

Supplementary Figure 1. Sequence alignment of TbpAs.



$\eta_2 \xrightarrow{\beta_7} \alpha_3 \xrightarrow{\beta_8} \eta_3 \xrightarrow{\beta_9} \eta_4 \xrightarrow{\beta_{10}} \dots$

		$\beta 11$										$\beta 12$										$\beta 13$										$\beta 14$										$\eta 5$										$\alpha 4$									
		TT										TT																				TT										lll										lll									
NmTbpA_K454	211	GR	IG	GA	EA	LL	HT	GR	RA	GE	IR	AE	HD	AG	RG	VQ	SF	NRL	VP	VE	...	DS	SN	YAF	FT	V	KE	EC	KN	GS	YE	T	CK	AN	P																										
NmTbpA_K454	211	GR	SG	GA	EA	LL	Y	T	K	R	GR	E	I	HA	HK	D	AG	K	G	V	S	F	N	R	L	V	L	D	E	DK	KE	GG	S	Q	Y	R	F	T	V	E	E	E	C	H	NG	S	Y	A	A	C	K	N	K	L							
NmTbpA_M597	211	GR	SG	GA	EA	LL	Y	T	K	R	GR	E	I	HA	HK	D	AG	K	G	V	S	F	N	R	L	V	L	D	E	DK	KE	GG	S	Q	Y	R	F	T	V	E	E	E	C	H	NG	S	Y	A	A	C	K	N	K	L							
NmTbpA_3-6	211	GR	IG	GA	EA	LL	HT	GR	RA	GE	IR	AE	HD	AG	RG	VQ	SF	NRL	VP	VE	...	DT	N	Q	Y	A	F	T	V	E	E	E	C	H	NG	S	Y	A	A	C	K	D	P	...																	
NmTbpA_H44/76	211	GR	IG	GA	EA	LL	HT	GR	RA	GE	IR	AE	HD	AG	RG	VQ	SF	NRL	VP	VE	...	DT	N	Q	Y	A	F	T	V	E	E	E	C	H	NG	S	Y	A	A	C	K	D	P	...																	
NmTbpA_NG144/82	211	GR	IG	GA	EA	LL	HT	GR	RA	GE	IR	AE	HD	AG	RG	VQ	SF	NRL	VP	VE	...	DS	SN	YAF	FT	V	KE	EC	KN	GS	YE	T	CK	AN	P	...																									
NmTbpA_D8	211	GR	IG	GA	EA	LL	HT	GR	RA	GE	IR	AE	HD	AG	RG	VQ	SF	NRL	VP	VE	...	DD	N	Q	Y	A	F	T	V	E	E	E	C	H	NG	S	Y	A	A	C	K	D	P	...																	
NmTbpA_P2396	211	GR	IG	GA	EA	LL	HT	GR	RA	GE	IR	AE	HD	AG	RG	VQ	SF	NRL	VP	VE	...	DD	N	Q	Y	A	F	T	V	E	E	E	C	H	NG	S	Y	A	A	C	K	D	P	...																	
NmTbpA_G2136	211	GL	I	V	C	A	E	A	LL	Q	M	R	C	A	E	I	R	A	E	D	AG	RG	VQ	SF	NRL	VP	VE	...	DT	N	Q	Y	A	F	T	V	E	E	E	C	H	NG	S	Y	A	A	C	K	D	P	...										
NmTbpA_931905	211	GR	IG	GA	EA	LL	HT	GR	RA	GE	IR	AE	HD	AG	RG	VQ	SF	NRL	VP	VE	...	DD	N	Q	Y	A	F	T	V	E	E	E	C	H	NG	S	Y	A	A	C	K	D	P	...																	
NmTbpA_BZ163	211	GR	IG	GA	EA	LL	HT	GR	RA	GE	IR	AE	HD	AG	RG	VQ	SF	NRL	VP	VE	...	DG	S	T	Y	A	F	T	V	E	E	E	C	H	NG	S	Y	A	A	C	K	D	P	...																	
NmTbpA_M1080	211	GR	IG	GA	EA	LL	HT	GR	RA	GE	IR	AE	HD	AG	RG	VQ	SF	NRL	VP	VE	...	D	T	H	P	Y	A	F	T	V	E	E	E	C	H	NG	S	Y	A	A	C	K	D	P	...																
NmTbpA_M982	211	GR	IG	GA	EA	LL	HT	GR	RA	GE	IR	AE	HD	AG	RG	VQ	SF	NRL	VP	VE	...	D	T	H	P	Y	A	F	T	V	E	E	E	C	H	NG	S	Y	A	A	C	K	D	P	...																
NmTbpA_400	211	GR	IG	GA	EA	LL	HT	GR	RA	GE	IR	AE	HD	AG	RG	VQ	SF	NRL	VP	VE	...	DD	S	K	Y	A	F	T	V	E	E	E	C	H	NG	S	Y	A	A	C	K	D	P	...																	
NmTbpA_H1964	211	GR	IG	GA	EA	LL	HT	GR	RA	GE	IR	AE	HD	AG	RG	VQ	SF	NRL	VP	VE	...	DS	SN	YAF	FT	V	KE	EC	KN	GS	YE	T	CK	AN	P	...																									
NmTbpA_S3131	211	GR	IG	GA	EA	LL	HT	GR	RA	GE	IR	AE	HD	AG	RG	VQ	SF	NRL	VP	VE	...	DT	N	Q	Y	A	F	T	V	E	E	E	C	H	NG	S	Y	A	A	C	K	D	P	...																	
NmTbpA_M978	211	GR	IG	GA	EA	LL	HT	S	R	RA	GE	IR	AE	HD	AG	RG	VQ	SF	NRL	VP	VE	...	DD	H	Q	Y	A	F	T	V	E	E	E	C	S	R	N	Y	E	T	CK	AN	P	...																	
NgTbpA_FA19	211	GR	IG	GA	EA	LL	HT	GR	RA	GE	IR	AE	HD	AG	RG	VQ	SF	NRL	AP	VD	...	DG	S	K	Y	A	F	T	V	E	E	E	C	H	NG	S	Y	A	A	C	K	D	P	...																	
NgTbpA_MS11	211	GR	IG	GA	EA	LL	HT	GR	RA	GE	IR	AE	HD	AG	RG	VQ	SF	NRL	AP	VD	...	D	A	S	T	Y	A	F	T	V	E	A	E	C	H	NG	S	Y	A	A	C	K	D	P	...																
NgTbpA_WHO_P	211	GR	IG	GA	EA	LL	HT	GR	RA	GE	IR	AE	HD	AG	RG	VQ	SF	NRL	AP	VD	...	D	A	S	T	Y	A	F	T	V	E	A	E	C	H	NG	S	Y	A	A	C	K	D	P	...																
NgTbpA_WHO_L	211	GR	IG	GA	EA	LL	HT	GR	RA	GE	IR	AE	HD	AG	RG	VQ	SF	NRL	AP	VD	...	D	A	S	T	Y	A	F	T	V	E	A	E	C	H	NG	S	Y	A	A	C	K	D	P	...																
NgTbpA_WHO_N	211	GR	IG	GA	EA	LL	HT	GR	RA	GE	IR	AE	HD	AG	RG	VQ	SF	NRL	AP	VD	...	D	G	S	D	Y	A	F	T	V	E	G	E	C	P	K	G	Y	A	A	C	K	D	P	...																
NgTbpA_WHO_M	211	GR	IG	GA	EA	LL	HT	GR	RA	GE	IR	AE	HD	AG	RG	VQ	SF	NRL	AP	VD	...	D	G	S	D	Y	A	F	T	V	E	G	E	C	P	K	G	Y	A	A	C	K	D	P	...																
NgTbpA_WHO_U	211	GR	IG	GA	EA	LL	HT	GR	RA	GE	IR	AE	HD	AG	RG	VQ	SF	NRL	AP	VD	...	D	G	S	D	Y	A	F	T	V	E	G	E	C	P	K	G	Y	A	A	C	K	D	P	...																
NgTbpA_WHO_O	211	GR	IG	GA	EA	LL	HT	GR	RA	GE	IR	AE	HD	AG	RG	VQ	SF	NRL	AP	VD	...	D	G	S	D	Y	A	F	T	V	E	G	E	C	P	K	G	Y	A	A	C	K	D	P	...																
NgTbpA_WHO_G	211	GR	IG	GA	EA	LL	HT	GR	RA	GE	IR	AE	HD	AG	RG	VQ	SF	NRL	AP	VD	...	D	G	S	K	Y	A	F	T	V	E	E	E	C	H	NG	S	Y	A	A	C	K	D	P	...																
NgTbpA_WHO_F	211	GR	IG	GA	EA	LL	HT	GR	RA	GE	IR	AE	HD	AG	RG	VQ	SF	NRL	AP	VE	...	D	G	S	K	Y	A	F	T	V	E	E	E	C	H	NG	S	Y	A	A	C	K	D	P	...																
NgTbpA_WHO_Y	211	GR	IG	GA	EA	LL	HT	GR	RA	GE	IR	AE	HD	AG	RG	VQ	SF	NRL	VP	VE	...	D	A	S	T	Y	A	F	T	V	E	E	E	C	H	NG	S	Y	A	A	C	K	D	P	...																
NgTbpA_DG118	211	GR	IG	GA	EA	LL	HT	GR	RA	GE	IR	AE	HD	AG	RG	VQ	SF	NRL	AP	VE	...	DT	N	Q	Y	A	F	T	V	E	E	E	C	H	NG	S	Y	A	A	C	K	D	P	...																	
NgTbpA_WHO_K	211	GR	IG	GA	EA	LL	HT	GR	RA	GE	IR	AE	HD	AG	RG	VQ	SF	NRL	AP	VD	...	D	A	S	T	Y	A	F	T	V	E	E	E	C	H	NG	S	Y	A	A	C	K	D	P	...																
NgTbpA_WHO_W	211	GR	IG	GA	EA	LL	HT	GR	RA	GE	IR	AE	HD	AG	RG	VQ	SF	NRL	AP	VD	...	D	A	S	T	Y	A	F	T	V	E	E	E	C	H	NG	S	Y	A	A	C	K	D	P	...																
NgTbpA_WHO_X	211	GR	IG	GA	EA	LL	HT	GR	RA	GE	IR	AE	HD	AG	RG	VQ	SF	NRL	AP	VD	...	D	A	S	T	Y	A	F	T	V	E	E	E	C	H	NG	S	Y	A	A	C	K	D	P	...																
NgTbpA_WHO_Z	211	GR	IG	GA	EA	LL	HT	GR	RA	GE	IR	AE	HD	AG	RG	VQ	SF	NRL	AP	VD	...	D	A	S	T	Y	A	F	T	V	E	E	E	C	H	NG	S	Y	A	A	C	K	D	P	...																
NgTbpA_WHO_V	211	GR	IG	GA	EA	LL	HT	GR	RA	GE	IR	AE	HD	AG	RG	VQ	SF	NRL	AP	VD	...	D	S	S	D	Y	A	F	T	V	E	G	E	C	H	NG	S	Y	A	A	C	K	D	P	...																
NgTbpA_F62	211	GR	IG	GA	EA	LL	HT	GR	RA	GE	IR	AE	HD	AG	RG	VQ	SF	NRL	AP	VD	...	D	A	S	T	W	Y	A	F	T	V	E	E	E	C	H	NG	S	Y	A	A	C	K	D	P	...															
NgTbpA_FA1090	211	GR	IG	GA	EA	LL	HT	GR	RA	GE	IR	AE	HD	AG	RG	VQ	SF	NRL	VP	VE	...	D	A	S	T	Y	A	F	T	V	E	E	E	C	H	NG	S	Y	A	A	C	K	D	P	...																

