASPP-SCDHHGQKIACCVHGMPTFPFWRHAYVVQAEALLSQRK-	102

TopaH1	TDTVLSLGLALDSNYYVTA EVTAINGTLMPTQTI-PRPIVITYIPPOGFKDVNMVNM----	417
EuschH1	TDKVISLGLPLSGDYVQAVVTAINGTLLPDGII-PSPIVSYPVPGHGLDDEMKNV----	445
SeofH1	TDTVNSLGLPLSGNYYVQAI VTAINGTLLPDGII-PNPIVSYVPSVGLKDEEMKVV----	445
SemaH	TDTVTSGLPLSGNYYVQAI VTAINGTSLPDGIL-PNPIVSYVPSAGLKDEEMKVV----	445
LijaH2	TKAVDDANLPYDGNYYVSIKVS AVNGTSIPSSVL-YKPQVVYQPAKQFVDVTPPKG----	370
NunuH1	TDTFHKHGIDFHQNFYIKTELYAVNGSALPSDAL-VSGTVGHQPAGYLDPKPAPV----	435
MecrH1	SDTVHKMGMKLDGHYTVKAELFSVNGTALPDDL-LPHPVVVHHPEKGFDPVKHH----	433
HacrH1	TKAVQRLGVVLSGHYYVKTELSVNGTSLSSDIL-PQPTVAYRPGKGHIDPPIHHR----	434
HarufH1	TKAVQRLGVVLSGHYYVKTELSVNGTSLSPDIL-PQPTVAYRPGKGHIDPPVHHR----	434
HadishaH1	TKAVQRLGVALS GHYYVKTELSVNGTSLSPDIL-PQPTVAYRPGKGHIDPPVHHR----	434
HadivH1	TKAVQRLGVALS GHYYVKTELSVNGTSLSPDIL-PQPTVAYRPGKGHIDPPVHHR----	349
HaasH1	TKAVKRLGVPLSGHYYVKTNLFSVNGTFLSPDLL-PQPTVAYRPGKGHRDPPVHHR----	434
HarubH1	TDAVHRLGVPLSGHYYVKANPFSVNGTSLSPDLV-PQPTVAYRPGKGHLDPPVHHR----	434
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CoasHaN	EHEFHENVVRKNVDRLTIEEVVQLREALQEFQNDKSVEGYQAI AEFHGDGPKCPNPTAK	505
HepoHaN	EHEFHENVAVRKNVDRLTREEVVQLREALQEF LNDKSVEGYQAI AEFHGDGPKCPDPTAK	504
HeluHaD	-LEHKEEVSIRKDV DHLTREEILELREALEKLQSDHSVDGYQAI AEFHGDGPKCPFTAR	502
ApcH1	GHEVHDGVSIRKIDITL TREEVNDLRQALTKFQNDASVDGYQATAEFHGDGPKCPYNAK	502
LystH1	EHEYHEGISVRKIDIRLTNEE IYELREALQK FQNDKSVDGYQAI AEFHGDGPKCPNPSK	513
PhacH1	EHEYHDDVAVRKDV DRLTREEVYELRQALARFQNDSSVDGYQAI AEFHGDGPKCPTPTSK	508
PocaH1	---RTDATVVRKNVKAL TDEETLALRQALSRFQNDTSVDGFQAVAEF HGLPARC PHPDAR	498
MetuMH	-RDVHRHAVVRKNVVDLTDEEVYELRLAMD RFQNDTSVDGYQAI AEFHGLPARCPRPDAA	514
LisaH1	-DGKGPTTVVRKDIAVLTDEEVYALRQAMERFQNDTSVDGFQAVAEF HGLPAKCPHPDAA	503
CrfoH1	-DSRKPSNVVRKDI ELLTDEEVYALRQAMHRFQNDTSIDGYQAVAEF HGLPAKCPHPDAA	497
RaveH1	-PDLKKTTLVRKDVETLTDEEVYLRQAMAKFQNDTSIDGFQAVAEF HGLPPKCPHPDAA	509
OcvuHA	---DKADV KIRKDVSVLTKEEYGVRIAMERFMDLKSINGYQALAEF HGLPAKCPRPDAP	501
TopaH1	---DTSSLFRKDISSLTTEEEYELRVAMERFMSDKSINGYQALAEF HGLPAKCPRPDAL	474
EuschH1	---DEMKLSTRKDLSSLTDEEEYELRQAMERFMSDKSINGYQALAEF HGLPAKCPRPDAQ	502
SeofH1	---DVTCLKTRKDVSSLTDEEKYDLRVAMERFMSDKSINGYQALAEF HGLPAKCPRPDAL	502
SemaH	---DATKLKTRKDVSSLTDEEKYDLRVAMERFMSDKSINGYQALAEF HGLPAKCPRPDAL	502
LijaH2	---DPAALAVRKDVSR LPTTEVYLRQAMERFQADTSVDGFQATVEYHGLPARCPRPDAK	427
NunuH1	---DRTGLAVRKNLDRLTDEEVDSL RKAMARLQSDKSVDGYDAIAEYHGLPARCPRPDAA	492
MecrH1	---QSANLLVRKNINDLTREEVLNLREAFHKFQEDRSVDGYQATAEYHGLPARCPRPDAK	490
HacrH1	---QNEDYIVRKNINH LTRSETYELRKALERFQADTSVDGFQATVEYHGLPARCPEPDAK	491
HarufH1	---QNEDYIVRKNINH LTRSETYELRKALERFQADTSVDGFQATVEYHGLPARCPEPDAK	491
HadishaH1	---QNEDYIVRKNINH LTRSETYELRKALERFQADTSVDGFQATVEYHGLPARCPEPDAK	491
HadivH1	---QNEDYIVRKNIDH LTRSETYELRKALERFQADTSVDGFQATVEYHGLPARCPEPDAK	406
HaasH1	---HDEDLIVRKNIDH LTRREEYELRRALERFQADTSVDGYQATVEYHGLPARCQPDAK	491
HarubH1	---HDDDLIVRKNIDH LTRREEYALRRALERFQADTSVDGYQATVEYHGLPARCQPDAK	491
	**:: ** * : * * : . : * * : * : * . * : * * : * * :	
CoasHaN	DRHACCIHGLPTFFPHWHRLIVTQVEDSLRRRGAPLGLPYWDFTRPDTHVPQLANDETYFN	565
HepoHaN	DRHACCIHGLPTFFPHWHRLIVTQVEDSLRRRGAPLGVPYWDFTRPDTHVPLLASEEIIYFN	564
HeluHaD	DRFACCIHGMPTFFPHWHRLLVVQVEDALRRRGAGHTGIPYWDWTKPNTHIPALAADETYVN	562
ApcH1	NRLACCIHGMPTFFPHWHRLFV VQVEDALRRRGAGIGIPYWDWTKPGTQIPALAAEETVVD	562
LystH1	NRKACCIHGMPTFFPHWHRLLVVQVEDALRRRGSNIGVPYWDWTKPRTSVPKLAADETYTD	573
PhacH1	VRQACCIHGMPTFFPHWHRLLVVQVEDALRRRGSHIGIPYWDWTKPGT SIPALAADHDYLD	568
PocaH1	VRYACCLHGVPTFFPHWHRLFV VQVEDALRTRGLDIGIPYWDWTGMDTTVPPLADDDVYLD	558
MetuMH	VRYACCIHGMATFFPHWHRLFV VQIEDELKARDLHFGMPYWDWTVPNAQIPAI AAEATYQD	574
LisaH1	LRVACCIHGMATFFPHWHRLFVVEVEDE LRSRGLEFGIPYWDWTKPNAAIPALAADITYTD	563
CrfoH1	VRYACCVHGMATFFPHWHRLFVVEVEDE LRSRGLEIGIPYWDWTRPNAHIPALANDVSYED	557
RaveH1	VRYACCIHGMATFFPHWHRLFVTEVEDE LKSRGLEFGIPYWDWTRPNTHVPALAAEETYED	569
OcvuHA	NRIACCEHGMATFFPHWHRLVIMQLEDALDRGSTVGVPYWDWSKPI THLPSLVAEETYQD	561
TopaH1	NRVACCIHGMATFFPHWHRLVVMQFENALFTRGSPIGVPYWDWTKPFTALPSLLADETYVD	534
EuschH1	NRVACCVHGMATFFPHWHRLVVVQFENALMRGSIQGVPYWDWTKPI TALPHLLGDETYVD	562
SeofH1	NRVACCVHGMATFFPHWHRLVVVQFEDALINRGSPIGVPYWDWTKPMKALPDLLADETYVD	562
SemaH	NRAACCVHGMATFFPHWHRLVVVQFEAALINRGSPIGVPYWDWTKPMKALPDLLAQETVVD	562
LijaH2	ERVACCVHGMATFFVHWHRLV VVQVEDAIRRGSGVGVPYWDWTEPIEALPALAGEATYLD	487
NunuH1	ERVACCVHGMPTFFPHWHRLVMVQLEDALVDRGSTIGLPYWDWTKPLIGLPDLISNKMYKD	552
MecrH1	DRYACCVHGMPIFFPHWHRLFVTQVEDALVGRGATIGIPYWDWTEPMTHIPGLAGNKTYVD	550
HacrH1	VRFACCMHGMA SFPHWHRLFVTQVEDALVRRGSPIGVPYWDWTKPMTHLPDLAASANYVD	551
HarufH1	VRFACCMHGMA SFPHWHRLFVTQVEDALVRRGSPIGVPYWDWTKPMTHLPDLAASENYVD	551
HadishaH1	VRFACCMHGMA SFPHWHRLFVTQVEDALVRRGSPIGVPYWDWTKPMTHLPDLAASEDYVD	551
HadivH1	VRFACCMHGMA SFPHWHRLFVTQVEDALVRRGPPIGVPYWDWTKPMTHLPDLAASEDYVD	466
HaasH1	VRFACCMHGMA SFPHWHRLFVTQVEDALVRRGSPIGVPYWDWTRPMTHLP ELASNETYID	551
HarubH1	VRFACCMHGMA SFPHWHRLFVTQVEDALVRRGSPIGVPYWDWTKPMTHLP ELASDATYID	551
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CoasHaN	PHI-GQNVHNPFFHDVEIAFLGN DVRTERDI-SESLAQTPAWGEHTELFNAFLLALEQDNF	623
HepoHaN	PHT-GGNLHNPFHDVQIAFLGN DVHTERDI-SPSLAQTPAWGEHTELFNAFLLALEQDYF	622
HeluHaD	PHD-NAEHVNPFFH HAVIGFLGGDAKTSRD-LPELTQTPKWDHTELFDFVLLALEQDNF	620
ApcH1	PEN-GETVRNPF FGDVAFNLNSGAKTSRDV-SDSLNDVPEWGDHTNLFDQYLYALEQEDF	620
LystH1	PTT-NEVKRNPFFHDAPIAFLGD STKTTRDV-SSSLSDSPKWDHTELFDAFLLALEQDNF	631
PhacH1	PKG-RVPSQPLPSRPHLSFLGADAKTGRDV-DNSLSQQPKLGDHTELFDAFLLALEQDNF	626
PocaH1	PIT-GEFQHNPFHDAPVAFIGE--RTSRQV-QAELTQTPKFGDHTDLFDGMLLAFEQTDF	614
MetuMH	PHHPDVTLHNPFYDA AVAFINT--RTTRDV-QNDLAENPIYGDHISKLYDGILLAFEQTDF	631

LisaH1	PHS-GVEVHNPFDAAVAFLGE--RTTRDTMVLELSKNAEFGDHTPLFDGILLAFEQTDF	620
CrfoH1	ANT-HQQLHNPFHDAPIAFLGE--KTTRQV-QDDLSESPFEGDHTSLFDGILLAFEQTDF	613
RaveH1	PHT-HHQVHNPFHDALVAFLLK--KTTRDV-QADLTETPAFGDHTALFDGMLLAFEQTDF	625
OcvuHA	PFT-LESKPNPFFRASIDFLHSGVYTTRDV-DPRLMQPAKGHDHCPLYDGLLLAYEQDEY	619
TopaH1	PYT-KETKPNPFFKAPIEFLLKAGVHTSRQI-DERLQKQPSKGDHGLYDGLSLAFEQDDF	592
EuschH1	PYT-KETKANPFFSSAIEFLDAGVHTTRVI-DPRLQKQPSVGDHDSAMYDGMLLAFEQEDF	620
SeofH1	PYT-KETKPNPFFSAPIEFMHAGVSTKRVI-DARLFKEPTVGDHSHYLDGLMLAFEQHD	620
SemaH	PYT-KETKPNPFFSAPIEFMHAGISTKRVI-DARLFKEPTVGDHSHYLDGLMLAYEQHD	620
LijaH2	TKT-NERLPNPFFKQIIPMVG--SETSRDV-QDGLFEKPAFGEHTSLDEEVMYALEQDHF	543
NunuH1	PQT-GANTDNPFFHGSVAFEG--HVTDRDP-DSRLFEDPSYGDHTALFDGMLLALQEDF	608
MecrH1	SH--GASHTNPFHSSVIAFEENAPHTKRQI-DQRLFKPATFGHHTDLFNQILYAFEQEDY	607
HacrH1	PN--GHTRHNPFFNANISFEEGHHHTSRSI-DARLFAPAAYGDHTPLFDGILYAFEQEDF	608
HarufH1	PN--GHTRHNPFFNANISFEEGHHHTSRSI-DARLFAPAAYGDHTALFDGILYAFEQEDF	608
HadishaH1	PN--GHTRHNPFFNANISFEEGHHHTSRSI-DARLFAPAAYGDHTALFDGILYAFEQEDF	608
HadivH1	PN--GHTRHNPFFNANISFEEGHHHTSRSI-DARLFAPAAYGDHTALFDGILYAFEQEDF	523
HaasH1	PY--GHIHNPFFNANISFEEGHHHTSRSL-DPRLFAPAAYGDHTHLFDGILYAFEQEDF	608
HarubH1	PH--GHIHNPFFNANISFAEGHHHTSRSI-DSRLFAPAAYGDHTHLFDGILYAFEQEDF	608
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CoasHaN	CKFAVQFEVAHNLIHGLVGGNTSHGLSTLSYSADFPIFYIYHSNIDRIWAIWTALQQLRG	683
HepoHaN	CKFAIQFEVAHNLIHGLVGGNTPHGLSTLSYSADFPIFYIYHSNIDRIWAIWTALQEHRG	682
HeluHaD	CDFEVQFEIAHNLIHAYVGGNSKYGLSSLSYSADFPIFYLHHSNIDRIWAIWTALQQHRG	680
ApcHa1	CNFEVQFEVAHNLIHALVGGNTQFGLSSLSYSADFPIFFLHHSNVDRIWAIWTALQQYRG	680
LystH1	CDFEVQFEVAHNLIHALVGGKEQYSLATLSYSADFPIFYLHHSNVDRIWAIWTALQELRG	691
PhacH1	CDFEIQFEVAHNLIHALVGGKNPHSLATLSYSADFPIFYLHHSNVDRIWAIWTALQELRG	686
PocaH1	CDFEIQFEVVHNAPHFLVGGFAPYSLATLHYSADFPIFYLHHSNVDRMWAIWQALQVLRG	674
MetuMH	CDFEIQFEVIHNSPHFLVGGFGAYTLATLHYSADFPIFYLHHSNVDRMWAIWQELQIRRG	691
LisaH1	CDFEVQFEVTHNAPHFLVGGFAPYSLATLHYSADFPIFYLHHSNVDRLWAIWQKLQIRG	680
CrfoH1	CDFEVQFEVVHNAPHFLVGGFGAYTLATLHYSADFPIFYLHHSNVDRLWAIWQQLQIKRG	673
RaveH1	CDFEVQFEVVHNAIHFLVGGFDPYTMATLHYSADPIFYLHHSNVDRLWAIWQKLQMRRG	685
OcvuHA	CDFEVQFEVTHNFVHAWIGGKEAYSMSLLHYTSFDFLFWLHHAQVDRLWAIWQALQIHRG	679
TopaH1	CDFEVQFEVTHNSIHAWTGGSEPYSMSSLLHYTSFDFPMFWLHHSQVDRLWAIWQALQIRG	652
EuschH1	CDFEVQFEVTHNAIHAWTGGAEPYSMSSLLHYTSFDFPMFWFHHSEVDRLWAIWQALQVHRK	680
SeofH1	CDFEVQFEVTHNAIHRWTGGSEPYSMSSLLHYTSFHPMFWLHHSVDRLWAIWQALQIHRG	680
SemaH	CDFEVQFEVTHNAIHAWTGGSEPYSMSSLLHYTSFDFPMFWLHHSVDRLWAIWQALQIHRG	680
LijaH2	CDFAVQFEIAHNRIHALVGGSQRYSMSSLLHYTSYDPLFFLHHSNVDRLWAIWQQLQILRG	603
NunuH1	CDFEVQFEVTHNNLHAWVGGSAKYSMSLLHYTAFDPVFYLYHHSNVDRLWAMWQALQQYRG	668
MecrH1	CDFEVQFEITHNTIHAWTGGSEHFSMSLLHYTAFDPLFYFHHSNVDRLWAVWQALQMRH	667
HacrH1	CDFEIQFELVHNSIHAWIGGSEDYSMSLLHYTAFDPIFYLYHHSNVDRLWAIWQALQIRRH	668
HarufH1	CDFEIQFELVHNSIHAWIGGSEDYSMSLLHYTAFDPIFYLYHHSNVDRLWAIWQALQIRRH	668
HadishaH1	CDFEIQFELVHNSIHAWIGGSEDYSMSLLHYTAFDPIFYLYHHSNVDRLWAIWQALQIRRH	668
HadivH1	CDFEIQFELVHNSIHAWIGGSEDYSMSLLHYAFAFDPIFYLYHHSNVDRLWAIWQALQIRRH	583
HaasH1	CDFEIQFELVHNSIHAWVGAEDYSMATLHYTAFDPIFYLYHHSNVDRLWAIWQALQIRRH	668
HarubH1	CDFEIQFELVHNSIHAWIGGSEDYSMATLHYTAFDPIFYLYHHSNVDRLWAIWQALQIRRH	668
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CoasHaN	KPYKAHCAQSYVHTPLKPFAPKPPYNNDAKTFAHSTATNIYDYEKELAYTFDSLEFGGMS	743
HepoHaN	KPYKAHCAQSYVHTPLKPFAPKPPYNNDAKTYAHSTATNIYDYEKELAYTYDSLEFGGMS	742
HeluHaD	KPYKAHCAQSYVYTPLKPFAPHTPYNNNEKTFAHSTPTDVYDYEKEFYQYGYDNLQFGGLG	740
ApcHa1	KPYKAHCAQSYVNQPLKPFAPSSPLNNNEKTFSSHVPNTNVDYAEELGYDYNLQFGGMG	740
LystH1	KPYKAHCAQSYTYEPLKPFAPSSPYNNNDQKTFTHAVPRNVYDYETELNAYDSLEFGGLT	751
PhacH1	KPYKAHCAQSYTYEPLKPFAPASPYNNNEKTSHAVPRNVYDYETELKYTYDQLEFGGMS	746
PocaH1	LPYQAHCALSLTRDTLKPFGFSPPLNNNQKTFSRARGDQVVEYQKNFLYDYDSLTFGGMT	734
MetuMH	LPYRAHCAHTMTHEPMKPFSAAPLNNNEKTFSSHSEPSQVYDYERDLGYTYDSLTFGGMT	751
LisaH1	LPYKAHCASTQTQEVLPKPFGPPPPWNNDEKTFNNARPTNVDYENVLDYTYDTLQFGGMT	740
CrfoH1	LPYKAHCASTQTQEVLPKPFGPPPPWNNDEKTFENARPTNIYDYEAVLDYTYDSLQFGGMT	733
RaveH1	KLYKAHCAGSLTQELMMPFGFPPPYHNDPKTHDNARPSQIYDYESVLDYTYDSLQFGGMT	745
OcvuHA	KPYKAYCANSEVHRPLKPFAPFESPFNNNEHTRAHAIPTDVYDYQANLGYTFDSLFGGMS	739
TopaH1	KPYKTYCANSEVYRPMKPFAPKSPPLNNDEKTHREHVPNTDVYDYQAEALAYTYDTLFFGGLS	712
EuschH1	LPYKCHCASSEVYRPMKPFAPFEPPLNNDHQTHSHSVPTHIYDYQAEALKYAYDTLFFGGMS	740
SeofH1	LPYKAHCASSEVYQPMKPFAPDAPLNNDELTHSHSVPTDIYDYQSELEYAFDTLFFGGMS	740
SemaH	LPYKAHCASSEVYQPMKPFAPDAPLNNDELTHSHSVPTNIYDYQSELDYAFDTLFFGGMS	740
LijaH2	KPKFAYCANSDVHMSLKPFGFPAPLNSNPKTFEHAVPTNIYDYENELDYTYDTLQYHGMT	663
NunuH1	KPYKAHCATYTYTYPLKPFAPKSPPLNNNEKTQKHAVPTNVDYDYSELGYSFDSLEFGGMG	728
MecrH1	KPYRAHCAISLEHMHLPKPFAPSSPLNNNEKTHANAMPNKIYDYENVLHYTYEDLTFFGGIS	727
HacrH1	KPYRAHCAQSIEQLPMKPFAPSPPLNNNEKTHSNSVPTDIYDYEETLHYSYDDLTFGGMN	728
HarufH1	KPYRAHCAQSIEQLPMKPFAPSPPLNNNEKTHSNSVPTDIYDYEETLHYSYDDLTFGGMN	728
HadishaH1	KPYRAHCAQSIEQLPMKPFAPSPPLNNNEKTHSNSVPTDIYDYEETLHYSYDDLTFGGMN	728
HadivH1	KPYRAHCAQSIEQLPMKPFAPSPPLNNNEKTHSNSVPTDIYDYEETLHYSYDDLTFGGMN	643
HaasH1	KPYQAHCAQSVEQPMKPFAPSPPLNNNEKTHSHSVPTDIYDYEEVLHYSYDDLTFGGMN	728
HarubH1	KPYQAHCAQSVEQTPMKPFAPSSPLNNNEKTHSHSIPTDIYDYEEELHYSYDDLTFGGMN	728
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CoasHaN	VPELDNYINTNIKNNRNVFVGIIQLHGIQTSGLAHIIYIEAPGKD-KFEAGRFAILGGPTEM	802
HepoHaN	VPELDNYINTNIKNNRIFVGIIQLHGIKTSGLAHIFIEAPGKE-KLEAGRFAILGGPTEM	801
HeluHaD	IPQLENYINEHLKSKSRFTVGIHLHGIKTSGLATIHVSASGK--DYVAGHFAILGGPSEM	798
ApcHa1	IAELDQYIKSTQKSKDRVFYGIILLHGIIKKAALATVYVKKPGVDTEYNAGQFALLGGPSEM	800

