

1o4z

	1	10	20	30	40	50
1o4z	...MYLIYLR	LVFCAL	LLGCGD	NSKFD	SATDLP	VVEQEQE
Agaribacterium	...MNHKSL	LA	CLTAL	SVL		
Shewanella	MKGKYM	KHHLN	LVCATA	LL	ST	S
Shewanella	...MKPSM	NVIYAT	TL	MATS		
Pseudoalteromonas	...MKNK	TTLF	IG	CL		
Colwellia	...MKT	S	VLL	TG		
Catenovulum	...MKK	L	LA	IS		
Gayadomonas	...MKHL	S	AL	IT	G	
Alteromonas	...MKN	L	S	LL	AG	
Aliagarivorans	...MFNV	Q	R	V	L	IS
Agarivorans	...MLPR	H	Y	K	N	L
Agarivorans	...MKG	F	T	K	H	L
Vibrio	...MKLP	S	L	L	S	L
Vas1_1339	...MKSI	I	K	T	L	T
Vibrio	...MKST	I	K	S	L	P

1o4z

	η1	β1	T.T	TT	α1	β2	β3
	60	70	80	90	100	110	
1o4z	V	D	W	K	D	I	P
Agaribacterium	Y	D	W	N	V	A	I
Shewanella	A	D	W	N	I	P	L
Shewanella	A	D	W	N	I	P	L
Pseudoalteromonas	N	D	W	S	I	P	L
Colwellia	A	D	W	N	I	P	L
Catenovulum	A	D	W	N	I	P	L
Gayadomonas	E	D	W	N	V	P	I
Alteromonas	E	D	W	N	I	P	L
Aliagarivorans	N	D	W	D	I	P	A
Agarivorans	N	D	W	D	I	P	A
Agarivorans	A	D	W	N	I	P	A
Vibrio	N	D	W	S	I	P	A
Vas1_1339	E	D	W	R	E	I	P
Vibrio	N	D	W	Q	D	I	P

1o4z

	η2	β4	TT	β5	β6	TT	β7	β8	β9	β10
	120	130	140	150	160	170				
1o4z	W	K	R	D	R	S	Y	V	A	D
Agaribacterium	W	K	K	D	H	S	N	V	A	G
Shewanella	W	S	S	G	E	S	W	S	D	G
Shewanella	W	S	Q	N	E	S	W	S	D	G
Pseudoalteromonas	W	Q	D	E	S	W	S	D	G	N
Colwellia	W	Q	K	N	S	W	S	D	G	N
Catenovulum	W	S	S	E	S	W	S	D	G	N
Gayadomonas	W	S	S	N	E	S	W	S	D	G
Alteromonas	W	S	S	N	E	S	W	S	D	G
Aliagarivorans	W	S	S	D	E	S	W	S	D	G
Agarivorans	W	S	S	D	E	S	W	S	D	G
Agarivorans	W	S	S	D	E	S	W	S	D	G
Vibrio	W	Q	S	N	E	S	W	S	D	G
Vas1_1339	W	Q	S	D	E	S	W	S	D	G
Vibrio	W	Q	R	D	E	S	W	S	D	G

1o4z

	TT	β11	β12	β13	α2	β14	β15
	180	190	200	210	220		
1o4z	L	S	A	D	D	T	Q
Agaribacterium	L	S	N	D	Q	R	E
Shewanella	L	S	E	N	D	R	E
Shewanella	L	S	E	N	D	R	E
Pseudoalteromonas	L	S	N	D	Q	R	E
Colwellia	L	S	E	N	D	R	E
Catenovulum	L	S	E	N	D	R	E
Gayadomonas	L	S	E	N	D	R	E
Alteromonas	L	S	Q	N	D	R	E
Aliagarivorans	L	S	E	N	D	R	E
Agarivorans	L	S	E	N	D	R	E
Agarivorans	L	S	E	N	D	R	E
Vibrio	L	S	E	N	D	R	E
Vas1_1339	L	S	E	N	D	R	E
Vibrio	L	S	E	N	D	R	E

1o4z

	η3	β16	η4	β17	TT	β18	TT	β19	α3	TT	TT
	230	240	250	260	270	280					
1o4z	A	G	S	W	F	E	D	G	T	V	N
Agaribacterium	Q	S	N	...	G	Y	R	D	G	Y	H
Shewanella	T	P	V	...	G	N	T	W	R	E	G
Shewanella	T	P	T	...	G	N	Y	W	R	E	G
Pseudoalteromonas	T	P	S	...	G	T	Y	W	R	E	G
Colwellia	T	P	T	...	G	T	Y	W	R	E	G
Catenovulum	T	P	P	...	G	T	Y	W	R	E	G
Gayadomonas	E	P	A	...	G	T	Y	W	R	E	G
Alteromonas	E	P	S	...	G	T	Y	W	R	E	G
Aliagarivorans	T	P	S	...	G	T	Y	W	R	E	G
Agarivorans	E	P	S	...	G	T	Y	W	R	E	G
Agarivorans	T	P	T	...	G	N	Y	W	R	E	G
Vibrio	E	P	S	...	G	T	Y	W	R	E	G
Vas1_1339	E	P	Q	...	G	T	Y	W	R	E	G
Vibrio	E	P	Q	...	G	T	Y	W	R	E	G