		β24																β25															
NmTbpA_K454																		TT TT															
NmTbpA_K454	417	ADKDT	TD	YAR	LS	YDR	QG	VGL	DN	HF	Q	Q	THCSA	D	GSD	KY	CRP	SAD	K	FP	S	Y	YKSDRV	I	Y	G	ESH	RL	QAA	F	KK		
NmTbpA_B1686	414	ADKDT	TD	YAR	LS	YDR	QG	IDL	DN	LF	Q	Q	THCSH	D	GSD	KN	CRP	DGN	K	FP	S	Y	YKSDRM	I	Y	E	SRN	LF	QAA	F	KK		
NmTbpA_M597	414	ADKDT	TD	YAR	LF	YDR	QG	IDL	DN	LF	Q	Q	THCSH	D	GSD	KN	CRP	DGN	K	FP	S	Y	YKSDRM	I	Y	E	SRN	LF	QAA	F	KK		
NmTbpA_3-6	416	ADKDT	TD	YAR	LS	YDR	QG	IGL	DN	HF	Q	Q	THCSA	D	GSD	KY	CRP	SAD	K	FP	S	Y	YKSDRV	I	Y	G	ESH	RL	QAA	F	KK		
NmTbpA_H44/76	417	ADKDT	TD	YAR	LS	YDR	QG	IGL	DN	HF	Q	Q	THCSA	D	GSD	KY	CRP	SAD	K	FP	S	Y	YKSDRV	I	Y	G	ESH	RL	QAA	F	KK		
NmTbpA_NG144/82	417	ADKDT	TD	YAR	LS	YDR	QG	IGL	DN	HF	Q	Q	THCSA	D	GSD	KY	CRP	SAD	K	FP	S	Y	YKSDRV	I	Y	G	ESH	RL	QAA	F	KK		
NmTbpA_D8	416	ADKDT	TD	YAR	LS	YDR	QG	IGL	DN	HF	Q	Q	THCSA	D	GSD	KY	CRP	SAD	K	FP	S	Y	YKSDRV	I	Y	G	ESH	RL	QAA	F	KK		
NmTbpA_P2396	416	ADKDT	TD	YAR	LS	YDR	QG	IGL	DN	HF	Q	Q	THCSA	D	GSD	KY	CRP	SAD	K	FP	S	Y	YKSDRV	I	Y	G	ESH	RL	QAA	F	KK		
NmTbpA_G2136	417	ADKDT	TD	YAR	LS	YDR	QG	IGL	DN	HF	Q	Q	THCSA	D	GSD	KN	CRP	SAD	K	FP	S	Y	YKSDRV	I	Y	G	ESH	RL	QAA	F	KK		
NmTbpA_931905	417	ADKDT	TD	YAR	LS	CDR	QG	IGL	DN	HF	Q	Q	THCSA	D	GSD	KY	CRP	SAD	K	FP	S	Y	YKSDRV	I	Y	G	ESH	RL	QAA	F	KK		
NmTbpA_BZ163	416	ADKDT	TD	YAR	LS	YDR	QG	IGL	DN	HF	Q	Q	THCSA	D	GSD	KY	CRP	SAD	K	FP	S	Y	YKSDRV	I	Y	G	ESH	RL	QAA	F	KK		
NmTbpA_M1080	417	ADKDT	TD	YAR	LS	YDR	QG	IGL	DN	HF	Q	Q	THCSA	D	GSD	KY	CRP	SAD	K	FP	S	Y	YKSDRV	I	Y	G	ESH	RL	QAA	F	KK		
NmTbpA_M982	416	ADKDT	TD	YAR	LS	YDR	QG	IGL	DN	HF	Q	Q	THCSA	D	GSD	KY	CRP	SAD	K	FP	S	Y	YKSDRV	I	Y	G	ESH	RL	QAA	F	KK		
NmTbpA_400	416	ADKDT	TD	YAR	LS	YDR	QG	IGL	DN	HF	Q	Q	THCSA	D	GSD	KY	CRP	SAD	K	FP	S	Y	YKSDRV	I	Y	G	ESH	RL	QAA	F	KK		
NmTbpA_H1964	416	ADKDT	TD	YAR	LS	YDR	QG	IGL	DN	HF	Q	Q	THCSA	D	GSD	KY	CRP	SAD	K	FP	S	Y	YKSDRV	I	Y	G	ESH	RL	QAA	F	KK		
NmTbpA_S3131	416	ADKDT	TD	YAR	LS	YDR	QG	IGL	DN	HF	Q	Q	THCSA	D	GSD	KN	CRP	SAD	K	FP	S	Y	YKSDRV	I	Y	G	ESH	RL	QAA	F	KK		
NmTbpA_M978	417	ADKDT	TD	YAR	LS	YDR	QG	IGL	DN	HF	Q	Q	THCSA	D	GSD	KY	CRP	SAD	K	FP	S	Y	YKSDRV	I	Y	G	ESH	RL	QAA	F	KK		
NgTbpA_FA19	417	ADKDT	TD	YAR	LS	YDR	QG	IGL	DN	HF	Q	Q	THCSA	D	GSD	KY	CRP	SAD	K	FP	S	Y	YKSDRV	I	Y	G	ESH	KL	QAA	F	KK		
NgTbpA_MS11	417	ADKDA	W	YAR	LS	YDR	QG	IGL	DN	HF	Q	Q	THCSA	D	GSD	KY	CRP	SAD	K	FP	S	Y	YKSDRV	I	Y	G	ESH	RL	QAA	F	KK		
NgTbpA_WHO_P	417	ADKDA	W	YAR	LS	YDR	QG	IGL	DN	HF	Q	Q	THCSA	D	GSD	KY	CRP	SAD	K	FP	S	Y	YKSDRV	I	Y	G	ESH	RL	QAA	F	KK		
NgTbpA_WHO_L	417	ADKDA	W	YAR	LS	YDR	QG	IGL	DN	HF	Q	Q	THCSA	D	GSD	KY	CRP	SAD	K	FP	S	Y	YKSDRV	I	Y	G	ESH	RL	QAA	F	KK		
NgTbpA_WHO_N	415	ADKDT	TD	YAR	LS	YDR	QG	IGL	DN	HF	Q	Q	THCSA	D	GSD	KY	CRP	SAD	K	FP	S	Y	YKSDRV	I	Y	G	ESH	RL	QAA	F	KK		
NgTbpA_WHO_M	415	ADKDT	TD	YAR	LS	YDR	QG	IGL	DN	HF	Q	Q	THCSA	D	GSD	KY	CRP	SAD	K	FP	S	Y	YKSDRV	I	Y	G	ESH	RL	QAA	F	KK		
NgTbpA_WHO_U	415	ADKDT	TD	YAR	LS	YDR	QG	IGL	DN	HF	Q	Q	THCSA	D	GSD	KY	CRP	SAD	K	FP	S	Y	YKSDRV	I	Y	G	ESH	RL	QAA	F	KK		
NgTbpA_WHO_O	415	ADKDT	TD	YAR	LS	YDR	QG	IGL	DN	HF	Q	Q	THCSA	D	GSD	KY	CRP	SAD	K	FP	S	Y	YKSDRV	I	Y	G	ESH	RL	QAA	F	KK		
NgTbpA_WHO_G	416	ADKDT	TD	YAR	LS	YDR	QG	IGL	DN	HF	Q	Q	THCSA	D	GSD	KY	CRP	SAD	K	FP	S	Y	YKSDRV	I	Y	G	ESH	RL	QAA	F	KK		
NgTbpA_WHO_F	416	ADKDT	TD	YAR	LS	YDR	QG	IGL	DN	HF	Q	Q	THCSA	D	GSD	KY	CRP	SAD	K	FP	S	Y	YKSDRV	I	Y	G	ESH	RL	QAA	F	KK		
NgTbpA_WHO_Y	414	ADKDT	TD	YAR	LS	YDR	QG	IGL	DN	HF	Q	Q	THCSA	D	GSD	KY	CRP	SAD	K	FP	S	Y	YKSDRV	I	Y	G	ESH	RL	QAA	F	KK		
NgTbpA_DG118	416	ADKDT	TD	YAR	LS	YDR	QG	IGL	DN	HF	Q	Q	THCSA	D	GSD	KY	CRP	SAD	K	FP	S	Y	YKSDRV	I	Y	G	ESH	RL	QAA	F	KK		
NgTbpA_WHO_K	414	ADKDT	TD	YAR	LS	YDR	QG	IGL	DN	HF	Q	Q	THCSA	D	GSD	KY	CRP	SAD	K	FP	S	Y	YKSDRV	I	Y	G	ESH	RL	QAA	F	KK		
NgTbpA_WHO_W	414	ADKDT	TD	YAR	LS	YDR	QG	IGL	DN	HF	Q	Q	THCSA	D	GSD	KY	CRP	SAD	K	FP	S	Y	YKSDRV	I	Y	G	ESH	RL	QAA	F	KK		
NgTbpA_WHO_X	414	ADKDT	TD	YAR	LS	YDR	QG	IGL	DN	HF	Q	Q	THCSA	D	GSD	KY	CRP	SAD	K	FP	S	Y	YKSDRV	I	Y	G	ESH	RL	QAA	F	KK		
NgTbpA_WHO_Z	414	ADKDT	TD	YAR	LS	YDR	QG	IGL	DN	HF	Q	Q	THCSA	D	GSD	KY	CRP	SAD	K	FP	S	Y	YKSDRV	I	Y	G	ESH	RL	QAA	F	KK		
NgTbpA_WHO_V	416	ADKDT	TD	YAR	LS	YDR	QG	IGL	DN	HF	Q	Q	THCSA	D	GSD	KY	CRP	SAD	K	FP	S	Y	YKSDRV	I	Y	G	ESH	RL	QAA	F	KK		
NgTbpA_F62	414	ADKDT	TD	YAR	LS	YDR	QG	IGL	DN	HF	Q	Q	THCSA	D	GSD	KY	CRP	SAD	K	FP	S	Y	YKSDRV	I	Y	G	ESH	RL	QAA	F	KK		
NgTbpA_FA1090	414	ADKDT	TD	YAR	LS	YDR	QG	IGL	DN	HF	Q	Q	THCSA	D	GSD	KY	CRP	SAD	K	FP	S	Y	YKSDRV	I	Y	G	ESH	RL	QAA	F	KK		

[illegible]

[illegible]

		β41 β42 TT β43 α7 η7 TT TT η8									
<i>NmTbpA_K454</i>		β41 β42 TT β43 α7 η7 TT TT η8									
<i>NmTbpA_K454</i>	830	GNSRNT	TKATARRTRP	WYIV	DVSGYYT	VKKHF	TLRAGVYNLLN	YRYVTWENV	ROTAG	GAVNQHK	NVGVYNR
<i>NmTbpA_B16B6</i>	823	GNAANAK	KAASRRTRP	WYIV	DVSGYYN	IKKHL	TLRAGVYNLLN	YRYVTWENV	RQTAG	GAVNQHK	NVGVYNR
<i>NmTbpA_M597</i>	823	GNAANAK	KAASRRTRP	WYIV	DVSGYYN	IKKHL	TLRAGVYNLLN	YRYVTWENV	RQTAG	GAVNQHK	NVGVYNR
<i>NmTbpA_3-6</i>	827	GNSRNT	TKATARRTRP	WYIV	DVSGYYT	VKKHF	TLRAGVYNLLN	YRYVTWENV	ROTAG	GAVNQHK	NVGVYNR
<i>NmTbpA_H44/76</i>	830	GNSRNT	TKATARRTRP	WYIV	DVSGYYT	VKKHF	TLRAGVYNLLN	YRYVTWENV	ROTAG	GAVNQHK	NVGVYNR
<i>NmTbpA_NG144/82</i>	830	GNSRNT	TKATARRTRP	WYIV	DVSGYYT	VKKHF	TLRAGVYNLLN	YRYVTWENV	ROTAG	GAVNQHK	NVGVYNR
<i>NmTbpA_D8</i>	825	GNSRNT	TKATARRTRP	WYIV	DVSGYYT	VKKHF	TLRAGVYNLLN	YRYVTWENV	ROTAG	GAVNQHK	NVGVYNR
<i>NmTbpA_P2396</i>	829	GNSRNT	TKATARRTRP	WYIV	DVSGYYT	VKKHF	TLRAGVYNLLN	YRYVTWENV	RQTAG	GAVNQHK	NVGVYNR
<i>NmTbpA_G2136</i>	830	GNSRNT	TKATARRTRP	WYIV	DVSGYYT	VKKHF	TLRAGVYNLLN	YRYVTWENV	RQTAG	GAVNQHK	NVGVYNR
<i>NmTbpA_931905</i>	830	GNSRNT	TKATARRTRP	WYIV	DVSGYYT	VKKHF	TLRAGVYNLLN	YRYVTWENV	RQTAG	GAVNQHK	NVGVYNR
<i>NmTbpA_BZ163</i>	829	GNSRNT	TKATARRTRP	WYIV	DVSGYYT	VKKHF	TLRAGVYNLLN	YRYVTWENV	ROTAG	GAVNQHK	NVGVYNR
<i>NmTbpA_M1080</i>	830	GNSRNT	TKATARRTRP	WYIV	DVSGYYT	VKKHF	TLRAGVYNLLN	YRYVTWENV	ROTAG	GAVNQHK	NVGVYNR
<i>NmTbpA_M982</i>	825	GNSRNT	TKATARRTRP	WYIV	DVSGYYT	VKKHF	TLRAGVYNLLN	YRYVTWENV	ROTAG	GAVNQHK	NVGVYNR
<i>NmTbpA_400</i>	825	GNSRNT	TKATARRTRP	WYIV	DVSGYYT	VKKHF	TLRAGVYNLLN	YRYVTWENV	RQTAG	GAVNQHK	NVGVYNR
<i>NmTbpA_H1964</i>	829	GNSRNT	TKATARRTRP	WYIV	DVSGYYT	VKKHF	TLRAGVYNLLN	YRYVTWENV	RQTAG	GAVNQHK	NVGVYNR
<i>NmTbpA_S3131</i>	828	GNSRNT	TKATARRTRP	WYIV	DVSGYYT	VKKHF	TLRAGVYNLLN	YRYVTWENV	RQTAG	GAVNQHK	NVGVYNR
<i>NmTbpA_M978</i>	829	GNSRNT	TKATARRTRP	WYIV	DVSGYYT	VKKHF	TLRAGVYNLLN	YRYVTWENV	RQTAG	GAVNQHK	NVGVYNR
<i>NgTbpA_FA19</i>	830	GNSRNT	TKATARRTRP	WYIV	DVSGYYT	VKKHF	TLRAGVYNLLN	YRYVTWENV	ROTAG	GAVNQHK	NVGVYNR
<i>NgTbpA_MS11</i>	832	GNSRNT	TKATARRTRP	WYIV	DVSGYYT	VKKHF	TLRAGVYNLLN	YRYVTWENV	ROTAG	GAVNQHK	NVGVYNR
<i>NgTbpA_WHO_P</i>	832	GNSRNT	TKATARRTRP	WYIV	DVSGYYT	VKKHF	TLRAGVYNLLN	YRYVTWENV	RQTAG	GAVNQHK	NVGVYNR
<i>NgTbpA_WHO_L</i>	832	GNSRNT	TKATARRTRP	WYIV	DVSGYYT	VKKHF	TLRAGVYNLLN	YRYVTWENV	ROTAG	GAVNQHK	NVGVYNR
<i>NgTbpA_WHO_N</i>	828	GNSRNT	TKATARRTRP	WYIV	DVSGYYT	VKKHF	TLRAGVYNLLN	YRYVTWENV	RQTAA	GAVNQHK	NVGVYNR
<i>NgTbpA_WHO_M</i>	835	GNSRNT	TKATARRTRP	WYIV	DVSGYYT	VKKHF	TLRAGVYNLLN	YRYVTWENV	ROTAG	GAVNQHK	NVGVYNR
<i>NgTbpA_WHO_U</i>	835	GNSRNT	TKATARRTRP	WYIV	DVSGYYT	VKKHF	TLRAGVYNLLN	YRYVTWENV	ROTAG	GAVNQHK	NVGVYNR
<i>NgTbpA_WHO_O</i>	828	GNSRNT	TKATARRTRP	WYIV	DVSGYYT	VKKHF	TLRAGVYNLLN	YRYVTWENV	ROTAG	GAVNQHK	NVGVYNR
<i>NgTbpA_WHO_G</i>	831	GNSRNT	TKATARRTRP	WYIV	DVSGYYT	VKKHF	TLRAGVYNLLN	YRYVTWENV	RQTAG	GAVNQHK	NVGVYNR
<i>NgTbpA_WHO_F</i>	827	GNSRNT	TKATARRTRP	WYIV	DVSGYYT	VKKHF	TLRAGVYNLLN	YRYVTWENV	RQTAA	GAVNQHK	NVGVYNR
<i>NgTbpA_WHO_Y</i>	834	GNSRNT	TKATARRTRP	WYIV	DVSGYYT	VKKHF	TLRAGVYNLLN	YRYVTWENV	ROTAG	GAVNQHK	NVGVYNR
<i>NgTbpA_DG118</i>	829	GNSRNT	TKATARRTRP	WYIV	DVSGYYT	VKKHF	TLRAGVYNLLN	YRYVTWENV	ROTAG	GAVNQHK	NVGVYNR
<i>NgTbpA_WHO_K</i>	827	GNSRNT	TKATARRTRP	WYIV	DVSGYYT	VKKHF	TLRAGVYNLLN	YRYVTWENV	ROTAG	GAVNQHK	NVGVYNR
<i>NgTbpA_WHO_W</i>	827	GNSRNT	TKATARRTRP	WYIV	DVSGYYT	VKKHF	TLRAGVYNLLN	YRYVTWENV	ROTAG	GAVNQHK	NVGVYNR
<i>NgTbpA_WHO_X</i>	827	GNSRNT	TKATARRTRP	WYIV	DVSGYYT	VKKHF	TLRAGVYNLLN	YRYVTWENV	ROTAG	GAVNQHK	NVGVYNR
<i>NgTbpA_WHO_Z</i>	827	GNSRNT	TKATARRTRP	WYIV	DVSGYYT	VKKHF	TLRAGVYNLLN	YRYVTWENV	ROTAG	GAVNQHK	NVGVYNR
<i>NgTbpA_WHO_V</i>	829	GNSRNT	TKATARRTRP	WYIV	DVSGYYT	VKKHF	TLRAGVYNLLN	YRYVTWENV	RQTAA	GAVNQHK	NVGVYNR
<i>NgTbpA_F62</i>	829	GNSRNT	TKATARRTRP	WYIV	DVSGYYT	VKKHF	TLRAGVYNLLN	YRYVTWENV	ROTAG	GAVNQHK	NVGVYNR
<i>NgTbpA_FA1090</i>	827	GNSRNT	TKATARRTRP	WYIV	DVSGYYT	VKKHF	TLRAGVYNLLN	YRYVTWENV	RQTAA	GAVNQHK	NVGVYNR