LystH1	IKQLNDYINNERKTKNRVFAGVLLWGIKRSALATLYVN-----DVEAGRFAALLGGPSEM	805
PhacH1	VQQLNDYINNQNQTKDRTFAGILLHGIIKSATARIYVTAPGKD-KYEAGRFVVLGGPSEM	805
PocaH1	IPQLNQFLA-ERGNRDRTFVGVKLHNIGVSAAVVKLYISV-PGGERYLANSAFVVLGGEREM	792
MetuMH	IEQLENYLE-ERQSKERVVFGIELHNIGASAWVKVLIDSGSGGPEPYLVGKIAVLGGEKEM	810
LisaH1	VDQLEHYLE-ERQTRDRAFVGIALHNIGVSAWVDVKINA-PGGESYQVGVHAVLGGGEKEM	798
CrfoH1	VDQLEHYLH-ERKTQNRDFVGIALHNIGVSAWVTLSLQV-EGGEPYQVGKIAVLGGEKEM	791
RaveH1	IAQLDHYLE-ERKTHDRTFVGIMLHNIGISAWATLAIEM-KNGEYTVGKVAVLGGGEKEM	803
OcvuHA	IRELQKHID-EKKTHDRVFAGFLFGGIKTSANIDLIVVA--AGNEYLASPISILGGTKEM	796
TopaH1	IRELQRYVE-EAKSKDRVFAGFLLMGIQTSANVDLFVVA--GGNEFFVGSIAVLGGSKEM	769
Eusch1	VRELQGHID-NNKHKDRVFAGFLFMGIKTSIAIDFYVVA--AGNEFMAGSVAVLGGSKEM	797
SeofH1	IRELQEHIQ-ENELKDRVFAGFLFMGIKTSANIDFYVVA--GENEFMAGSIAVLGGSKEM	797
SemaH	IRELQEHIQ-ENELKDRVFAGFLFMGIKTSANIDFYVVA--GENEFMAGSIAVLGGSKEM	797
LijaH2	MEQLNIYLR-RRGQKDRVFAGCNLKGIRTSAMVDFQICKQDGTGCGESAGHFAVLGGPFEM	722
NunuH1	IQELDHYIQ-ERKATDRVFVGFLEEGFQKSANVDFFIER-SGQDKFKAGTIAVLGGSDEM	786
MecrH1	LENIEKMIH-ENQQEDRIYAGFLFAGIRTSANVDIFIKT-TDSVQHKAGTFAVLGGSKEM	785
HacrH1	LDEIEETIH-HRQQHERVFAGFLLGGIGKSALVNIFINK-PGSSPHKAGDIAILGGTKEM	786
HarufH1	LDEIEDTIIH-HRQQHERVFAGFLLGGIGKSALVNIFINK-PGSSPHKAGDIAILGGTKEM	786
HadishaH1	LDEIEETIH-HRQQHERVFAGFLLGGIGKSALVNIFINK-PGSSPHKAGDIAILGGTKEM	786
HativH1	LDEIEETIH-HRQQHERVFAGFLLGGIGKSALVNIFINK-PGSSPHKAGDIAILGGTKEM	701
HaasH1	LDQIEKAIH-LRQQHERVFAGFLLGAGIGKSALVDIFIKT-PGSEPFKAGDFAILGGSKEM	786
HarubH1	LDEIEEAIH-LRQQHERVFAGFLLGGIGKSALVDIFIKT-TGSEPHKAGDFAILGGAKEM	786
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CoasHaN	PWRYDRLYKHEITNALETQLHWAQPYNVNIEIARFDGTPIDAHQFGHVEVLYLPGKQTK	862
HepoHaN	PWRYDNLYKHEITNALEKLDLHWAQPYNVNIEIAQFDGTPIDAKQFGHLEILYLPGKQTK	861
HeluHaD	DWDYDRPYRHDISHALEELGVNWAQPFVDTIEMHTFDNKPIDVQFPRINIHKKEQQA	858
ApcH1	EWRFDRNRYFEITKALEELGINFLSPFDRLEMNEFDGTPIDVQFQKSLIFKRRDILP	860
LystH1	EWRFDRLYKHEITDTLEELNLHWAQPYVTTLKLTDFEGHDIPIPFPPKQIIFKAKEEPK	865
PhacH1	QWRFRDLRYQEITNALNELNLQWNNDDYTVSVEYEAIDNTPISDSELTHIQIYKAKEDVK	865
PocaH1	TWTFDRLFKVEITDTLLAIGRNYDEDFDVTLDITDVQQQKLSVDTFSHTTIFHQPKKD	852
MetuMH	PWHFDRLFKMEITDALSIDLGSYDDNFDVTLQITDVTGKEWSSDSFQHDTIFHEPGKTFE	870
LisaH1	AWHFDRLFKLEITDALSALGLRYDDDFEVHLHVIDVTGKQWPEDTFSSHITLHSPAQVHE	858
CrfoH1	PWRFRDLFKVEITSALQKGLSYDDDFNVHLDITDVTGKKWAEDTFHHNTIIHVPGEH	851
RaveH1	PWHFDRTFKVEITEALHKLGYRYDDEYDVKLHIKDVGTGKEWPEDTFSSHITIIHVPASTHL	863
OcvuHA	PWRFRDLRFQEIITDSLKALGVDPFGDFTLRVDIKDVNGTALPSTIISQPIVIFEPGKVT	856
TopaH1	TWRFRDRPYKHEITKALSALGLTKEDVFSIHVDITDVNGTALNSNLVPSPIIFSPAAGEE	829
Eusch1	SWRFDRVYKHEITGALAALGVDKYAEYTLRVDIKDVNGTALPATTLPQPTVIFVPGKADT	857
SeofH1	SWRFDRVYKYEITAALAALGVDKYAEYTLRVDIKDVNGTALSANILPSPTVIFTPGKVE-	856
SemaH	SWRFDRVYKYEITAALAALGVDKYAEYTLRVDIKDVNGTALSANILPSPTVIFTPGKVE-	856
LijaH2	DWRFRDRPYKHEITKALSALGLTKEDVFSIHVDITDVNGTALNSNLVPSPIIFSPAAGEE	782
NunuH1	KWRFRDRVYKHEITESLTTGLTKDSDFSISVTLTDVDTGTELDASVLHDPTIIFEPSHAAE	846
MecrH1	KWGFDRVFKFDITHVLKDLDLTADGDVEVTFDITEVDGTGLASSLIPHASVIREHARVKF	845
HacrH1	PWAFDRLFKVEITDALKALSVDVDGDYEVTFDIHDMHGKLSDDLIPHPAVVSEPAHPSF	846
HarufH1	PWAFDRLFKVEITDALKALALDVGDDYEVTFDIHDMHGKLSDDLIPHPAVISEPAHPTF	846
HadishaH1	PWAFDRLYKVEITDALKALALDVGDDYEVTFDIHDMHGKLSDDLIPHPAVISEPAHPSF	846
HativH1	PWAFDRLYKVEITDALKALALDVGDDYEVTFDIHDMHGKLSDDLIPHPAVISEPAHPSF	761
HaasH1	PWAFDRLYKVEITDALKNLISLEVDDYETITINIHDMHGKALDADLIPHAIISEPAHPSF	846
HarubH1	PWAFDRVYKVEITDALKILSLEVDDYEVTFDIHDMHGKALDADLIPHAIISEPAHPSF	846
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CoasHaN	KSA---DVEVHVRKEVSQLTGEEIIDLRLHALANLEVDKSIGGYQTLGRYHGASKWCPSPS	919
HepoHaN	KPA---DVEVHVRKEVSQLTGEEIIDLRLHALSNLEEDKSIGGYQTLGRYHGAYKWCPS	918
HeluHaD	DTS---PITKIRKNNVNLTEEEILNLRHSLAFLEEDRSVGGYQTLGRFHGTPNWC	915
ApcH1	EAQ---IDEVTVRKNVDSLNAEEVLALRLALANLKEDSSIGGYQTLGRYHGTPNWC	917
LystH1	DVS---ADTIKIRKNNVATLTAEEVVDLRQALANLQNDQSSAGGYQDLGRFHGTPNWC	922
PhacH1	DET---PDSHRVRKNVNSLTREEVLSALREMLNLQGDNSAGGYQDLGRFHGTPNWC	922
PocaH1	GDA---PEEVGRMRYNVDSLTRQQAQSLRDLALQKLQNDSTVNGFGHIAAFHGQPSWCP	910
MetuMH	VRGV---SDKRTLRLDVLHNLSEQIQNLRLDAFKALEDSTINGFNQIAAFHGQPSWCP	927
LisaH1	HEGMTFGDREYLRSDVTSLSREQIQNLRLDAMQSLSDSTINGYNQIAAFHGQPSWCP	918
CrfoH1	D-P--GEDDDHVRNDIVTTLTAEQEQNVRDAFQGLKNDKSVAGYNQIAAFHGQPNWCPSTQ	908
RaveH1	EED--HKEEDHVRNDVDTLTKEQIQNMREALATLQDHSPPGGFDHLAAAFHGQPNWCP	921
OcvuHA	DVK--FDENFRTRKEVSTLTASQMAALREALEKYEADKTANGYQQVAAAFHGSTEWCP	914
TopaH1	NVK--FDEQHRSRKNVDSMTVSEMNALRTAMAAFAADKEVTGYQQVAAAFHGSTQWCP	887
Eusch1	DVE--FDEQHRSRKNVDSMTKTEMDIRSALTAFADKSAANGFQQVAAAFHGSTKWCPS	915
SeofH1	DVH--FDEQHRSRKNVDSMTKSEMEDLRKAMTAFADKGVGTGYQQVAAAFHGSTKWCPS	914
SemaH	EVH--FDEQHRSRKNVGSMTKSEMDLRLKAMTTFADKGVGTGYQVAAAFHGSTKWCPS	914
LijaH2	E-F--ADDWTIVRKDVTRLSPREETALRVALQAVKDDSSVGGFQTIAGYHGIPTLCPT	839
NunuH1	D-R--PTDFRVVRKNADRLTETETDSLVLHALLKQEDTGAGGFQMGAFHGLPNWCQV	902
MecrH1	D-K--VPRSRLIRKNVDRLSPEEMNELRKALALLKEDKSAGGFQQLGAFHGEKWCPSPE	902
HacrH1	E-D--VSTSLRIRKNVDYLTPEETNDLRHALDLLEKDPSSAGGFNLGAFHGEKWCPSPE	903
HarufH1	E-D--VSTSLRIRKNADYLTPEETNDLRHALDLLEKDPSSAGGFNLGAFHGEKWCPSPE	903
HadishaH1	E-D--VSTSLRIRKNVDYLTPEETNDLRHALDLLEKDPSSAGGFNLGAFHGEKWCPSPE	903
HativH1	E-D--VTTSLRIRKNVDYLTPEETNDLRHALDLLEKDPSSAGGFNLGAFHGEKWCPSPE	818
HaasH1	E-D--ETHSFRIRKNVDSLTPREETNELRKAMDLLQKDHTAGGFNLGAFHGEKWCPSPE	903
HarubH1	E-D--EAHSRLRIRKNVDSLTPREETNELRKALDLLQKDHSAGGFNLGAFHGEKWCPSPE	903
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CoasHaN	AEVKKVCCPHGMAIFPHWHRLLVVQFENALTNHGYHGAVPYWDWTQPLDSLPAALVTAETY	979
HepoHaN	AEVKKVCCPHGMSIFPHWHRLLVVQFENALSSHGYHGAVPYWDWTPLDSLPAALVTAQTY	978
HeluHaD	AEKKVACCPHGGPTFPHWHRLLTVQAENALRRKHGKGLPYWDWTQPATSLPAIVVPETY	975
ApcHa1	AEKKVACCLHGMPVFPHWHRLLTVQAENALRRHGFSGGLPYWDWTRPMTQLPDLVDSAKY	977
LystH1	AEVKKSCCLHGMPTFPHWHRLWTVQAENALRRHGYPVGAIPYWDWTQPVKSLPDLVTSEKY	982
PhacH1	AEVKKSCCLHGMPTFPHWHRLWTVQAENALRRSGLKGAIPYWDWTQPIAALPELVQSEY	982
PocaH1	APVKYACCVHGMVFPWHWHRLLTVMENALRRKGFKEGLPYWDWTQPMSSLPDFVEEESY	970
MetuMH	AETKYACCLHGMPTFPHWHRLITVQLENALRDKGFGESGLPYWDWTLPMTLPESTFAETY	987
LisaH1	AEKKYACCAHGMAIFPHWHRLLTVQAENALHANGLDGLPYWDWTLPMETLPEIVRDETY	978
CrfoH1	AERKYACCTHGMVFPWHWHRLLTVQAENGLIANGHLSGLPYWDWTLPMTSLPSIVLNATY	968
RaveH1	AEHKVACCPHGMVPFPHWHRLLTVQAENALIAHGMHSGLPYWDWTLPMTALPKFVADATY	981
OcvuHA	AEHKYACCHHGMAATFPHWHRLLTNLFENGLRRNGYDGGIPYWDWLNPIISALPNLVAEEQY	974
TopaH1	AAQKYACCHHGMAATFPHWHRLIALNFENGLRRNGWSGGIPYWDWTRPIDALPALVLEAEY	947
Eusch1	AAQKYACCHHGMAATFPHWHRLVTNLNENGLRRNGYSGGVPYWDWTRPIDALPALVLEEQY	975
SeofH1	AAQKYACCHHGMAATFPHWHRLLTNLFENGLRRNGYSGGIPYWDWTRPIEALPALVLEEQY	974
SemaH	AAQKYACCHHGMAATFPHWHRLLTNLENGLRRNGYSGGIPYWDWTRPIEALPALVLEEQY	974
LijaH2	AASKFSCCVHGMATFAHWHRLYTVQFEQALRKQGTGALPYWDWSKPISSLPALATDDTF	899
NunuH1	-DEKVACCAHGMAVFPWHWHRLLVVQFEAGLHKYGYKGGVPYWDWSSPMDSLPTLANAATY	961
MecrH1	ASKKFACCVHGMVFPWHWHRLLTVQSENALRRHGYDGAIPYWDWTSPLNLHPELADHEKY	962
HacrH1	AEHKVACCVHGMVFPWHWHRLLAQENALRRHGYSGALPYWDWTRPLKLPDLVTPETY	963
HarufH1	AYHKVACCVHGMVFPWHWHRLLAQENALRRHGYSGALPYWDWTRPINKLPDLVTPETY	963
HadishaH1	AEHKVACCVHGMVFPWHWHRLLAQENALRRHGYSGALPYWDWTCPIINKLPDLVTPETY	963
HativH1	AEHKVACCVHGMVFPWHWHRLLAQENALRRHGYSGAFPYWDWTHPISKLPDLVTPETY	878
HaasH1	AVHKVACCVHGMVFPWHWHRLLAQENALRRKHGYTGALPYWDWTRPLSHLPNLVTPPEQF	963
HarubH1	AEHKVACCVHGMVFPWHWHRLLAQENALRRKHGYSGALPYWDWTRPVSKLPDLVAHEHF	963
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CoasHaN	TDPGSNKDVANPFYSAHI--DDANQDTERSPPK-PELFLKPKYGDYTAIAKQVLLAFEQED	1036
HepoHaN	PDPASNKDVANPFYSAHI--DDVNQDTERSPPK-PELFQKPKYGEYTSIAKQVLLAFEQED	1035
HeluHaD	IDPSNNQETHNPFHDAYI--DDVNQNTVRSVR-SDLYQQPAFGEYTDIAKQVLLYALEQDN	1032
ApcHa1	SDPKSGQELDNPFYSGHI--DDANADTVRSVR-DDLFQQPPFFGGYTDIAKQVLLALEQDD	1034
LystH1	RDPSSNNEKPNPFYSAHI--TDADQDTVRSVR-DDLFEQPKFGQNTAIAKQVLLALEQDN	1039
PhacH1	EDGN-GKSVKNPFYSAHI--TDVDKDTTRSVR-DDLFQKPAFGEYTDVAKQVLLALEQED	1038
PocaH1	QNPRTEDIEFPNPFHHGTV--EG--QDTTTRSVR-EDLFKVPEYGGQMPVAEQVLLALEQTD	1025
MetuMH	DNPVSGANEANPLHHAHV--EG--HKTTRSVR-GELFQQPAFGKFTRIGEQQVMLAFEQTD	1042
LisaH1	IHPKTGQSTENPLHHAHV--DG--HKTVRTLREELFEAPAFGLKTRIAEKVMLAFEQTD	1034
CrfoH1	VHPKTGESVANPLYSGQV--DG--HDTTRSVR-QELFEQPKFGHMTKIAEKVMLAFEQDN	1023
RaveH1	ENPKTHHTEPNPFWSGEV--DG--HNTSRMVR-DDLFEQPEFDKMTIRIAEKVMLAFEQDN	1036
OcvuHA	TDM-NGETHVNPFFSGSI--DHIGKTTSRAP-ADLFLQPKFGEFTSLTNEVIYALEQED	1030
TopaH1	TDA-NGEAKPNPFSGAI--DSIGASTSRAPT-EALYEKPDFGKYTHLANEIIISALEQED	1003
Eusch1	TDV-NGEAHPNPFSGAI--DEAGAVTSRAP-ANLFEKPEFGKYTHLANEIIIFALEQED	1031
SeofH1	TDS-NGESHNPFFSGAI--DEAGAVTSRAP-EHLYEKPDFGKYTELANEVIYALEKED	1030
SemaH	TDS-NGESHNPFFSGAI--DEAGAVTSRAP-EHLYEKPDFGKYTELANEVIYALEKED	1030
LijaH2	KDPTTGQSTENPWLSTIAA-AGDVATERAPR-DELFBVQPGFGQFTNLGKQLLYAFEQED	957
NunuH1	THPEDGSSIPNPFYSFDDVEGGVSHSTTSRAPR-QELFENPGFGKHTKVAKQVMLAFEQED	1020
MecrH1	VDPEDGVEKHNPWFDDGHI--DTVDKTTTRSVP-NKLFEQPEFGHYTSIAKQVLLALEQDN	1019
HacrH1	TDPSDHQDKHNPWHNGHI--DTVDEYTTNRNVR-EDLYQQPEFGHFTDIAQQVLLALEQDD	1020
HarufH1	TDPSDNQDKHNPWYNGHI--ETVDQYTTNRNVR-EDLYQQPEFGHFTDIAQQVLLALEQDD	1020
HadishaH1	TDPSDNQDKHNPWYNGHI--ETVDQDTTNRNVR-EDLYQQPEFGHSTDIAQVLLALEQDD	1020
HativH1	TDPSDNQDKHNPWYNGHI--ETVDQDTTNRNVR-GDLYQQPEFGHSTDIAQVLLALEQDD	935
HaasH1	EDPSDHHVKHNPWYNGHI--DSVNQTTTRSVP-ADLYQKPEFGHYTDIAQQVLLALEQDD	1020
HarubH1	TDPSDHHEKHNPWFNGHI--DTVNHNNTTRSVP-SDLYQQPEFGHFTDIAQQVLLALEQDD	1020
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CoasHaN	FCDFEVQFEIAHNFIHTLVGGSKPYSMASLAYTAYDPLFFLHHSNTDRLWAIWQALQKNR	1096
HepoHaN	FCDFEVQFEIAHNFIHTLVGGSKPYSMASLAYTAYDPIFYLHHSNTDRLWAIWQALQKNR	1095
HeluHaD	YCDFEVQFEIAHNFIHALVGGSEVYSMASLLYTAFDPLFYLHHSNTDRIWAIWQALQAYR	1092
ApcHa1	FCTFEVQFEIAHNFIHALVGGSEQFSLASLQYTAFDPIFFLHHSNTDRIWAIWQALQKYR	1094
LystH1	FCDFEVQFEIAHNFIHALVGGNEQFSMASLLYTAFDPLFYLHHSNTDRLWAIWQALQKYR	1099
PhacH1	FCTFEVQFEIAHNFIHALVGGQEPYSLASLMYTAFDPLFYLHHSNTDRIWAIWQALQKYR	1098
PocaH1	FCSFEVQFEIAHNYIHALVGDKEEYSMASLRYTAYDPLFYLHHSNTDRLWAMWQVLQGYR	1085
MetuMH	YCSFEVQFEVAHNYIHALVGGNELYSMASLRYTAYDPLFALHHSNTDRIWAIWQALQKYR	1102
LisaH1	FCDFEIQFEIAHNYIHALVGGNEEYSMASLRYTAYDPIFYLHHSNTDRIWAIWQQLQYR	1094
CrfoH1	FCDFEIQFEIAHNYIHALVGGNETYSMASLRYTAYDPIFFLHHSNTDRIWAIWQALQKYR	1083
RaveH1	FCDFEIQFEIAHNHIHALVGGNKLYSMASLRYTAYDPLFFLHHSNTDRIWAIWQTLQKMR	1096
OcvuHA	FCSFEVQFEIAHNHIHALVGGTEPYSMSSLEFAYDPIFFLHHSNTDRIWAIWQALQKHR	1090
TopaH1	FCDFEVQFEIAHNHIHALVGGTEAVSMASLEYSADFPIFMLHHSNTDRIWATWQALQKFR	1063
Eusch1	FCDFEVQFEIAHNHIHALVGGTEPFSMASLEYSADFPIFMLHHSNTDRIWATWQALQKFR	1091
SeofH1	FCDFDVQFEIAHNHIHALVGGTEAFSMSSLEYSADFPIFMLHHSNTDRIWATWQALQKFR	1090
SemaH	FCDFGVQFEIAHNHIHALVGGTEAFSMSSLEYSADFPIFMLHHSNTDRIWATWQALQKFR	1090
LijaH2	FCDFSQVQFEITHNAIHALVGGNKPFYSMASLRYTTFDPIFFLHHSNTDRIWAIWQALQKFR	1017
NunuH1	FCSFETQFEIAHNFIHAYVGGKDEYSMASLRYTAYDPIFYLHHSNTDRIWAMWQALQKYR	1080
MecrH1	FCDFEIQFEIAHNYIHALVGGQAPYGMASLRYTAYDPLFYLHHSNTDRIWAIWQALQKYR	1079
HacrH1	FCSFEVQFEISHNFIHALVGGTTPYGMASLRYTAYDPIFFLHHSNTDRIWAIWQALQKYR	1080
HarufH1	FCSFEVQFEISHNFIHALVGGTTPYGMASLRYTAYDPIFFLHHSNTDRIWAIWQALQKYR	1080
HadishaH1	FCSFEVQFEISHNFIHALVGGTTPYGMASLRYTAYDPIFFLHHSNTDRIWAIWQALQKHR	1080
HativH1	FCSFEVQFEISHNFIHALVGGTTPYGMASLRYTAYDPIFFLHHSNTDRIWAIWQALQKYR	995

HaasH1	FCSFEVQYEISHNFIHALVGGKDPYGMASLRYTAYDPIFFLHHSNTDRIWAIWQSLQKYR	1080
HarubH1	FCSFEVQYEISHNFIHALVGGTDPYGMASLRYTAYDPLFLHHSNTDRIWAIWQSLQKYR : * * *: : * * *: * * . : : * * : : : * * * : : * * * : * * * *	1080
CoasHaN	GKSHNSANCATGLLRKPLAPFSLDSVNPDPVTKAHSQPHQVFDYKQSFHYEYDNLEFNG	1156
HepoHaN	GKPHNSANCATGLLRKPLAPFSLDSVNPDPVTKAHSQPYQVFDYKDSFHYDYDNLEFNG	1155
HeluHaD	GKPENANCAIGKLRIPLPFFSLTPDVNPDPVTRHSSPLRVFNKYKDSFYQYEYDTLDFSG	1152
ApcHa1	GKPYNTANCAIGQLRNPLSPFSLTSDINPDPVTRHSSVPFQVFDYQTNFHYEYDALEFNG	1154
LystH1	NKPYNTANCAIGQLRKPLSPFSLTSSVNPDPANTREHSLPFQVFDYRNNFHYEYDNLEFNG	1159
PhacH1	GKPYNTANCAIGQLRKPLSPFSLTSDINPDADTREHAVPFQVFDYRNNFHYEYDNLEFNG	1158
PocaH1	GLPMFTANCALTSFRQPLQPFAQPSVVNPDPITRENSIPFRVFDYTRNFHYRYDNIDFNG	1145
MetuMH	GLPYNTANCAITQLRKPLQPFAQTSTVNPDSDVTRDHSVPFDVFDYSSSFHYDYDNLEFNG	1162
LisaH1	GLPYNSANCAIASLRKPLQPFAQSSVVNPDPVTRDHAVPFDVFNVEDSFHYHYDNFQFNG	1154
CrfoH1	GKPYNSANCAIAEMRKPLQPFAQTSLTNPDPVTRDHSTPFDVFNHYHSSSFHYHYDNLDLDFNG	1143
RaveH1	GKPYNSANCAIAELRKPLQPFAQTSVTNPDPVTRDHSVPFDVFKYHENFHYRFDNMQFNG	1156
OcvuHA	GNAYSANCAIEILRKPMSPFSLSDINVDSDTREHSSVPFDADFDTKSFHYEYDSLDSVSG	1150
TopaH1	GKAYNSANCAIEILRKPMSPFSLASDINPDAMTREYSVPFDVFNKYKKNFHYEYDTLELNG	1123
Eusch1	GKPYNTANCAIEMLRKPMSPFSLASDINPDMSMTREHSSVPFDVFDYKKNFHYEYDTLELNG	1151
SeofH1	GKPYNTANCAIEILRKPMSPFSLASDINADAMTREHSSVPFDVFDYKKAHFHYEFDTLELNG	1150
SemaH	GKPYNTANCAIEILRKPMSPFSLASDINADAMTREHSSVPFDVFDYKKAHFHYEFDTLELNG	1150
LijaH2	GKPYNKANCALEQMRGSLMPFNLGADVNPNDLTRDNSAPFRVFDYENVFYGYNDLEFNG	1077
NunuH1	GKPYNRANCALDSMRAHLKPFAMPSSVNPYPITRDNISIPFGAFDYKSNFHYSDNLEFNG	1140
MecrH1	GKPYNVANCAVTSMREPLQPFGLSANINTDHSVTKESHVSPFNVDYKTNFNHYEYDTLEFNG	1139
HacrH1	GKPYNTANCAIASMRKPLQPFGLSSDVNPDIITREHAIPFDVFNKYKDNFHYKYDTLEFNG	1140
HarufH1	GKPYNTANCAIASMRKPLQPFGLSSDVNPDIITREHAIPFDVFDYKDNFHYKYDTLEFNG	1140
HadishaH1	GKPYNTANCATASMRKPLQPFGLSSDVNPDIITREHAIPFDVFNRYRDNFHYKYDTLEFNG	1140
HadivH1	GKPYNTANCAIASMRKPLQPFGLSSDVNPDIITREHAIPFDVFNRYRGNFHYKYDTLEFNG	1055
HaasH1	GKPYNTANCAIASMRRLPQPFGLGDDINPDSITREHAIPFDVFNKYKDNFHYGYDSLEFNG	1140
HarubH1	GKPYNTANCAIASMRRLPQPFGLSSDINPDIITREHAIPFDVFNKYKDNFHYVYDTLEFNG . * * * * : * : * * * * * : : * * . * . * * * : * : : . * *	1140
CoasHaN	LTIPQLERLIQHNGGEDRVFAGFLLHGIQHSALLRFNICKTEDHCEDEGGEFYILGDPHE	1216
HepoHaN	LTIPQLERVIQHNAEDRVFAGFLLHGIHESALLRFNICKTEDHCEPQGGEFYILGDPHE	1215
HeluHaD	LGIPQLAKILLEENKADDRVFAGFLLHGVGHSALVTFFICRNDTDCNNHGGEFYILGDPNE	1212
ApcHa1	LSVPQLARVLEQNKAGDRVFAGFMLHGIQSSALVKFYICKSDDDCNNYAEEFYVLGDVNE	1214
LystH1	LSIPQLAKELEKNKGDDRVFVGFMLHGIKRSALIKFQIHKNDTEFKE-AGEFYILGDENE	1218
PhacH1	LSIPQLAKQLEEIKGKDRVFAGFMLHGLKQSALVTFSICKSENSCKK-AGEFYILGDINE	1217
PocaH1	LSIPQLQREIVKRQSRERVFVGFMLHGIQRSALVVLNLCQV--TCQK-AGEFYILGDANE	1202
MetuMH	LSIAQLQHEVVVRKAHERVFAGFMLHGIKQSALVRFEICSSGGACGQ-AGEFYILGDDYE	1221
LisaH1	LSIPQIQREIVRRQAKERIFAGFMLHGVESVLVVFIEICKPNGDCKE-AGEFYLLGDEYE	1213
CrfoH1	MSVAQLQREVIRRRGLERAFAGFMLHGVKKSCLVVFEDICKPDGTCTK-SGEFYLLGDENE	1202
RaveH1	MSPQQLLRETVRRKGLDRVFAGFMLHGIKQSALVVFEICKPDGTCKE-AGEFYLLGDEFE	1215
OcvuHA	MSIPQLQTEINKRRAKDRIFVTFLLEGHKQSLLEVEYYIRLHGSTDNRNKAGEFYVLGSENE	1210
TopaH1	LSISQLSREINRRKAKNRVXTFMLEGLKKSLLVEYFIAADGTDQKMKKAGEFYVLGSENE	1183
Eusch1	LSIPQLSREINRRKAKNRVLVTFMLEGLKKSVLVEYFIKDDGSDNKMKAGEFYVLGSENE	1211
SeofH1	MSIPQLSREINRRKSKNRVITFMLEGLKKSLLVEYFIKDDGSDNKMKAGEFYVLGSENE	1210
SemaH	MSIPQLSREINRRKSKNRVITFMLEGLKKSLLVEYFIKDDGSDNKMKAGEFYVLGSENE	1210
LijaH2	LSISDLSHIEINQKSHDRVFAGFMLHGIKSSALLKFYICLSAGDCDHFAGEFYILGDVAE	1137
NunuH1	LSIPQLSRELESRSKSLYRVFAGFMLHGIKDTVLVKFYICLSNGDCSNYAGEFLFLGDPAE	1200
MecrH1	LSISQLNKKLEAIKSQDRFFAGFLLSGFKKSSLVKFNICTDSSNCH-PAGEFYLLGDENE	1198
HacrH1	LSISQLNRELDRIKSHDRVFAGFLLSGIKKSVLVKFNVCAPPHDCH-PAGEFYLLGDENE	1199
HarufH1	LSISQLNRELDRIKSHDRVFAGFLLSGIKKSVLVKFNVCAPPHDCH-PAGEFYLLGDENE	1199
HadishaH1	LSISQLNRELDKIKSHDRVFAGFLLSGIKKSVLVKFNVCAPPHDCH-PAGEFYLLGDENE	1199
HadivH1	LSISQLNRELDKIKSHDRVFAGFLLSGIKKSVLVKFNVCAPPHDCH-PAGEFYLLGDENE	1114
HaasH1	LSISQLNRELEKIKSHDRVFAGFLLSGIKQSALVKFEVCTPPDQCH-KAGEFYLLGDENE	1199
HarubH1	LSISQLNRELDKIKSHDRVFAGFLLSGIKKSALVKFEVCTPPDHCH-KAGEFYLLGDENE : : : : * * * * : * : : . * * . * . *	1199
CoasHaN	IPWSYNRLFKEYITEQLKSLGLHYDDSYTIHYTLLDVGADLG--QRYSQPTVIEHVGTS	1274
HepoHaN	IPWSYNRLFKEYITEQLKSLGLHYDDNINIHYTLLDLDGTDLG--QRYSQPTVIHQVGTS	1273
HeluHaD	MEWSYDRLYKYEITEELKKLHLRYNDRYFVRYEIHDLTGQDLG--QPFPTPTVIRQIGTS	1270
ApcHa1	MAWSYDRLYKYEITDALAALGLRYNDRYSVRYEVLNLQGEDIG--QPFPTPTVVKEDGTS	1272
LystH1	MEWSYDRLYKYEVTQQLDEFGLRYNDRYYIKYQVLDLDGSIY-STDFTSTPTVLFELGTS	1277
PhacH1	MEWNYDRLYKYEITHQLEEQNIHHNDRYDITVKVQALDGSIDTEAANI PPPTVLFELGTS	1277
PocaH1	MPWKYDRLFKYEITRLLAELKLRRADDPYRVSYTVYDLNGQELE-DNLFGNVTIVRDTGTG	1261
MetuMH	MPWEYDRLFKYEITDQLKEQGLEPLDRYDIKYTVFALDGSVVG-TDTFGQVTVVHTYGAG	1280
LisaH1	LPWSYDRLFKYEITDQLHEFDLQHGDNDYDIHYVVYDLAGSSLG-DDLFGSSTTVYSAGHQ	1272
CrfoH1	LPWEYDRLYKYEITHELEDMGLEPQDRFDVQYHVYDLDNTDLG-DDVFGKAVIYYSAGQG	1261
RaveH1	MPWEYDRLFKYDITEQLEKFDLEPMDRYDIQYTVSDLNGQNLG-DDLFGNATIVYTPGLG	1274
OcvuHA	MPWKFDREVYKADITRQMEHLHLHYNDLYHIEYTLKDMSGAEVT-----SLG	1256
TopaH1	MPWKFDREVYKSDITYVMDAMKLHYTDKYHVELRITDMTGAEVT--DLKLVTSVIYEPGIG	1241
Eusch1	MPWKFDRAVKADITHMTDEMMLHYTDKYHIEYTVTDLTGAEVA--GVSLSSSVVYEPGLG	1269
SeofH1	MPWKFDRAVKSDITHVMDDEMMLHYTDKYHVEYKISDMTGAEVT--DIKLESSVVYEPGLG	1268
SemaH	MPWKFDRAVKSDITHVMDDEMMLHYTDKYHVEYKISDMTGAEIA--DIKLESSVIYEPGLG	1268
LijaH2	MPWIYDRAYKYEITSQKALNLRFGDSFSIRSVILDLNGNEIP-PDTFSPSATVDFVPAQG	1196
NunuH1	MPWTYNHLYKYEITDVLDLHLHHEDRYSIKYEVYDLNNQNTG-TQPYPEPTILHEPSSG	1259
MecrH1	MPWAYDRVFKYDITEKLHDLKLHAEDHFYIDYEVFDLKPASLG-KDLFKQPSVIEHPRIG	1257