1o4z

TT 300 β20 α4 310 320 η5 330 α5 340 η6 β21

290 300 310 320 330 340

1o4z  
 Agaribacterium  
 Shewanella  
 Shewanella  
 Pseudoalteromonas  
 Colwellia  
 Catenovulum  
 Gayadomonas  
 Alteromonas  
 Aliagarivorans  
 Agarivorans  
 Agarivorans  
 Vibrio  
 Vas1\_1339  
 Vibrio

TEIDTRFTGLNKEMDIINTEDQTWRSSPA SGLQSNITYFTDNE LSN IENNTFGVDWIRIY  
 YLDKSRYNMNSMFMILDMEDHEWRSRAG.....NVASDADLADNSKNRMYVDWVRTY  
 IMNKSQYTMDEEMFIILDTEDHSWRSEAG.....NIATNADLADASKNKMYVDWIRVY  
 IMDKNQYTMNEEMFIILDTEDHSWRSEAG.....NVATDADLADQSKNKMYVDWIRVY  
 TLNKNTHNMDQSAIYIIDLTEHDWRSEAG.....NIATDADLADGSKNKMYVDWVRVY  
 ILDKSQSNMDEEAFIIDLTEHDWRSEAG.....HVATDIDLADNKNKMYVDWIRVY  
 ILDKSQYNMDEEMFIILDTEDHDWRSEAG.....IVASDADLANGNKNKMYVDWIRVY  
 ILDKSQYNMDEETYIILDTEDHEWRSRAG.....IVASDADLANP SKNKMYVDWIRVY  
 TLDKSQYNMDEEAFIIDLTEHDWRSEAG.....IVASDADLADGSKNKMYVDWIRVY  
 ILDKSRYNMDEEMFIILDTEDHSWRSEAG.....IVASDADLANPKNKMYVDWIRVY  
 VLDKSVYNLNQEAFFIIDLTEHDSWRSEAG.....IVASDADLADNKNKMYVDWIRVY  
 ILDKSRYNMDEEMFIILDTEDHSWRSEAG.....HIATDADLADGDKNKMYVDWIRVY  
 TLDKSFNMDDEEMFIILDTEDHSWRSEAG.....IVASDADLADSKNKMYVDWIRVY  
 ILDKSTYNMDEEMFIILDTEDHSWRSEAG.....IIAKDEDLADSKNKMYVDWIRVY  
 ILDKSTYNMDEEMFIILDTEDHSWRSEAG.....IIAKDEDLADNSKNKMYVDWIRVY

1o4z

350

1o4z  
 Agaribacterium  
 Shewanella  
 Shewanella  
 Pseudoalteromonas  
 Colwellia  
 Catenovulum  
 Gayadomonas  
 Alteromonas  
 Aliagarivorans  
 Agarivorans  
 Agarivorans  
 Vibrio  
 Vas1\_1339  
 Vibrio

KPV EK.....PNDWTLNKM R HSAKCM DVAYGARTNGSTYHQWACNQNNVN  
 KPVASGD.GGPGSGG..TTLPNDWTLNKM R HSAKCM DVAYGARTNGSTYHQWACNQNNVN  
 QPVS DGS SGGNTGG..N.INPNTQYQVVAKHSNK CVDVIDSKKTNGSTYQQTACSNNSD  
 QPVSNGGSSGGDNGGNDGSIEPNTQYNLVAKHSNK CIDVINSQTYNGSQYQQASCTNINA.  
 KPVNASNTNSVSNNG.....AQIKAKHSQK CIDITAGAMSNGSYQQWCGGSDNAN  
 KPVSNNS.....NSTIPTGLTTLAKHSNKCLDTK.GSMINGGEYHQWGCNINNAN  
 KPVAT.....GG..GVTPGGFNLLQAKHSNK CIDVAN GAMTNGTYYHQWGCSTANVN  
 KPVAT.....VPSGFNTLQAKHSQK CIDLTNGAMTNGSYQQWNCSTSNAN  
 KPVVDG.....VVTGNLQAKHSGR CIDVAQGAMINGSQYQQWTCDTTNTN  
 KPV AEDGGGSGG DG..SVDVPSGNLQLVHSNLCLDVAN GATWNGSTYHQWVCNTGNAN  
 KPVTDSSG.GENG..NVSVPSSTYTNLQLVHSDCLDVAS GATWNGSTYQQWICNTGNSN  
 KPTGGSTT..PPTG..GITPPSGYTNLQVHSNLCLDVKS GALWNGSTYQQWSCNTGNAN  
 KPVRLND.....NN..GVVPPSDDTSLQFTHSNRCLDVKD GATWNGSTYQQWSCNTSNAN  
 KPVGGDD.....NG..NVTVPSGYTNTQFVHSDCLDVKD GATWNGSTYQQWVCNTGNAN  
 KPVGGDD.....NG..DVVVPSGYTNTQFVHSDCLDVKD GATWNGSTYQQWVCNTSNAN