		β44									
<i>NmTbpA_K454</i>		β44									
<i>NmTbpA_K454</i>	900	YAAPGRNYTF	SLEMKF	...							
<i>NmTbpA_B16B6</i>	893	YAAPGRNYTF	SLEMKF	...							
<i>NmTbpA_M597</i>	893	YAAPGRNYTF	SLEMKF	...							
<i>NmTbpA_3-6</i>	897	YAAPGRNYTF	SLEMKF	...							
<i>NmTbpA_H44/76</i>	900	YAAPGRNYTF	SLEMKF	...							
<i>NmTbpA_NG144/82</i>	900	YAAPGRNYTF	SLEMKF	...							
<i>NmTbpA_D8</i>	895	YAAPGRNYTF	SLEMKF	...							
<i>NmTbpA_P2396</i>	899	YAAPGRNYTF	SLEMKF	...							
<i>NmTbpA_G2136</i>	900	YAAPGRNYTF	SLEMKF	...							
<i>NmTbpA_931905</i>	900	YAAPGRNYTF	SLEMKF	...							
<i>NmTbpA_BZ163</i>	899	YAAPGRNYTF	SLEMKF	...							
<i>NmTbpA_M1080</i>	900	YAAPGRNYTF	SLEMKF	...							
<i>NmTbpA_M982</i>	895	YAAPGRNYTF	SLEMKF	...							
<i>NmTbpA_400</i>	895	YAAPGRNYTF	SLEMKF	...							
<i>NmTbpA_H1964</i>	899	YAAPGRNYTF	SLEMKF	...							
<i>NmTbpA_S3131</i>	898	YAAPGRNYTF	SLEMKF	...							
<i>NmTbpA_M978</i>	899	YAAPGRNYTF	SLEMKF	...							
<i>NgTbpA_FA19</i>	900	YAAPGRNYTF	SLEMKF	...							
<i>NgTbpA_MS11</i>	902	YAAPGRNYTF	SLEMKF	...							
<i>NgTbpA_WHO_P</i>	902	YAAPGRNYTF	SLEMKF	...							
<i>NgTbpA_WHO_L</i>	902	YAAPGRNYTF	SLEMKF	...							
<i>NgTbpA_WHO_N</i>	898	YAAPGRNYTF	SLEMKF	...							
<i>NgTbpA_WHO_M</i>	905	YAAPGRNYTF	SLEMKF	...							
<i>NgTbpA_WHO_U</i>	905	YAAPGRNYTF	SLEMKF	...							
<i>NgTbpA_WHO_O</i>	898	YAAPGRNYTF	SLEMKF	...							
<i>NgTbpA_WHO_G</i>	901	YAAPGRNYTF	SLEMKF	...							
<i>NgTbpA_WHO_F</i>	897	YAAPGRNYTF	SLEMKF	...							
<i>NgTbpA_WHO_Y</i>	904	YAAPGRNYTF	SLEMKF	...							
<i>NgTbpA_DG118</i>	899	YAAPGRNYTF	SLEMKF	...							
<i>NgTbpA_WHO_K</i>	897	YAAPGRNYTF	SLEMKF	...							
<i>NgTbpA_WHO_W</i>	897	YAAPGRNYTF	SLEMKF	...							
<i>NgTbpA_WHO_X</i>	897	YAAPGRNYTF	SLEMKF	...							
<i>NgTbpA_WHO_Z</i>	897	YAAPGRNYTF	SLEMKF	...							
<i>NgTbpA_WHO_V</i>	899	YAAPGRNYTF	SLEMKF	...							
<i>NgTbpA_F62</i>	899	YAAPGRNYTF	SLEMKF	...							
<i>NgTbpA_FA1090</i>	897	YAAPGRNYTF	SLEMKF	...							

Supplementary Figure 2. Sequence alignment of TbpBs.

	1	10	20	30	40
NmTbpB_M597	VLVWVA	ARSF	DLDSVETVQDM	HSKPKYED	ESQPESSQDDVS
NmTbpB_B16B6	MNNPLVNQAAMVLPVFL	LSACLGG	GGSF	DLDSVETVQDM	HSKPKYED
NgTbpB_FA19	MNNPLVNQAAMVLPVFL	LSACLGG	GGSF	DLDSVETVQDM	HSKPKYED
NmTbpB_M978	SACLGG	GGSF	DLDSVETVQDM	HSKPKYED	ESQPESSQDDVS
NmTbpB_020	LSACLGG	GGSF	DLDSVETVQDM	HSKPKYED	ESQPESSQDDVS
NmTbpB_M1080	SACLGG	GGSF	DLDSVETVQDM	HSKPKYED	ESQPESSQDDVS
NmTbpB_P2396	LSACLGG	GGSF	DLDSVETVQDM	HSKPKYED	ESQPESSQDDVS
NmTbpB_MC58	MNNPLVNQAAMVLPVFL	LSACLGG	GGSF	DLDSVETVQDM	HSKPKYED
NmTbpB_120M	LSACLGG	GGSF	DLDSVETVQDM	HSKPKYED	ESQPESSQDDVS
NmTbpB_931905	LSACLGG	GGSF	DLDSVETVQDM	HSKPKYED	ESQPESSQDDVS
NmTbpB_NG114/22	LSACLGG	GGSF	DLDSVETVQDM	HSKPKYED	ESQPESSQDDVS
NmTbpB_H44/76	LSACLGG	GGSF	DLDSVETVQDM	HSKPKYED	ESQPESSQDDVS
NmTbpB_G2136	LSACLGG	GGSF	DLDSVETVQDM	HSKPKYED	ESQPESSQDDVS
NgTbpB_WHO_P	MNNPLVNQAAMVLPVFL	LSACLGG	GGSF	DLDSVETVQDM	HSKPKYED
NgTbpB_WHO_Y	MNNPLVNQAAMVLPVFL	LSACLGG	GGSF	DLDSVETVQDM	HSKPKYED
NgTbpB_WHO_W	MNNPLVNQAAMVLPVFL	LSACLGG	GGSF	DLDSVETVQDM	HSKPKYED
NgTbpB_WHO_M	MVLVPVFL	LSACLGG	GGSF	DLDSVETVQDM	HSKPKYED
NgTbpB_WHO_U	MNNPLVNQAAMVLPVFL	LSACLGG	GGSF	DLDSVETVQDM	HSKPKYED

	50	60	70	80	90
NmTbpB_M597	ENSGAA	YGF	AVKL	LR	RRNAHFNPKYK
NmTbpB_B16B6	ENSGAA	YGF	AVKL	LR	RRNAHFNPKYK
NgTbpB_FA19	ENSGAA	YGF	AVKL	LR	RRNAHFNPKYK
NmTbpB_M978	RKDQGG	YGF	AMR	LKRRNWH	PSANPKED
NmTbpB_020	RKDQGG	YGF	AMR	LKRRNWH	PSANPKED
NmTbpB_M1080	RKDQGG	YGF	AMR	LKRRNWH	PSANPKED
NmTbpB_P2396	RKDQGG	YGF	AMR	LKRRNWH	PSANPKED
NmTbpB_MC58	RKDQGG	YGF	AMR	LKRRNWH	PSANPKED
NmTbpB_120M	RKDQGG	YGF	AMR	LKRRNWH	PSANPKED
NmTbpB_931905	RKDQGG	YGF	AMR	LKRRNWH	PSANPKED
NmTbpB_NG114/82	RKDQGG	YGF	AMR	LKRRNWH	PSANPKED
NmTbpB_G2136	RKDQGG	YGF	AMR	LKRRNWH	PSANPKED
NgTbpB_WHO_P	RKDQGG	YGF	AMR	LKRRNWH	PSANPKED
NgTbpB_WHO_Y	RKDQGG	YGF	AMR	LKRRNWH	PSANPKED
NgTbpB_WHO_W	RKDQGG	YGF	AMR	LKRRNWH	PSANPKED
NgTbpB_WHO_M	RKDQGG	YGF	AMR	LKRRNWH	PSANPKED
NgTbpB_WHO_U	RKDQGG	YGF	AMR	LKRRNWH	PSANPKED

	100	110	120	130
NmTbpB_M597	KKRGSS	ELIESK	WED	GQSR
NmTbpB_B16B6	KKRGSS	ELIESK	WED	GQSR
NgTbpB_FA19	TN.GNSK	MYTSP	YLSQDAD	SSHANGANQ
NmTbpB_M978	TG.SDSN	IYSSP	YLTQSNH	QNGS
NmTbpB_020	ANNGDNN	IYTS	SPYLTQSNH	QNGTNGANL
NmTbpB_M1080	ANNGDNN	IYTS	SPYLTQSNH	QNGTNGANL
NmTbpB_P2396	TD.DGSN	IYSSP	YLTQSNH	QNGTNGANL
NmTbpB_MC58	TD.SDNN	IYSSP	YLTQSNH	QNGTNGANL
NmTbpB_120M	TD.SDNN	IYSSP	YLTQSNH	QNGTNGANL
NmTbpB_931905	TD.DDSN	IYSSP	YLTQSNH	QNGTNGANL
NmTbpB_NG114/82	TD.DDSN	IYSSP	YLTQSNH	QNGTNGANL
NmTbpB_H44/76	GNNEGAL	LQDSS	QENQ	GISK
NmTbpB_G2136	GNNGGAS	LQDSS	QENQ	GISK
NgTbpB_WHO_P	GND.GET	LQDSS	Q.QE	GISK
NgTbpB_WHO_Y	GNE.GVS	LQDSS	QQGE	GISK
NgTbpB_WHO_W	GND.GET	LQDSS	QEQS	GISK
NgTbpB_WHO_M	GNE.GEL	LQDSS	QQGK	GISK
NgTbpB_WHO_U	GNE.GEL	LQDSS	QQGK	GISK

	140	150	160	170	180	190
NmTbpB_M597	NNI	VLF	GP	DGY	LYYK	GKEPSKE
NmTbpB_B16B6	NNI	VLF	GP	DGY	LYYK	GKEPSKE
NgTbpB_FA19	NG..L.VS	AKRG	DGY	LYYH	GDKPSR	QLPAS
NmTbpB_M978	NN..LIK	GAKSG	DGY	LYYH	GDKPSR	QLPAS
NmTbpB_020	NS..LIK	GAKSG	DGY	LYYH	GDKPSR	QLPAS
NmTbpB_M1080	NS..SIK	GAKSG	DGY	LYYH	GDKPSR	QLPAS
NmTbpB_P2396	.G..QNK	IAQGG	DGY	LYYH	GDKPSR	QLPAS
NmTbpB_MC58	.V..EPK	SAKNG	DGY	LYYH	GDKPSR	QLPAS
NmTbpB_120M	.V..EPK	SAKNG	DGY	LYYH	GDKPSR	QLPAS
NmTbpB_931905	...TNKI	VQQGD	DGY	LYYH	GDKPSR	QLPAS
NmTbpB_NG114/82	...ANKI	VQQGD	DGY	LYYH	GDKPSR	QLPAS
NmTbpB_H44/76	GS..SITA	AARNG	DGY	LYYH	GDKPSR	QLPAS
NmTbpB_G2136	DS..SITA	AARSG	DGY	LYYH	GDKPSR	QLPAS
NgTbpB_WHO_P	.TIDG	KVT	VRS	GP	DGY	LYYH
NgTbpB_WHO_Y	DLN	SKII	E	ARNG	DGY	LYYH
NgTbpB_WHO_W	DSS	SKII	E	VRNG	DGY	LYYH
NgTbpB_WHO_M	.ESN	KII	E	ARSG	DGY	LYYH
NgTbpB_WHO_U	.ESN	KII	E	ARSG	DGY	LYYH

200 210 220 230 240

NmTbpB_M597 .GCDKSGALSALE..EGVLRNQAEASSGHTDFGMTSEFEVDFSDKTIKGLTYRNNRITQN
NmTbpB_B16B6 .GCDKSGALSALE..EGVLRNQAEASSGHTDFGMTSEFEVDFSDKTIKGLTYRNNRITQN
NgTbpB_FA19 GQGDKYSGFSGDEGETTSNRTDSNLNDKHHEGYGFTSNFKVDFNNKKLTGKLIRNNRVINT
NmTbpB_M978 KQGDYSGFSGDDEEYSNKNESMLKDGQEGYGFSTSNLKVDFNNKKLTGKLIRNNRVNTA
NmTbpB_020 KQGDYSGFSGDDEEYSNKNESMLKDGQEGYGFSTSNLKVDFNNKKLTGKLIRNNRVNTA
NmTbpB_M1080 KQGDYSGFSGDDEEYSNKNESMLKDGQEGYGFSTSNLKVDFNNKKLTGKLIRNNRVNTA
NmTbpB_P2396 RQGDKYSGFSGDEGEYSNKNESMLKDGQEGYGFSTSNLKVDFNNKKLTGKLIRNNRVNTA
NmTbpB_MC58 SQGDYSGFSGDDEEYSNKNESMLKDGQEGYGFSTSNLKVDFNNKKLTGKLIRNNRVNTA
NmTbpB_120M SQGDYSGFSGDDEEYSNKNESMLKDGQEGYGFSTSNLKVDFNNKKLTGKLIRNNRVNTA
NmTbpB_931905 SQGDYSGFSGDDEEYSNKNESMLKDGQEGYGFSTSNLKVDFNNKKLTGKLIRNNRVNTA
NmTbpB_NG114/282 SQGDYSGFSGDDEEYSNKNESMLKDGQEGYGFSTSNLKVDFNNKKLTGKLIRNNRVNTA
NmTbpB_H44/76 KPGDYSAFSGEL..DYIVKQENDKKDGHVGLGLTTEITVDFEKKTLGSKGLIKNNRVITTT
NmTbpB_G2136 GPGDYSAFSGEL..DYIVNKKDSDDKKDGHVGLGLTTEITVDFEKKTLGSKGLIKNNRVITTT
NgTbpB_WHO_P KPGDYSAFSGEL..DYIVKKEEDDKKDGHVGLGLTTEITVDFEKKTLGSKGLIKNNRVITTT
NgTbpB_WHO_Y KSGDYSAFSGEL..DYIVKKEEDDKKDGHVGLGLTTEITVDFEKKTLGSKGLIKNNRVITTT
NgTbpB_WHO_W KPGDYSAFSGEL..DYIVKKEEDDKKDGHVGLGLTTEITVDFEKKTLGSKGLIKNNRVITTT
NgTbpB_WHO_M KSGDYSAFSGEL..DYIVKKEEDDKKDGHVGLGLTTEITVDFEKKTLGSKGLIKNNRVITTT
NgTbpB_WHO_U KSGDYSAFSGEL..DYIVKKEEDDKKDGHVGLGLTTEITVDFEKKTLGSKGLIKNNRVITTT

250 260 270 280 290 300

NmTbpB_M597 NSENKQ.IKTTTRYTIQATLHGGRFKGKALAADKGA.....TNGSHPFISDSDSLGGFFY
NmTbpB_B16B6 NSENKQ.IKTTTRYTIQATLHGGRFKGKALAADKGA.....TNGSHPFISDSDSLGGFFY
NgTbpB_FA19 AAS..DGYTTTEYYSLDATLHGGRFKGKALAADKGN.T...GGTKLHPFVDFSSSLGGFFY
NmTbpB_M978 TAN..DKYTTTEYYSLEBAOVTGNRRFGKATATDKPG.T...GETKHHPFVDFSSSLGGFFY
NmTbpB_020 TTG..GKHATTTEYYSLEBAOVTGNRRFGKATATDKPQ.N...SETKEHPFVDFSSSLGGFFY
NmTbpB_M1080 TTS..DKHTTTEYYSLEBAOVTGNRRFGKATATDKPG.N...GETKHHPFVDFSSSLGGFFY
NmTbpB_P2396 TNN..DKHTTTEYYSLDATLHGGRFKGKAEATDKPKND...GETKEHPFVDFSSSLGGFFY
NmTbpB_MC58 .NN..QATTTTEYYSLEBAOVTGNRRFGKATATDKPQ.N...SETKEHPFVDFSSSLGGFFY
NmTbpB_120M .NN..QATTTTEYYSLEBAOVTGNRRFGKATATDKPQ.N...SETKEHPFVDFSSSLGGFFY
NmTbpB_931905 .NN..QA.TTEYYSLEBAOVTGNRRFGKATATDKPQ.N...SETKEHPFVDFSSSLGGFFY
NmTbpB_NG114/282 .NN..QA.TTEYYSLEBAOITGNRRFGKAMATDKPG.T...GETKLHPFVDFSSSLGGFFY
NmTbpB_H44/76 NND...KHTTTEYYSLEATLKGRRFGKATATDKPKE...NETKHHPFVDFSSSLGGFFY
NmTbpB_G2136 DND...KHTTTEYYSLDATLHGGRFKGKAEATDKPKND...GETKEHPFVDFSSSLGGFFY
NgTbpB_WHO_P GDE...PTTEYYSLEBAOVTGNRRFGKALATDKPKAN...ETKEHPFVDFSSSLGGFFY
NgTbpB_WHO_Y GDE...PTTEYYSLEBAOVTGNRRFGKALATDKPKVN...ETKEHPFVDFSSSLGGFFY
NgTbpB_WHO_W NSDDQNKYTTTEYYTLDATLHGGRFKGKAMATDKSKNGETDQTKKHPFVDFSSSLGGFFY
NgTbpB_WHO_M NGDQNKYTTTEYYTLDATLHGGRFKGKATATDKKEN...ETGQHPFVDFSSSLGGFFY
NgTbpB_WHO_U NGDQNKYTTTEYYTLDATLHGGRFKGKATATDKKEN...ETGQHPFVDFSSSLGGFFY