HacrH1	MAWAYDRVKYDITNVLDENNHLHFYDHFISYEVFDLHGTSLG-TDIFHKANVIHDPGTG	1258
HarufH1	MAWAYDRVKYDITNVLDENNHLHFYDHFISYEVFDLHGTSLG-TDIFHKANVIHDSGTG	1258
HadishaH1	MAWAYDRVKYDITNVLDENNHLHFYDHFITYEVFDLHGTSLG-TDIFHKANVIHDSGTG	1258
HativH1	MAWAYDRVKYDITNVLDENNHLHFYDHFITYEVFDLHGTSLG-TDIFHKANVIHDSGTG	1173
HaasH1	MAWAYDRLFKYDITHVLEENHLHFYDNIFIKYEVLDLKGASLG-TDLFHTANVIHYTGTG	1258
HarubH1	MAWAYDQLFKYDITHVLEENHLHFYDNIFIHVEVFDLKGTSLG-TDLFHTANVIHDKGTG	1258
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CoasHaN	HLY--GQEYRPVVAASQVRRNLESLSERGEIESLRAAFLAIQND--HSYEGIASYHGKPG	1330
HepoHaN	HIY--GQEYRPVVAASQVRRNLESLSERGEIESLRAAFLAIQND--HSYEAIASFHGKPG	1329
HeluHaD	HLY--GREYRDAVTVAHVVRKDLDTLTAGEIESLRS AFLDIQQD--HTYENIASFHGKPG	1326
ApcH1	QLY--GQEYREAVTAASYVRRDLSTLNEGEVESLRAAFLSIQKD--DTYANIAAFHGKPG	1328
LystH1	NLY--GKEFRAVSTAASQIRRNLDLSLQGEIESLRAAFLSIKED--GTYEKIASFHGKPG	1333
PhacH1	NLY--GKEYRPSVTTISNIRRNLDLSEGEVESLRS AFLSIQKD--GTYGDIAAFHGKPG	1333
PocaH1	VRR--GRVFNVIETASHVRKNLEDLSPGETESLRSALLQMOKD--ESFQKIASFHGKPG	1317
MetuMH	HVE--RKS YGEELKASSHVRRNVDDL TGEIESLKAALQKMEED--GSFENIAEFHGAPG	1336
LisaH1	D----GNAYRQDVQASSHVRRNIDDLTGEAEESLRAALLHMEED--GSFEAIARFHGFPG	1326
CrfoH1	HQKGHEEDYLEEVQASSHVRRNLEDLTTGEAESLRSALRMEED--GSFDAIARFHGYPG	1319
RaveH1	HMKGHEEDYRAEVRASSHVRRNLSLTTEGESLRSALHMEED--GSFEAI AQFHGSPG	1332
OcvuHA	H-YGEDRAWIEPVTSANRIRKNLEDLDTAGEIESLRNAFKQIKMD--GTYERIAAFHGLPA	1313
TopaH1	N-FGEGRRWISPITSASRIRKNLLDFEDGEMESLRNAFKQMADE--GRYEEIASFHGVPA	1298
Eusch1	K-FGEGRAWIEPVTSASRIRKSLDLSGGEIESLRNTFFKQMTKD--GRYQEIASFHGLPA	1326
SeofH1	K-YGEGRAWIEPVTSAVRIRKNLNDLSGGEL-ILRNYIKQMTKD--GSYQQIAAFHGLPA	1324
SemaH	K-YGEGRAWIEPVTSAVRIRKNLNNLSGGEIESLRNTFFKQMTKD--GRYQQIASFHGLPA	1325
LijaH2	T-YGTEAEWVEPITDASRIRKDLATLTVGETESLRNAFLRLQKDKNRGYEYIAGFHGLPT	1255
NunuH1	A--GVDHEYEEVVTASHIRKIDINNLPGEIESLRAAFGQIRND--GTYAKIAQAHGKPG	1315
MecrH1	H--HEGEVYQAEVTSANRIRKNIE NLSLGELES LRAAFLEIEND--GTYESIAKFHGSPG	1313
HacrH1	S--REHDKYVEEVTGASHIRKNLNDLNLGEMESLRAAFLHIQND--GTYESIAQYHGKPG	1314
HarufH1	S--REHDKYVEEVTGASHIRKNLNDLNLGEMESLRAAFLHIQND--GTYESIAQYHGKPG	1314
HadishaH1	S--REHDKYVEEVTGASHIRKNLNDLNLGEMESLRAAFLHIQND--GTYESIAQYHGKPG	1314
HativH1	S--REHDKYVEEVTGASHIRKNLNDLNLGEMESLRAAFLHIQND--GTYESIAQYHGKPG	1229
HaasH1	T--RR-ENYVEEVTGASHIRKNLNLGEMESLRAAFLHIQAD--GTYESIAKYHGKPG	1313
HarubH1	T--REHHTYVEEVTGASHIRKNLNDLNTGEMESLRAAFLHIQND--GTYESIAQYHGKPG	1314
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CoasHaN	LCEH-QGR-KVACCVHGNPTFFPSWHRLYVELVEHALLSHGSSVAVPYWDWISPIKKLPKL	1388
HepoHaN	LCEH-EGR-KVACCVHGDPTFFPSWHRLYVELVEHALLSHGSSVAVPYWDWISPIKKLPKL	1387
HeluHaD	LCQH-EGH-KVACCVHGMPTFFLSWHRLYVEQVEEALLDHGSSVAVPYFDWISPIKQLPDL	1384
ApcH1	LCEL-NGR-KVACCVHGMATFFPAWHRLYVEQVEEALLGRGSSVAVPYWDWTQPI TELPKL	1386
LystH1	KCKDSAGR-TVACCVHGMPTFFPAWHRLYVEQVEEALLGRGSSVAVPYWDWTQPI TELPKL	1392
PhacH1	LCEH-DGH-KIACCVHGMPTFFPAWHRLYVEQVEEALLSRGSSVAVPYWDWTSPFQKLPSL	1391
PocaH1	MCKH-NNR-SVACCVHGSPTFFLHWHRLYVEQVENCLLARGSAVSVPYWDWTQPIRQLPTL	1375
MetuMH	LCEL-NGK-KVGC CVHGMATFFPHWHRLYVEQVENALLSHGSAVSI PYWDWTKPITKL PDI	1394
LisaH1	LCEL-NGQ-KKACCVHGSPTFFPHWHRLYVEQVENALLSHGSAVSVPYWDWTQPIRKLPEL	1384
CrfoH1	LCEH-DGH-KAACCVHGS PAFPHWHRLYVEQVENSLLSHGSAVSVPYWDWTQPIKKLPAL	1377
RaveH1	LCDH-KGK-QVGC CVHGA PTFPHWHRLFVEQVENALLDHGSAVSVPYWDWTEDFDHLPKL	1390
OcvuHA	KCPNEDGSKVYTCLLHGMPTFFLHWHRLYTVSVEHELLARGSSVAVPYWDWLKSFDEL PKL	1373
TopaH1	QCPSEDGTMVHTCCLHGMPTFFPHWHRLYVSLVEDELLARGSAVAVPYWDWVPEFDEL PRL	1358
Eusch1	QCPNADGTVVFTCCLHGMPTFFPHWHRLYVSLVEDELLARGAGVAVPYWNWIEPFDRLPAF	1386
SeofH1	QCPSEDGTTVHTCCLHGMPTFFPHWHRLYVSLVEDELLSRGSRSGRPYWDWIDPFDRLPDF	1384
SemaH	QCPSEDGTTVHTCCLHGMPTFFPHWHRLYVSLVEDELLSRGAGVAVPYWDWIDPFDRLPPEF	1385
LijaH2	KCPSPDNP-KYACCLHGMPTFFPHWHRLYVSLVEDELLAIGSSIAVPYWDWTKRIDRLPPL	1314
NunuH1	LCNG-----KGCCVHGMATFFPHWHRLYEVQVENALLEHGS AVAVPYWDWTEPIKSLPHL	1369
MecrH1	LCQLNGNP--ISCCVHGMPTFFPHWHRLYVVVENALLKKGSSVAVPYWDWTKRIEHLPHL	1371
HacrH1	KCELNHHS--IACCVHGMPTFFQWHRLYVQVENALLKKGSSVAVPYWEWTVPIDHLPGL	1372
HarufH1	KCELNHHS--IACCVHGMPTFFQWHRLYVQVENALLKMGSSVAVPYWEWTAPIEHLPLG	1372
HadishaH1	KCELNHRS--IACCVHGMPTFFQWHRLYVQVENALLKMGSSVAVPYWEWTAPIDHLPLG	1372
HativH1	KCELNHRS--IACCVHGMPTFFQWHRLYVQVENALLKMGSSVAVPYWEWTAPIDHLPLG	1287
HaasH1	KCQLNGRN--IACCVHGMPTFFQWHRLYVQVENALLDRGSGVAVPYWEWTAPIDHLPHF	1371
HarubH1	KCELNHRS--IACCVHGMPTFFQWHRLYVQVENALLKRGSGVAVPYWEWTSPIDHLPHF	1372
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CoasHaN	ISKSTYYNSRQQRFDPNPFFSGRIA--GENAVTTRDPQPELFNNDYFLEQALFALEQDHY	1446
HepoHaN	ISKSTYYNSRQQRFDPNPFFSGRIA--GENAVTTRDPQPELFNNDYFLEQALFALEQDHY	1445
HeluHaD	ISKATYYNSRQQRFDPNPFFSGKVA--GEDAVTTRDPQPELFNNDYFYEQALYALEQDNF	1442
ApcH1	INDATYFNSRTQKFEPNPFSSGKVL--GEDAVTTRDPQQLFNNDYFYQQTFLFALEQTNF	1444
LystH1	INQATYFNSRQQRFEPNPFFSGSIA--GEGAVTTRDPQPELFNNDLYEQVLYALEQDNF	1450
PhacH1	ISKATYYNSRQQRFDPNPFFSGKIK--GEDAVTTRDPQPELFDNSELYEVLFALEQDNF	1449
PocaH1	ISSPSFFNSRTYNKESNPFRRGEIP--DTDAFTTRDPQQLFNSNYFLDNVLLALEQTSF	1433
MetuMH	IAQBTYFDSRSQTMQNNPFFRGPIRTPDVNDYTTTRDPQPELFNNDYFLQQTLLALEQTSY	1454
LisaH1	IDAPTYFNSRSHTKDTNPFFRGKIS--DTDKYTTTRDPRDLPFNNNYFLDNVLLALEQTSF	1442
CrfoH1	INDATYYDSRAHAKLENPFWRKIP--GDTMYTSRDP RPDLFDSYDFLNNALLALEQTSY	1435
RaveH1	LAMPTYYNSRMHSDKDVNPFFRWKVS--GTDEYTTTRDVRFDLFNAEYFLDNILLALEQTSY	1448
OcvuHA	INEATFYNSRTLHIESNPFFNGKIS--FENTETDRDPQPNLFGNSYFYEHALFAFEQTDF	1431
TopaH1	INEATFYNSRTLQIEPNPFFGKIS--FENAEETDRDTQPELFGNRYLYDHTLFFVFEQTDF	1416
Eusch1	FNDATYYNSRTLHIESNPFFNGAID--FASVTDRDAHELLYGNKNLYDEALFVLEQTD	1444
SeofH1	FNDATYYNSRTLHIESNPFFRGMS--FANTLTDRDAQDVIYNNHEFYDKALLVLEQTD	1442

SemaH	FNDATYYNSRTLHIESNPFFRGSVD--FASTLTDRDAQDVIYNNHEFYDKALLVLEQTD	1443
LijaH2	VSDSTFFYNSRTLRLDPNPFFRGEIS--FENAVTTTRDPQPELYNNDYFYNQVLLAFEEDDF	1372
NunuH1	LSDPTEFFNSRSHEFDVNPFFSGDIP--GENSDTSRDPQPRLENNDYFYDNMLLAFEQTSF	1427
MecrH1	ISDATYYNSRQHYYETNPFFHHGKIT--HENEITTRDPKDSLHSDYFYEQVLYALEQDNF	1429
HacrH1	IDDATYFNSRQQRYDPNPFFRGGKIS--FENAVTTTRDPQEELFNSEYMHNNVLLALEQDNY	1430
HarufH1	IDDATYFNSRQQRYDPNPFFRGGKIS--FENAVTTTRDPQEELFNSEYMHNNVLLALEQDDY	1430
HadishaH1	IDDATYFNSRQQRYDPNPFFRGGKIS--FENAVTTTRDPQEELFNSEYMQNNVLLALEQDNY	1430
HativH1	IDDATYFNSRQQRYDPNPFFRGGKIS--FENAVTTTRDPQEELFNSEYMQNNVLLALEQDNY	1345
HaasH1	IDDATYFNSRQQRYDPNPFFRGGKIT--FENAVTTTRDPQEGLFNSDYMYENVLLALEQENY	1429
HarubH1	IDDATYFNSRQQRYDPNPFFRGRIT--FENAVTTTRDPQEGLFNSDYMYENVLLALEQENY	1430
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CoasHaN	CDFEIQFEILHNALHLSWLGGHAFYSMASLDYAAFDPVFFLHHANTDRIWAVWQELQRYRG	1506
HepoHaN	CDFEIQFEILHNALHLSWLGGHALYSMASLDYSAFDPVFFLHHANTDRIWAIWQELQRYRG	1505
HeluHaD	CDFEIQFEILHNALHLSWLGGHAKYSFSSLDYAFDPVFFLHHANTDRLWAIWQELQRYRG	1502
ApcHa1	CDFEIQFEILHNALHLSWLGGRAEYSFSSLDYAFDPVFFLHHANTDRIWAIWQELQRYRG	1504
LystH1	CDFEIQFEILHNALHLSWLGGRAQYSLSSLDYSAFDPVFFLHHANTDRIWAIWQELQRYRG	1510
PhacH1	CDFEIQFEILHNALHLSWLGGRAQYSLSSLDYSAFDPVFFLHHANTDRIWAIWQELQRYRG	1509
PocaH1	CDFEIQFEILHNALHLSWLGGRDKHSMSLDYSAFDPVFFLHHANTDRLWAIWQALQQYRG	1493
MetuMH	CDFEAQFEIVTHNAFHSFLGGRGKYSLSLTDYSAFDPVFFLYHANTDRIWAIWQALQSYRG	1514
LisaH1	CDFEVQFEIVHNALHLSWLGGRGKFSMSGLDYSAFDPVFFLHHANTDRIWAIWQALQRHRG	1502
CrfoH1	CDFEVQFEILHNALHLSFLGGRGKYSLSLTDYSAFDPVFFLHHANVDRIWAIWQALQKIRG	1495
RaveH1	CDFEVQFEVSHNAIHSFLGGRGKVSMSLTDYSAFDPVFFLHHANMDRIWAIWQALQKHRD	1508
OcvuHA	CEFATHLEVLHNSLHLSWLGGRDPHSMSSLDYAAYPDPAFFLHHSNMDRLWAIWQELQRYRK	1491
TopaH1	CEFEVHYEVLHNTIHSWLGGRDVHSMSSLDYAAYPDPAFFLHHSNVDRLWAIWQELQRYRK	1476
Eusch1	CEFEVQFEVLHNRHLSLGGREVSMSASLDFAAYPDPAFFLHHSNVDRLWAIWQELQRYRK	1504
SeofH1	CEFEVQFEVLHNRHLSMLGGREIYSMSLDYAAYPDPAFFLHHSNVDRLWAIWQELQRYRK	1502
SemaH	CEFEVQFEVLHNRHLSMSGGREIYSMSLDYAAYPDPAFFLHHSNVDRLWAIWQELQRYRK	1503
LijaH2	CNFEVQFEIAHNALHAWIGGRDPYSMSLTDYTAYDPIFFLHHTNVDRLWAIWQELQRYRK	1432
NunuH1	CDFEIQFELVHNALHLSWIGGRAHYSLSLTDYAFDPVFFLHHANVDRLWAIWQELQRYRK	1487
MecrH1	CDFEIQFELVHNALHLSLGGKGQYSMSNLDYAAFDPVFFLHHANTDRIWAIWQDLQRFKR	1489
HacrH1	CDFEIQFELVHNALHLSLGGKGQYSMSLDYSAFDPVFFLHHANTDRLWAIWQELQRYRG	1490
HarufH1	CDFEIQFELVHNALHLSLGGKGQYSMSLDYSAFDPVFFLHHANTDRLWAIWQELQRYRG	1490
HadishaH1	CDFEIQFELVHNALHLSLGGKGQYSMSLEYSADFDPVFFLHHANTDRLWAIWQELQRYRG	1490
HativH1	CDFEIQFELVHNALHLSLGGKGQYSMSLDYSAFDPVFFLHHANTDRLWAIWQELQRYRG	1405
HaasH1	CDFEIQFELVHNALHLSLGGKGQYSLSLTDYSAFDPVFFLHHANTDRLWAIWQELQRYRE	1489
HarubH1	CDFEIQFELVHNALHLSMLGGKGQYSMSLDYSAFDPVFFLHHANTDRLWAIWQELQRYRD	1490
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CoasHaN	LQYNEADCALNLMRKPLEPFNRV--TNTDEVTRKNSRPVDTFDYRNNLHYEYDTLEFNHL	1564
HepoHaN	LQYNEADCALNLMKKPLQPFNRV--TNTDEVTRKYSRPVDTFDYRNNLHYEYDTLEFNHL	1563
HeluHaD	LPYNEADCALNLMRKPLQPFQDKK--LNPNINITNYSRPADTFDCRNHFHYEYDTLEFNHL	1561
ApcHa1	LPYNEADCALNLMRKPLQPFNNDD--FNHG DATNRYSRPADTFDYRNHFQY EYDTLTFNHL	1563
LystH1	LKYN EADCALNQMRTPLRPFNDQ--LNHGDLTHRYSRPADTFDYRNHFHYEYDTLEFNHL	1569
PhacH1	LLYNEADCALNLMRKPLQPFNDGG--LNHG DYTHRYSRPADTFDYRNHFHYEYDNLEFNHL	1568
PocaH1	LPSHESDCSLHLMRRPLQPFDDST--QNPVEITNQFSRPADVDFDYNHFSYRYDNLLFNSW	1552
MetuMH	LHWDEADCALNLMRDGLHPFDVKA--QNEFDITHKYSRPVDVWDYSDHLQYHYDNLLNDW	1573
LisaH1	LSFEESDCALNLMRKPLHPFDKKT--QNEFDLTNHYSRPADLFDYSGHLDYHYDNLFKNSW	1561
CrfoH1	LPFDESDCALNIMGTPLHPFDKKE--ENQFDLTNKYSRPIDAFDYSNHFDYHYDTLKFNSW	1554
RaveH1	LPFDETDCAVNLMKPLHPFDNKD--INHFG LTYKHSRPADVWDYSRHLDYHYDNLQLHGW	1567
OcvuHA	LPYNSANCALGLLNQPMRPFNSKT--ANSNLLTFTHSRANDVFDYQNVLHYKYDSLAFNGL	1550
TopaH1	LSYNEANCALPLMNQPMRPFNSST--ANNDRLTFTNSRPNDVFDYQNVLHYKYDTLNFAGL	1535
Eusch1	LPYNEANCALPLLNEPMRPFNSST--ANQDRLTFTNSRPNDVFDYQNVLHYKYDTLTFEGL	1563
SeofH1	LSYNEANCALPLLNEPMRPFNSKT--ANHDRLTFTNSRPNDVFDYQNVLHYKYDTLKFEG	1561
SemaH	LSYNEANCALPLPNQPMRPFNSKT--ANHDRLTFTNSRPNDVFDYQNVLHYKYDTLEFEG	1562
LijaH2	KPSNTAFCALPYMQTPIKPFSFDRSINYDMTRVSRPSEAFDYQNNFGYKYDTLEFNGM	1492
NunuH1	LPYNKADCSINLMRKPLYPFAGD--ENKDTLTKKNSHPQDVFDYRNNLHYKYDNLEFHMM	1545
MecrH1	RPYREANCAIQLMHTPLQPFDDKSD--NNDEATKTHATPHDGFQYQNSFGYAYDNLELNHY	1547
HacrH1	LPYEEANCAINLMHQPLKPFSDPN--ENHDNITLHESKQPQCFDYRNNFGYKYDNLEFHHL	1549
HarufH1	LPYEEANCAINLMHQPLMPFSDPH--ENHDNVTLKHSKQPQCFDYRNNFGYKYDNLEFHHL	1549
HadishaH1	LPYEEANCAINLMHQPLMPFSDPN--ENHDNVTLKHSKQPQCFDYRNNFGYKYDNLEFHHL	1549
HativH1	LPYEEANCAINLMHQPLMPFSDPN--ENHGNVTLKHSKQPQCFDYRNNFGYKYDNLEFHHL	1464
HaasH1	LPYEEANCAINLMHQPLKPFCDPH--ENHDNITLKYSKQPQCFDYQNHFGYKYDNLEFHHL	1548
HarubH1	LPYEEANCAINLMHQPLKPFSDPH--ENHDNITLKYSKQPQGFQYQNHFGYKYDNLEFHHL	1549
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CoasHaN	SIPQLEELIQS--RKRNGRVFAGFLIHNIGLSADVVDVYVCVSVGKYGEQDCDHKAATFSVL	1623
HepoHaN	SIPQLEELQS--RKRNGRVFAGFLIHNIGLSADVVDVYVCVTVGQFGEQDCNHKAGTFSVL	1622
HeluHaD	TVPQLENLLKR--RQ EYGRVFAGFLIHNIGLSADVTVYVCVPSGPKGKNDCNHKAGVFSVL	1620
ApcHa1	TIPQLENLLHQ--RQESGRVFAGFLIHNIGLSADVETIYICVPTGPRGKKNCGTRAGVFSVL	1622
LystH1	TVPQLEALLKK--RKESGRVFAGFLIHNIGLSAVANIYVCVPSGPRGKKNCSNHPAGSFSIL	1628
PhacH1	TIPQLEALLKK--RKQNGRVFAGFLIHNIGLSAEVDIYVCVPAGPRGKKNCSDHKAGSFIIL	1627
PocaH1	TLPQLEAVLRN--QRSRDRLFAGFLLSNIGTSADVLI FICVATGN--GGRSCNHPAGEFSIL	1610
MetuMH	TIPQLEEV LKT--QRSRDRMFAGFLIHNIGTSADV LHI CVATGN--GDRNCNHPAGKFSIL	1631
LisaH1	TVPQLDEV LKQ--QRSRDRLFAGFLIHNIGTSADVEIDVCVATGN--GAQSCNHPAGK FALL	1619
CrfoH1	TIPQLEQVLEK--QRSRDRVFAGFLIHNIGTSADVEIDVCVATGN--GAKSCNHPAGKFAIL	1612
RaveH1	SIAQLDEV LKK--QRSRDRMFAGFLIHNIGTSADV EIDVCVDTGD--GGRSCHHPAGKFSIL	1625