1o4z

1o4z  
 Agaribacterium  
 Shewanella  
 Shewanella  
 Pseudoalteromonas  
 Colwellia  
 Catenovulum  
 Gayadomonas  
 Alteromonas  
 Aliagarivorans  
 Agarivorans  
 Agarivorans  
 Vibrio  
 Vas1\_1339  
 Vibrio

QAFKFTSVGGGYTYIKSRVSNLCLMDLSAGSSA..NGAKVQ QWSCNSSNQNHKIVDKGD  
 QQFSFTELSNGFYSTIKAKVSNLCLDL SAGSTA..NGAKIQQWVCNSSNQNMWQLIDKGN  
 QKF TNLQLSNGFYTIKSNVSNLCLDL SAGSTS..NGAKIQQWVCNSSNQNMWQLIDKGD  
 QQFNLVLSNNEYATISQLSGLCMLQIENASTS..NGAKLEQWVCNHAKASQRFILNSTGD  
 QQFTFTHLGNSEYATISNK SGLCVELKDANTA..NGATVHQWVCNHSENKQRWKLADKGD  
 QGFKLVRNGNNEYTIQSER SGLCLEL ANGSTA..NGATI HQWVCNAANNQRWTLHDKGD  
 QRFKFIALGNNEYTIQSQSNLCLLELKDGN SA..DGAVIHQWVCNSANNQRWTLHDKGD  
 QSFKFISAGNNEYLIQSTQSNLCLVELKDNN SA..NGANIHQWVCNSANDNQRWTLHDKGD  
 QRF T LSSLGNGEYALQSKV SGLCMLKDGSSS..NGATVHQWVCNHSDSNQRWLVLDKGS  
 QRFQF TALGNNEYATISSEV SGLCVELDQASHA..DGAIVHQWVCNHSDSKQWTLFDKGS  
 QRFQF TALGNNEYATISAKV SGLCMLASGSA..DGAIVHQWVCNHSDSNQRWLVLDKGS  
 QRF T F T P V S N S E Y L I Q S D N S Q L C L E L K P D A S Q W K D G A T I Q Q Y I C N S A E E N Q R W T L F D K G S  
 QRF GFEEVATGEYLIKSKR SGLCLELKP GSNQWQD GATIQQYVCNSAEENQRWTLFDKGS  
 QRF EFDEVSGEYLIKSKR SGLCLELKP NNQWQD GTVIQQYVCNSAEENQRWTLFDKGS

1o4z

1o4z  
 Agaribacterium  
 Shewanella  
 Shewanella  
 Pseudoalteromonas  
 Colwellia  
 Catenovulum  
 Gayadomonas  
 Alteromonas  
 Aliagarivorans  
 Agarivorans  
 Agarivorans  
 Vibrio  
 Vas1\_1339  
 Vibrio

AWFEILSRKAN KCLDVAGKSTKNGADYVHWACYNGHNQFRFH.  
 DYFEIRNKTSNKCIDVAGKLTNGANITQWSCYDGNQRFKLN.  
 GYFEILSKVSNKCLDIAGKSTNDGASLTQWSCYNGTNQRFKVE.  
 GYFELKSLSNKCVDIAGKLTQTDGADIVQWCYNGDNQRFQFIE  
 GYFEIRSKVSNKCLDVAGQQTNGAAFNWNCFNNGNQRFTFIN  
 DYFEIHNKVS GKCDVAGQSTDNGANIVQWNCFNNGNQRFKFLQ  
 QHFEIRNKITGKCIDVAGKSTNGANIVQWSCYNGQNRFFKFLQ  
 QHFEIRSKVTGKCIDVAGKATNGANIVQWSCYNGQNRFFKFLQ  
 NTFEIRNKASGKCLDIAGASMSNGKLOQWACTGANNRFFKFLVQ  
 STFEIRNKVSGKCLEIANNASNNGAPLQWSCDGGNQRFFKFL.  
 NTFEIRNKQSGKCLEIANNASGANGADLRQWSCDGGTNQRFFKQ.  
 NTFEIRSKATGKCLEVANSQATNGGSIQASCDEGNNQRIFK.  
 QTFEIRSKATGKCLELADNQSNGSGTVQWSCDGGNQRIFKIQ  
 QTFEIRNKATGKCLELADNQSNGSGTVQWSCDGGNQRIFKIQ