310 320 330 340

NmTbpB_M597 GPKGEELAGKFLSNDNKVAVVFGAKQKDKKDGENAA.....GPKAT
NmTbpB_B16B6 GPKGEELAGKFLSNDNKVAVVFGAKQKDKKDGENAA.....GPKAT
NgTbpB_FA19 GPKGEELGFRFLSDDKVAVVGSAKTKDSTANGNAPAASSGGPAA.....TM.PSETRL
NmTbpB_M978 GPKGEELGFRFLSNDKVAVVGSAKTQDKAANGNTAAASGGTDAAASNGAAATSSSENSKL
NmTbpB_020 GPKGEELGFRFLSNDKVAVVGSAKTQDKPGN...GAAASDGAGAAASNGAAAMPSENSKL
NmTbpB_M1080 GPKGEELGFRFLSDDKVAVVGSAKTKDNTANGNTAAASGGAGAAASNGAAAMPSENSKL
NmTbpB_P2396 GPKGEELGFRFLSDDKVAVVGSAKTQDKPENGA...AASGGTDAAASNGAAATSSSENSKL
NmTbpB_MC58 GPKGEELGFRFLSDDKVAVVGSAKTKDKPANGNTAAASGGTDAAASNGAAATSSSENSKL
NmTbpB_120M GPKGEELGFRFLSDDKVAVVGSAKTKDKPANGNTAAASGGTDAAASNGAAATSSSENSKL
NmTbpB_931905 GRKGEELGFRFLSDDKVAVVGSAKTQDKPENGA...AALGGAGAAASGGVAMPSENSKL
NmTbpB_NG114/282 GPKGEELGFRFLSDDKVAVVGSAKTQDKPGNGA...AASGGTGAAASGGADAMPSENSKL
NmTbpB_H44/76 GPKGEELGFRFLSDDKVAVVGSAKTKDKPGNGA...AAPGGTDAAASNGAAATSSSENSKL
NmTbpB_G2136 GPKGEELGFRFLSDDKVAVVGSAKTQDKPRNGA...VASGGAGAAASNGAAATSSSENSKL
NgTbpB_WHO_P GPKGEELGFRFLSDDKVAVVGSAKTKDETASSGGT...SGGASVS.ASGGTGTSENSKL
NgTbpB_WHO_Y GPKGEELGFRFLSDDKVAVVGSAKTKDKNANGNTA...AAGT...AGAAAMSSSETKL
NgTbpB_WHO_W GPKGEELGFRFLSDDKVAVVGSAKTKDKAENGNGGASGGASVSVSNAGAAATSSSENSKL
NgTbpB_WHO_M GPKGEELGFRFLSDDKVAVVGSAKTKDNTANGNPAVSS...GAGAAAM.PSETGL
NgTbpB_WHO_U GPKGEELGFRFLSDDKVAVVGSAKTKDNTANGNPAVSS...GAGAAAM.PSETGL

350 360 370 380

NmTbpB_M597 ETVIDAYRITGEEFKKEQIDSFQDVKKLLVDGVLSLLPSEGKNA.....
NmTbpB_B16B6 ETVIDAYRITGEEFKKEQIDSFQDVKKLLVDGVLSLLPSEGKNA.....
NgTbpB_FA19 TVVLDAVELTPDGKEIKNLDNFSNAATRLVVDGIMIPLLPTES..GNGQADKG.....KN
NmTbpB_M978 TVVLDAVELTLNDKKIKNLDNFSNAATRLVVDGIMIPLLPTES..ESGNGQADKGKKGKNGKN
NmTbpB_020 TVVLDAVELTHGGTAIKNLDNFSNAATRLVVDGIMIPLLPEASESGNNQANQG.....TN
NmTbpB_M1080 TVVLDAVELTHGGTAIKNLDNFSNAATRLVVDGIMIPLLPEASESGN...TNQG.....TN
NmTbpB_P2396 TVVLDAVELKSGGKEVKNLDNFSNAATRLVVDGIMIPLLPKDSESGNTQADKG.....KN
NmTbpB_MC58 TVVLDAVELKLGDKKEVQKLDNFSNAATRLVVDGIMIPLLPEASESGNNQANQG.....TN
NmTbpB_120M TVVLDAVELKLGDKKEVQKLDNFSNAATRLVVDGIMIPLLPEASESGNNQANQG.....TN
NmTbpB_931905 TVVLDAVELTHGGTAIKNLDNFSNAATRLVVDGIMIPLLPTES..ESGNGQADKG.....KN
NmTbpB_NG114/282 TVVLDAVELTHGGTAIKNLDNFSNAATRLVVDGIMIPLLPEASESGNNQANQG.....TN
NmTbpB_H44/76 TVVLDAVELKSGGKEVKNLDNFSNAATRLVVDGIMIPLLPKDSESGNTQADKG.....KN
NmTbpB_G2136 TVVLDAVELTPDGKKIKLDNFSNAATRLVVDGIMIPLLPT..ESGNGQADKG.....EN
NgTbpB_WHO_P TVVLDAVELTPDGKKIKLDNFSNAATRLVVDGIMIPLLPT..ESGNGQADKG.....EN
NgTbpB_WHO_Y TVVLDAVELTPDGKKEIKNLDNFSNAATRLVVDGIMIPLLPT..ESGNGQADKG.....EN
NgTbpB_WHO_W TVVLDAVELTLDGKEIKNLDNFSNAATRLVVDGIMIPLLST..ESGDGQADKG.....KN
NgTbpB_WHO_M TVVLDAVELTLDGKEIKNLDNFSNAATRLVVDGIMIPLLST..ESGDGQADKG.....KN
NgTbpB_WHO_U TVVLDAVELTLDGKEIKNLDNFSNAATRLVVDGIMIPLLST..ESGDGQADKG.....KN

	390	400
NmTbpB_M597	..AFQHE.....	IEQNGVKATVC
NmTbpB_B16B6	..AFQHE.....	IEQNGVKATVC
NgTbpB_FA19	GGTDFTYE...TTYTPESDKKDTKAQTGAGGMQTASGTAG...VNGGQVG	TKTYKVVQVC
NmTbpB_M978	GGTDFTYK...TTYTPKNDDKDTKAQTGAAGSSGAQTDLGKADVNGGKAE	TKTYVEVEVC
NmTbpB_020	GGTAFTTRK...FDYTPKSDKDKDAQAGTAANGDQAASNTAG...DANGK	TKTYAVEVC
NmTbpB_M1080	GGTAFTTRK...FAHTPKSDEKDTQAGTAANGDQAASNTAG...DANGK	TKTYAVEVC
NmTbpB_P2396	GGTEFTTRK...FEHTPEESDKKDKAQAGTQTNGAQQTASNTAG...DTNGK	TKTYVEVEVC
NmTbpB_MC58	GGTAFTTRK...FDHTPEESDKKDKAQAGTQTNGAQQTASNTAG...DTNGK	TKTYVEVEVC
NmTbpB_120M	GGTAFTTRK...FDHTPEESDKKDKAQAGTQTNGAQQTASNTAG...DTNGK	TKTYVEVEVC
NmTbpB_931905	GGTEFTTRK...FDYTPESDKKDTQAGTPTNGAQQTASNTAG...DTNGK	TKTYVEVEVC
NmTbpB_NG114/82	GGTAFTTRK...FNHTPTSDEKDTQAGTAANGDQAASNTAG...DANGK	TKTYAVEVC
NmTbpB_H44/76	GGTEFTTRK...FEHTPEESDKKDKAQAGTAENGNPAASNTAG...DTNGK	TKTYAVEVC
NmTbpB_G2136	GGTAFTTRK...FNHTPKSDEKDTQAGTAENGNPAASNTAG...DANGK	TKTYVEVEVC
NgTbpB_WHO_P	GKTAFTIYE...TTYTPESDKKDTQTGMATNGVQTVSNTAG...GTSGKT	KTHYKVVQAC
NgTbpB_WHO_Y	GKTAFTIYE...TTYTPESDKKDTQTGMATNGVQTVSNTAG...GTSGKT	KTHYKVVQAC
NgTbpB_WHO_W	GKTAFTIYE...TTYTPESDKKDTQAGTGAGGMQTVSNAG...GT...SGE	TKTYKVVQAC
NgTbpB_WHO_M	GGTDFTYTTTYYTTTTPESDKKDTKAQTGAVGMQTAPGAAG...VNGGQAG	TKTYVEVEAC
NgTbpB_WHO_U	GGTDFTYTTTYYTTTTPESDKKDTKAQTGAVGMQTAPGAAG...VNGGQAG	TKTYVEVEAC

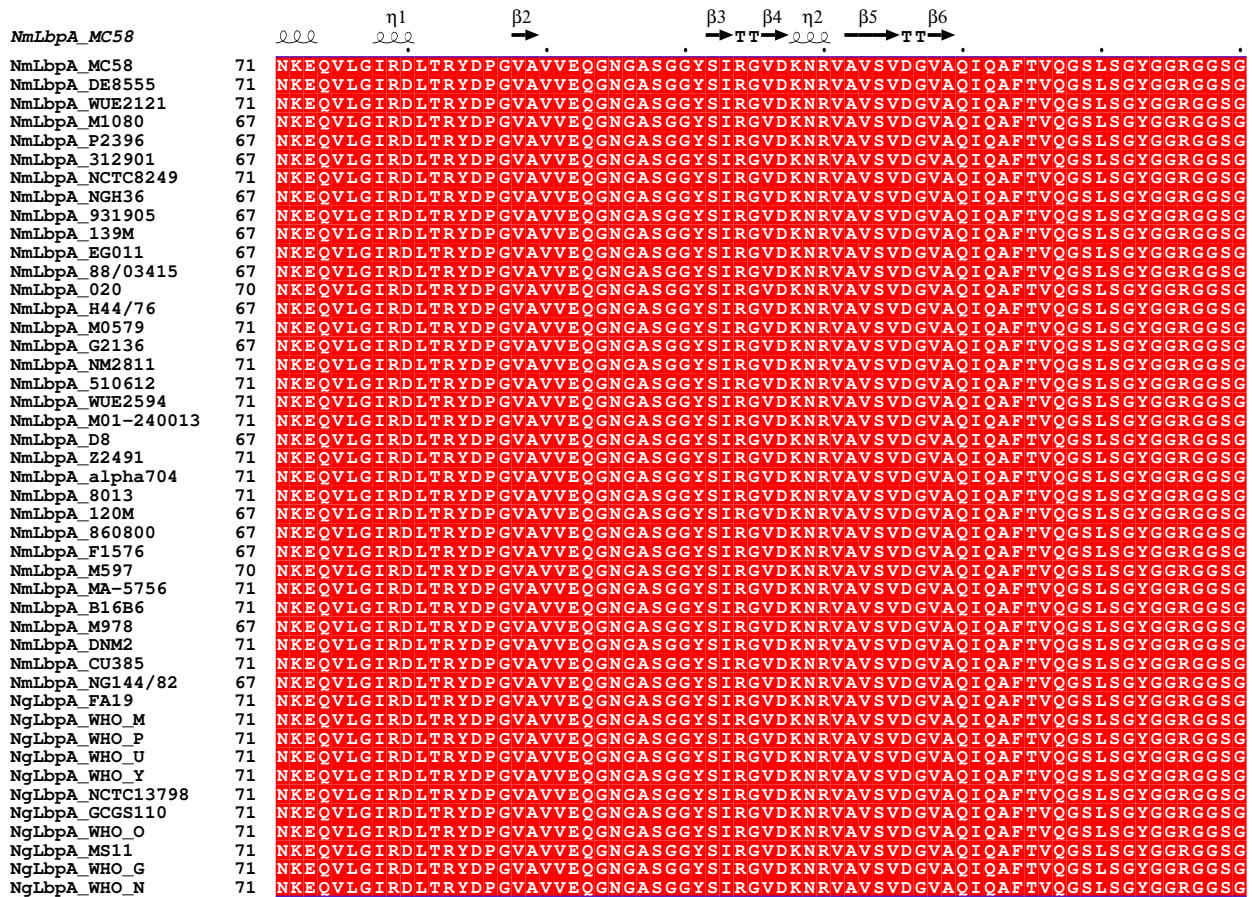
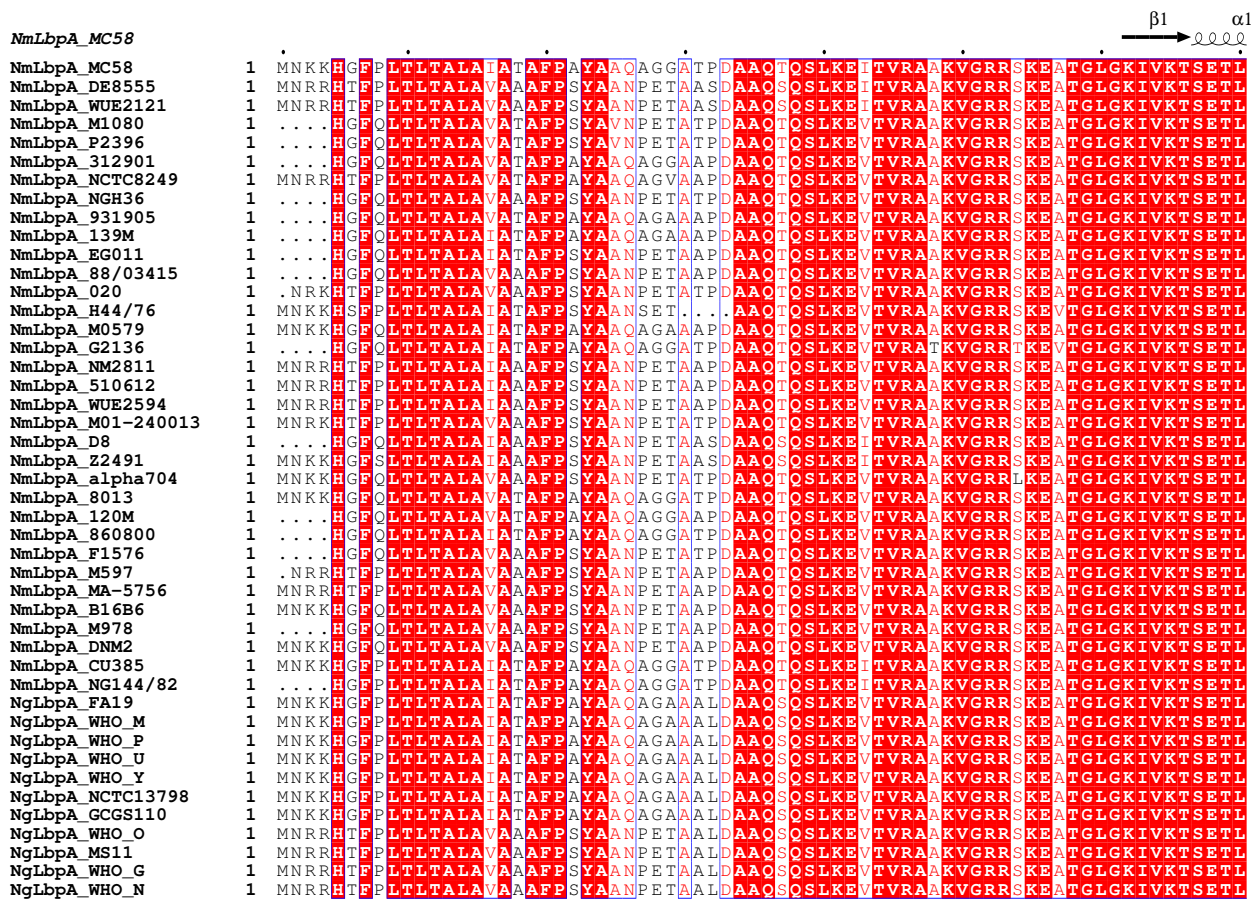
	410	420	430	440
NmTbpB_M597	CSNLDYMSFGKLSKEN...KDDMFLOGVTRFPVS	DVAARTEAN		
NmTbpB_B16B6	CSNLDYMSFGKLSKEN...KDDMFLOGVTRFPVS	DVAARTEAN		
NgTbpB_FA19	CSNLDYMSFGKLSKEN...KDDMFLOGVTRFPVS	DVAARTEAN		
NmTbpB_M978	CSNLDYMSFGKLSKEN...KDDMFLOGVTRFPVS	DVAARTEAN		
NmTbpB_020	CSNLDYMSFGKLSKEN...KDDMFLOGVTRFPVS	DVAARTEAN		
NmTbpB_M1080	CSNLDYMSFGKLSKEN...KDDMFLOGVTRFPVS	DVAARTEAN		
NmTbpB_P2396	CSNLDYMSFGKLSKEN...KDDMFLOGVTRFPVS	DVAARTEAN		
NmTbpB_MC58	CSNLDYMSFGKLSKEN...KDDMFLOGVTRFPVS	DVAARTEAN		
NmTbpB_120M	CSNLDYMSFGKLSKEN...KDDMFLOGVTRFPVS	DVAARTEAN		
NmTbpB_931905	CSNLDYMSFGKLSKEN...KDDMFLOGVTRFPVS	DVAARTEAN		
NmTbpB_NG114/82	CSNLDYMSFGKLSKEN...KDDMFLOGVTRFPVS	DVAARTEAN		
NmTbpB_H44/76	CSNLDYMSFGKLSKEN...KDDMFLOGVTRFPVS	DVAARTEAN		
NmTbpB_G2136	CSNLDYMSFGKLSKEN...KDDMFLOGVTRFPVS	DVAARTEAN		
NgTbpB_WHO_P	CSNLDYMSFGKLSKEN...KDDMFLOGVTRFPVS	DVAARTEAN		
NgTbpB_WHO_Y	CSNLDYMSFGKLSKEN...KDDMFLOGVTRFPVS	DVAARTEAN		
NgTbpB_WHO_W	CSNLDYMSFGKLSKEN...KDDMFLOGVTRFPVS	DVAARTEAN		
NgTbpB_WHO_M	CSNLDYMSFGKLSKEN...KDDMFLOGVTRFPVS	DVAARTEAN		
NgTbpB_WHO_U	CSNLDYMSFGKLSKEN...KDDMFLOGVTRFPVS	DVAARTEAN		