OcvuHA	TVIQLENLLQHNRHQQDRVFAAFLHLHGKASADVRIYICAPTGR-NQENCANYAGVFSIL	1609
TopaH1	SIPQLERILQK-NQGRDRIFAGFLLHGIKASADVRIYICVPTGI-GEENCGNYAGIFSIL	1593
Eusch1	SIPLEALLNK-RQDHDRVFAGFLLHGIKTSAEVHIYICVPTGV-NEENCGNFVGTFSVL	1621
SeofH1	SIPLEALLNK-RKSHDRVFAGFLLHGIKTSADISIYICVPTGV-NEENCGNYVGTFSAL	1619
SemaH	SIPLEALLNK-RKSHDRVFAGFLLHGIKTSADISIYICVPTGV-NAENCGNYVGTFSAL	1620
LijaH2	SIPKLQSLLLEV-RKSQDRVFAGFLLSGIQTSANVRIFICLPR-T-GYTDCSNYAGIFSIL	1549
NunuH1	SIPLEATLDA-RKSRDRVFAGFLLHNIIGTSADVEIYICVPGKD-GYKDCNNYAGVFSVL	1603
MecrH1	SIPQLDHMLQE-RKRHDRVAGFLLHNIIGTSADGHVVFVCLPTGE-HTKDCSHEAGMFSIL	1605
HacrH1	SIPSLDATLKA-RKEHDRVAGFLLHNIIGTSADISIYICQPDGS-GGNDCSHKAGTFYVL	1607
HarufH1	SIPSLDATLKA-RKEHDRVAGFLLHNIIGTSADISIYICQPDGS-GGNDCSHKAGTFYVL	1607
HadishaH1	SIPSLDATLKA-RKEHDRVAGFLLHNIIGTSADISIYICLPGDS-GGNDCSHKAGTFYVL	1607
HativH1	SIPSLDATLKA-RKEHDRVAGFLLHNIIGTSADISIYICLPGDS-GGNDCSHKAGTFYVL	1522
HaasH1	SIPSLDATLKQ-RKQHDRVAGFLLHNIIGTSADITIYICLPNEH-HGHDCGHEAGTFYIL	1606
HarubH1	SIPSLDVTLKQ-RKHDRVAGFLLHNIIGTSADITIYICLPDGR-RGHDCSHEAGTFYLL	1607
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CoasHaN	GGET-EMPFEFNRLYKQDITRTVRELGLKLDYANFHLLEIKAPNGSQLDPHILPDPPI	1682
HepoHaN	GGET-EMPFEFNRLYKQDITRTVRELGLKLDNANFHLLEIRAPNGSQLDPHILPDPPI	1681
HeluHaD	GGEL-EMPFTFDRLYMLQITDTIKQLGLKVNNAASYQLKVEIKAVNGTLLDPHILPDPPI	1679
ApcH1	GGQLEEMPVFDRLYKYDITRAVRDLGLRPDNGAKFDLKNIHAVNGSYLNPSSLPAPT	1682
LystH1	GGEL-EMPVFDRLYKYDITKTVRDLGLKLDNANFELRVDIKAVNGSLDSDILPKPTI	1687
PhacH1	GGEL-EMPVFDRLYKHDTTSTIKALGLKLDNANFELKIDIKAVNGSLSDILPTPTI	1686
PocaH1	GGET-EMPFTFDRLYKYDISEPIRQLGLKLDNANFELKIDIKAVNGSYLNPSSLPAPT	1669
MetuMH	GGY-EMPFTFDRLYKYDISEPIRQLGLKLDNANFELKIDIKAVNGSYLNPSSLPAPT	1690
LisaH1	GGEY-EMPFTFDRLYKFDISDTVRKLGRLDSDADFDLEIKIKSYNGSYIDSNLLGRPSI	1678
CrfoH1	GGEY-EMPFTFDRLYKYDISEPIRQLGLKLDNANFELKIDIKAVNGSYIDSNLLGRPSI	1671
RaveH1	GGEY-EMPFTFDRLYKHDTITDAIRKLGRLDSDADFDLEIKIKSYNGSYIDSNLLGRPSI	1684
OcvuHA	GGES-EMPWFDRFLRYEITDLSMLKGLNHNH--HFRISTEVRAVNGSKIEKKIFPEPTI	1666
TopaH1	GGET-EMPWQFDRFLRYEITDELKKLGLNQN--HFRVEMELTAVNGSKITQKIFNPPTI	1650
Eusch1	GGES-EMSWNFDRFLRYEITDDELMLLGLNHNH--HFRIAVEIITANRSMADSNIFPTPTV	1678
SeofH1	GGES-EMPWNFDRFLRYEITDELMLLGLNHNH--HFRISIEIMTMNRSIASSKIFNPPTI	1676
SemaH	GGET-EMPWNFDRFLRYEITDELMLLGLNHNH--HFRISIEIMTMNRSIASSKIFNPPTI	1677
LijaH2	GGET-EMPWSFDRLYKYDITPALSGLTADS--NFDVSIIEIARNGSSLSPLDFRPTI	1606
NunuH1	GGEV-EMPVFDRLYKYDITPTIHSGLNPDASDFDLKVAIHGVNGAILSSDALPRPTI	1661
MecrH1	GGQT-EMSFVFDRLYKLDITKALKKNGVHLQG--DFDLEIEITAVNGSHLDSHVIHSPTI	1662
HacrH1	GGET-EMPVFDRLYKFEITEALHKLGVKLHG-GF'DLELDIVAYNGSHLDSHIF-DPTI	1664
HarufH1	GGET-EMPVFDRLYKFEITEALHKLGVKLHG-GF'DLELDIVAYNGSHLDSHIF-DPTI	1664
HadishaH1	GGET-EMPVFDRLYKFEITEALHKLGVKLHG-GF'DLELDIVAYNGSHLDSHIF-DPTI	1664
HativH1	GGET-EMPVFDRLYKFEITEALHKLGVKLHG-GF'DLELDIVAYNGSHLDSHIF-DPTI	1579
HaasH1	GGET-EMPVFDRLYKFEITEALHKLGVKLHG-GVFDLELEIRAYNGSYLDPHTF-DPTI	1663
HarubH1	GGET-EMPVFDRLYKFEITEALHKLGVKLHG-GVFELELEIRAYNGSYLDSHTF-DPTI	1664
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		. **:
CoasHaN	IYIPGTDEEQD-----	1693
HepoHaN	IYIPGTDEVED-----	1692
HeluHaD	IFEPGTERQA-----	1690
ApcH1	LYVPGSNERQE-----	1693
LystH1	LFEPGTGERQK-----	1698
PhacH1	QFVPGTTEVQK-----	1697
PocaH1	IFLPGTGKRQT-----	1680
MetuMH	IFEPGENTFQT-----	1701
LisaH1	IFMPGEGKHQD-----	1689
CrfoH1	IFEPGQGQTQD-----	1682
RaveH1	IFQPGEGKTQD-----	1695
OcvuHA	IFVPKHGA-----	1674
TopaH1	IFVPSDVEFEEDTWRDVVTSANRIRRNKDLKSKEDMFSLRAAFKRMTDDGRYEEIAAFHG	1710
Eusch1	IFVPTADSEHKESWGGVITSANRIRRNKDLKKEEMICFADAFRLMAADGRYEEIAAFHG	1738
SeofH1	IFVPGADSGKDAWGGVITSANRIRRNKDLNKDQMICFAEAFRMAESGRYEEIAAFHG	1736
SemaH	IFVPGADSEGKDAWGGVITSANRIRRNKDLNKDQMICFAEAFRMAESGRYEEIAAFHG	1737
LijaH2	VYVPGTGHEMQS-----	1618
NunuH1	LLQPGRGAAAP-----	1672
MecrH1	LFEAGTDSAHT-----	1673
HacrH1	IFEPGKIDTHVL-----	1675
HarufH1	IFEPGIDTHVL-----	1675
HadishaH1	IFEPGIDTHVL-----	1675
HativH1	IFEPGIDTHVL-----	1590
HaasH1	IFEPGTDTHIL-----	1674
HarubH1	IFEPGTDTHIL-----	1675
CoasHaN	-----	1693
HepoHaN	-----	1692
HeluHaD	-----	1690
ApcH1	-----	1693
LystH1	-----	1698
PhacH1	-----	1697
PocaH1	-----	1680

MetuMH	-----	1701
LisaH1	-----	1689
CrfoH1	-----	1682
RaveH1	-----	1695
OcvuHA	-----	1674
TopaH1	LPAQCPNADGSNIHTCCLHGMPVTFPHWHRLYLALVENELLARGSDVAVPYWDWIEPFDL	1770
Eusch1	LPAQCPDETGDNVYTCCLHGMPVFPWHRLYLALVENELLARGSCIAPVYWDWIEPFDL	1798
SeofH1	LPAQCPDESGDKVFTCCLHGMPVFPWHRLYLALVENELMSRGSCIAPVYWDWIEPFDL	1796
SemaH	LPAQCPDESGDKVFTCCLHGMPVFPWHRLYLALVENELMARGSCIAPVYWDWIEPFDL	1797
LijaH2	-----	1618
NunuH1	-----	1672
MecrH1	-----	1673
HacrH1	-----	1675
HarufH1	-----	1675
HadishaH1	-----	1675
HativH1	-----	1590
HaasH1	-----	1674
HarubH1	-----	1675

CoasHaN	-----	1693
HepoHaN	-----	1692
HeluHaD	-----	1690
ApcH1	-----	1693
LystH1	-----	1698
PhacH1	-----	1697
PocaH1	-----	1680
MetuMH	-----	1701
LisaH1	-----	1689
CrfoH1	-----	1682
RaveH1	-----	1695
OcvuHA	-----	1674
TopaH1	PGLISDETYKHPKTNEDIENPFHKGKISFADAVTVRKPRDQLFNNRYLYEHALFAFEHTD	1830
Eusch1	PPLINDLTYYNPKTDKTLNPFLLKGSVSFENTHTQRTLSSDIFGNMNYDHALFALEQTD	1858
SeofH1	PVLINDLTYYNPQTNKVHPNPFLLKGNISFASSETHRSPTELYGNRYLYDHALFALEQTD	1856
SemaH	PVLINDLTYYNPKTNKVHPNPFLLKGNISFASTETHRSPTKELFGNRYLYDHALFALEQTD	1857
LijaH2	-----	1618
NunuH1	-----	1672
MecrH1	-----	1673
HacrH1	-----	1675
HarufH1	-----	1675
HadishaH1	-----	1675
HativH1	-----	1590
HaasH1	-----	1674
HarubH1	-----	1675

CoasHaN	-----	1693
HepoHaN	-----	1692
HeluHaD	-----	1690
ApcH1	-----	1693
LystH1	-----	1698
PhacH1	-----	1697
PocaH1	-----	1680
MetuMH	-----	1701
LisaH1	-----	1689
CrfoH1	-----	1682
RaveH1	-----	1695
OcvuHA	-----	1674
TopaH1	FCDFEVHFEVLHNSIHSWIGGPNPHSMSSLDFAAYDPIFFLHHSTVDRLWAIWQDLQRYR	1890
Eusch1	FCEFEIQYEVLHNTIHALIGGASKYSMSSLDFAAYDPIFFLHHSNVDRLWAVWQELQRYR	1918
SeofH1	FCEFEVHFEVLHNTIHSWIGGPNPHSMSSLDFAAYDPIFFLHHSNVDRLWAIWQELQRYR	1916
SemaH	FCEFEVHFEVLHNTIHSWIGGPNPHSMSSLDFTAYDPIFFLHHSNVDRLWAIWQELQRYR	1917
LijaH2	-----	1618
NunuH1	-----	1672
MecrH1	-----	1673
HacrH1	-----	1675
HarufH1	-----	1675
HadishaH1	-----	1675
HativH1	-----	1590
HaasH1	-----	1674
HarubH1	-----	1675

CoasHaN	-----	1693
HepoHaN	-----	1692
HeluHaD	-----	1690

ApcH1	-----	1693
LystH1	-----	1698
PhacH1	-----	1697
PocaH1	-----	1680
MetuMH	-----	1701
LisaH1	-----	1689
CrfoH1	-----	1682
RaveH1	-----	1695
OcvuHA	-----	1674
TopaH1	KLDYNVANCALNLLNDPMRPFNNKTANQDHLTFTNSRPNDVFDYQNSLNYKFDLSFSGL	1950
Eusch1	KLEYNTATCAKNSLNKPMRPFNSNSTANHDRLTYVNSKPNDVFDYQNVLHYKYETIEFSGL	1978
SeofH1	KLDYNTATCAKNYLNKPMRPFNSNSTANHDRLTYVNSKPNDVFDYQNVLHYKYDSISFSGL	1976
SemaH	KLDYNTATCAKNYLNKPMRPFNGNSTANHDRLTYVNSKPNDVFDYQNVLHYKYDSISFSGL	1977
LijaH2	-----	1618
NunuH1	-----	1672
MecrH1	-----	1673
HacrH1	-----	1675
HarufH1	-----	1675
HadishaH1	-----	1675
HativH1	-----	1590
HaasH1	-----	1674
HarubH1	-----	1675

CoasHaN	-----	1693
HepoHaN	-----	1692
HeluHaD	-----	1690
ApcH1	-----	1693
LystH1	-----	1698
PhacH1	-----	1697
PocaH1	-----	1680
MetuMH	-----	1701
LisaH1	-----	1689
CrfoH1	-----	1682
RaveH1	-----	1695
OcvuHA	-----	1674
TopaH1	SIPRLDDLLESRQSHDRVFAGFWLSGIKASADVNIHICVPIGVEHEDCDNYAGTFAVLGG	2010
Eusch1	NIPQLENVLKNNKAHDRVFVGYSLSHGIKASAFFRFYICVPVGA-EKNCDHFGGTFSVLGG	2037
SeofH1	NIPQLENVLTNNKAHDRVFVGFSLSHGIKASADVRIYICVPVGQEEKNCDHYAGIFSVLGG	2036
SemaH	NIPQLENVLTNNKAHDRVFVGFSLSHGIKASADVRIYICVPVGQEEKNCDHYAGIFSVLGG	2037
LijaH2	-----	1618
NunuH1	-----	1672
MecrH1	-----	1673
HacrH1	-----	1675
HarufH1	-----	1675
HadishaH1	-----	1675
HativH1	-----	1590
HaasH1	-----	1674
HarubH1	-----	1675

CoasHaN	-----	1693
HepoHaN	-----	1692
HeluHaD	-----	1690
ApcH1	-----	1693
LystH1	-----	1698
PhacH1	-----	1697
PocaH1	-----	1680
MetuMH	-----	1701
LisaH1	-----	1689
CrfoH1	-----	1682
RaveH1	-----	1695
OcvuHA	-----	1674
TopaH1	ETEMPWAFDRLFRYEISDEMKKQLTEDSKFRLTNI IASNGSKVSNDIFPTPTVIFVPK	2070
Eusch1	ETEMPWQFDRLFRYEDITPILNELNLNYKSDFTIKTEVIGVNGTKLNEKLFHDPSIIFVPK	2097
SeofH1	ETEMPWQFDRLFRYEISHALNALELTHKSDFTIKVEVTAANGTRINEKIFPEPTIIFAPR	2096
SemaH	ETEMPWQFDRLFRYEISHALNELELTHKSDFTIKVEVIAANGTRINEKIFPEPTIIFAPR	2097
LijaH2	-----	1618
NunuH1	-----	1672
MecrH1	-----	1673
HacrH1	-----	1675
HarufH1	-----	1675
HadishaH1	-----	1675
HativH1	-----	1590
HaasH1	-----	1674
HarubH1	-----	1675

CoasHaN	-----QLGATTTYLVVRKNVESLNPLEGYHLADALIALKKDTSADGFGSIATFHAIPP	1745
HepoHaN	-----QHGSTSTYLVVRKNVESLSPLEGYYLAEALIALKKDTSADGYQSIATFHAIPP	1744
HeluHaD	-----EDGDVKDIDVVRKNVDALSPRETLSLIHALEALQADSSADGYQSIAAFHAVPP	1742
ApcaH1	-----ADGQVGNYLVRKNIASLSPQEELSLLKAMAALQADSSADGYQSIASFHAIPP	1745
LystH1	-----SSGEVTNYLVVRKEINSLSPREVQSLYSAMEALQADSSADGWQSIASFHAIPP	1750
PhacH1	-----PSGEVSSYLVRKEINSLSPRETFSLYKAMESLQADSSADGWQSIAAFHAIPP	1749
PocaH1	-----ANGRTENRLVRKNAWALSPNELRSMWAMRLQEDSSPNGFQALASFHALPP	1732
MetuMH	-----QDGKTQRNMIRRNVLTLSLAERRSLVLAMRRLQEDHSADGFQALASFHALPE	1753
LisaH1	-----EHGHSERRLVRKDAWAISPAERRSLVIALRNLQADDSADGFQSLAAFHAVPP	1741
CrfoH1	-----DVGHVERRLVRSVLSLSPAERRSLVLAMRSLQEDSSADGFGQSLASFHALPP	1734
RaveH1	-----DEGHPISDLVRKSVWTLSPAERRSLVLAMKSLQADSSADGFQSLASFHAQPP	1747
OcvuHA	---HSESEDEKKLVANLIRKNINRLSLEEDSLMHALKRMQKDKSSDGFESIATFHALPP	1731
TopaH1	KERTEQVSTTKSVRGNLVRKNVDRLSLQEINSLIHALKRMQKDRSSDGFETIASFHALPP	2130
Eusch1	EERSFKSATKNLYGNLVRKNVDRLSLQEINSLVHALKRMQKQDQADGFETIASFHAIPP	2157
SeofH1	EEHTVQSATHSNLYGNLVRKNVDRLSLQEVNSLVHALTRMQKDKSADGFETIASFHALPP	2156
SemaH	EEHTVHSATHSNLYGNLVRKNVDRLSLQEVNSLVHALKRMQKDKSADGFETIASFHALLS	2157
LijaH2	-----DSQHDSRELERKNINSLSPGDISSLMTAFRSMMAADTSADGYQAIASFHAIPA	1670
NunuH1	-----HHG-GSDVTVRKEINTLTPLEVDSLKAMRRLQEDSSPNGYQGIASFHAVPP	1723
MecrH1	-----DDGHTPEVPMIRKDITQLDKRQQLSLVKALESMKADHSSDGFQAIASFHALPP	1725
HacrH1	-----DHDNTEEILIRKNINDLSPRERVSLVKALKGMQHDRSADGFQAIASFHALPP	1727
HarufH1	-----DHDNTEEILVRKNINDLSPRERVSLVKALKGMQNDRSADGFQAIASFHALPP	1727
HadishaH1	-----DHDNTEEILVRKNIIDLSPRERVSLVKALKGMQNDRSADGYQAIASFHALPP	1727
HadivH1	-----DHDNTEEILVRKNIIDLSPRERVSLVKALKGMQNDRSADGYQAIASFHALPP	1642
HaasH1	-----DHDHKEEILVRKNINDLSPREKVS LVKALEGMKNDRSADGYQAIASFHALPP	1726
HarubH1	-----DHDHKEEILVRKNINDLSPRERVSLVRALEGMKNDRSSDGYQAIASFHALPP	1727

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CoasHaN	LCPSPTASLRYACCIHGGTSFQLQWHRLYTVQFEDALKRHGSPIGVPYWDWTRFSTELPRT	1805
HepoHaN	LCPSPTASRRYACCIHGGTSFQLQWHRLYTVQFEDALKRHGSPIGVPYWDWTRFSKELPRT	1804
HeluHaD	LCPSPSASTRYACCLHGMSTFFPQWHRLYTVQVEDALRRHGSVVGIPYWDWTRASQSLPHF	1802
ApcaH1	LCPSPSASKRYACCLHGMATFFPQWHRLYTVQVEDALRRHGSVLVGIPYWDWSRQTDHLPGL	1805
LystH1	LCPSPSAENRYACCLHGMATFFPQWHRLYTVQVEDALKRHGALVGIPYWDWSRVSDSLPHF	1810
PhacH1	LCPHPSASKRYACCLHGMATFFPQWHRLYTVQVEDALRRHGSVLVGIPYWDWSRLSSSLPHL	1809
PocaH1	LCPYPEAPVRYACCVHGMPTFFPQWHRLYLVQFEDALRRHSALVGIPYWDWSVEPSGFHPYM	1792
MetuMH	LCPYPEAAKRYACCVHGMASFFPQWHRLYTVQFEELRRHGSVLVGIPYWDWSRPQKALPAF	1813
LisaH1	LCPSPEASERFACCVHGQATFFPQWHRLYTVQFEDALRRHGALVGIPYLNLSLEPVSMPLVL	1801
CrfoH1	LCPYPEATKRFFACCIHGMATFFPHWHRLYTVQFEDALRRHGALVGIPYWDTVVPSRLPDF	1794
RaveH1	LCPYPEATKRFFACCVHGMATFFPAWHRLYTVQFEDALRRHGALVGIPYWDTVVPQSELPPF	1807
OcvuHA	MCNPNTAKHRYACCLHGMATFFPQWHRLYTVQFEQALQRHGAKVGVYWDWTYPMSEIIPSF	1791
TopaH1	LCPNPTAKHRHACCLHGMATFFPQWHRLYVVQFEHSLNRHGAIVGVYWDWTYPMTEVPGL	2190
Eusch1	LCPNPTAKHRHACCLHGMATFFPQWHRLYVVQFEQALHRHGATVGVYWDWTYPMKEVPNL	2217
SeofH1	LCPNPTAKHRYACCLHGMATFFPQWHRLHVQFEQALHRHGATVGVYWDWTYPMKEVPHL	2216
SemaH	LCPNPTAKHRYACCLHGMATFFPQWHRLYVVQFEQALHRHGATVGVYWDWTYPMKEVPHL	2217
LijaH2	LCPNPTAAQRYACCVHGMATFFPQWHRIYVVQVEDALRRQGSTVGLPYWDWLEPFTALPSI	1730
NunuH1	LCPSFAAANRFACCVHGMATFFPQWHRLHVQMEQALKDHGATVGLPYWDWTRPMTSLPDF	1783
MecrH1	LCPSFAASKRFFACCVHGMATFFPQWHRLYTVQFQDSLRRKHGAVVGLPYWDWTLPRSELPEL	1785
HacrH1	LCPNPSAAHRFACCVHGMATFFPQWHRLYTVQVQDALRRHGSVLVGIPYWDWTKPVSELPEF	1787
HarufH1	LCPNPSAAHRFACCVHGMATFFPQWHRLYTVQVQDALRRHGSVLVGIPYWDWTKPVSELPEF	1787
HadishaH1	LCPNPSAANRFACCVHGMATFFPQWHRLYTVQFQDALRRHGSVLVGIPYWDWTKPVSELPKL	1787
HadivH1	LCPNPSAANRFACCVHGMATFFPQWHRLYTVQFQDALRRHGSVLVGIPYWDWTKPVSELPKL	1702
HaasH1	LCPSFSASKRYACCVHGMATFFPQWHRLYTVQLQDALRRHGSVLVGIPYWDWTKPVTELPKL	1786
HarubH1	LCPNPAAAHRYACCVHGMATFFPQWHRLYTVQFQDALRRHGSFVGVPYWDWTKPATELPKL	1787