	450	460	470	480	490
NmTbpB_M597	AKYRGTWYGYIA.NG..TSWSGEASNQEGGNRAEFVDVDFSTKKISGTLTA	KDRISPAFTTI			
NmTbpB_B16B6	AKYRGTWYGYIA.NG..TSWSGEASNQEGGNRAEFVDVDFSTKKISGTLTA	KDRISPAFTTI			
NgTbpB_FA19	IVYLGFWYGRIA.NG..TSWSGKASNATDGNRAKFTVNFDRKEITGTLTA	NRSEATFTTI			
NmTbpB_M978	VVYRGSWYGHIA.SS..TSWSGNASNATSGNRAEFTVNFDTKKINGLTA	ENRQEAFTTI			
NmTbpB_020	IVYRGSWYGHIA.NG..TSWSGNASNATSGNRAEFTVNFGEKKINGLTA	ENRQEAFTTI			
NmTbpB_M1080	IVYRGSWYGHIA.NG..TSWSGNASNATSGNRAEFTVNFGEKKINGLTA	ENRQEAFTTI			
NmTbpB_P2396	VVYRGSWYGYIA.NDKS.TSWSGNASDREGGNRAEFTVNFGEKKITGTLTA	ENRQEAFTTI			
NmTbpB_MC58	IVYRGSWYGYIA.NDKS.TSWSGNASNATSGNRAEFTVNFADKKITGTLTA	ENRQEAFTTI			
NmTbpB_120M	VVYRGSWYGHIA.N..GTSWSGNASDKEGGNRAEFTVDFGAKKINGLTA	ENRQEAFTTI			
NmTbpB_931905	VVYRGSWYGHIA.NG..TSWSGNASDKEGGNRAEFTVDFGAKKINGLTA	ENRQEAFTTI			
NmTbpB_NG114/82	VVYRGSWYGHIA.NG..TSWSGNASDKEGGNRAEFTVNFGEKKINGLTA	ENRQEAFTTI			
NmTbpB_H44/76	IVYRGSWYGHIA.NG..TSWSGNASDKEGGNRAEFTVNFADKKLNGLTA	GERISPTFTTI			
NmTbpB_G2136	VVYRGSWYGHIA.NG..TSWSGNASDKEGGNRAEFTVNFGEKKINGLTA	ENRQEAFTTI			
NgTbpB_WHO_P	VVYLGFWYGHIAING..TSWTREASNQENGNRAKFDVNFDKKKITGTLTA	ANRQEAFTTI			
NgTbpB_WHO_Y	VVYLGFWYGHIAANG..TSWTGKASDQSGNRAKFDVNFDKKKITGTLTA	ANRQEAFTTI			
NgTbpB_WHO_W	IVYRGSWYGYIV.SG..TSWSGNASNATSGNRAEFTVNFDAKKINGLTA	ENRSEATFTTI			
NgTbpB_WHO_M	AKYRGTWYGYIA.NG..TSWSGNASNTTSGNRAEFTVNFDKKKITGMLTA	ANRQEAFTTI			
NgTbpB_WHO_U	AKYRGTWYGYIA.NG..TSWSGNASNTTSGNRAEFTVNFDKKKITGMLTA	ANRQEAFTTI			

	500	510	520	530	540	550
NmTbpB_M597	TAMIKDNGFSGVAKTGENGFALDPQNTGN	SHYTHI.EATVSGGFYGNKAIEMGGSE	SFPFG			
NmTbpB_B16B6	TAMIKDNGFSGVAKTGENGFALDPQNTGN	SHYTHI.EATVSGGFYGNKAIEMGGSE	SFPFG			
NgTbpB_FA19	DAMIEGNFGKGTAKTGNDGFAPDQNNSTVTHKVHIANAEVGGGFYGNABELGGWFAYPG					
NmTbpB_M978	DGKIEGNFGKGTAKTADLGFDDQSNNTGTPKAYITDAKVGGGFYGNABELGGWFAYPG					
NmTbpB_020	BGTIQGNFGKGTAKTADS	GFDDQSNNTGTPKAYITDAKVGGGFYGNABELGGWFAYPG				
NmTbpB_M1080	BGTIQGNFGKGTAKTADS	GFDDQSNNTGTPKAYITDAKVGGGFYGNABELGGWFAYPG				
NmTbpB_P2396	BGTIQGNFGKGTAKTADS	GFDDQSNNTGTPKAYITDAKVGGGFYGNABELGGWFAYPG				
NmTbpB_MC58	DGNIKDNFGKGTAKTADS	GFDDQSNNTGTPKAYITDAKVGGGFYGNABELGGWFAYPG				
NmTbpB_120M	BGTIEGNFGKGTAKTADS	GFDDQSNNTGTPKAYITDAKVGGGFYGNABELGGWFAYPG				
NmTbpB_931905	BGTIEGNFGKGTAKTADS	GFDDQSNNTGTPKAYITDAKVGGGFYGNABELGGWFAYPG				
NmTbpB_NG114/82	BGTIEGNFGKGTAKTADS	GFDDQSNNTGTPKAYITDAKVGGGFYGNABELGGWFAYPG				
NmTbpB_H44/76	TATIQGNFGKGTAKTADS	GFDDQSNNTGTPKAYITDAKVGGGFYGNABELGGWFAYPG				
NmTbpB_G2136	VGDIEGNFGKGTAKTADS	GFDDQSNNTGTPKAYITDAKVGGGFYGNABELGGWFAYPG				
NgTbpB_WHO_P	DAMIEGNFGKGTAKTADS	GFDDQSNNTGTPKAYITDAKVGGGFYGNABELGGWFAYPG				
NgTbpB_WHO_Y	SGMIDGNFGKGTAKTADS	GFDDQSNNTGTPKAYITDAKVGGGFYGNABELGGWFAYPG				
NgTbpB_WHO_W	DAMIEGNFGKGTAKTADS	GFDDQSNNTGTPKAYITDAKVGGGFYGNABELGGWFAYPG				
NgTbpB_WHO_M	DAMIEGNFGKGTAKTADS	GFDDQSNNTGTPKAYITDAKVGGGFYGNABELGGWFAYPG				
NgTbpB_WHO_U	DAMIEGNFGKGTAKTADS	GFDDQSNNTGTPKAYITDAKVGGGFYGNABELGGWFAYPG				

	560	570
NmTbpB_M597	NAPEG.....KQEK	ASVVFQAKRQ
NmTbpB_B1686	NAPEG.....KQEK	ASVVFQAKRQLVQ
NgTbpB_FA19	NEQTK..NATVE..SGNGNS	ASATVVFQAKRQLVK
NmTbpB_M978	DKQTE..KATVA..SGNGNS	ASATVVFQAKRQ....
NmTbpB_Q20	DKQAQ..PSVSGSG..ASA	ANASATVVFQAKRQ....
NmTbpB_M1080	DKQTE..NATVA..SGNGNS	ASATVVFQAKRQL..
NmTbpB_P2396	DKQTK..NAPVA..SGNGNS	ASATVVFQAKRQPV
NmTbpB_MC58	DKQTK..NATNA..SG....	NSATVVFQAKRQPV
NmTbpB_120M	DKQTK..NATNA..SG....	NSATVVFQAKRQP..
NmTbpB_931905	DKQTK..NATNA..SG....	NSATVVFQAKRQPV
NmTbpB_NG114/82	DNAAQ..PSASGSGAS..A	ANASATVVFQAKRQ....
NmTbpB_H44/76	DRQAQ..PSASGSGT..SA	ANASATVVFQAKRQ....
NmTbpB_G2136	DKQTK..NATDA..SGNGNS	ASATVVFQAKRQKP..
NgTbpB_WHO_P	NGQAGENAQTSSGNGNS	AGSATVVFQAKRQELVK
NgTbpB_WHO_Y	NGQAK..NAQASSGNGNS	AGSATVVFQAKRQLVQ
NgTbpB_WHO_W	NGQTK..NAQTSSGNGNS	AGSATVVFQAKRQELVK
NgTbpB_WHO_M	NGQTK..NAQASSGNGNS	AGSATVVFQAKRQLVK
NgTbpB_WHO_U	NGQTK..NAQASSGNGNS	AGSATVVFQAKRQLVK

Supplementary Figure 3. Sequence alignment of LbpAs.



$$\eta^3 \xrightarrow{\beta^7} \alpha^2 \xrightarrow{\beta^8} \eta^4 \quad \mathbf{T\,T} \quad \xrightarrow{\beta^9} \xrightarrow{\beta^{10}} \xrightarrow{\beta^{11}}$$