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CoasHaN	FTFTNYSDPFTNVWTLNPFYKGRVEFEHV--DTERDVQEDKLFKSG-PHGWDTWLYTQVL	1862
HepoHaN	FTYANYSDPFTNLWTLNPFYSGRVEFEHV--DTERDVQEDKLFKRG-PHGWDTWLYTQVL	1861
HeluHaD	LSDNNYTDPYTKEVHDNPWHGASIDFEHS--HTERDIQSALFKLG-PHGWDTWLFEQAL	1859
ApcaH1	LANPTYTDVYTGGQITDNPWYKAKIEFENS--VTERDVQGDYLFKQG-PHGFDTWLFNQAL	1862
LystH1	IDDENFVDPTGDKANPWKKARIEFENS--ETEREVVSDRLFKRG-PHGWDTWLFNQAL	1867
PhacH1	IDDESIDPNSETVANPWKKAKIAFENS--ETERDVVSDKLFKRG-PHGWDTWLFNQAL	1866
PocaH1	FTNKTYQVPVHKFQWNNPWESAAITFAGK--RTARDFQNDRLADS--DGLGLGWQWKQFV	1848
MetuMH	ATDEKFTDPVLNVEFDNPWLADIEFENS--HTEREPNLARLGEEG-EHGYDTWLYEQYL	1870
LisaH1	MSDETWDPLFNSDIPNPWAGADIEFKGA--KVARVDVQSDRLAKKG-PHGYDTWSWKQYL	1858
CrfoH1	IAESVWDDPLFHANFSNPWAGADIEFDNS--AVVRDVNMDRISQKG-PKGYDTWSWKQYL	1851
RaveH1	FNDEVWDDPLFHANFPNPWQGAIEFNHH--KVARDFDMDQLAKKG-PKGYDTWSWKQYI	1864
OcvuHA	LALEKYVNPYTGIEFMFPFNHGHISYISKETMTTHRDISP-HMFE-KPELGKQTWLFNNII	1849
TopaH1	LTSEKYTDPGTGIEFTFNPNHGHISFISPETMTTREVSE-HLFE-QPALGKQTWLFNNII	2248
Eusch1	LTSEKYVDPFTAVETFNPNHGHISFISPETMTARDVSD-HLFE-QPGLGKQTWLFNNII	2275
SeofH1	LTSEKYTDPFTGVETFNPNHGHLSFISPETMTTRDVSE-HLFE-QPALGKQTWLFNNII	2274
SemaH	LTSEKYTDPFTGVETHNPNHGHISFISPETMTTRDVNE-HLFE-QPALGKQTWLFNNII	2275
LijaH2	FTDDEFTDSVSLKTFKNPLKNVHIAFEDT--HVERDVIAEKLIE-QPKNGKQTWLYEQVM	1787
NunuH1	FNDGQYTDARTGVTFDNPFHHADINFEGAGVHTRSPNEQRLFE-DPSLGYNTWLFENVI	1842
MecrH1	LTVSTIHDPEETGRDIPNPFIGSKIEFEGENVHTKRDINRDLFQ-GSTKTHHNWFIQAL	1844
HacrH1	LSAETFHDPIHNLVNSNPFAKADIEFEGDGVHTERDIQSDFLFHSBGDHEGYHNWFFETVL	1847
HarufH1	LSAETFHDPIHDLNVSNPFFKADIEFEGDGVHTERDIQSDFLFHSBGDHEGYHNWFFETVL	1847
HadishaH1	LSAETFHDPIHNNVSNPFFKADIEFEGDGVHTERDIQSDFLFHSBGDHEGYHNWFFETVL	1847

HadivH1	LSAETHFDPIHNVNVSNPFFKADIEFEGDGVHTERDIQPDFLFHSGDHGEYHNWFFETVL	1762
HaasH1	LSSEIFYDPIHSINISNPFLLQADIEFEGEGIHTQRHINADRLFHSGDHGEYHNWFFENVL	1846
HarubH1	LSSQTFHDPIHNINISNPFQADIEFEGAGVHTERHIDADLLFHSGDHDGYHNWFFETVL	1847
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CoasHaN	FALEQEDFCDFEVQLEIAHNNAIHSWIGGSKEHSLAHLHYASYDPAFFIHHSNTDRLFAVV	1922
HepoHaN	FALEQEDFCDFEVQLEIAHNNAIHSWIGGSKEHSLAHLHYASYDPAFFIHHSNTDRLFAVV	1921
HeluHaD	LALEQEDYCDEFIQFEITHNAIHSWVGGSKEHSLAHLHYASYDPAFYIHHSSMDRIWAIW	1919
ApcHa1	LALEQEDYCDEFIQFEITHNAVHSLWGGTKVHSMGHLHYASYDPAFYVHHSNTDRLWALW	1922
LystH1	LALEQEDYCNCFEIQFEITHNAIHSWVGGSKEHSLGLHLYASYDPAFFVHHSSNTDRLWAVW	1927
PhacH1	FALEQEDYCNCFEIQFEITHNAIHSWLGGSKESHLGLHLYASYDPAFFVHHSNTDRLWAVW	1926
PocaH1	FALEQEDYCDEFEVQFEIAHNNAIHAUVGGSEYSMGHLHYASFDPAFYLLHHSMDRIYAMW	1908
MetuMH	LALEQDNYCDEFEVQFEIAHNNAIHAUVGGSKIHSMGHLHYASYDPIFLHHSSTDRIFAVW	1930
LisaH1	YALEQEDYCDEFEVQFEIAHNNAIHAUWLGGETYSMAHLHYASYDPAFILHHSNTDRIFALW	1911
CrfoH1	YALEQENFCDFEVQFEIAHNNAIHAUWVGGSSEVSHMAHLHYASYDPAFILHHSNTDRIFALW	1911
RaveH1	FALEQEDYCDEFEVQFEIAHNNAIHAUVGGKEYSMGHLHYASYDPIFLHHSNTDRIFALW	1924
OcvuHA	LALEQTDYCEFEIQFEIVHNAIHSWLGGKEMYSMNLHLYAAYDPAFYSHHANVDRLWVIW	1909
TopaH1	LALEQTDYCDCEFEVQFEIVHNSIHSWLGGKELYSLNHLHYAAYDPAFFLHHSNVDRLWVWW	2308
EuscH1	LALEQTDYCDCEFEVQFEIVHNAIHSWLGGKEIYSLNHLHYAAYDPAFYLLHHSNVDRLWVIW	2335
SeofH1	LALEQTDYCDCEFEVQFEIVHNAIHSWLGGKEIYSLNHLHYAAYDPAFYLLHHSNVDRLWVIW	2334
SemaH	LALEQTDYCDCEFEVQFEIVHNAIHSWLGGKELYSLNHLHYASYDPAFYLLHHSNVDRLWVIW	2335
LijaH2	LALEQTNYCDEFEVQFEIAHNSIHAUVGGSKKHSGLHLYASYDPIFFFHHSNVDRLWAIW	1847
NunuH1	LALEQDNKYCDEFEVQFEVMHNAIHAUVGGGELRSMGHLHYASYDPIFYIHHSSTDRIFAMW	1902
MecrH1	LALEQTNKYCDEFEVQFEIMHNGVHTWVGGEKPYGIGHLYASYDPIFYIHHSTDRIWAIW	1904
HacrH1	LALEQEDYCDEFIQFEIAHNGIHTTWIGGSAKYGMGHLHYASYDPIFYIHHSTDRIWAIW	1907
HarufH1	FALEQEDYCDEFIQFEIAHNGIHTTWIGGSAKYGMGHLHYASYDPIFYIHHSTDRIWAIW	1907
HadishaH1	LALEQEDYCDEFIQFEIAHNGIHTTWIGGSAKYGMGHLHYASYDPIFYIHHSTDRIWAIW	1907
HadivH1	LALEQEDYCDEFIQFEIAHNGIHTTWIGGSAGMGLHYASYDPIFYIRHSQTDRIWAIW	1822
HaasH1	LALEQEDYCDEFIQFEIAHNGIHTTWIGGDVYGMGHLHYASYDPIFYIHHSTDRIWAIW	1906
HarubH1	FALEQEDYCNCFEIQFEIAHNGIHTTWIGGNAVYGMGHLHYASYDPIFYIHHSTDRIWAIW	1907
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CoasHaN	QKLQQYRGHDPNSANCALEQLREPLKPFSFGPPYNLNKVQTQEYSRPQDTFAYKEHFHYKY	1982
HepoHaN	QKLQTYRGHDANSANCALEQLREPLKPFSFGPPYNLNKVTDNSRPEDTFAYKEHFHYKY	1981
HeluHaD	QALQKHRRGSPNEANCALHEHLKDCLKPFSFGPPYNLNKLTTKYSHPEDTFAYEDHFEYQY	1979
ApcHa1	QALQKYRGLNPNEANCALQMVRPLKPFSGFAPYNLNPKTKEFSKPEDTFEYEEHFNINY	1982
LystH1	QALQKYRGYDPEANCALQMOKDLKPFSGFAPYNLNPDKTEHSRPEDTFNYADHFHYRY	1987
PhacH1	QALQKYRGHDPEANCALQMKEPLKPFSGFAPYNLNPKTEEYSRPEDTFNYVDHFQYKY	1986
PocaH1	QELQRYRGLDPEANCALQLVREPLKPFSGFSPYNLNPVTHQYSRPEDVFYDKARFNYQY	1968
MetuMH	QELQRLRGKDPNEANCALIMEHPLKPFSGFSPYNLNPENTQYRSRPEDTFDYQSHPHYEY	1990
LisaH1	QELQRYRGHDPEINCALELMREPLKPFSGFAPYNLNPITTKYSKPEDADFYQAHFNYEY	1978
CrfoH1	QELQKYRGRDANEVNCALELMKEPLKPFSGFSPYNLNPTTTLYSKPEDADFYKGHFKEYEY	1971
RaveH1	QKLQKFRGHDPNNVNCALELMREPLKPFSGFSPYNLNDNTRHKSPEETLDYHTHFHYDY	1984
OcvuHA	QELQKLRGLPAYESNCAIEMMSKPLKPFSGFPYPYNLPNTTKYSTPSAVFKYKEHFHYEY	1969
TopaH1	QELQKFRGLPAYESNCAIELMSQPLKPFSGFAPYNLNPVTTKYSKPSDVFNKYQNHFHYEY	2368
EuscH1	QELQKFRGLPAYESNCAIELMSQPLKPFSGFAPYNLNPMTTKYSKPADVFNYKDNHFHYEY	2395
SeofH1	QELQKFRGLPAYESNCAIELMSQPLKPFSGFPYPYNLNPMTTKYSKPSDVFNKYKEHFHYEY	2394
SemaH	QELQKFRGFPLAYESNCAIELMSQPLKPFSGFAPYNLNPMTTKYSKPSDVFNKYKEHFHYEY	2395
LijaH2	QELQRYRGLGSDANCALEMLRVPLKPFSGEPYNLNPDKTKYSKPADTFYKNHFHYHY	1907
NunuH1	QALQNHRLGLDGEHPNCALEVMKEKLPKPFSGKPYNLNPVTAEYSKPGDTDFDKNHFHYDF	1962
MecrH1	QSLQRFRLGSLGSEANCAVNLMTPLKPFSGFAPYNLNDHTHDFSKEPDTFDYQ-KFGYYIY	1963
HacrH1	QELQKYRGLSGSDANCAIELMRTPLKPFSGFPYPYNLNSHTQEFASKPEDTFDYK-KFGYRY	1966
HarufH1	QELQKYRGLSGSEANCAIELMRTPLKPFSGFPYPYNLNSHTQEFASKPEDTFDYK-KFGYRY	1966
HadishaH1	QELQKYRGLSGSEANCAIELMRTPLKPFSGFAPYNLNSHTQEFASKPEDTFDYK-KFGYRY	1966
HadivH1	QELQKYRGLSGSEANCAIELMRTPLKPFSGFAPYNLNSHTQEFASKPEDTFDYK-KFGYRY	1881
HaasH1	QELQKYRGLSGSEANCAIELMRTPLKPFSGFPYPYNLNRHTQEFASKPEDTFDYK-KFGYRY	1965
HarubH1	QELQKYRGLSGSEANCAIDHMRTPLKPFSGFPYPYNLNHTQEFASKPEDTFDYK-KFGYRY	1966
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CoasHaN	DALEFVGMNIPTLDAYIKERQEHRDVFAGFLLKGIGQSATVEFEICSDA-TGDCFDGGEF	2041
HepoHaN	DALEFVGMNIPTLDAYIKERQEHRDVFAGFLLKGIGQSASVKFEICIDA-TGVCFDGGEF	2040
HeluHaD	DSLEFVGMNIPALDAYIKERQEHRDVFAGFLLHGLGTSASVEFTICDA--FKKCFEGGGF	2037
ApcHa1	DHLEFVGLDIPALDGIKEQEEDRVFAGFLLKGFGSSAFVNFDIVSN---GKSFEGGYF	2039
LystH1	DNLEFVGLSIPQLDAFIKERHEHRDVFAGFLLKGFKKSALVDFDICAN---GNCFPGGYF	2044
PhacH1	DSLEFVGLSIPQLDAFIKEQEHRDVFAGFLLKGFGESGSINFNICPK--AKACFDGGYF	2044
PocaH1	DTLELLGMDVPRLQGYINKQKEKPRVFAGFLLHSLGTSAHVTFSVCSGEEYQECTLAGDF	2028
MetuMH	DSLEVLGMPAQLEDATHKRQEKDRVFAGFLLKGIGTSAHVEFTICNEA--GVCTTAGDF	2048
LisaH1	DKLELQGLDMRSIRQDYINKEKEKDRVFAGFLLHGFGTSAHVEFAVCNEE--GTCTPAGDF	2036
CrfoH1	DTLELQGLDVORLQDYINKEKEHDRVAGFLLSGIGQSAHVASVCKAN--GESTAGDF	2029
RaveH1	DSLELQGMDVHRLQDYINQQKEEDRVFAGFLLQGIGTSAHVAFSVCKDG--GECTSAGFF	2042
OcvuHA	DMLEMNGMSVAQLEAYIRTQQRERMFAGFLLKGIGQSAYATFQVCDKK--NSCHDGSFH	2027
TopaH1	DMLEMNGMSIAQLESYIRQEQKDRVFAGFLLGFGSSAYATFQVCPDV--GDCYEGSHF	2426
EuscH1	DMLEMNGMSIAQLESYIRQEQKDRVVFVGLLHGFGSSAYATFDICNDA--GECREGSHF	2453
SeofH1	DMLEMNGMSIAQLESYIRQEQKDRVFAGFLLGFGSSAYATFQICSDA--GECHDGSHF	2452
SemaH	DMLEMNGMSIAQLESYIRQEQKDRVFAGFLLGFGSSAYATFQICNDA--GECHDGSHF	2453
LijaH2	EHLEVGGNLNPKLDRLRLRQEHRDVFAGFLLHGFGSSGTVKFNVCDPN--GKCTEGGSF	1965
NunuH1	DKLEIGGMSAALDITFIOERKERDVFAGFLLHGFKMSATVKFOVCKD--GTCOAGGSF	2029

MecrH1	DTLEFAGWSIRGIDHIVNRQEHRSRVFAGFLLEGFGTSATVDFQVCRTA--GDCEDAGYF	2021
HacrH1	DSLELEGRSVAHIDELIKERQEHDRTFAGFLLKGFGTSATVTLKICRDD--HTCQNAGYF	2024
HarufH1	DNLELEGRSVAHIDELIKERQEHDRTFAGFLLKGFGTSATVTLKVCRRDD--HTCQNAGYF	2024
HadishaH1	DNLELEGRSVAHIDELIKERQEHDRTFAGFLLKGFGTSATVTLKICRDD--YTCEENAGYF	2024
HativH1	DNLELEGRSVAHIDELIKERQEHDRTFAGFLLKGFGTSATVTLKICRDD--YTCEENAGYF	1939
HaasH1	DNLELEGRSISHIDELIKERQEQRDTFAGFLLKGFGTSATVSVFDICTVN--HTCEKAGYF	2023
HarubH1	DNLELEGRSIAHLDELIKERQEQRDTFAGFLLKGFGTSATVSVFEICRVD--HTCEKAGYF	2024
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CoasHaN	SILGGSAMPWQFNRLYKYEITDQLESHHVHYDDEYHLTVHLKS-INGTELDShLVHEPT	2100
HepoHaN	SILGGSAMPWQFNRLYKYEITDQLESHHVHYDDEYHLTVHLKS-INGTELDShLIEPT	2099
HeluHaD	TVLGGELEKWPQFDRLYRYPITDVLKENHIHYDDDYHFHIIKA-LNGTELDskLIPEPS	2096
ApcaH1	TVLGGSAMPWQFDRLFKYEITDQLIAANIRFDDNYSFNISVRL-PDGTILDSSLIPTPS	2098
LystH1	TVLGGSAMPWQFDRLFKYEITDQLNEHKLRFDDDEYTFQIKIRA-PDGTELSsDLIGTPS	2103
PhacH1	TILGGSAMPWQFDRLFKYEITEQLEEHLGRFDDDEYTFEIIKA-PNGSELASSLISAPS	2103
PocaH1	NVLGGSAMPWRFDRLYRYEITDVLKTKGLKVDDMFQIKVVITA-QNGTVLDSNSLPQPT	2087
MetuMH	DILGGSAMPWsfDRAYKYDITNVLEKKGLEATDAFKVKVAITA-QDGTALDSSLLPEPS	2107
LisaH1	NVLGGSAMPWRFDRLYKYEITDVLSESKGLDVRDTFHIEVMVTA-ANGTVLDSHILPDAS	2095
CrfoH1	DILGGSAMPWRFDRLYKYEITDVLKEKGLDVHDSFNITVSLTA-LDGSALSSSLPTPS	2088
RaveH1	DVLGGALETPPWRFRDRLYKYEISDVLKEKGLEVRDAFHIELTITA-SNGTALPSSSLIPEPS	2101
OcvuHA	SILGGSaEMSWAFDRLYVMEITDILHDMGLKFDSHFHIIHHIKT-ANGTDLPSDLIPQAT	2086
TopaH1	SVLGGSTEMPWAFDRLYKMEITDILQAMBLLKFDSHFTIKTKIVA-HNGTELPESLLPEAT	2485
Eusch1	SVLGGSTEMPWsfDRLYRIEITDILKDMGLEFDSHFTIKVQLAA-HNGTELNH-VLSEPT	2511
SeofH1	SVLGGSAEMPWAFDRLYRIEITDILKDMGLQFDSHFTIKVNLLA-HNGTELTG-VLTEPT	2510
SemaH	SVLGGSTEMPWAFDRLYRTEITDILKDMGLQFDSHFIIKVNLLA-HNGTELTG-VLTEPT	2511
LijaH2	HVLGGSMEmpWAFDRQYRYDITSaVEALGARKDDALSISVSIVA-TNGTEVPSSILKTPN	2024
NunuH1	EVLGGTLEMPWRFDRLYKYEITDVLDKMDIRYDDPFHFewTVPTMPGDTIDSNPISEPS	2080
MecrH1	TVLGGEKEMPWAFDRLYKYDITETLDKMNLRHDEIFQIEVTITS-YDGTVLDSGLIPTPS	2080
HacrH1	TVLGGSAMPWAFDRLYKYDITKTLDHMNLRHEDTFYINRTVTA-YDGTVLPgDLIPPAS	2083
HarufH1	TVLGGSAMPWAFDRLYKYDITKTLDHMNLRHEDTFYINGTVTA-YDGTVLPgDLIPPAS	2083
HadishaH1	TVLGGSAMPWAFDRLYKYDITKTLDHMNLRHEDTFYINGTVTA-YDGTVLPgDLIPPAS	2083
HativH1	TVLGGSAMPWAFDRLYKYDITKTLDHMNLRHEDTFYINGTVTA-YDGTVLPgDLIPPAS	1998
HaasH1	TILGGSAMPWVfDRLYKYDITKTLNDMHLRHEDTFsVRVNVTS-YDGTVLSGDLIQTPS	2082
HarubH1	TVLGGSAMPWVfDRLYKYDITKTLHDMHLRHEDTFsVKVTVTS-YNGTVLSGDLIQTPS	2083
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CoasHaN	VIYVPAKHdVTLKKVTvNHIRrNLDDVEDRDTQSIQTALRKLlADTGPDGWASLASfHGA	2160
HepoHaN	VIYVPAKHdVTLKKVTvNHIRrNLDEVEERDTQSIQRALRDLLADTGPDGWASLASfHGA	2159
HeluHaD	VLfVAAhEDVHHVEATPNNIRrNLNLTEERDIQSIQAALRDlQRDTTNDGwANLASfHGA	2156
ApcaH1	VLfKSAQHDFKREHVAPNHVRrNLDTLEERDLQSLKAALRDlQHDNSNDGWASLASfHGS	2158
LystH1	VILEPFfKRdYDLEKVTPNFVRHDLSTLTERDLQGLKSALRDlQLDESADGWASLASfHGA	2163
PhacH1	VILDPAHKVTDLEKVTHNYVRrDLNSLTERDVQSLKAALRDlQLDlTNDGWASLASMHGA	2163
PocaH1	VIFMPKIRERDLQDAPPSRVRRDLRDLKEVDIQNlKAAMASfQRDKGGNGWEAITAFHGV	2147
MetuMH	IILQHATRDlQGQYELAPNVRrRSLDlTERDVMSLKSALHDLQEDDSATGWQSLAAfHGV	2167
LisaH1	VIYDPKSrDSQLHEVAPNHVRHDLShLSERDVMSLKAAMLDMQRDKGTSgyQNIAAfHGA	2155
CrfoH1	VIffEKSRTElHEVAPNRIrHDLTHLSErDIRSLKSSIRDLQLDDSNdGYQNIASfHGA	2148
RaveH1	VIYAPKShDTelHEVAPNVRHDLADLTDRDIKNLKSaIRDLQNDISKDgyQHIAfHGA	2161
OcvuHA	IIRIPAMRLEKQRfIPHNRIrKNINSLEERDVQNImsALTRMKEDESfNGfQTIVASyHGS	2146
TopaH1	IVRIPPSAQNLEVAIPLNRIrRNINSLESrDVQNLMSALKRLKEDESfGfQTIAgyHGS	2545
Eusch1	IVRIPPeKEHIEVAIPLNKIRrQIESLEERDIQNlMSALRRLKEDDSfGfQTIAgyHGS	2571
SeofH1	VVRIPPEREHIEVAIPLNKIRrNIQTlDERDIQNlMSSLRRLKEDESfGfQTIASyHGS	2570
SemaH	VVRIPPEREHVEVAIPLNKIRrNIQTlDERDIQNlMSSLRRLKEDESfGfQTIASyHGS	2571
LijaH2	VFFVPGKDTVRNAQTppNVRVQNINNVNERDIQSImAAELKEDESADGFAAIAAFHGS	2084
NunuH1	VIFVPAIVDHNEdKfAHNQVRrNINELDEADVRSLSSALTDLMADEdKDGfQAIArFHGM	2140
MecrH1	IIYDPAHHDiSSHHLSLNVrHDLSTLSErDIGSLKYALSSlQADTSADGFAAIASfHGL	2140
HacrH1	IIFVPGRHTLNSRKHAPNKIRHELSLSSrDVASLKAALTSLQKDDGPDgyQAIAAFHGL	2143
HarufH1	IIFVPGRHHLNSRKHAPNKIRHELSLSSrDVASLKAALTSLQKDDGPDgyQAIAAFHGL	2143
HadishaH1	IIFVPGRHNLNSRKHTPNKIRHELTSLSSrDVASLKAALTSLQKDDGPNGYQAIAAFHGL	2143
HativH1	IIFVPGRHNLNSRKHTPNKIRHELTSLSSrDVASLKAALTSLQKDDGPNGYQAIAAFHGL	2058
HaasH1	IIFVPGRHKLNSRKHAPNKIRHEiSSLSsRDVASLKAALTSLQHDDGPDgyQSIAAfHGL	2142
HarubH1	IIFVPGRHKLNSRKHAPNKIRHELSLSSrDIASLKAALTSLQHDSGTdgyQATAAFHGV	2143
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CoasHaN	PARCPDPDHPTVACCQHGMPTfFLHWHRLfTLQVEQAiQKHGSSIAIPYWDWTQPLKKLPD	2220
HepoHaN	PARCPDPDHPTVACCQHGMPTfFLHWHRLfTLQVEQAiQKHGSAIAIPYWDWTQPIKKLPD	2219
HeluHaD	PARCPDPKHPTVACCvHGMPfFPHWHRLfALQIEQALHRHGSSIALPYWDWTlAIDDLPS	2216
ApcaH1	PAKcSTPANESVACCIHGMPfFPHWHRLfTLQVEQALRRHGSAIAIPYWDWTlPITDLPE	2218
LystH1	PSMCENESGAkvACCIHGMPfFPHWHRLfTVQVERALQRHGSAVAIPYWDWTkPITALPE	2223
PhacH1	PARCKDDAGKDVACCIHGMPfFPHWHRLfTLQVEQALQRHGSAIAIPYWDWTkPIKALPE	2223
PocaH1	PARCPSPQPEKACCIHGMPfFPHWHRLYTLQVDMsVVRKGSSVALPYWDWTlPTDPLPS	2207
MetuMH	PALCPSPEEAkYACCIHGMPfFPHWHRLYVLAVEHSliKHGSSVAIPYWDWTNPLDKLPE	2227
LisaH1	PAMCPTPEAAEYACCVHGMPfFPHWHRLYTVEMEDALIKHGSSVALPYWDWTlPIEHLPD	2215
CrfoH1	PALCPSPEAAEYACCVHGMPfFPHWHRLYTVEMEDAMVRHGSSVALPYWDWTMPITQLPD	2208
RaveH1	PALCPDPNAPThACCLHGNTfFPHWHRLYAVEMEDALIRHGSGVALPYWDWMKPITELPE	2221
OcvuHA	T-MCPDPENAKYACQHGMAfFPHWHRIYALQFEeALRRHGSNVAIPYWDWTThSEKLPS	2205
TopaH1	L-MCPTPEAEYACCLHGMPfFMHWHRLYLLHFEESMRRHGSVAVPYWDWTMPsDNLPS	2604
Eusch1	K-NCPSPDDAQYACCLHGMPfFPHWHRYLLHFEDAMRRHGANVAVPYWDWTlPISSLPH	2630