NmLbpA_MC58

β12

β13

NmLbpA_MC58	211	AGFSKDGWEGLLIRTERQGRETR	PHGDIADGV	EYGI	DLDAFR	OTYDI	IKRKT	T	REP	FF	SV	EGE	RES	SKP	VA						
NmLbpA_DE8555	211	AGFSKDGWEGLLIRTERQGRETR	PHGDIADGV	AYGIN	NRLDAFR	OTHDI	QSKD	KTGQ	FF	SV	EGE	RES	SKP	VA							
NmLbpA_WUE2121	211	AGFSKDGWEGLLIRTERQGRETR	PHGDIADGV	AYGIN	NRLDAFR	OTHDI	QSKD	KTGQ	FF	SV	EGE	RES	SKP	VA							
NmLbpA_M1080	207	AGFSKDGWEGLLIRTERQGRETR	PHGDIADGV	AYGIN	NRLDAFR	OTHDI	QS	NKTGQ	FF	LV	EGENT	LKP	VA								
NmLbpA_P2396	207	AGFSKDGWEGLLIRTERQGRETR	PHGDIADGV	AYGIN	NRLDAFR	OTHDI	QS	NKTGQ	FF	LV	EGENT	LKP	VA								
NmLbpA_312901	207	AGFSKDGWEGLLIRTERQGRETR	PHGDIADGV	AYGIN	NRLDAFR	OTYDI	QS	QDKTGQ	FF	SV	EGE	RES	SKP	VA							
NmLbpA_NCTC8249	211	AGFSKDGWEGLLIRTERQGRETR	PHGDIADGV	AYGIN	NRLDAFR	OTHDI	QSKD	KTGQ	FF	LV	EGENT	LKP	VA								
NmLbpA_NGH36	207	AGFSKDGWEGLLIRTERQGRETR	PHGDIADGV	AYGIN	NRLDAFR	OTHDI	QS	QDKTGQ	FF	LV	EGENT	LKP	VA								
NmLbpA_931905	207	AGFSKDGWEGLLIRTERQGRETR	PHGDIADGV	AYGIN	NRLDAFR	OTHDI	QS	QDKTGQ	FF	LV	EGENT	LKP	VA								
NmLbpA_139M	207	AGFSKDGWEGLLIRTERQGRETR	PHGDIADGV	AYGIN	NRLDAFR	OTHDI	QS	QDKTGQ	FF	LV	EGENT	LKP	VA								
NmLbpA_EG011	207	AGFSKDGWEGLLIRTERQGRETR	PHGDIADGV	AYGIN	NRLDAFR	OTHDI	QSKD	KPGQ	FF	LV	EGENT	LKP	VA								
NmLbpA_88/03415	207	AGFSKDGWEGLLIRTERQGRETR	PHGDIADGV	AYGIN	NRLDAFR	OTHDI	QS	QDKTGQ	FF	LV	EGENT	LKP	VA								
NmLbpA_020	210	AGFSKDGWEGLLIRTERQGRETR	PHGDIADGV	AYGIN	NRLDAFR	OTHDI	QS	QDKTGQ	FF	LV	EGENT	LKP	VA								
NmLbpA_H44/76	207	AGFSKDGWEGLLIRTERQGRETR	PHGDIADGV	EYGI	DLDAFR	OTYDI	QKQ	NKAAE	Y	FL	AEGE	SE	LKP	AA							
NmLbpA_M0579	211	AGFSKDGWEGLLIRTERQGRETR	PHGDIADGV	EYGI	DLDAFR	THGI	IKKP	SEEGE	Y	FL	AEGE	SE	PKP	VA							
NmLbpA_G2136	207	AGFSKDGWEGLLIRTERQGRETR	PHGDIADGV	EYGI	DLDAFR	OTYDI	QKQ	NKAAE	Y	FL	AEGE	SE	PKP	VA							
NmLbpA_NM2811	211	AGFSKDGWEGLLIRTERQGRETR	PHGDIADGV	EYGI	DLDAFR	OTYDI	QKQ	NKAAE	Y	FL	AEGE	RES	SKP	VA							
NmLbpA_510612	211	AGFSKDGWEGLLIRTERQGRETR	PHGDIADGV	AYGI	DLDAFR	OTYDI	QKQ	NKAAE	Y	FL	AEGE	RES	SKP	VA							
NmLbpA_WUE2594	211	AGFSKDGWEGLLIRTERQGRETR	PHGDIADGV	AYGI	DLDAFR	OTYDI	QKQ	NKAAE	Y	FL	AEGE	RES	SKP	VA							
NmLbpA_M01-240013	211	AGFSKDGWEGLLIRTERQGRETR	PHGDIADGV	EYGI	DLDAFR	OTYDI	QKQ	NKAAE	Y	FL	AEGE	RE	PKP	VA							
NmLbpA_D8	207	AGFSKDGWEGLLIRTERQGRETR	PHGDIADGV	EYGI	DLDAFR	OTYDI	QNP	NKAAE	Y	FL	AEGE	RE	PKP	VA							
NmLbpA_Z2491	211	AGFSKDGWEGLLIRTERQGRETR	PHGDIADGV	EYGI	DLDAFR	OTYDI	QKQ	NKAAE	Y	FL	AEGE	RE	PKP	VA							
NmLbpA_alpha704	211	AGFSKDGWEGLLIRTERQGRETR	PHGDIADGV	AYGIN	NRLDAFR	OTYDI	KRREK	T	TEP	FF	LV	EGE	SE	PKP	VA						
NmLbpA_8013	211	AGFSKDGWEGLLIRTERQGRETR	PHGDIADGV	AYGIN	NRLDAFR	OTYGI	KNP	SERGE	Y	FL	AEGE	SE	PKP	VA							
NmLbpA_120M	207	AGFSKDGWEGLLIRTERQGRETR	PHGDIADGV	EYGI	DLDAFR	OTYDI	ILSP	NKAAE	Y	FL	AEGE	SE	LKP	AA							
NmLbpA_860800	207	AGFSKDGWEGLLIRTERQGRETR	PHGDIADGV	AYGIN	NRLDAFR	OTYDI	QNP	NKAAE	Y	FL	AEGE	SE	LKP	AA							
NmLbpA_F1576	207	AGFSKDGWEGLLIRTERQGRETR	PHGDIADGV	AYGIN	NRLDAFR	OTYGI	KNP	SERGE	Y	FL	AEGE	SE	LKP	VA							
NmLbpA_M597	210	AGFSKDGWEGLLIRTERQGRETR	PHGDIADGV	AYGIN	NRLDAFR	OTYGI	IKKP	SEEGE	Y	FL	AEGE	SE	LKP	VA							
NmLbpA_MA-5756	211	AGFSKDGWEGLLIRTERQGRETR	PHGDIADGV	AYGIN	NRLDAFR	OTYGI	IKKP	SEEGE	Y	FL	AEGE	SE	LKP	VA							
NmLbpA_B16B6	211	AGFSKDGWEGLLIRTERQGRETR	PHGDIADGV	AYGIN	NRLDAFR	OTYGI	IKKP	SEEGE	Y	FL	AEGE	SE	LKP	VA							
NmLbpA_M978	207	AGFSKDGWEGLLIRTERQGRETR	PHGDIADGV	AYGIN	NRLDAFR	OTYGI	IKKP	SEEGE	Y	FL	AEGE	SE	LKP	VA							
NmLbpA_DNM2	211	AGFSKDGWEGLLIRTERQGRETR	PHGDIADGV	AYGIN	NRLDAFR	OTYGI	IKKP	SEEGE	Y	FL	AEGE	SE	LKP	VA							
NmLbpA_CU385	211	AGFSKDGWEGLLIRTERQGRETR	PHGDIADGV	EYGI	DLDAFR	OTYDI	KRKT	T	REP	FF	SV	EGE	RES	SKP	VA						
NmLbpA_NG144/82	207	AGFSKDGWEGLLIRTERQGRETR	PHGDIADGV	EYGI	DLDAFR	OTYDI	KRKT	T	REP	FF	SV	EGE	RES	SKP	VA						
NgLbpA_FA19	211	AGFSKDGWEGLLIRTERQGRETR	PHGDIADGV	EYGI	DLDAFR	OTYDI	KRKT	T	TEP	FF	LV	EGENT	LKP	VA							
NgLbpA_WHO_M	211	AGFSKDGWEGLLIRTERQGRETR	PHGDIADGV	EYGI	DLDAFR	OTYDI	KRKT	T	TEP	FF	LV	EGENT	LKP	VA							
NgLbpA_WHO_P	211	AGFSKDGWEGLLIRTERQGRETR	PHGDIADGV	EYGI	DLDAFR	OTYDI	KRKT	T	TEP	FF	LV	EGENT	LKP	VA							
NgLbpA_WHO_U	211	AGFSKDGWEGLLIRTERQGRETR	PHGDIADGV	EYGI	DLDAFR	OTYDI	KRKT	T	TEP	FF	LV	EGENT	LKP	VA							
NgLbpA_WHO_Y	211	AGFSKDGWEGLLIRTERQGRETR	PHGDIADGV	EYGI	DLDAFR	OTYDI	KRKT	T	TEP	FF	LV	EGENT	LKP	VA							
NgLbpA_NCTC13798	211	AGFSKDGWEGLLIRTERQGRETR	PHGDIADGV	EYGI	DLDAFR	OTYDI	KRKT	T	TEP	FF	LV	EGENT	LKP	VA							
NgLbpA_CGS110	211	AGFSKDGWEGLLIRTERQGRETR	PHGDIADGV	EYGI	DLDAFR	OTYDI	KRKT	T	TEP	FF	LV	EGENT	LKP	VA							
NgLbpA_WHO_O	211	AGFSKDGWEGLLIRTERQGRETR	PHGDIADGV	EYGI	DLDAFR	OTYDI	KRKT	T	TEP	FF	LV	EGENT	LKP	VA							
NgLbpA_MS11	211	AGFSKDGWEGLLIRTERQGRETR	PHGDIADGV	EYGI	DLDAFR	OTYDI	KRKT	T	TEP	FF	LV	EGENT	LKP	VA							
NgLbpA_WHO_G	211	AGFSKDGWEGLLIRTERQGRETR	PHGDIADGV	EYGI	DLDAFR	OTYDI	KRKT	T	TEP	FF	LV	EGENT	LKP	VA							
NgLbpA_WHO_N	211	AGFSKDGWEGLLIRTERQGRETR	PHGDIADGV	EYGI	DLDAFR	OTYDI	KRKT	T	TEP	FF	LV	EGENT	LKP	VA							

			$\alpha 3$ 0000	TT	$\beta 14$	TTT	TT	$\beta 15$
<i>NmLbpA_MC58</i>								
NmLbpA_MC58	280	KL	AG	Y	G	K	Y	L
NmLbpA_DE8555	281	KL	AG	N	G	N	Y	L
NmLbpA_WUE2121	281	KL	AG	N	G	N	Y	L
NmLbpA_M1080	276	KL	AG	Y	G	I	Y	L
NmLbpA_P2396	276	KL	AG	Y	G	I	Y	L
NmLbpA_312901	277	KL	AG	Y	G	I	Y	L
NmLbpA_NCTC8249	281	KL	AG	Y	G	I	Y	L
NmLbpA_NGH36	277	KL	AG	Y	G	I	Y	L
NmLbpA_931905	277	KL	AG	Y	G	I	Y	L
NmLbpA_139M	277	KL	AG	Y	G	I	Y	L
NmLbpA_EG011	277	KL	AG	Y	G	I	Y	L
NmLbpA_88/03415	277	KL	AG	Y	G	I	Y	L
NmLbpA_020	280	KL	AG	Y	G	I	Y	L
NmLbpA_H44/76	277	KL	AG	N	G	N	Y	L
NmLbpA_M0579	281	KL	AG	N	G	N	Y	L
NmLbpA_G2136	277	KL	AG	N	G	N	Y	L
NmLbpA_NM2811	281	KL	AG	N	G	N	Y	L
NmLbpA_510612	281	KL	AG	N	G	N	Y	L
NmLbpA_WUE2594	281	KL	AG	N	G	N	Y	L
NmLbpA_M01-240013	281	KL	AG	N	G	N	Y	L
NmLbpA_D8	277	KL	AG	N	G	N	Y	L
NmLbpA_Z2491	281	KL	AG	N	G	N	Y	L
NmLbpA_alpha704	280	KL	AG	Y	G	K	Y	L
NmLbpA_8013	281	KL	AG	N	G	N	Y	L
NmLbpA_120M	277	KL	AG	N	G	N	Y	L
NmLbpA_860800	277	KL	AG	N	G	N	Y	L
NmLbpA_F1576	277	KL	AG	N	G	N	Y	L
NmLbpA_M597	280	KL	AG	N	G	N	Y	L
NmLbpA_MA-5756	281	KL	AG	N	G	N	Y	L
NmLbpA_B16B6	281	KL	AG	N	G	N	Y	L
NmLbpA_M978	277	KL	AG	N	G	N	Y	L
NmLbpA_DNM2	281	KL	AG	N	G	N	Y	L
NmLbpA_CU385	280	KL	AG	Y	G	K	Y	L
NmLbpA_NG144/82	276	KL	AG	Y	G	K	Y	L
NmLbpA_FA19	280	KL	AG	Y	G	I	Y	L
NgLbpA_WHO_M	280	KL	AG	Y	G	I	Y	L
NgLbpA_WHO_P	280	KL	AG	Y	G	I	Y	L
NgLbpA_WHO_U	280	KL	AG	Y	G	I	Y	L
NgLbpA_WHO_Y	280	KL	AG	Y	G	I	Y	L
NgLbpA_NCTC13798	280	KL	AG	Y	G	I	Y	L
NgLbpA_GCGS110	280	KL	AG	Y	G	I	Y	L
NgLbpA_WHO_O	280	KL	AG	Y	G	I	Y	L
NgLbpA_MS11	280	KL	AG	Y	G	I	Y	L
NgLbpA_WHO_G	280	KL	AG	Y	G	I	Y	L
NgLbpA_WHO_N	280	KL	AG	Y	G	I	Y	L

L3 helix finger

			$\beta 16$	$\alpha 4$ 0000000000	TT	$\beta 17$
<i>NmLbpA_MC58</i>						
NmLbpA_MC58	350	KL	GY	R	F	G
NmLbpA_DE8555	351	KL	GY	R	F	G
NmLbpA_WUE2121	351	KL	GY	R	F	G
NmLbpA_M1080	346	KL	GY	R	F	G
NmLbpA_P2396	346	KL	GY	R	F	G
NmLbpA_312901	347	KL	GY	R	F	G
NmLbpA_NCTC8249	351	KL	GY	R	F	G
NmLbpA_NGH36	347	KL	GY	R	F	G
NmLbpA_931905	347	KL	GY	R	F	G
NmLbpA_139M	347	KL	GY	R	F	G
NmLbpA_EG011	347	KL	GY	R	F	G
NmLbpA_88/03415	347	KL	GY	R	F	G
NmLbpA_020	350	KL	GY	R	F	G
NmLbpA_H44/76	347	KL	GY	R	F	G
NmLbpA_M0579	351	KL	GY	R	F	G
NmLbpA_G2136	347	KL	GY	R	F	G
NmLbpA_NM2811	351	KL	GY	R	F	G
NmLbpA_510612	351	KL	GY	R	F	G
NmLbpA_WUE2594	351	KL	GY	R	F	G
NmLbpA_M01-240013	351	KL	GY	R	F	G
NmLbpA_D8	347	KL	GY	R	F	G
NmLbpA_Z2491	351	KL	GY	R	F	G
NmLbpA_alpha704	350	KL	GY	R	F	G
NmLbpA_8013	351	KL	GY	R	F	G
NmLbpA_120M	347	KL	GY	R	F	G
NmLbpA_860800	347	KL	GY	R	F	G
NmLbpA_F1576	347	KL	GY	R	F	G
NmLbpA_M597	350	KL	GY	R	F	G
NmLbpA_MA-5756	351	KL	GY	R	F	G
NmLbpA_B16B6	351	KL	GY	R	F	G
NmLbpA_M978	347	KL	GY	R	F	G
NmLbpA_DNM2	351	KL	GY	R	F	G
NmLbpA_CU385	350	KL	GY	R	F	G
NmLbpA_NG144/82	346	KL	GY	R	F	G
NgLbpA_FA19	350	KL	GY	R	F	G
NgLbpA_WHO_M	350	KL	GY	R	F	G
NgLbpA_WHO_P	350	KL	GY	R	F	G
NgLbpA_WHO_U	350	KL	GY	R	F	G
NgLbpA_WHO_Y	350	KL	GY	R	F	G
NgLbpA_NCTC13798	350	KL	GY	R	F	G
NgLbpA_GCGS110	350	KL	GY	R	F	G
NgLbpA_WHO_O	350	KL	GY	R	F	G
NgLbpA_MS11	350	KL	GY	R	F	G
NgLbpA_WHO_G	350	KL	GY	R	F	G
NgLbpA_WHO_N	350	KL	GY	R	F	G

				$\beta 18$	$\beta 19$	$\beta 20$	T
				T	TTT		T
NmLbpA_MC58							
NmLbpA_MC58	420	.KN	LVR	GIGLKYSRTKFFIDEHRRRRRMGLLYRYENE	AYS	SDNWADKAVLSFDKQGVATDNNTLKLNCAYVP	
NmLbpA_DE8555	421	.TN	LVR	GIGLKYSRTKFFIDEHRRRRRMGLLYRYENE	AYS	SDNWADKAVLSFDKQGVATDNNTLKLNCAYVP	
NmLbpA_WUE2121	421	.TN	LVR	GIGLKYSRTKFFIDEHRRRRRMGLLYRYENE	AYS	SDNWADKAVLSFDKQGVATDNNTLKLNCAYVP	
NmLbpA_M1080	416	.KK	LVR	GIGLKYSRTKFFIDEHRRRRRMGLLYRYENE	AYS	SDNWADKAVLSFDKQGVATDNNTLKLNCAYVP	
NmLbpA_P2396	416	.KK	LVR	GIGLKYSRTKFFIDEHRRRRRMGLLYRYENE	AYS	SDNWADKAVLSFDKQGVATDNNTLKLNCAYVP	
NmLbpA_312901	417	.KK	LVR	GIGLKYSRTKFFIDEHRRRRRMGLLYRYENE	AYS	SDNWADKAVLSFDKQGVATDNNTLKLNCAYVP	
NmLbpA_NCTC8249	421	.KN	LVR	GIGLKYSRTKFFIDEHRRRRRMGLLYRYENE	AYS	SDNWADKAVLSFDKQGVATDNNTLKLNCAYVP	
NmLbpA_NGH36	417	.KK	LVR	GIGLKYSRTKFFIDEHRRRRRMGLLYRYENE	AYS	SDNWADKAVLSFDKQGVATDNNTLKLNCAYVP	
NmLbpA_931905	417	.KK	LVR	GIGLKYSRTKFFIDEHRRRRRMGLLYRYENE	AYS	SDNWADKAVLSFDKQGVATDNNTLKLNCAYVP	
NmLbpA_139M	417	.KK	LVR	GIGLKYSRTKFFIDEHRRRRRMGLLYRYENE	AYS	SDNWADKAVLSFDKQGVATDNNTLKLNCAYVP	
NmLbpA_EG011	417	.KK	LVR	GIGLKYSRTKFFIDEHRRRRRMGLLYRYENE	AYS	SDNWADKAVLSFDKQGVATDNNTLKLNCAYVP	
NmLbpA_88/03415	417	.KK	LVR	GIGLKYSRTKFFIDEHRRRRRMGLLYRYENE	AYS	SDNWADKAVLSFDKQGVATDNNTLKLNCAYVP	
NmLbpA_020	420	.KK	LVR	GIGLKYSRTKFFIDEHRRRRRMGLLYRYENE	AYS	SDNWADKAVLSFDKQGVATDNNTLKLNCAYVP	
NmLbpA_H44/76	417	.KN	LVR	GIGLKYSRTKFFIDEHRRRRRMGLLYRYENE	AYS	SDNWADKAVLSFDKQGVATDNNTLKLNCAYVP	
NmLbpA_M0579	421	.KKD	LVR	GIGLKYSRTKFFIDEHRRRRRMGLLYRYENE	AYS	SDNWADKAVLSFDKQGVATDNNTLKLNCAYVP	
NmLbpA_G2136	417	.TN	LVR	GIGLKYSRTKFFIDEHRRRRRMGLLYRYENE	AYS	SDNWADKAVLSFDKQGVATDNNTLKLNCAYVP	
NmLbpA_NM2811	421	.TN	LVR	GIGLKYSRTKFFIDEHRRRRRMGLLYRYENE	AYS	SDNWADKAVLSFDKQGVATDNNTLKLNCAYVP	
NmLbpA_510612	421	.TN	LVR	GIGLKYSRTKFFIDEHRRRRRMGLLYRYENE	AYS	SDNWADKAVLSFDKQGVATDNNTLKLNCAYVP	
NmLbpA_WUE2594	421	.TN	LVR	GIGLKYSRTKFFIDEHRRRRRMGLLYRYENE	AYS	SDNWADKAVLSFDKQGVATDNNTLKLNCAYVP	
NmLbpA_M01-240013	421	.KN	LVR	GIGLKYSRTKFFIDEHRRRRRMGLLYRYENE	AYS	SDNWADKAVLSFDKQGVATDNNTLKLNCAYVP	
NmLbpA_D8	417	.TN	LVR	GIGLKYSRTKFFIDEHRRRRRMGLLYRYENE	AYS	SDNWADKAVLSFDKQGVATDNNTLKLNCAYVP	
NmLbpA_22491	421	.TN	LVR	GIGLKYSRTKFFIDEHRRRRRMGLLYRYENE	AYS	SDNWADKAVLSFDKQGVATDNNTLKLNCAYVP	
NmLbpA_alpha704	420	.TN	LVR	GIGLKYSRTKFFIDEHRRRRRMGLLYRYENE	AYS	SDNWADKAVLSFDKQGVATDNNTLKLNCAYVP	
NmLbpA_8013	421	.TN	LVR	GIGLKYSRTKFFIDEHRRRRRMGLLYRYENE	AYS	SDNWADKAVLSFDKQGVATDNNTLKLNCAYVP	
NmLbpA_120M	417	.TN	LVR	GIGLKYSRTKFFIDEHRRRRRMGLLYRYENE	AYS	SDNWADKAVLSFDKQGVATDNNTLKLNCAYVP	
NmLbpA_860800	417	.QKL	LVR	GIGLKYSRTKFFIDEHRRRRRMGLLYRYENE	AYS	SDNWADKAVLSFDKQGVATDNNTLKLNCAYVP	
NmLbpA_F1576	417	.KK	LVR	GIGLKYSRTKFFIDEHRRRRRMGLLYRYENE	AYS	SDNWADKAVLSFDKQGVATDNNTLKLNCAYVP	
NmLbpA_M597	420	.QKL	LVR	GIGLKYSRTKFFIDEHRRRRRMGLLYRYENE	AYS	SDNWADKAVLSFDKQGVATDNNTLKLNCAYVP	
NmLbpA_MA-5756	421	.QKL	LVR	GIGLKYSRTKFFIDEHRRRRRMGLLYRYENE	AYS	SDNWADKAVLSFDKQGVATDNNTLKLNCAYVP	
NmLbpA_B16B6	421	.QKL	LVR	GIGLKYSRTKFFIDEHRRRRRMGLLYRYENE	AYS	SDNWADKAVLSFDKQGVATDNNTLKLNCAYVP	
NmLbpA_M978	417	.QKL	LVR	GIGLKYSRTKFFIDEHRRRRRMGLLYRYENE	AYS	SDNWADKAVLSFDKQGVATDNNTLKLNCAYVP	
NmLbpA_DNM2	421	.QKL	LVR	GIGLKYSRTKFFIDEHRRRRRMGLLYRYENE	AYS	SDNWADKAVLSFDKQGVATDNNTLKLNCAYVP	
NmLbpA_CU385	420	.KN	LVR	GIGLKYSRTKFFIDEHRRRRRMGLLYRYENE	AYS	SDNWADKAVLSFDKQGVATDNNTLKLNCAYVP	
NmLbpA_NG144/82	416	.KN	LVR	GIGLKYSRTKFFIDEHRRRRRMGLLYRYENE	AYS	SDNWADKAVLSFDKQGVATDNNTLKLNCAYVP	
NgLbpA_FA19	420	.KN	LVR	GIGLKYSRTKFFIDEHRRRRRMGLLYRYENE	AYS	SDNWADKAVLSFDKQGVATDNNTLKLNCAYVP	
NgLbpA_WHO_M	420	.KN	LVR	GIGLKYSRTKFFIDEHRRRRRMGLLYRYENE	AYS	SDNWADKAVLSFDKQGVATDNNTLKLNCAYVP	
NgLbpA_WHO_P	420	.KN	LVR	GIGLKYSRTKFFIDEHRRRRRMGLLYRYENE	AYS	SDNWADKAVLSFDKQGVATDNNTLKLNCAYVP	
NgLbpA_WHO_U	420	.KN	LVR	GIGLKYSRTKFFIDEHRRRRRMGLLYRYENE	AYS	SDNWADKAVLSFDKQGVATDNNTLKLNCAYVP	
NgLbpA_WHO_Y	420	.KN	LVR	GIGLKYSRTKFFIDEHRRRRRMGLLYRYENE	AYS	SDNWADKAVLSFDKQGVATDNNTLKLNCAYVP	
NgLbpA_NCTC13798	420	.KN	LVR	GIGLKYSRTKFFIDEHRRRRRMGLLYRYENE	AYS	SDNWADKAVLSFDKQGVATDNNTLKLNCAYVP	
NgLbpA_GCGS110	420	.KN	LVR	GIGLKYSRTKFFIDEHRRRRRMGLLYRYENE	AYS	SDNWADKAVLSFDKQGVATDNNTLKLNCAYVP	
NgLbpA_WHO_O	420	.KN	LVR	GIGLKYSRTKFFIDEHRRRRRMGLLYRYENE	AYS	SDNWADKAVLSFDKQGVATDNNTLKLNCAYVP	
NgLbpA_MS11	420	.KN	LVR	GIGLKYSRTKFFIDEHRRRRRMGLLYRYENE	AYS	SDNWADKAVLSFDKQGVATDNNTLKLNCAYVP	
NgLbpA_WHO_G	420	.KN	LVR	GIGLKYSRTKFFIDEHRRRRRMGLLYRYENE	AYS	SDNWADKAVLSFDKQGVATDNNTLKLNCAYVP	
NgLbpA_WHO_N	420	.KN	LVR	GIGLKYSRTKFFIDEHRRRRRMGLLYRYENE	AYS	SDNWADKAVLSFDKQGVATDNNTLKLNCAYVP	

NmLbpA_MC58				β24		TT		β25	
NmLbpA_MC58	559	ARISE	STG	F	DENNO	DKY	L	GKPEV	EGSV
NmLbpA_DE8555	560	ARISE	H	TGEY	TDDGK	DKY	L	GKPEV	EGSV
NmLbpA_WUE2121	560	ARISE	H	TGEY	TDDGK	DKY	L	GKPEV	EGSV
NmLbpA_M1080	555	ARISE	STG	F	DEKNO	DKY	L	GKPEV	EGSV
NmLbpA_P2396	555	ARISE	STG	F	DDKNO	DKY	L	GKPEV	EGSV
NmLbpA_312901	556	ARISE	Y	SDY	TDKG	DKY	L	GKPEV	EGSV
NmLbpA_NCTC8249	560	ARISE	H	TGEY	TADDK	DKY	L	GKPEV	EGSV
NmLbpA_NGH36	556	ARISE	H	TGEY	TADDK	DKY	L	GKPEV	EGSV
NmLbpA_931905	556	ARISE	STG	F	DEKNO	DKY	L	GKPEV	EGSV
NmLbpA_139M	556	ARISE	STG	F	DEKNO	DKY	L	GKPEV	EGSV
NmLbpA_EG011	556	ARISE	STG	F	DEKNO	DKY	L	GKPEV	EGSV
NmLbpA_88/03415	556	ARISE	STG	F	DEKNO	DKY	L	GKPEV	EGSV
NmLbpA_020	559	ARISE	STG	F	DEKNO	DKY	L	GKPEV	EGSV
NmLbpA_H44/76	556	ARISE	F	S	DY	ADDGK	Y	KY	L
NmLbpA_M0579	561	ARISE	STG	F	DEKNO	DKY	L	GKPEV	EGSV
NmLbpA_G2136	556	ARISE	STG	F	DEKNO	DKY	L	GKPEV	EGSV
NmLbpA_NM2811	560	ARISE	H	TGEY	TADDK	DKY	L	GKPEV	EGSV
NmLbpA_510612	560	ARISE	H	TGEY	TADDK	DKY	L	GKPEV	EGSV
NmLbpA_WUE2594	560	ARISE	H	TGEY	TADDK	DKY	L	GKPEV	EGSV
NmLbpA_M01-240013	560	ARISE	STG	F	DDNNQ	DKY	L	GKPEV	EGSV
NmLbpA_D8	556	ARISE	STG	F	DDNNQ	DKY	L	GKPEV	EGSV
NmLbpA_Z2491	560	ARISE	STG	F	DDNNQ	DKY	L	GKPEV	EGSV
NmLbpA_alpha704	559	ARISE	H	TGEY	TDDGK	DKY	L	GKPEV	EGSV
NmLbpA_8013	560	ARISE	H	TGEY	TDDGK	DKY	L	GKPEV	EGSV
NmLbpA_120M	556	ARISE	Y	SD	Y	T	DKG	DKY	L
NmLbpA_860800	556	ARISE	Y	SD	Y	T	DKG	DKY	L
NmLbpA_F1576	556	ARISE	Y	SD	Y	T	DKG	DKY	L
NmLbpA_M597	559	ARISE	Y	SD	Y	T	DKG	DKY	L
NmLbpA_MA-5756	560	ARISE	Y	SD	Y	T	DKG	DKY	L
NmLbpA_B16B6	560	ARISE	Y	SD	Y	T	DKG	DKY	L
NmLbpA_M978	556	ARISE	Y	SD	Y	T	DKG	DKY	L
NmLbpA_DNM2	560	ARISE	Y	SD	Y	T	DKG	DKY	L
NmLbpA_CU385	559	ARISE	STG	F	DENNO	DKY	L	GKPEV	EGSV
NmLbpA_NG144/82	555	ARISE	STG	F	DENNO	DKY	L	GKPEV	EGSV
NmLbpA_FA19	559	ARISE	STG	F	DEKNO	DKY	L	GKPEV	EGSV
NgLbpA_WHO_M	559	ARISE	STG	F	DEKNO	DKY	L	GKPEV	EGSV
NgLbpA_WHO_P	559	ARISE	STG	F	DEKNO	DKY	L	GKPEV	EGSV
NgLbpA_WHO_U	559	ARISE	STG	F	DEKNO	DKY	L	GKPEV	EGSV
NgLbpA_WHO_Y	559	ARISE	STG	F	DEKNO	DKY	L	GKPEV	EGSV
NgLbpA_NCTC13798	559	ARISE	STG	F	DEKNO	DKY	L	GKPEV	EGSV
NgLbpA_GCGS110	559	ARISE	STG	F	DEKNO	DKY	L	GKPEV	EGSV
NgLbpA_WHO_O	559	ARISE	STG	F	DEKNO	DKY	L	GKPEV	EGSV
NgLbpA_MS11	559	ARISE	STG	F	DEKNO	DKY	L	GKPEV	EGSV
NgLbpA_WHO_G	559	ARISE	STG	F	DEKNO	DKY	L	GKPEV	EGSV
NgLbpA_WHO_N	559	ARISE	STG	F	DEKNO	DKY	L	GKPEV	EGSV