SeofH1	L-LCPTPEAPEYACCLHGMATFPPHWRVYLLHFEDAMRRHGANVAVPYWDWTLPIISGLPS	2629
SemaH	L-LCPTPEAPEYACCLHGMATFPPHWRVYLLHFEDAMRRHGANVAVPYCDWTLPIISGLPS	2630
LijaH2	PAKCVRDSGEVPACCVHGMAAFPHWHRLYTVQFEDALRRHGSSVALPYWDWTVD-ASLPK	2143
NunuH1	PVQCQGD-----VACCHHGMPFPPHWHRLITVQFEMALQRHGSSSGLPYWDWTEKMDALPH	2195
MecrH1	PAKCNDSHNNEVACCIHGMPTFPPHWHRLYTLQFEQALRRHGSSVAVPYWDWTKPIHNIPH	2200
HacrH1	PAQCHDTSGHQIACCIHGMATFPPHWHRLYTLQLEQALAKHGSSVAVPYWDWTRPITELPH	2203
HarufH1	PAQCHDTSGHQIACCIHGMATFPPHWHRLYTLQLEQALAKHGSSVAVPYWDWTRPITELPH	2203
HadishaH1	PAQCHDTSGHQIACCIHGMATFPPHWHRLYTLQLEWALAKHGSSVAVPYWDWTRPITELPH	2203
HativH1	PAQCHDTSGHQIACCIHGMATFPPHWHRLYTLQLEWALAKHGSSVAVPYWDWTRPITELPH	2118
HaasH1	PAQCHEASGREIACCIHGMATFPPHWHRLYTLQLEQALS KHGSSVAVPYWDWTKPITELPH	2202
HarubH1	PAQCHDASGREIACCIHGMATFPPHWHRLYTLQLEQALSRHGSSVAVPYWDWTKPITELPH	2203
	* *** * : * ***** : . : : : : * : . : * * * *	
CoasHaN	IFTRVNYYDAWSDQVLENPFAGHSIPSEKAQTVRDVQPE--LFETTEDGKHSTLFLPILLE	2278
HepoHaN	IFTKVNYYDAWSDQVLENPFAGHSIPSEKAQTVRDVQPE--LFETTKDGKHSTLFLPILLE	2277
HeluHaD	TFTKEDYDVRDEVVVPNPFAGHYVASEDTYTVRDIQET--LHDRHVDGKHSFLFYGVLE	2274
ApcHa1	IFTSQNYYYVVRDVVVNNPFARGYLPTEDYTVRDIQPE--VRNKNQAGDHS AIFDLALS	2276
LystH1	IFTKEDFYDAWRDEVVDNPFARGFIPTENTYTVRDIRPE--LFQTSKDGSHSDFELVLVS	2281
PhacH1	IFTDEDYDVRDEVVVPNPFARGYVPSEEVYTVRDRVQPE--LFKTSKDGSHSDFDLVLVS	2281
PocaH1	LFTEQTFYDAWKDEVLENPFARGFIKEISGYTVRDPQPE--LLKLSADGEHSVLFDEVLL	2265
MetuMH	LFTKQTYDPAWRDEVYDNPARGYVKGDEAYTVRDPQPE--LKERSRDGKHSVLFQDVLL	2285
LisaH1	LFTKETYYDAWRDEVMDNPFARGYVSSVGFTTVRDPQPE--LTKLSRDGKHSVLFDEVLL	2273
CrfoH1	LFTSETYYDAWRDEVVANPFARAYIKVAGGYTVRDPQAA--LKQLSRDGQHSALFDLVLL	2266
RaveH1	LFTSESYDPWRDEVVVPNPFVRAYIKANAGYTVRDRPA--LKKLSHDGKHSILFDEVLL	2279
OcvuHA	VLSRSDYYDAWNDVVIENPFLRGYIKSEDTYTVRDRVQPE--LFELAKGGETSLLYDQVLL	2263
TopaH1	LLGDADYYDAWTDSVIENPFLRGHIKYEDTYTVREIQPE--LFALAEQGKESTLFFKDVML	2662
EuschH1	LLADADYYDAWSDSVIENPFLRGFIKSEDTFTVRDIQPD--LFKIAEGGKVS VLYKQVML	2688
SeofH1	LLADADYYDVWSDSVIENPFLRGFIKQEDTFTVRDIQPE--LYKFAEGGKVS VLYKQVML	2687
SemaH	LLADADYYDVWSDSVIENPFLRGFIKQEDTFTVRDIQPE--LYKFAEGGKVS VLYKQVML	2688
LijaH2	LATRADYYDAWTDVTVENPFLRGRIEHEDTYTARNVQPE--LTEVGPDGKN-ALYESMML	2200
NunuH1	LLTEPEYYDAWTDKVVPNPFARGYIESEDTYTVRDRVNEFKLFDNAPDAKHSILFNSVMY	2255
MecrH1	LFTDEYYDVWRNKVMPNPFARGYVPSHDTYTVRDRVQEG--LFHLTSTGEHSALLNQALL	2258
HacrH1	ILTDGEYYDFWHDVAMPNPF SRGHVNFENTFTVRNVQED--LFKLSPIGKHSVLFQDQALL	2261
HarufH1	ILTDGEYYDFWQDAVMPNPF SRGHVNFENTFTVRNVQEA--LFKLSPIGKHSVLFQDQALL	2261
HadishaH1	ILTDGEYYDFWQDAVMPNPF SRGHVKFENTFTVRNVQEA--LFKLSPIGKHSVLFQDQALL	2261
HativH1	ILTDGEYYDFWQDAVMPNPF SRGHVKFENTFTVRNVKA--LFKLSPIGKHSVLFQDQALL	2176
HaasH1	ILTDREYYDVWQNAVMPNPFARGYVKFKDAFTVRNVQEG--LFKMSALGKHSLLFDQALL	2260
HarubH1	LLTDGEYYDVWQNAVITNPFARGYVKFKDAFTVRNVQEG--LFKMSTFGKHSLLFDQALL	2261
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CoasHaN	ALEQTSYCDFAVQFEVLHNAIHYLVGGHQKYSLSLSLEYSAYDPIFFIHHSFSDKLVVVWQ	2338
HepoHaN	ALEQTSYCDFAVQFEVLHNAIHYLVGGHQKYSLSLSLEYSAYDPIFFIHHSFSDKLVVVWQ	2337
HeluHaD	VLEQTDYCDFEVHFVHVHNAIHYLIGGHQTYSLSSLEYSAYDPIFFIHHSFDTKLWAVWQ	2334
ApcHa1	AMEQTDYCDFEVQLEVMHNAIHFVLVGGHQTYSLSSLEYSAYDPLFFIHHSFDTKLWAVWQ	2336
LystH1	ALEQTDYCDFEVQFEVMHNAIHYLVGGLQTYSLSSLEYSAYDPIFFIHHSFVDKIWVVWQ	2341
PhacH1	ALEQTNFCDFEVQFEVMHNAIHYLVGGHQKYSLSLSLEYSAYDPIFFIHHA FVDKIWVVWQ	2341
PocaH1	VLEQTDYCDFEVQFEVHNAIHYLVGGRQSYSLSSSLHYASYDPLFFIHHSFVDKIWAVWQ	2325
MetuMH	ALEQTDYCDFEVQYEVTHNAIHYLVGGHQKYSLSLSLHYSSYDPIFFVHHSFVDKIWAVWQ	2345
LisaH1	ALEQTDFCDFEVQYEVVLHNAIHYLVGGRQTFALSSLEYSSYDPIFFVHHSFVDKIWVIWQ	2333
CrfoH1	VLEQTDYCDFEVQFEVHNAIHYLVGGRQLYSMSLSLEYTSYDPIFFVHHSFVDKIWAVWQ	2326
RaveH1	ALEQTDYCDFEVQFEVTHNAIHYLVGGRHLYSLSSLEYSSYDPIFFVHHSFVDKIWAVWQ	2339
OcvuHA	MLEQEDFCDFEVQFEVHNNAIHYLLGGHQKYAMSSL-----VDRIWAIWQ	2308
TopaH1	MFEQEDYCDFEVQAEVIHNSIHYLLGGHQKYAMSSLMFSSFDPIFFVHHSMDRLWAIWQ	2722
EuschH1	MFEQEDYCDFEVQLEVIHNTIHYLLGGHQKYAMSSLMYSSFDPIFFIHHSMDRLWAIWQ	2748
SeofH1	MFEQEDYCDFEIQLEVIHNSIHYLLGGYQKYAMSSLVFSSYDPAFYIHHSMDRLWAIWQ	2747
SemaH	MFEQEDYCDFEIQLEVIHNSIHYLLGGYQKYAMSSLVFSSYDPAFYIHHSMDRLWAIWQ	2748
LijaH2	AFEQEDYCDFEVQFEVSHNAIHYLVGGRHEYALSSLSYTSYDPIFFLHHSQVDRWAIWQ	2260
NunuH1	ALEQEDFCDFEVQFEVIHNAIHFLLIGGFQTYALSSSLHYSSYDPLFYIHANVDRIWAVWQ	2315
MecrH1	ALEQHDYCDFAVQFEVMHNTIHYLVGGPQVYSLSSSLHYASYDPIFFIHHSFVDKIVAVWQ	2318
HacrH1	ALEQTDYCDFEVQFEVMHNTIHYLLIGGRQTYAFSSSLHYASYDPIFFIHHSFVDKIWAIWQ	2321
HarufH1	ALEQTDYCDFEVQFEVMHNTIHYLLIGGRQTYAFSSSLHYASYDPVFFIHHSFVDKIWAIWQ	2321
HadishaH1	ALEQTDYCDFEVQFEVMHNTIHYLLIGGRQTYAFSSSLHYASYDPIFFIHHSFVDKIWAIWQ	2321
HativH1	ALEQTDYCDFEVQFEVMHNTIHYLLIGGRQTYAFSSSLHYASYDPIFFIHHSFVDKIWAIWE	2236
HaasH1	ALEQTDYCDFEVQFEVMHNTIHYLVGGPQTYAFSSLEYSSYDPIFFIHHSFVDKIWAVWQ	2320
HarubH1	ALEQTDYCDFEVQFEVMHNTIHYLVGGPQTYAFSSLEYSSYDPIFFIHHSFVDKIWAVWQ	2321
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CoasHaN	ELQQRRLHPYHTADCAVNAMSEPMKPF SF-ETFNTNKFTREHSPNTVFDHENLGYTYDN	2397
HepoHaN	ELQQRRLHPYHTADCAVSAMSEPMKPF SF-ETFNTNKFTRDHAGPNSLFDHENLGYTYDH	2396
HeluHaD	ELQQRRLHPYNRADCALNYVNEPLKPF SF-EGFNLNKFTREHAVPNTL FNNEDLGAYYDN	2393
ApcHa1	ELQTRRRLPANKADCALNYMSQPMRPF FFF-EGFNLNKFTMDHAVPNTVFDYEHLGYSYDD	2395
LystH1	ELQQRRLPSNTANCALNYLAEPMKPFNL-D-LNINAFTKKHAVPRDVFNHEELGYHYDN	2399
PhacH1	ELQQRRLPSNRADCALNYMNEPMKPFNI-EGFNINSFTKKHAVPNTVFNYEHLGYQYDN	2400
PocaH1	ELQQRRLPHDRADCAVNMAEPMA PFNN-PKVNFPNPRTRAYAVPQTVFDYEGLEYTYDN	2384
MetuMH	ALQQRKGKPSERADCAVNMYDDMHPFDS-AKLDPDPTIRSHANPSTVFNIYDLGYKYDD	2404
LisaH1	EMQKRRGLSYDRADCAVNMYMNEVLHPFDW-AQFNTDVRTRAHSLPQS VFYEDLGYHYDN	2392
CrfoH1	ELQKRRGMNYDRADCAVNFMNERMHPFDW-EALNPDVRTREHSLPQSVWKYEDLGYHYDN	2385

RaveH1	ELQKRRLGLTYDRADCAVNFMQHKMHPPFDW--DDLNPDVTRTREHAHPQTVDYEDLGYHYDD	2398
OcvuHA	ELQEYRRKMPFDKAYCALDQMSLAMKPFT--WESNPNLATRALATPSMLFDYKRFYGKYDN	2366
TopaH1	ELQKHRRKLPHDKAYCALDQMAFFPMKPFI--WESNPNPTTRAVSTPSKLFYDKSLGYDYDH	2780
EuscH1	ELQHFRKLPMNKSANFALDQMSAFAMKPPF--WESNPNPHTRSVAVPAPKALFDYKSLGYIYDD	2806
SeofH1	ELQHFRKLDPDKAKFALDQMSFQMKPFH--WDSNPNNAHTRSSTPAKLFDYKGLGYIYDD	2805
SemaH	ELQHFRKLDPDKAKFALDQMSFQMKPFH--WDSNPNPHTRSSTPAKLFDYKGLGYIYDD	2806
LijaH2	ALQKHRRKRPYLKAYCAAAQMTMPMKPFKFNETFNMNSVTRSHARPDSVFNYENLGITYDD	2320
NunuH1	ELQKHRRKLPMNKSANFALDQMSFPMHPFD--MGININKVTKRHAVPTSLVDFEDFDYKSLGYTDS	2373
MecrH1	ALQEKRGLPSDRADCAVSLMTQNMRRPFH--YEINHNQFTKKHAVPNVDVKYELLGORYDN	2376
HacrH1	ELQSRRHLQFNGADCAVSLMGKAMRPFN--KDFNHNPFKTHAVPNTLFDYEDLGYNYDN	2379
HarufH1	ELQSRRHLQFNGADCAVSLMSKAMRPFN--KDFNHNPFKTHAVPNTLFDYEDLGYNYDN	2379
HadishaH1	ELQSRRHLQFNAADCAVSLMSKAMRPFN--KDFNHNPFKTHAVPNTLFDYEDLGYNYDN	2379
HadivH1	ELQSRRHLQFNGADCAVSLMSKAMRPFN--KDFNHNPFKTHAVPNTLFDYEDLGYNYDN	2294
HaasH1	ELQSRRHLQFKAADCAVGLMSKAMRPFN--KDFNHNSTKTHAVPNTVFDYEDLGYNYDN	2378
HarubH1	ELQSRRHLQYKAADCAVGLMSKAMRPFN--KDFNHNSTKTHAVPNTVFDYEDLGYNYDN	2379
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CoasHaN	LNVGGYSLDQLEELIHDNQQHARVFAGFLLHGIKTSGSVKIKLCQG---DKCTSAGQFNL	2454
HepoHaN	LKVGGYDLGQLEELIHDNQQHARVFAGFLLHGIKTSGSVKIKLCQG---DKCTSAGQFNL	2453
HeluHaD	FNIGGYDLDELEKLIHDRQIKPRIFAGFLLHGIKTSGSVNKLVCVF---EECTPAGEFNL	2450
ApcaH1	LSIGGYDLGQLEQVIADRQSKARVFAGFLLKGVKTSGSVVINICLRN--NVCNYAGRNV	2453
LystH1	LNIGGYNLDQLEQLIAQHQSRRPVFAGFLLKGIKTSGSVLNVCKG---SQCTYAGRNL	2456
PhacH1	LEIGGYNIEQLEALIAQQRSPRVFAGFLLKGVKTSGSVVLIQICNSR--KQCSYAGRNL	2458
PocaH1	LNIGDKTPELEKLINKQRSRRPVFAGFLLHGIGTSDVVIISVCVH---NSCVRAGAFFI	2441
MetuMH	YQIGGNLDELEALIKDNQAHPRVFAGFHLKGIGSSADVVFKICKDKSGGQCTRAGSIFI	2464
LisaH1	LELGKGTLEELEELIHDQQSHPRVFAGFHLHAIGTSDAVIFEVCKTD--DECYRAGFFI	2450
CrfoH1	YQIGGKSIEELEELIKQQSHPRVFAGFQLHGLGTSADVLSVCKSQ--NSCVSAGVIFI	2443
RaveH1	FKLGKTSIEELEEMIHEKKSHPRVFAGFHLHNGITSDVVFHICTTE--SRCTRAGGLFI	2456
OcvuHA	LEFHHGMDTEHLEIEIQKLQKDRVFATFLLHGIKTSADVHLKLCDD---SCSAAGVVI	2423
TopaH1	LNHFHMSIGQLEALIQKQKADRVFAGFLLHGIIKISADVHLKICIE---ADCQEAGVIFV	2837
EuscH1	LTFFHMSIAQLDAAIQNQKADRVFAGFLLHGIKTSADVHLKVCNE---DICKDAGVLF	2863
SeofH1	LTFFHMSIAQLEAAIQRKQEDDRVAGFLLHGIIKISADMHLKVCNE---ADCKEAGTIFI	2862
SemaH	LTFFHMSIAQLEAAIQRKQEDDRVAGFLLHGIIKISADMHLKVCNE---ADCKEAGTIFI	2863
LijaH2	LKFDGHSIEELSEIVERQTQSDRVFANFLLHGIGTSDVKFSVCKTD--NTCERAGLFFI	2378
NunuH1	FKIGGLSLSEITQEEIDNRRNHDRVFAGFLLSGIKTSALVHFHLCKSD--DICKIKAGEFGV	2431
MecrH1	LEIGGMNLHEIEKEIKDKQHVRVFAGFLLHGIGRTSADVQFQICKTS--EDCHHGQIFV	2434
HacrH1	LEISGLNLKEIALIAKRKSHARVFAGFLLFGIGTSDADVHLDICKTS--DCHHAGVLF	2437
HarufH1	LEISGLNLKEIALIAKRKSHARVFAGFLLFGIGTSDAVHLDICKTS--EDCHHAGVLF	2437
HadishaH1	LEISGLNLKEIALIAKRKSHARVFAGFLLFGIGTSDADHLDICKTS--DCHHAGVLF	2437
HadivH1	LEISGLNLKEIALIAKRKSHARVFAGFLLFGIGTSDADHLDICKTS--DGCHHAGVLF	2352
HaasH1	LELSGLNLNEIALITKRKSHARVFAGFLLFGIGTSDAVHLDICKTS--ENCHDAGVIFI	2436
HarubH1	LELSGLNLNEIALISKRKSHARVFAGFLLFGLGTSADHLDICKTS--ENCHHAGVIFI	2437
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CoasHaN	LGGPLESPWAYNRLYKRDITQYLAALNLHPEDVDFDPTLQVHLEVEVRDVQDHVLEAQNVL	2514
HepoHaN	LGGPLESPWAYNRLYKRDITQYLEDNLNLHPEDVDFDPTLQVHLEVEVRDVQDHLLVAQDVL	2513
HeluHaD	LGGPLEMPWAFDRLFKKDI TWTIARIGLNPDDIHKTDSGFKLEVQAFNVEGTALPLSQAI	2510
ApcaH1	LGGPIEMAWAFDRLFTYDITSALEQSGINPEDVFDAAELFTLDIKVDFDVEGHALPVSSVL	2513
LystH1	LGGPSEMPWAFDRLFKKDI TWALEAADIKPESVFDADSFLTLDVKVFDVEGHALINVSXVF	2516
PhacH1	LGGPTEMEWAFDRLYKKDITWALEEAGISPESVFDAAENFTLDVKVYNVDGESINVKSVF	2518
PocaH1	LGGALEMQWSFDRLYRHDITQALLAVSVRPQDLFTEHTPFTLDYSITAVNGTQLPRS-LM	2500
MetuMH	LGGEKEMPWEFDRLYKYDITDALKDNGIQPEDVFDAAEPFYLKYEVTAVNGSTLPSK-VI	2523
LisaH1	LGGHLEMPWTFDRLYKYDITDPLHDADISPEVDVFNQPTFTIKYSIHAVNGSALPLS-SV	2509
CrfoH1	LGGKLEMPWAFDRLFKLDITDPLHDMGIEPEDVFDTPAQPFPLSYEVHAVNGTTLPLS-TI	2502
RaveH1	LGGALEMPWAFDRLYKYDITEDLHDLGIEPEDVFNQAPFHLKYEIHAVNGSTLAPS-TI	2515
OcvuHA	LGGETEMPWWFDRTRYKMDITMVMKEKGIAMESLFHHDISKVHLEMEIITIDGTVLDN-SL	2482
TopaH1	LGGETEMPWWFDRTRYKMDITDVLKKRNI PPALFHEHDSKIHLEMEIKSVGDVAVLDPN-SL	2896
EuscH1	LGGETEMPWWFDRNRYLEITSVLEEMKISFDDLQFHEHDSKIHLEVLIKNVDGSPLDAG-LL	2922
SeofH1	LGGETEMAWHFDRNRYFEITSVLEEMKIPFDKLFEHESKIHWEVEI IKVDGTPVDAG-VI	2921
SemaH	LGGETEMPWWFDRNRYFEITSVLEEMKIPFDKLFEHESKIHLEVIKVDGTPVDGSG-VI	2922
LijaH2	LGSDLEMPWAFDRTRYKYDITKALQKGLVLS----DDLYHLKVTIVAVNGTTLNSD-VI	2432
NunuH1	LGGEFEMPWAFDRLYKYEITSAVKEAGLNPNVDVFNAEAPFHLKLEITKVDGTQIPSS-EL	2490
MecrH1	LGGTKEMAWAYNRLFKYDITHALHDAHITPEDVFHPSEPFFIKVSVTAVNGTVLPSS-IL	2493
HacrH1	LGGSAEMHWAYNRLYKYDITEALHEFGINPEDVFHADEAFFLKVSVVAVNGTVLPSS-LL	2496
HarufH1	LGGSAEMHWAYNRLYKYDITEALHEFGINPEDVFHADEAFFLKVSVVAVNGTVLPSS-LL	2496
HadishaH1	LGGSAEMHWAYNRLYKYDITEALHEFGINPEDVFHADEAFFLKVSVVAVNGTVLPSS-LL	2496
HadivH1	LGGSAEMHWAYNRLYKYDITEALHEFGINPEDVFHADEAFFLKVSVVAVDGTVLPSS-LL	2411
HaasH1	LGGPAEMHWAYNRLYKYDITEALREFDINPEDVFHADEPFFLKLSVVAVNGSVIPSS-LL	2495
HarubH1	LGGSAEMHWAYNRLYKYDITEALHEFDINPEDVFHADEPFFLKLSVVAVNGTVIPSS-LL	2496
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CoasHaN	PQPTIIIFDPPHEGAED---V-SSTSIAGIGVRKDVSTLSTSEIYNIRSALRQVKDDAGAN	2570
HepoHaN	PQPTIIIFDPPHEGAED---V-SSTSIAGVGRKDVSSLSTSEIDNIRSALQQVEDDTGPN	2569
HeluHaD	PKPSVTYKPALGVEKD---I-HTTAVAGVGRKDVTRLTVSETENLREAPPRRIKADNGSN	2566
ApcaH1	PEPTIIYKAAVGASEE---VSSSSSLAGVGRKDVSTLSTSEIDNIREALRRVQADAGPN	2570
LystH1	PTPSTIIYDPAKGVANV---D-ITSAVAGVGRKDVSSLTASETESLERNALRKVQDEGNP	2572
PhacH1	PTPSLIFDPAHGAED---V-VSTSIAGVGRKDVSTLSTVSETENLRNALRKVQADNGPN	2573

PocaH1	PPPTIIYEPASGGFRG---M-PSYSLAGIGVRKDINTLSEAETENLREALSSVMDDTRII	2556
MetuMH	NAPTLIFVPATGASVD---A-KSYAVAGMSVRKDINTLSSAETQSLKNSLQKVMDEGGPL	2579
LisaH1	SPPTIIFEPAHGASQD---H-TSYSVAGVGVRKDINTLTAEETESLRDSLREMQEKGSGV	2565
CrfoH1	SPPTLVFQPAEGAAAE---H-SSYSIAGVGVRKDINTLTAAEMENLRDALGRVQAGTGRL	2558
RaveH1	SAPTLIFKPAEGASVD---Q-TSYSIAGVGVRKDINTLTAAEMKNLRDALRRVQAGTGRL	2571
OcvuHA	PKPSLVYSPAKGSVHQHHHH-HKEYAEGTIVRKNVNSLTPSEIDNLRHALSDVMADKSEN	2541
TopaH1	PKPSLIYAPAKGLIIQ---Q-VGEYDAGSMVRKNVNSLTPSEIENLRNALAAVQADKTD	2952
EuschH1	PKPSLIYLPKAKHHA---K-EQPEMAGTLIRKNVDSLTPYEVGNLRDALAAVQADITKT	2978
SeofH1	PKPSLIYLPKGPHLIE---K-EKPHSAGAAVRKNVNSLTPYETNNLRMALAAVQADITDT	2977
SemaH	PKPSLIYLPKGPHHIE---K-EKPHAAGAAVRKNVNSLTPYETDNLRDALAAVQADITDT	2978
LijaH2	PAPTLTFVPASRSGRQ---A-EADHAAAPGIRKNVKDLSSSEMENLREAMRQVQQDPSSR	2488
NunuH1	HKPTIIYEPAHGHES---V-GVASHAGRGVRKNVNTLTPSEIDNLKDMRAVQADKGVN	2546
MecrH1	HAPTIIYEPGLDHHED---H-HSSSMAGHGVRKEINTLTAEVDNLKDMRAVMAHDGPN	2549
HacrH1	HEPTILYEPGVGHHED---H-ESGSLAGSGVRKDVNTLTAEETDNLRALRGVKEDHGHN	2552
HarufH1	HEPTILYEPGVGHHED---H-ESGNLAGSGVRKDVNTLTAEETDNLRKALRGVKEDHGHN	2552
HadishaH1	HEPTILYEPGVGHHED---H-ESGSLAGSGVRKDVNTLTAEETENLRKALRGVKEDHGHN	2552
HadivH1	HEPTILYEPGVGHHED---H-ESGSLAGSGVRKDVNTLTAEETENLRKALRGVKEDHGYN	2467
HaasH1	HQPTIIYEPGEDHHED---H-ESGSIAGSGVRKNVNTLTAEETDNLRALRGVMDHGHN	2551
HarubH1	HQPTIIYEPGEHHDD---H-ESGSIAGSGVRKDVNTLTAEETDNLRALRGVMDHGHN	2552
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CoasHaN	GFLNIASFHGKPARCEH-DHHPVACCVHGSFKFPHWHRLYVKQWEDALTAHGAKIGIPYW	2629
HepoHaN	GFQNIASFHGSPPARCEH-DHHPVACCVHGSFNPFPQWHRLYVKQWEDALTAHGAKIGIPYW	2628
HeluHaD	GFQNIASFHGSPPGCVH-ENHSVACRIHGMANFPQWHRLYVKQWEDALTAQGAKIGIPYW	2625
ApcaH1	GFASIAAFHGEPAAGCEL-NGRRIACQHGTMNFPQWHRLYVKQWEDALTAQGTMIGIPYW	2629
LystH1	GFQNIASFHGSGLACEY-QGHPIACCLHGMANFPQWHRLYVKQWEDALTSQGSKVGIPYW	2631
PhacH1	GFQNIASFHGSPPARCEH-NGHSIACCLHGMANFPQWHRLYVKQWEDALTAQGAMIGIPYW	2633
PocaH1	SYQRLAGWGFPGGLCSM-NGQQVACCVHGSFPHWHRLYVRSLEIAMTLEGARIGIPYW	2615
MetuMH	SYQKIAEMHGWPGDCEQ-NGKKVACCHGMASFPQWHRVYTRLLEMAMTWQGANVGIPYW	2638
LisaH1	PFQQFASWHGWPAACEH-DGHPVACCHGMASFPQWHRLYVRILEMVMTFRGARVGIPYW	2624
CrfoH1	TYDNNVSAHGYPQCTH-DGHKVACCVHGMASFPQWHRLYVTRQMEVALSWEGAKVGIPYW	2617
RaveH1	TYDNIAGAHGYPAAACKM-GEYDVACCVHGMASFPQWHRVYTRQMEVALSWEGAKVGIPYW	2630
OcvuHA	GYQKIAAYHGMPLSCKYPNGTAYACCVHGMVTFPHWHRLYVKQMEDALKLKGAKTIGIPYW	2601
TopaH1	GYQKIASFHGMPLSCQYPDGTAFACCVHGMVTFPHWHRLYMKQMEDALKAKGAKIGIPYW	3012
EuschH1	GYQKIASYHGMPLSCKYDNGTALACCVHGMVTFPHWHRLYMKQMEDAMRARGARVGIPYW	3038
SeofH1	GFQKIAAFHGMPLSCKYDNGSAYACCVHGMVTFPHWHRLYMKQMEDALRARGAKVAIPYW	3037
SemaH	GFQKIASFHGMPLSCKYDNGSAYACCVHGMVTFPHWHRLYMKQMEDALRARGAKVGIPYW	3038
LijaH2	GYQIAAAYHGLPAQCG-----DYACCLHGMPTFPHWHRLYVKQMEDALAAHGAEGVMPYW	2548
NunuH1	GYQIAAAYHGNPMPDGMKNGYSCCTHGMATFPHWHRLYTKQMEDALTAHGARGVGLPYW	2601
MecrH1	GFQIAAAYHGNPMPDGMKNGYSCCTHGMATFPHWHRLYTKQMEDALTAHGARGVGLPYW	2609
HacrH1	GFQIAAAYHGNPMPDGMKNGYSCCTHGMATFPHWHRLYTKQMEDALKAHGSVGLPYW	2612
HarufH1	GFQIAAAYHGNPMPDGMKNGYSCCTHGMATFPHWHRLYTKQMEDALKAHGSVGLPYW	2612
HadishaH1	GFQIAAAYHGNPMPDGMKNGYSCCTHGMATFPHWHRLYTKQMEDALKAHGSVGLPYW	2612
HadivH1	GFQIAAAYHGNPMPDGMKNGYSCCTHGMATFPHWHRLYTKQMEDALKAHGSVGLPYW	2527
HaasH1	GFQIAAAYHGNPMPDGMKNGYSCCTHGMATFPHWHRLYTKQMEDALRAHGSVGLPYW	2611
HarubH1	GFQIAAAYHGNPMPDGMKNGYSCCTHGMATFPHWHRLYTKQMEDALKSHGSVGLPYW	2612
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CoasHaN	DWTYAFKKLPSLVT-AEVDNPFHHGVTHDG---HVTTRAPRSLLFNDPEFGDESFFYRQV	2685
HepoHaN	DWTYAFKKLPSLVT-AGDNNPFHHGVTHDG---HITTRAPRSLLFNDPEFGDESFFYRQV	2684
HeluHaD	DWTTAFTALPALVT-EEVDNPFHHGTIYNG---EITTRAPRDKLFNDPEFGKESFFYRQV	2681
ApcaH1	DWTTAFTALPSLVT-EQENNPFFYNFKIFNG---EVTSRAPREQLFNDPEFGSESFFYRQA	2685
LystH1	DWTTAFTALPTLVT-EETNNPFHHGKIYNG---EITTRAPRDLFNDPEFGSESFFYRQA	2687
PhacH1	DWTTAFTALPTLVT-EEENNPFFHHGKIYNG---EITTRAPREQLFNDPEFGSESFFYRQT	2689
PocaH1	DWTTTFTNLPSLLTADDSSNPFLKGHIKALN--QSTSRSPRQLFNDPERGEESFFYRQI	2673
MetuMH	DWTEAFTALPSLVT-DDGDNPFNHGHIEALG--KVTSREPRQLFKDPEHGEESFFYRQI	2695
LisaH1	DWTQAFTALPALVT-EEENNPFFHHGVIEAL--NMTTSRAPRQLFNDPEHGEDESFFYRQV	2681
CrfoH1	DWTEAFTALPALVR-EEENNPFFHHGRIPGTD--TVTTRAPRQLFRDPEHGEDESFFYRQV	2674
RaveH1	DWTEAFTALPTLVS-EDHDNPFHHGHVPGKAENITTRAPRQLFKDPEHGEESFFYRQA	2689
OcvuHA	DWTFPFTDLPTLIT-EETDNPFHHHAHIDSVD--EITTRAPRHQLFEG-----RHFFYDQM	2653
TopaH1	DWTTAFHSLPILVT-EPKNNPFHHGYIDVAD--TKTTRDPRQLFDDPEQGDQSFYRQI	3069
EuschH1	DWTIAFSSLPDLVT-DEKNNPFHHHAHIDVAN--TITTRNPRQLFDDPEQGDDESFFYRQI	3095
SeofH1	DWTTAFSSLPALVT-DEKNNPFHHSYIDVAG--TITTRSPRQLFDDPEHGEDESFFYRQI	3094
SemaH	DWTTAFSSLPALVT-DEKNNPFHHSYIDVAG--TITTRSPRQLFDDPEHGEDESFFYRQI	3095
LijaH2	DWTMPFTSLPHLVT-ETENNPFNKVKIVFKN--KYTTRDPVNLFRDPEYGEKSFFYRQV	2605
NunuH1	DWTTAFTKLALVT-DPNDNPWVHAHIEYLN--EVTTRAPRQLFKDPEHNEGSFFYRQM	2658
MecrH1	DGTTAFTALPTFVT-DEEDNPFHHGHIDYLG--VDTTRSPRDKLFNDPERGESFFYRQV	2666
HacrH1	DWTTAFTALPTLVT-DEEDNPFHGHIDYLG--VDTTRSPRDLFNDPEHGESFFYRQV	2669
HarufH1	DWTTAFTALPTLVT-DNDNNPFHGHIDYLG--VDTTRSPRDLFNDPEHGESFFYRQV	2669
HadishaH1	DWTTAFTALPTLVT-DNDNNPFHGHIDYLG--VDTTRSPRDLFNDPEHGESFFYRQV	2669
HadivH1	DWTTAFTALPTLVT-DNDNNPFHGHIDYLG--VDTTRSPRDLFNDPEHGESFFYRQV	2584
HaasH1	DWTTAFTALPTLVT-DTENNPFNHGHIEYLD--VDTTRSPRDLFNDPEHGESFFYRQV	2668
HarubH1	DWTTAFTALPTLVI-DTKNNPFNHGHIEYLD--VDTTRSPRDLFNDPEHGESFFYRQV	2669
	* * * ** :: .**: . :*: * ** . *** *	
CoasHaN	LLAFEQTDYCDFEVQFEITHNAIHSWVGQSPYGLSTLEYTAYDPLFLHHSNVDRQFAI	2745
HepoHaN	LLAFEQTDYCDFEVQFEITHNAIHSWVGQSPYGLSTLEYTAYDPLFLHHSNVDRQFSI	2744

HeluHaD	LLAFEQTDYCDFEVQYEISHNAIHSWTGGQSPYGMSTLEYTAYDPLFLLHHSNVDRQFAI	2741
ApcaH1	LLAFEQTDYCDFEVQYEITHNAIHSWTGGRSPYGMSTLEFTAYDPLFLLHHSNADRQFAI	2745
LystH1	LFTEQTDYCNFEVQFEITHNAIHSWTGSSQYGMSSLEYTAYDPLFLLHHSNVDRQFAI	2747
PhacH1	LLAFEQTDYCDFEVQYEINHNAIHSWTGGVSPYGMSTLEYTAYDPLFLLHHSNVDRQFAI	2749
PocaH1	LLAFEQRDYCDFEVQFEVTHNAIHSWIGGTSPYGMSTLEYSAYDPIFFIHHSNVDRQFAI	2733
MetuMH	LLAFEQRDYCDFEVQFEVTHNAPHSWIGGTSPYGMSTLEFSSYDPVFFLHHSNVDRQFAI	2755
LisaH1	LLAFEQRDYCDFEVQFEVAHNAIHSWIGGTSPYGMSTLEYSAYDPIFFIHHSNVDRQFAI	2741
CrfoH1	QLALEQRDYCDFEVQFEVIHNAIHSWIGGTSPYGMSTLEYSAYDPIFFIHHSNVDRQFAI	2734
RaveH1	LLAFEQRDFCDFEVQFEVLHNAIHSWIGGTSPYGMSTLEYAAYDPLFFIHHSNVDRQFAI	2749
OcvuHA	MFALQTNFCDFEIQFEISHNAIHSWVGSSPYSMSTLHYTSYDPLFYLHHSNVDRQFAI	2713
TopaH1	AFALQQRDFCDFEIQFEMGHNAIHSWVGSPYGMSTLHYTSYDPLFYVHHSNTDRIWAI	3129
Eusch1	AFALQQRDFCDFEIQFEMGHNAIHSWVGSSPYGMSTLHYTSYDPLFYLHHSNTDRIWAI	3155
SeofH1	ALALQQRDFCDFEIQFEMGHNAIHSWVGSPYGMSTLHYTSYDPLFYLHHSNTDRIWAI	3154
SemaH	ALALQQRDFCDFEIQFEMGHNAIHSWVGSPYGMSTLHYTSYDPLFYLHHSNTDRIWAI	3155
LijaH2	LFALQQRDYCDFEIQFEVSHNAIHSWVGSSPYSMSTLHYTSYDPLFYLHHSNTDRIWAI	2665
NunuH1	LLAFEQTDYCDFEVQFEMTHNAIHSWTGSASPYGLSSLDFTSYDPLFYVHHSNTDRLWAM	2718
MecrH1	LLALEQTDFCQFEVQFEITHNAIHSWTGGLTPYGMSTLEYTTYDPLFWLHHANTDRIWAI	2726
HacrH1	LFALQTDFCCKFEVQFEITHNAIHSWTGGHSPYGMSTLDFTAAYDPLFWLHHSNTDRIWAI	2729
HarufH1	LFALQTDFCCKFEVQFEITHNAIHSWTGGHSPYGMSTLDFTAAYDPLFWLHHSNTDRIWAI	2729
HadishaH1	LFALQTDFCCKFEVQFEITHNAIHSWTGGHSPYGMSTLDFTAAYDPLFWLHHSNTDRIWAI	2729
HadivH1	LFALQTDFCCKLEVQFEITHNAIHSWTGGHSPYGMSTLDFTAAYDPLFWLHHSNTDRIWAI	2644
HaasH1	LLALEQTDFCQFEVQFEITHNAIHSWTGGHSPYGMSTLDFTSYDPLFWLHHSNTDRIWAI	2728
HarubH1	LLALEQTDFCQFEVQYEITHNAIHSWTGGHSPYGMSTLDFTAAYDPLFWLHHSNTDRIWAI	2729
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CoasHaN	WQALQKHRGLPYNTANCAIQELRRPLRPFSDKENVNPTTRANSRAIDAFSSDRLHYQYDN	2805
HepoHaN	WQALQKYRGLPYNTANCAIQDLRRPLRPFSDPANVNPTTRANSRAIDAFNADSLHYQYDN	2804
HeluHaD	WQALQKFRGLPYNSANCAIQLLHQPMRPFSDADNVNPTVTRTNSRARDVFNYDRLNYQYDN	2801
ApcaH1	WQALQKFRGLPYNNANCAIQKLREPMKPFNSLDNINPTTRANARAIADFYDRFNYQYDN	2805
LystH1	WQALQKFRGLPYNSANCAIQHLRQPMRPFSDENNLNAITTRANSRAIDAFDYDRLNYQYDN	2807
PhacH1	WQALQKFRGLPYNSANCAIQHLRQPMKPFSESNINPTTRANSRGIDAFDYDRLNYQYDN	2809
PocaH1	WQALQRYRGLPLEHNSANCNIQELKMPLPEPNRKENLITIIRENSRAIDAFNYEQFGYQYDN	2793
MetuMH	WQALQKYRGLDYNSANCDIQELRMDLEPFNRDYIPIVIRNNARAIADFNYDQYSYQYDN	2815
LisaH1	WQALQKYRGLDYNTANCNIQELRQTLPEPFDSPHNPVSIIREHATAIDAFNYDQFSYQYDN	2801
CrfoH1	WQALQKYRGLDYNTANCNIQELRQVQEPFDRDDNPFVVTTRHYSKAIDAFNYDQYGYQYDN	2794
RaveH1	WQELQKHRGLDYNTANCHIQDLRKPLEPNRAGNPVLVTRAHRAIDAFNYDQYGYQYDN	2809
OcvuHA	WQALQKYRGLPYDSANCEIHRLLKKPLNPFSSDANHNEQTRTHSTGESSFDYHKLHYDYDN	2773
TopaH1	WQALQKYRGLPYNSANCEINKLKKPMMPFSSDNPNEVTKAHSTGYKSFYDQQLNVEYDN	3189
Eusch1	WQALQKYRGLPYNSANCEINKLKKPMPEPFSYEENPNPVTKAHSTGMKVFDYHELNVEYDN	3215
SeofH1	WQALQKYRGLPYNSANCEINKLKKPMMPFSSDDNHNEVTKAHSTGIKSFYDHELNVEYDN	3214
SemaH	WQALQKYRGLPYNSANCEINKLKKPMMPFSSDDNHNEVTKAHSTGIKSFYDHELNVEYDN	3215
LijaH2	WQALQKYRGLPYKYANCAIPLLRKPMRPFSDDDWNNAITRTNSRPIDVFYDQRLGYQYDN	2725
NunuH1	WQALQRFGRKPYNTAYCALEQLKKPIRPFSDASNPNPVTRAHARALRSFNYEALNYQYDT	2778
MecrH1	WQALQEYRGLPYDHANCEIQAMKRLRPFSDPINHNAFTHSNAKPTDVFEYSRNFQYDN	2786
HacrH1	WQALQKYRGLPYNHANCEIQAMKTPLRPFSDNINHNPNVTKANSRPVDVFEYNRLRYQYDN	2789
HarufH1	WQALQEYRGLPYNHANCEIQAMKTPLRPFSDNINHNPNVTKANSRPVDVFEYNRLRYQYDN	2789
HadishaH1	WQALQKYRGLPYNHANCEIQAMKTPLRPFSDNINHNPNVTKANSRPVDVFEYNRLRYQYDN	2789
HadivH1	WQALQKYRGLPYNHANCEIQAMKTPLRPFSDNINHNPNVTKANSRPVDVFEYNRLRYQYDN	2704
HaasH1	WQALQEHRLPYNHANCEIQAMKTPLRPFDDINKNPVTKANSKPVDFEYNRLSFQYDN	2788
HarubH1	WQALQEYRGLPYNHANCEIQAMKTPLRPFSDNINHNPNVTKANSKPVDFEYNRLSFQYDN	2789
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CoasHaN	LDFHGHISIVELEEILQHRQEEDRVFAEFLHLGLKTSADVTFDLCDERNHCEFAGTFAILG	2865
HepoHaN	LNHFHGHISIAELEELQHRQEEDRVFAEFLHLGLKTSADVTFDLCDERGHCEFAGTFAILG	2864
HeluHaD	LNHFHGLSISELNDVLERRKEKARIFAEFLHLGIGASADVTFDLCDSHDHCEFAGTFAILG	2861
ApcaH1	LNHFHGLTISELNDLLEKRKEEDRVFAEFLLAGFGSGDVVFNLCSEE-ECAFAGTFAVLG	2864
LystH1	LNHFHGLTISQLNDLLEKRKEEDRIFAEFLLRGFSASADVIFKLCDEKGHCEFAGTFAVLG	2867
PhacH1	LNHFHGLTISELNDVLERRKEEDRIFAEFLLRGFALSADVTFRLVDDKGHSEFAGTFAVLG	2869
PocaH1	LNHFHGLTIPELEAVLEARQEDRVFANFMLHGIRSSADVSDICDAQNHCFAGTFAILG	2853
MetuMH	LNHFHGMTIPELEALLEKRKRSSEHDVFLNFMLLGIGASADVTFDICDSEGHCFAGTFAVLG	2875
LisaH1	LNHFHGLTISQLDDLLEERKDEDRVFANFLLHNIGTSADVEFDLCDAEEHCQFAGTFAILG	2861
CrfoH1	LNHFHGMTISQLDEMLEKKKQEDHVFANFMLHGIQTSADVVFDLCDAGKCNFAGTFAILG	2854
RaveH1	LRFHGLSVQEELEEKLHERAEQDRVFLNFMRLGIKMSADVFEFDLCAQGTGNFAGTFAILG	2869
OcvuHA	LIFHGMTIPQLETELMKSKKQDRVYAGFLLRITIGQSADVFEVCRKDGECKFAGTFCILG	2833
TopaH1	LNHFHGMTIPQLEVHLKKIQEKDRVFAGFLLRAIGQSADVNFVCRKDGECTFGGTFCVLG	3249
Eusch1	LNHFHGMTIPQLEIHLEELIQEKDRVFAGFLLRAIGQSADVTFDICH-NGKCEFAGTFCVLG	3274
SeofH1	LNHFHGMTIPQLEVHLNKIQEKDRVFAGFLLRAIGQSADVNFIDICRKDGECHFGGTFCVLG	3274
SemaH	LNHFHGMTIPQLEVHLNKIQEKDRVFAGFLLRAIGQSADVNFIDICRKDGECHFGGTFCVLG	3275
LijaH2	LRFDGLDIPQLEVLLNENRQKDRVFAGFLLSGFQASADVRFDVCLASGECKFAGTFAVLG	2785
NunuH1	LSFNGMSIPELDDLVERHEKEDRIFAFAFSLLEGIKKTCDVKFVCKSDGECKFAGTFAILG	2838
MecrH1	LRFHGMTIKKLEHELEKQKEEDRTFAAFLHLGIIKKSADVSDVNCNHGGECHFAGTFAILG	2846
HacrH1	LVFHGHTIPELDHMLEERKKHDIRIFAFAFLRGIIKKSADVFEICEPDHECVFAGTFAILG	2849
HarufH1	LVFHGHTIPELNHMLEERKKHDIRIFAFAFLRGIIKKSADVFEICEPNHECVFAGTFAILG	2849
HadishaH1	LVFHGHTIPELDHMLEERKKHDIRIFAFAFLSGIIKKSADVFEICEPNHECVFAGTFAILG	2849
HadivH1	LVFHGHTIPELDHMLEERKKHDIRIFAFAFLSGIIKKSADVFEICEPNHECVFAGTFAILG	2764
HaasH1	LIFHEYNIPDLDRMLEERKKEDRIFAFAFLSGIIKKSADVFDICQPGHECVFAGTFAILG	2848
HarubH1	LIFHGYNIPDLDMLEERKQEDRIFAFAFLSGIIKKSADVFDICQPGHECVFAGTFAILG	2849

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CoasHaN	GDLEMDWEFDRFLFKYDVTNVFNKLHLQPDSDAYHFVDHITAVNGTELDNSLIRPPSVHFVP	2925
HepoHaN	GYLEMDWEFDRFLFRYDVTNVFNKLHLQPDSDYHFVDHITAVNGTELDSQLIRPPSVHFVP	2924
HeluHaD	GPLEHPWAFDRFLFKYDVTNVFVSKLHLRPDSEYHFNIHIVAVNGTELDSHLIRSPTVQFVP	2921
ApcaH1	GAIEMPWAFDRFLFKYDVTNVFRKLNLRHPPDVYHFEVKIMAVNGTELYPGLIRPPSVQFVP	2924
LystH1	GLLEMPWAFDRFLFKYDVTNVFNKLNLRTHDSDYHFDVEIKAINGTVLDSNLIRSPSVQFVP	2927
PhacH1	GPLEMPWAFDRFLFKYDVTNVFNKLNLRPDSNYHFEVEIKAINGTILDSNLIRSPSVQFVP	2929
PocaH1	GPLEMPWVFDRLFKYDVTNVFVKQLHLRPDSEYRFKMRLTAVNGTELDPHLLHAPSVSFLP	2913
MetuMH	GPLEMPWVFDRLFKYDVTNVFQMLHRPDSYSVKVHIVSVNGTELDSDLLEAPSVSFVP	2935
LisaH1	GPLEMAWRFDRLFKYDVTNVFRQMLRPDSVYHFRVHLTAVNGTELD AHLIEDPSVSFLP	2921
CrfoH1	GPLEMPWVFDRLFKYDVTNVFVKQMLRPDSEYSFRVSLTAVNGTQLDSRLIEAPSVSFVP	2914
RaveH1	GPLEMPWNFDRVFKYDVTNKIFRQMLRPDSNYTIPIRIRAVNGMQLPDPLEPPSVTFAP	2929
OcvuHA	GKHEMFWAFDRFLKYDITSTLEQLRLHAHQFSITVSIKATDGSGLAPSLIPPPSIMYHP	2893
TopaH1	GDYEMPWAFDRFLFYDISKSLVHLRLDAHQDFDIKVTIMGIDGKSLPPNLLPSPPTILFKP	3309
EuschH1	GEHEMAWAFDRFLFYDITKALTKLSDAYDDFKVQVGITSITGEKLPQSLLPPPTILFKP	3334
SeofH1	GQHEMAWAFDRFLFYDITKALNKLHLDAYDDFLINVSIVNIEGVKLPSLLPRPTIMFKP	3334
SemaH	GQHEMAWAFDRFLFYDITKALNKLHLDAYDDFVINVSIVNIEGVKLPSRLLPKPTIMFKP	3335
LijaH2	GTKEMPWAFDRFLFKYEITEALSALRADHHSVFTVETIIATNKTKLASNLIRPRTVIEP	2845
NunuH1	SEYEMHWYDRAFRYDITDMEELHLKPDSEFTIKLHLVQADGTELSDDLVDSPSEVIFVP	2898
MecrH1	GEHEMPWVFDRLFRYDITQVLKQMHLEYDSFTFHMRIIDTSGKQLPSDLIKMPTVEHSP	2906
HacrH1	GELEMPWVFDRLFRYDITKVMQQQLHRHSDSFSFKVKVVGTDDEKELPPGILKEPTIEYEP	2909
HarufH1	GELEMPWVFDRLFRYDITKVMQQQLHRHSDSFSFKVKVVGTDDEKELPHGILKEPTIEYEP	2909
HadishaH1	GELEMPWVFDRLFRYDITKVMQQQLHRHSDSFSFKVKVVGTDDELPPLGILKEPTIEFEP	2909
HadivH1	GELEMPWVFDRLFRYDITKVMQQQLHRHSDSFSFKVKVVGTDDELPPLGILKEPTIEFEP	2824
HaasH1	GDQEMPWAFDRFLFRYDITKVMKQLHLRHADFTFSVKIVSTDGQELPSDSVKTPPTIEFEP	2908
HarubH1	GELEMPWVFDRLFRYDITKVMKQLHLRHSDFTFRVKIVGIDDHLEPSPDSFKAPTIEFEP	2909
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CoasHaN	GVKKPHG-VAAAS---GPASGVLVVRKNNINQLSQDEAVSLRDALYQLQQDQGLGGFEAIAAG	2981
HepoHaN	GVKKPLG-VAAAS---GPGSGLVLRKNNINQLSQDEAVSLRDALYQLQQDQGLGGFEAIAAG	2980
HeluHaD	GVKDYYEKAQKT---EAHEDVLRKNNINELSLEESANLRSALNKLQQDQGPNGFEAIAAG	2978
ApcaH1	GVKGYVERVAAKT---AKSSASVLRKDVNDLTAEASNLRDALYKLQQDQGPNGFEAIAAG	2981
LystH1	GVKRIFYEKAQKT---VVRDDKLVVRKNNINQLTLDEAANLRLNALNQLQNDQGPNGFEAIAAG	2984
PhacH1	GTKKFYEKIAEKT---AKRDDKLVVRKNNINQLTLDEAANLRLNALNKFQQDQSDGEYEATAG	2986
PocaH1	GRGEQRA-RAAREDVPVTTVSSVTRYDVTTLTLEQASSLRLNALHKLQNDHGLTTSYEAIAS	2972
MetuMH	GKRGR----KAREDYRPTVSEDLRKEVSSLSLEEVSNLKNALYKLQNDHGPNGFEAIAAS	2991
LisaH1	GRDHGVSHAQAHEDPIPLASEDVTRYEVSSLSLEQSSNLRLNALYKLQNDHGPNGFEAIAAS	2981
CrfoH1	GKNKPGSKTSAAHEDPVPLDTGDVTRYEVSSALSQAQVTLNLRDALYKLQNDHGPNGFEAIAAS	2974
RaveH1	GKKSGSGRAVVVYEEPTPSETQDLTRHDLSSLSMAQISNLEDALYKLQNDHGPNGFEAIAAS	2989
OcvuHA	AAA-----	2896
TopaH1	GTGKI-----	3314
EuschH1	GKGSQQHH-----	3342
SeofH1	GKGTQHHH-----	3342
SemaH	GKGTQHHH-----	3343
LijaH2	GKAST---STKRV--TQPKRTALLRKGLNTLTLEAKNLREAMFKMMNDEGPNNGFEAIAAT	2900
NunuH1	GSAT---HEHHTV--HEDHRDVLRLKNNINSLSLEEARSLRDALYKLQNDQTENGFEHIAAG	2953
MecrH1	----GGKHHEKHH--EDHHEDILVRKNNINSLSHHEAEELRDALYKLQNDHSHGGYEHIAG	2960
HacrH1	ALGDGLKHEDEGH--DDRLSHVLIRKEVDFLSLKEANAIKDALYKLQNDHSGKGGFEEIAG	2967
HarufH1	ALGDGLKHEDEGH--DDRLSHVLIRKEVDFLSLKEANAIKDALYKLQNDHSGKGGFEEIAG	2967
HadishaH1	ALGDGLKHEDEGH--DDRLSHVLIRKEVDLLSLKEANAIKDALYKLQNDHSGKGGFEEIAG	2967
HadivH1	ALGDGLKHEDEGH--DDRLSHVLIRKEVDLLSLKEANAIKDALYKLQNDHSGKGGFEEIAG	2882
HaasH1	GVQDGRKLDGEHH--DDRHSVDLIRKEVDFLSLQEANAIKDALYKLQNDHSGKGGFEAIAAG	2966
HarubH1	GVHDGKGKDDGHH--DDRHSVDLIRKEVDFLSLQEANAIKDALYKLQNDHSGKGGFEAIAAG	2967
CoasHaN	FHGAPFLCPEHGAE-KYACCVHGMPSFPFHRLFTVQFEQSLKQHGSTTGIPYWDWTSPG	3040
HepoHaN	FHGAPFLCPENGDK-KYACCVHGMPTFPFHWRHLFTVQFEQALKLHGSTTGIPYWDWTSPG	3039
HeluHaD	FHGAPFKCPENGTD-KYACCVHGMSVFPFHWRLLTVQFEQALKAHGAKEGVVPYWDWTAPI	3037
ApcaH1	YHGAPFKCPANGED-KYACCAHGMPVFPFHWRHLTVQFEQALKEHGALVGPYWDWTAPI	3040
LystH1	FHGAPFRCPATGDD-KYACCVHGMVFPFHWRHLFTVQIEQALKSNGALIGVPYWDWTTPV	3043
PhacH1	FHGAPFKCPADGDD-KFACCVHGMVFPFHWRHLFTVQVEQSLKKNALVGPYWDWTAPV	3045
PocaH1	FHAGSGLCPENASV-TFACVPHGFANLPHFNRLLLVQMEMALLEKGATTGIPYWDWTRTI	3031
MetuMH	FHGDPLGCPPEGSGS-KYACCQHGMVFPFHWRLLTVQFERALKAKGSVVGVPYWDWTRPS	3050
LisaH1	FHGAPGLCPENGGLRIACCRHGMPAFPHWRLLTVQFERALRDKGAVVGVPYWDWTRPV	3041
CrfoH1	FHGAPGLCPENATD-HYACCRHGMPAFPHWRLLTVQFERALKDKGAVVGVPYWDWTRPA	3033
RaveH1	YHGAPGLCPENATE-HYSCCQHGMVFPFHWRLLTVQFEHALKEKGAMVGVPYWDWTRPA	3048
OcvuHA	-----	2896
TopaH1	-----	3314
EuschH1	-----	3342
SeofH1	-----	3342
SemaH	-----	3343
LijaH2	FHGAPGKCPGATENTFSCCIHGMPMPFHWRHLFVLQAEKSLQDHGATVGIPYWDWTRSM	2960
NunuH1	FHGEPNVCPEDSE-SKYACCAHGMPFPHWRLLTVQFERGLVDNGALIGLPYWDWTVP	3012
MecrH1	FHGYPNLCPEKGD-EKYPCCVHGMSIFPHWRHLHTIQFERALKKHGSHLIGIPYWDWTQTI	3019
HacrH1	YHGYPNKCPKGD-DKYPCCVHGMPFPHWRHLHTIQMERALKNHGSQIGIPYWDWTKRM	3026
HarufH1	YHGYPNKCPKGD-DKYPCCVHGMPFPHWRHLHTIQMERALKNHGSQIGIPYWDWTKRM	3026

HadishaH1	YHGYPNKCPEKGD-DKYPCCVHGMPIFPHWHRLHTIQMERALKNHGSQIGIPYWDWTKRM	3026
HadiVH1	YHGYPNKCPEKGD-DKYPCCVHGMPIFPHWHRLHTIQMERALKNHGSQIGIPYWNWTKRM	2941
HaasH1	YHGYPNMCPERGS-EKYPCCVHGMVPVFPWHRLHTIQMERALKNHGSPMGIPYWDWTKKM	3025
HarubH1	YHGYPNMCPEHGT-DKYPCCVHGMVPVFPWHRLHTIQMERALKNHGSPMGIPYWDWTKKM	3026

CoasHaN	NELPLFLADTSDNPFSGYTISFAGQRTSRNPLEALFSTN--TSAGTSLLYQLTLDALEE	3098
HepoHaN	NELPLFLADTDNDNPFSSYTISFVGQRTSRNPLGALFSTN--TSAGTSLLYQLTLDALEE	3097
HeluHaD	GKIPSLFGDSADYNPFYSYTISFNNQRTTRDIQSELYNPH--QINGYNYLYYLAALSTLEE	3095
ApcHa1	NALPSLIGDSSNNHNPFFKYHISFVNQDTRTDIQDSLFNPR--TINGYNYLYYLAALSTLEE	3098
LystH1	KSLPSFFGDDADHNPFAFRIAANNEKTTRQVQSELYSER--KVHGFYPYLYLALTLEE	3101
PhacH1	QSLPSLFGDSSDNPFYSFQIASANHKTTRDQVQDLYSNR--KVNGYHYLYLALNTLEE	3103
PocaH1	RALPSLVAES-GDNSFFSYHIRQANKDTRDVPQEDLYVAS--RGRTRNILEFQTLALALEE	3087
MetuMH	RGIPQLFSNTYGNPNPFLTIEIQAASAFVERDQVDALEHTTGHEGFEDSLFHQALETLEE	3110
LisaH1	KALPSLLTDPYDNNPFRSYRISFVEQYTRDQVQALFKHP--SEGDLSESLFHQALETLEE	3099
CrfoH1	KAMPSLFTDSYDNNPFQTYRMTFNDQYIQRDVSEELFNHP--SEGDVESLHFQALETLEE	3091
RaveH1	KGMPTLFTDNSAINPFYTYLMSFNNHHIERKVHEDLFSHS--AEGDPESLHFQALETLEE	3106
OcvuHA	-----	2896
TopaH1	-----	3314
EuschH1	-----	3342
SeofH1	-----	3342
SemaH	-----	3343
LijaH2	KALPNFVSQAE-NNPWHRGYIRFEGKYTTRTVDPRLFDPP-QVS-GRNFLHNNVLLSLEE	3017
NunuH1	KALPSLFAEES-NNPFYKYHIGFANTDTGEDVQDFLNFQP-SFYGKYNYLYYLAALTLEE	3070
MecrH1	SSLPTFFADSGNNNPFYKHIRSINQDTRVDVNEAIFQQT-K-FGEFSSIFYLALQALEE	3077
HacrH1	SSIPAFFGDDSNNNPFYKYHIRAVNQYTTRDQVDFLNFQT-K-FGEYDLYYLTQLVLEE	3084
HarufH1	SSIPAFFGDDSNNNPFYKYHIRAVNQYTTRDQVDFLNFQT-K-FGEYDLYYLTQLVLEE	3084
HadishaH1	SSIPAFFGDDSNNNPFYKYHIRAVNQYTTRDQVDFLNFQT-K-FGEYDLYYLTQLVLEE	3084
HadiVH1	SSIPAFFGDDSNNNPFYKYHIRAVNQYTTRDQVDFLNFQT-K-FGEYDLYYSTLQLVLEE	2999
HaasH1	SSIPAFFGDDSGNNNPFYKYIRGVHETTREINQQMFNQTK-FGEYDLYYLTQLVLEE	3083
HarubH1	SSIPAFFTDAGNPNPFYKYIRGVQHETTREINPIIFNQTK-FGEYDLYYLTQLVLEE	3084

CoasHaN	DDYCQFEIMLEFFHNRIHFLIGGSETYSMSTLDYSAFDPIFMIVHSGMDRLWVLWQELQK	3158
HepoHaN	DDYCHFEIMLEFLHNRIHFLIGGTETYSMSTLDYSAFDPIFMIVHSGMDRLWVLWQELQK	3157
HeluHaD	DNFCDFLVQMDLLHVRVHALVGGKEAFSMATMEHAADFPLFWLHAANVDRLWQAWQELQK	3155
ApcHa1	DSFCDFEIQYEILHNEIHGLIGGHGTYSMSTLDYSAFDPLFMIHSSIDRIWAIWQQLQK	3158
LystH1	DNYCDFEVQFEVLHNEIHADIGGSGTYSMATLDYSAFDPPFMIHSSIDRIWVIWQELQK	3161
PhacH1	DNYCDFEVQFEVLHNEIHATIGGSGQYSMATLDYSAFDPPFMIHSSIDRIWVIWQELQK	3163
PocaH1	VNFCDFLVQMDLLHVRVHALVGGKEAFSMATMEHAADFPLFWLHAANVDRLWQAWQELQK	3147
MetuMH	TSYCEFEVQFEMLHNAVHALVGGTKTHSMATLEWSAFDPPFMMVHSSIDRIWRIWQELQR	3170
LisaH1	NNYCDFEVQYEMLHNAVHELVGGRKYGMSTLEYSAFDPPFMIHSSIDRIWKIWOQLQK	3159
CrfoH1	TNYCDFEVQYEMLHNAVHELIGGNTYSMSTLEYSAFDPPFMMVHASIDRIWQIWQSLQK	3151
RaveH1	TNYCDFEVQYEMLHNAVHELVGGRKYGMSTLEYSAFDPPFMMVHSSIDRIWQIWQTLQK	3166
OcvuHA	-----	2896
TopaH1	-----	3314
EuschH1	-----	3342
SeofH1	-----	3342
SemaH	-----	3343
LijaH2	DDYCDFEVQFEIFHNTIHAWVGADPRSLSTLEYSAFDPLFLIHHSNMDRLWIWQELQK	3077
NunuH1	DNYCDFEVQFEVLHNAMHCFIGGTGAHSMNTLDYSAFDPPFIHSSIDRIWIWQELQK	3130
MecrH1	DNYCDFEVQYEILHNEVHALIGGAEKYSMSTLEYSAFDPYFMIHSSLDRIWIWQELQK	3137
HacrH1	NSYCDFEVQYEILHNAVHAYLGGAGKYSMSTLEYSAYDPVFMHSSLDRIWILWQQLQK	3144
HarufH1	NSYCDFEVQYEILHNAVHAYLGGAGKYSMSTLEYSAYDPVFMHSSLDRIWILWQQLQK	3144
HadishaH1	NSYCDFEVQYEILHNAVHAYLGGAGKYSMSTLEYSAYDPVFMHSSLDRIWILWQQLQK	3144
HadiVH1	NSFCGFEVQYEILHNAVHAYLGGAGKYSMSTLEYSAYDPVFMHSSLDRIWILWQQLQK	3059
HaasH1	NSYCDFEVQYEILHNAVHAYLGGAGKYSMSTLEYSAYDPVFMHSSLDRIWILWQKLQK	3143
HarubH1	NSYCDFEVQYEILHNAIHAWLGGPGMYSMSTLEYSAFDPVFMHSSLDRIWILWQKLQK	3144

CoasHaN	LRRKPFVAIECGEK-SLHEPLHPFDYD-INTISLTRENAVPSIFDHHHLQYDYDTTEIS	3216
HepoHaN	LRRKPFVAIECGEK-SLHEPLHPFDYD-INTIALTREHAVPDTLFDHHLLGYEYDTTEIS	3215
HeluHaD	LRHKPFNYAHCGGH-VLDDPLHPFSFGEINKNDLTRLNSQSSVFDYTHFGYEFDKLELN	3214
ApcHa1	LRRKPFNSARCGBA-IMEEPLQPFYSQINTNDFTRMNSQPSKVFDYAHLGYEFDNLELN	3217
LystH1	LRHKPFNGASCAGH-IMERPLQPFYSPEVNKNEFTRLNSVPNVVFDSERLGYKYDKLELN	3220
PhacH1	LRHKPFNSARCAGH-IMERPLQPFYSPEVNHNEFTRLNSVPNLVFDSERFYQYDNLELN	3222
PocaH1	LRRRSYHSGSCARV-TEDTPMLPFSSETLNPNPVTHANARPVQSEVVDKFRYSYDHLDFN	3206
MetuMH	LRRKPFNVARCAGR-YLRKPLEPFSYASVNTDEVARTNSRPIDIFDTAKFHYDFDNLDLG	3229
LisaH1	LRHKPFNFARCAGR-SLFKPMPEFAYESVNTDPITRANAEPVHVFDTEKFHYHYDSLELN	3218
CrfoH1	LRHKPFNYASCASR-SLYKPLEPFSYTSLNADPLTLNNAQPVHIFDTAKFHYHYDSLNLN	3210
RaveH1	LRHKPFNYAVCAAR-SMYKPLEPFSYESINPDPLTRENSKPAQIFDTHKFHYHYDNLNLN	3225
OcvuHA	-----	2896
TopaH1	-----	3314
EuschH1	-----	3342
SeofH1	-----	3342
SemaH	-----	3343
LijaH2	LRGKPYNSAPCAGR-KMSLPMQPFHFDLSLNHNTLTOKENSRAINAFDHHAFGYEYDSLNLN	3136

NunuH1	LRHKSFSYAECTKH-HLDRPLHPFNYASVNHNELTRTHSMPNQAADQSAFGYWDNLDMN	3189
MecrH1	RRVKPAHAGSCAGD-IMHVPLHPFNYESVNDDFTRENSLPNAVVDShRFNYKYDNLNLH	3196
HacrH1	RRMKPYAAADCAGD-LMKVPMHPFSYKSENEDEFTRVNSVPNIVFDHYKFNYDYDNMRIR	3203
HarufH1	RRMKPYAAADCAGD-LMKFPMHPFSYKSENEDEFTRVNSVPNIVFDHYKFNYDYDNMRIR	3203
HadishaH1	RRMKPYAAADCAGD-LMKFPMHPFSYKSENEDEFTRVNSVPNIVFDHYKFNYDYDNMRIR	3203
HativH1	RRMKLYAAADCAGD-LMKFPMHPFSYKSENEDEFTRVNSVPNIVFDHYKFNYDYDNMRIR	3118
HaasH1	RRMKPYALDCAGDRLMKAPLHPFNYESVNEDEFTRANSYPNSVFDHYRFNYEYDNLRI	3203
HarubH1	RRMKPYAIDCAGDRLMKAPLHPFNYETVNEDEFTRTNSYPNIVFDHYRFNYEYDNLRV	3204

CoasHaN	GHDAAEVLEIIRRRHSETRVYLGGAAQGYGESYRTETWVLNDA--GEKFSVGTNFFLLGSA	3274
HepoHaN	EHDAAEVLEIIRRRHSETRVYLGGAAAYGHGQSFRTAAAVLNDA--GEEFDAGTNFFLLGSS	3273
HeluHaD	GHDVQGIDDIHNLRHENRVYLGFLVFGQQSSLEYKIDLIDDA--GQAHTAGSFHLLGGE	3272
ApcH1	GHDVNDLNNIINLRDQDRVYLAFNNGCGKQGSFAFDVHFETAE--NNVVPPLGRFYVLGGE	3275
LystH1	GNSVEEINNIINLHHQERIFVGI LAFGHQKSLTIHISLINDN--DEAFDGGNIHILGGE	3278
PhacH1	GKNVQEIHEIINKLNQQDRVFIGFVIGGLQQSLTLDISLLND--NGVAAAGAVHVLGGE	3280
PocaH1	RRSVSELLEATQSLRVKDRLFAAFLLSGVHTSARLHVLTQTGS--DEGAVEVGSIIYLLGGL	3265
MetuMH	GHSIGEVMKINDMRSKTRLFVGFLVSGIETSATVKIEMDDSQ--GNSHEVGTFFYVLGGH	3287
LisaH1	GHSVKQLQEMVDSMRNSPRVFGFLHLHGVSASVHVDVVAAD--GSKVNAGNFYVLGGE	3276
CrfoH1	GHGVHELHDMIEDMQATSRI FAGFVLSGIST SARVHVDVTRGE---DTVSVGNFYVLGGS	3267
RaveH1	GHSVAELNTMIHAMQAQSRTFAGFVLSGIST SARVHVDIYKGD---EVASVGNFFVLGGP	3282
OcvuHA	-----	2896
TopaH1	-----	3314
Eusch1	-----	3342
SeofH1	-----	3342
SemaH	-----	3343
LijaH2	DLGVNQLLAYIKEIKQHDRFFVGFNTHGFSASANVDFFICRRNDNECNNYAGSFVVLGGP	3196
NunuH1	HHTVAELAEIEINSLRNSERVFAGFVLHGFASATRKVFVN-----DHYAGTFNVVLGDR	3242
MecrH1	GHNIEELEEVLRSLRLKSRVFAGFVLSGIRTTAVVKVYIKSG-TDSDDYAGSFVILGGA	3255
HacrH1	GHDINELEAIINDLRNKDRIFAGFVLSGIRITATVKVFIHETGVTDHEEFAGKFAILGGE	3263
HarufH1	GHDINELEAIINELRNKDRIFAGFVLSGIRTTATVKVFIHGTGATDHEEFAGKFAILGGE	3263
HadishaH1	GHDINELEAIINELRNKDRIFAGFVLSGIRITATVKVFIHGTGATDHEEFAGKFAILGGE	3263
HativH1	GHDINELEAIINELRNKDRIFAGFVLSGIRITATVKVFIHGTGATDHEEFAGKFAILGGE	3178
HaasH1	GHDIQEVEBILRELNRNDRVFAGFVLSGIRITAMVKVFIHSKNETRHEEYAGEFAVLGGE	3263
HarubH1	GHDHIELEEVKLERNKDRIFAGFVLSQLISAPVKVYIHSKNETIHEEYAGEFAVLGGE	3264

CoasHaN	KEMPWSNEILWKFDITNAVRQAGVST-DKNIKFHFI AETYN GTL-HHD-QVAYGIFVIRE	3331
HepoHaN	KEMPWANEILWKFDITTAHVHQAGVST-DKNIKFHFKIETYN GTL-FAS-ESAYAI FLVRE	3330
HeluHaD	REMPWAYERLFKYDITDVAKKYDITT-DHPKVKVSTSYNGEP-HQEYT-DEIVAVERH	3329
ApcH1	REMPWCFERVFVKYDVAEVLQANNVDI-HKPVKIGGQLFRYDGEH-VQNFTTYATFIERP	3333
LystH1	KEMPWAYERIMKLDVTEAIRKGKIST-DHAVKARFTSTDYQGNL-NHQ-DTDYAI IVERH	3335
PhacH1	KEMPWAYERLMKIDITETVKASSIDV-SHAVKARFTFTDYTGSK-IKE-AEDYAI FVERR	3337
PocaH1	QERWHAHERAYKLDVTEAARLELDP-YSTFDENVSLFDYTGQP-LPY-TLPYPLVLYRP	3322
MetuMH	NEMPWAYERVYKYEITEAAKKYGLDH-DSVFNFHKKVVKYDGQE-LSA-QFKAPILVERP	3344
LisaH1	EEMPWAYERPKLDITDAISKAGLAH-GDVTHLSTSVARYDGTP-LNV-TFPSSLI IERP	3333
CrfoH1	SEMPWAYERIYKLDMTEAASKLGLSS-ESTFHFKLTVTKYDGTA-LNV-TFPDPVIVKRA	3324
RaveH1	SEMPWAYERIYKLDMTEAAKKLGLSG-SSHFDFKLTVTKYD GSA-LDV-KFPDPVIVKRR	3339
OcvuHA	-----	2896
TopaH1	-----	3314
Eusch1	-----	3342
SeofH1	-----	3342
SemaH	-----	3343
LijaH2	TEMPWAFAERPFKYEVTELFNKLGYKY-TDDIKVRTEVKATNGSA-L-NIEFPLPVIVYRP	3253
NunuH1	KEMPWAYERLFKYDITEVLRENNLNAGHNDITFRCEVTALDGTALDNPNTLSDPVLVLRP	3302
MecrH1	KEMPWAYERLYRFDITETVHN--LNLTDHVKFRFDLKKYDHTE-LDASVLPAPI I VRRP	3312
HacrH1	KEMPWAYERLLKLDITDAVHR--LHLKDEEIRFRMEVTAYNGVP-VS-TKLADPLIVHRP	3319
HarufH1	KEMPWAYERLLKLDITDAVHR--LHLKDEEIRFRMEVTAYNGVP-VS-TKLADPLIVHRP	3319
HadishaH1	KEMPWAYERLLKLDITDAVHH--LHLKDEEIRFRMEVTAYNGVP-VS-TKLADPLIVHRP	3319
HativH1	KEMPWAYERLLKLDITDAVHH--LHLKDEEIRFRMEVTAYNGVP-VS-TKLADPLIAHRP	3234
HaasH1	KEMPWAYERMLKLDITDAVNK--LHVKDEDIRFRMEVTAYNGDI-VT-TKLSQPFIVHRP	3319
HarubH1	KEMPWAYERMLKLDITDAVNK--LHLKDEDIRFRMDVTAYNGDI-VT-TQLSQPFIVHRP	3320

CoasHaN	AYTDYLTNLIPVGG-NLPLPSKLVVPKKT HVRFLPVSE DY--NV-PIENLVSYTNYNKC	3386
HepoHaN	AYTDYLTNLIPVGV-GYPLPSKLVVPKKT HVRFLPVSE DY--NI-PIENLVSYTNYNKC	3385
HeluHaD	ADTDYDIVVIPVSK-DNTLVPKIVVKKGT RIEFVT--SDL---TD-PLEDLGSYTTMHKC	3382
ApcH1	AGVDYDIINIPVMR-NSSINPKTVVKKGT RVRFT--DGV---ET-PMENLGSTNFHFC	3386
LystH1	AEQDYDVVEIPVGR-KYPLPPKIVLKKGSRVKFYPGSDTF--NS-PLENLGSYTSFSKC	3390
PhacH1	ANTDYDVVNIPIGR-EQPLPPKISLKKGT RVRFIPVSDSF---TK-PMEDLGSYTSYNRC	3392
PocaH1	ASVDFDVLVYPLYV-DKALPPKVTVRG TKIRFHAADPSL---QGRRI RTFGSYTLFIKC	3378
MetuMH	AGVDYDVAIFQLKK-DNDLAPKVVLP RGT RIRFHS AEDGV---SS-VLREMGSYTNAVYC	3399
LisaH1	ANADYDVLVVQFGA-EQAKDYKVRVKRGT RVRFHSTLEGY---VG-QVKELGTYTNSQLC	3388
CrfoH1	ANSQHDVLVLP LSV-ANQLPPKIVVRQGTQVVFHASESGV----S-SLREVGSYTNSVHC	3378
RaveH1	TNAEFDELILPIRK-ENKLPPKIVVRGTRVLFHPTEEGI---LG-PIRELGSFTNSKLC	3394
OcvuHA	-----	2896
TopaH1	-----	3314

EuschH1	-----	3342
SeofH1	-----	3342
SemaH	-----	3343
LijaH2	PISENDVYVISIGQ-GRTPAHKIVAKRGTRFIVNPFDAESE--GKRYIMDLSSYTPFYRC	3310
NunuH1	ARVNYDVIIFQMAPNTNHNPPAKVIVKKGTKLQYHPHAAIVQMGLSDAVAE LGSYTSWSKC	3362
MecrH1	NNAVFDIIEIPIGK-DVNLPPKVVVKRGTKIMFMSVDEA----VTTPMLNLGSYTAMFKC	3367
HacrH1	AHASHDILVIPVGM-GHELPPKVVVKSGTKIEFTPIDSS----VDRAMVELGSFTAMAKC	3374
HarufH1	AHASHDILVIPVGK-GHQLPPKVVVKSGTKIEFTPIDSS----VDRAMVELGSFTAMAKC	3374
HadishaH1	AHASHDILVIPVGK-GHELPPKVVVKSGTKIEFTPIDSS----VDRAMVELGSFTAMAKC	3374
HadivH1	AHASHDILVIPVGK-GHELPPKVVVKSGTKIEFTPIDSS----VDRAMVELGSFTAMAKC	3289
HaasH1	AHVSHDILVIPVGA-GHDLPPKVVVKSGTKIEFTPIDSS----VNRPMVELGSFTAMAKC	3374
HarubH1	AHVSHDILVIPVGA-GHALPPKVVVKGGTKIEFTPIDSS----VDRSMVELGSFTALAKC	3375
CoasHaN	SLPPFAFDSYAVNVVHALQPGDYYFTSFS--KEHCTKGN-KIYIHVQDH--	3432
HepoHaN	SLPPFAFDSYAVNVVHALQPGDYYFTSFN--KEYCTQDK-KIYIHVQDH--	3431
HeluHaD	KIPPFNSNSYALNTVYKLSPGDYFFVPKN--VDLCNAGR-RIQITVEDD--	3428
ApcH1	NIPPFYSHSFPFGEVHALSPGDYFFVNRD--VDLCNSGR-KLQITVADE--	3432
LystH1	SIPPFYSQSYALGVVHTLQPGDYFFVPKD--KALCEAGK-RIQITVEDE--	3436
PhacH1	AVPPFSYQSYALNTVHSLEPGEHFFVAAD--KALCAEGK-RVIIAVEDE--	3438
PocaH1	EALPGNADALS LDTYSLNPGEYYLALDGDLP GKCLEAG-RTILVIDEE--	3426
MetuMH	SIPPGDANTYKLEVEYTL EPGDYFFVSND--EEKCKQGD-RIQISIDEE--	3445
LisaH1	VIPPGGLANSYELEMEHKLEPGDYFFTD F--RSGCLAGH-RIMISVDQDWN	3436
CrfoH1	AIPPGQANLYDLDVAYSLEAGDYYFTSSD--KTKCQQGS-RIQITVDDE--	3424
RaveH1	AIPPGHAHAYELDRLHVLEPGDYYFVSNN--VESCKAGS-RIQISVDEE--	3440
OcvuHA	-----	2896
TopaH1	-----	3314
EuschH1	-----	3342
SeofH1	-----	3342
SemaH	-----	3343
LijaH2	DVPEFGFQKYNFNQ EYTLAPGTYFFTAD--SETCKQGA-KFILEIAE---	3355
NunuH1	IVPPFGYRRYQFNTVYSLSPGNYYFSAPT--VEMCKQNR-KLILAVEEE--	3408
MecrH1	KVPPFSFHAFELGKMYSVESGDYFMTAST--TELCNDNNLRIHVHV DDE--	3414
HacrH1	IVPPFTYNAFELNKVYSVDHGDYYITAGT--HELCEK-NVRLNVHVEEE--	3420
HarufH1	IVPPFTYNAFELNKVYSVDHGDYYITAGT--HELCEQ-NVRLNVHVEEE--	3420
HadishaH1	IVPPFTYNAFELNKVYSVDHGDYYITAGT--HELCEQ-NVRLNVHVEEE--	3420
HadivH1	IVPPFTYNAFELNKVYSVDHGDYYITAGT--HELCEQ-NVRLNVHVEDE--	3335
HaasH1	IVPPFSYNGFELDKVYSVEHGDYYITAGT--TGLCEQ-NLKLNIHVEHE--	3420
HarubH1	IVPPFTYHGFELNKVYSVHHGDYYITAGT--KELCKQ-NLRLNIHVEHE--	3421