2

2

NmLbpA_MC58		β26		TT		β27		β28		β29		α5		TT	
NmLbpA_MC58	628	GGRYDR	KNFTT	SEEL	VRS	GRY	VDR	RSWNS	GIL	VFKPN	RHFS	SV	SYRASS	GFRTP	SFQEL
NmLbpA_DE8555	630	GGRYDR	KNFTT	SEEL	VRS	GRY	VDR	RSWNS	GIL	VFKPN	RHFS	SV	SYRASS	GFRTP	SFQEL
NmLbpA_WUE2121	630	GGRYDR	KNFTT	SEEL	VRS	GRY	VDR	RSWNS	GIL	VFKPN	RHFS	SV	SYRASS	GFRTP	SFQEL
NmLbpA_M1080	624	GGRYDR	KNFTT	SEEL	VRS	GRY	VDR	RSWNS	GIL	VFKPN	RHFS	SV	SYRASS	GFRTP	SFQEL
NmLbpA_P2396	624	GGRYDR	KNFTT	SEEL	VRS	GRY	VDR	RSWNS	GIL	VFKPN	RHFS	SV	SYRASS	GFRTP	SFQEL
NmLbpA_312901	624	GGRYDR	KNFTT	SEEL	VRS	GRY	VDR	RSWNS	GIL	VFKPN	RHFS	SV	SYRASS	GFRTP	SFQEL
NmLbpA_NCTC8249	630	GGRYDR	KNFTT	SEEL	VRS	GRY	VDR	RSWNS	GIL	VFKPN	RHFS	SV	SYRASS	GFRTP	SFQEL
NmLbpA_NGH36	626	GGRYDR	KNFTT	SEEL	VRS	GRY	VDR	RSWNS	GIL	VFKPN	RHFS	SV	SYRASS	GFRTP	SFQEL
NmLbpA_931905	625	GGRYDR	KNFTT	SEEL	VRS	GRY	VDR	RSWNS	GIL	VFKPN	RHFS	SV	SYRASS	GFRTP	SFQEL
NmLbpA_139M	625	GGRYDR	KNFTT	SEEL	VRS	GRY	VDR	RSWNS	GIL	VFKPN	RHFS	SV	SYRASS	GFRTP	SFQEL
NmLbpA_EG011	625	GGRYDR	KNFTT	SEEL	VRS	GRY	VDR	RSWNS	GIL	VFKPN	RHFS	SV	SYRASS	GFRTP	SFQEL
NmLbpA_88/03415	625	GGRYDR	KNFTT	SEEL	VRS	GRY	VDR	RSWNS	GIL	VFKPN	RHFS	SV	SYRASS	GFRTP	SFQEL
NmLbpA_020	628	GGRYDR	KNFTT	SEEL	VRS	GRY	VDR	RSWNS	GIL	VFKPN	RHFS	SV	SYRASS	GFRTP	SFQEL
NmLbpA_H44/76	625	GGRYDR	KNFTT	SEEL	VRS	GRY	VDR	RSWNS	GIL	VFKPN	RHFS	SV	SYRASS	GFRTP	SFQEL
NmLbpA_M0579	630	GGRYDR	KNFTT	SEEL	VRS	GRY	VDR	RSWNS	GIL	VFKPN	RHFS	SV	SYRASS	GFRTP	SFQEL
NmLbpA_G2136	625	GGRYDR	KNFTT	SEEL	VRS	GRY	VDR	RSWNS	GIL	VFKPN	RHFS	SV	SYRASS	GFRTP	SFQEL
NmLbpA_NM2811	630	GGRYDR	KNFTT	SEEL	VRS	GRY	VDR	RSWNS	GIL	VFKPN	RHFS	SV	SYRASS	GFRTP	SFQEL
NmLbpA_510612	630	GGRYDR	KNFTT	SEEL	VRS	GRY	VDR	RSWNS	GIL	VFKPN	RHFS	SV	SYRASS	GFRTP	SFQEL
NmLbpA_WUE2594	630	GGRYDR	KNFTT	SEEL	VRS	GRY	VDR	RSWNS	GIL	VFKPN	RHFS	SV	SYRASS	GFRTP	SFQEL
NmLbpA_M01-240013	629	GGRYDR	KNFTT	SEEL	VRS	GRY	VDR	RSWNS	GIL	VFKPN	RHFS	SV	SYRASS	GFRTP	SFQEL
NmLbpA_D8	625	GGRYDR	KNFTT	SEEL	VRS	GRY	VDR	RSWNS	GIL	VFKPN	RHFS	SV	SYRASS	GFRTP	SFQEL
NmLbpA_Z2491	629	GGRYDR	KNFTT	SEEL	VRS	GRY	VDR	RSWNS	GIL	VFKPN	RHFS	SV	SYRASS	GFRTP	SFQEL
NmLbpA_alpha704	629	GGRYDR	KNFTT	SEEL	VRS	GRY	VDR	RSWNS	GIL	VFKPN	RHFS	SV	SYRASS	GFRTP	SFQEL
NmLbpA_8013	630	GGRYDR	KNFTT	SEEL	VRS	GRY	VDR	RSWNS	GIL	VFKPN	RHFS	SV	SYRASS	GFRTP	SFQEL
NmLbpA_120M	624	GGRYDR	KNFTT	SEEL	VRS	GRY	VDR	RSWNS	GIL	VFKPN	RHFS	SV	SYRASS	GFRTP	SFQEL
NmLbpA_860800	624	GGRYDR	KNFTT	SEEL	VRS	GRY	VDR	RSWNS	GIL	VFKPN	RHFS	SV	SYRASS	GFRTP	SFQEL
NmLbpA_F1576	624	GGRYDR	KNFTT	SEEL	VRS	GRY	VDR	RSWNS	GIL	VFKPN	RHFS	SV	SYRASS	GFRTP	SFQEL
NmLbpA_M597	627	GGRYDR	KNFTT	SEEL	VRS	GRY	VDR	RSWNS	GIL	VFKPN	RHFS	SV	SYRASS	GFRTP	SFQEL
NmLbpA_MA-5756	628	GGRYDR	KNFTT	SEEL	VRS	GRY	VDR	RSWNS	GIL	VFKPN	RHFS	SV	SYRASS	GFRTP	SFQEL
NmLbpA_B16B6	628	GGRYDR	KNFTT	SEEL	VRS	GRY	VDR	RSWNS	GIL	VFKPN	RHFS	SV	SYRASS	GFRTP	SFQEL
NmLbpA_M978	624	GGRYDR	KNFTT	SEEL	VRS	GRY	VDR	RSWNS	GIL	VFKPN	RHFS	SV	SYRASS	GFRTP	SFQEL
NmLbpA_DNM2	628	GGRYDR	KNFTT	SEEL	VRS	GRY	VDR	RSWNS	GIL	VFKPN	RHFS	SV	SYRASS	GFRTP	SFQEL
NmLbpA_CU385	628	GGRYDR	KNFTT	SEEL	VRS	GRY	VDR	RSWNS	GIL	VFKPN	RHFS	SV	SYRASS	GFRTP	SFQEL
NmLbpA_NG144/82	624	GGRYDR	KNFTT	SEEL	VRS	GRY	VDR	RSWNS	GIL	VFKPN	RHFS	SV	SYRASS	GFRTP	SFQEL
NgLbpA_FA19	628	GGRYDR	KNFTT	SEEL	VRS	GRY	VDR	RSWNS	GIL	VFKPN	RHFS	SV	SYRASS	GFRTP	SFQEL
NgLbpA_WHO_M	628	GGRYDR	KNFTT	SEEL	VRS	GRY	VDR	RSWNS	GIL	VFKPN	RHFS	SV	SYRASS	GFRTP	SFQEL
NgLbpA_WHO_P	628	GGRYDR	KNFTT	SEEL	VRS	GRY	VDR	RSWNS	GIL	VFKPN	RHFS	SV	SYRASS	GFRTP	SFQEL
NgLbpA_WHO_U	628	GGRYDR	KNFTT	SEEL	VRS	GRY	VDR	RSWNS	GIL	VFKPN	RHFS	SV	SYRASS	GFRTP	SFQEL
NgLbpA_WHO_Y	628	GGRYDR	KNFTT	SEEL	VRS	GRY	VDR	RSWNS	GIL	VFKPN	RHFS	SV	SYRASS	GFRTP	SFQEL
NgLbpA_NCTC13798	628	GGRYDR	KNFTT	SEEL	VRS	GRY	VDR	RSWNS	GIL	VFKPN	RHFS	SV	SYRASS	GFRTP	SFQEL
NgLbpA_GCGS110	628	GGRYDR	KNFTT	SEEL	VRS	GRY	VDR	RSWNS	GIL	VFKPN	RHFS	SV	SYRASS	GFRTP	SFQEL
NgLbpA_WHO_O	628	GGRYDR	KNFTT	SEEL	VRS	GRY	VDR	RSWNS	GIL	VFKPN	RHFS	SV	SYRASS	GFRTP	SFQEL
NgLbpA_MS11	628	GGRYDR	KNFTT	SEEL	VRS	GRY	VDR	RSWNS	GIL	VFKPN	RHFS	SV	SYRASS	GFRTP	SFQEL
NgLbpA_WHO_G	628	GGRYDR	KNFTT	SEEL	VRS	GRY	VDR	RSWNS	GIL	VFKPN	RHFS	SV	SYRASS	GFRTP	SFQEL
NgLbpA_WHO_N	628	GGRYDR	KNFTT	SEEL	VRS	GRY	VDR	RSWNS	GIL	VFKPN	RHFS	SV	SYRASS	GFRTP	SFQEL

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NmLbpA_MC58		β38 β39 TT β40 α6	
NmLbpA_MC58	838	GANIMLTYSKGKNPDELAYLAGDQKRYST	KRASSSWSTADVSAYLNLKKRLTLRAATYNIGNYRYVTWES
NmLbpA_DE8555	840	GANIMLTYSKGKNPDELAYLAGDQKRYST	KRASSSWSTADVSAYLNLKKRLTLRAATYNIGNYRYVTWES
NmLbpA_WUE2121	840	GANIMLTYSKGKNPDELAYLAGDQKRYST	KRASSSWSTADVSAYLNLKKRLTLRAATYNIGNYRYVTWES
NmLbpA_M1080	834	GANIMLTYSKGKNPDELAYLAGDQKRYST	KRASSSWSTADVSAYLNLKKRLTLRAATYNIGNYRYVTWES
NmLbpA_P2396	834	GANIMLTYSKGKNPDELAYLAGDQKRYST	KRASSSWSTADVSAYLNLKKRLTLRAATYNIGNYRYVTWES
NmLbpA_312901	834	GANIMLTYSKGKNPDELAYLAGDQKRYST	KRASSSWSTADVSAYLNLKKRLTLRAATYNIGNYRYVTWES
NmLbpA_NCTC8249	840	GANIMLTYSKGKNPDELAYLAGDQKRYST	KRASSSWSTADVSAYLNLKKRLTLRAATYNIGNYRYVTWES
NmLbpA_NGH36	836	GANIMLTYSKGKNPDELAYLAGDQKRYST	KRASSSWSTADVSAYLNLKKRLTLRAATYNIGNYRYVTWES
NmLbpA_931905	835	GANIMLTYSKGKNPDELAYLAGDQKRYST	KRASSSWSTADVSAYLNLKKRLTLRAATYNIGNYRYVTWES
NmLbpA_139M	835	GANIMLTYSKGKNPDELAYLAGDQKRYST	KRASSSWSTADVSAYLNLKKRLTLRAATYNIGNYRYVTWES
NmLbpA_EG011	835	GANIMLTYSKGKNPDELAYLAGDQKRYST	KRASSSWSTADVSAYLNLKKRLTLRAATYNIGNYRYVTWES
NmLbpA_88/03415	835	GANIMLTYSKGKNPDELAYLAGDQKRYST	KRASSSWSTADVSAYLNLKKRLTLRAATYNIGNYRYVTWES
NmLbpA_020	838	GANIMLTYSKGKNPDELAYLAGDQKRYST	KRASSSWSTADVSAYLNLKKRLTLRAATYNIGNYRYVTWES
NmLbpA_H44/76	835	GANIMLTYSKGKNPDELAYLAGDQKRYST	KRASSSWSTADVSAYLNLKKRLTLRAATYNIGNYRYVTWES
NmLbpA_M0579	840	GANIMLTYSKGKNPDELAYLAGDQKRYST	KRASSSWSTADVSAYLNLKKRLTLRAATYNIGNYRYVTWES
NmLbpA_G2136	835	GANIMLTYSKGKNPDELAYLAGDQKRYST	KRASSSWSTADVSAYLNLKKRLTLRAATYNIGNYRYVTWES
NmLbpA_NM2811	840	GANIMLTYSKGKNPDELAYLAGDQKRYST	KRASSSWSTADVSAYLNLKKRLTLRAATYNIGNYRYVTWES
NmLbpA_510612	840	GANIMLTYSKGKNPDELAYLAGDQKRYST	KRASSSWSTADVSAYLNLKKRLTLRAATYNIGNYRYVTWES
NmLbpA_WUE2594	840	GANIMLTYSKGKNPDELAYLAGDQKRYST	KRASSSWSTADVSAYLNLKKRLTLRAATYNIGNYRYVTWES
NmLbpA_M01-240013	839	GANIMLTYSKGKNPDELAYLAGDQKRYST	KRASSSWSTADVSAYLNLKKRLTLRAATYNIGNYRYVTWES
NmLbpA_D8	835	GANIMLTYSKGKNPDELAYLAGDQKRYST	AGRVTSWKTADVSAYLNLKKRLTLRAATYNIGNYRYVTWES
NmLbpA_Z2491	839	GANIMLTYSKGKNPDELAYLAGDQKRYST	KRASSSWSTADVSAYLNLKKRLTLRAATYNIGNYRYVTWES
NmLbpA_alpha704	839	GANIMLTYSKGKNPDELAYLAGDQKRYST	KRASSSWSTADVSAYLNLKKRLTLRAATYNIGNYRYVTWES
NmLbpA_8013	840	GANIMLTYSKGKNPDELAYLAGDQKRYST	KRASSSWSTADVSAYLNLKKRLTLRAATYNIGNYRYVTWES
NmLbpA_120M	834	GANIMLTYSKGKNPDELAYLAGDQKRYST	KRASSSWSTADVSAYLNLKKRLTLRAATYNIGNYRYVTWES
NmLbpA_860800	834	GANIMLTYSKGKNPDELAYLAGDQKRYST	KRASSSWSTADVSAYLNLKKRLTLRAATYNIGNYRYVTWES
NmLbpA_F1576	834	GANIMLTYSKGKNPDELAYLAGDQKRYST	KRASSSWSTADVSAYLNLKKRLTLRAATYNIGNYRYVTWES
NmLbpA_M597	837	GANIMLTYSKGKNPDELAYLAGDQKRYST	KRASSSWSTADVSAYLNLKKRLTLRAATYNIGNYRYVTWES
NmLbpA_MA-5756	838	GANIMLTYSKGKNPDELAYLAGDQKRYST	KRASSSWSTADVSAYLNLKKRLTLRAATYNIGNYRYVTWES
NmLbpA_B16B6	838	GANIMLTYSKGKNPDELAYLAGDQKRYST	KRASSSWSTADVSAYLNLKKRLTLRAATYNIGNYRYVTWES
NmLbpA_M978	834	GANIMLTYSKGKNPDELAYLAGDQKRYST	KRASSSWSTADVSAYLNLKKRLTLRAATYNIGNYRYVTWES
NmLbpA_DNM2	838	GANIMLTYSKGKNPDELAYLAGDQKRYST	KRASSSWSTADVSAYLNLKKRLTLRAATYNIGNYRYVTWES
NmLbpA_CU385	838	GANIMLTYSKGKNPDELAYLAGDQKRYST	KRASSSWSTADVSAYLNLKKRLTLRAATYNIGNYRYVTWES
NmLbpA_NG144/82	834	GANIMLTYSKGKNPDELAYLAGDQKRYST	KRASSSWSTADVSAYLNLKKRLTLRAATYNIGNYRYVTWES
NgLbpA_FA19	838	GANIMLTYSKGKNPDELAYLAGDQKRYST	AGRVTSWKTADVSAYLNLKKRLTLRAATYNIGNYRYVTWES
NgLbpA_WHO_M	838	GANIMLTYSKGKNPDELAYLAGDQKRYST	AGRVTSWKTADVSAYLNLKKRLTLRAATYNIGNYRYVTWES
NgLbpA_WHO_P	838	GANIMLTYSKGKNPDELAYLAGDQKRYST	AGRVTSWKTADVSAYLNLKKRLTLRAATYNIGNYRYVTWES
NgLbpA_WHO_U	838	GANIMLTYSKGKNPDELAYLAGDQKRYST	AGRVTSWKTADVSAYLNLKKRLTLRAATYNIGNYRYVTWES
NgLbpA_WHO_Y	838	GANIMLTYSKGKNPDELAYLAGDQKRYST	AGRVTSWKTADVSAYLNLKKRLTLRAATYNIGNYRYVTWES
NgLbpA_NCTC13798	838	GANIMLTYSKGKNPDELAYLAGDQKRYST	AGRVTSWKTADVSAYLNLKKRLTLRAATYNIGNYRYVTWES
NgLbpA_GCGS110	838	GANIMLTYSKGKNPDELAYLAGDQKRYST	AGRVTSWKTADVSAYLNLKKRLTLRAATYNIGNYRYVTWES
NgLbpA_WHO_O	838	GANIMLTYSKGKNPDELAYLAGDQKRYST	AGRVTSWKTADVSAYLNLKKRLTLRAATYNIGNYRYVTWES
NgLbpA_MS11	838	GANIMLTYSKGKNPDELAYLAGDQKRYST	AGRVTSWKTADVSAYLNLKKRLTLRAATYNIGNYRYVTWES
NgLbpA_WHO_G	838	GANIMLTYSKGKNPDELAYLAGDQKRYST	AGRVTSWKTADVSAYLNLKKRLTLRAATYNIGNYRYVTWES
NgLbpA_WHO_N	838	GANIMLTYSKGKNPDELAYLAGDQKRYST	AGRVTSWKTADVSAYLNLKKRLTLRAATYNIGNYRYVTWES

NmLbpA_MC58		η5 TT TT β41	
NmLbpA_MC58	908	LRQTAE	TANRHGGDSNYGRYAAPGRNFSLALEMKF
NmLbpA_DE8555	910	LRQTAE	TANRHGGDSNYGRYAAPGRNFSLALEMKF
NmLbpA_WUE2121	910	LRQTAE	TANRHGGDSNYGRYAAPGRNFSLALEMKF
NmLbpA_M1080	904	LRQTAE	TANRHGGDSNYGRYAAPGRNFSLALEMKF
NmLbpA_P2396	904	LRQTAE	TANRHGGDSNYGRYAAPGRNFSLALEMKF
NmLbpA_312901	904	LRQTAE	TANRHGGDSNYGRYAAPGRNFSLALEMKF
NmLbpA_NCTC8249	910	LRQTAE	TANRHGGDSNYGRYAAPGRNFSLALEMKF
NmLbpA_NGH36	906	LRQTAE	TANRHGGDSNYGRYAAPGRNFSLALEMKF
NmLbpA_931905	905	LRQTAE	TANRHGGDSNYGRYAAPGRNFSLALEMKF
NmLbpA_139M	905	LRQTAE	TANRHGGDSNYGRYAAPGRNFSLALEMKF
NmLbpA_EG011	905	LRQTAE	TANRHGGDSNYGRYAAPGRNFSLALEMKF
NmLbpA_88/03415	905	LRQTAE	TANRHGGDSNYGRYAAPGRNFSLALEMKF
NmLbpA_020	908	LRQTAE	TANRHGGDSNYGRYAAPGRNFSLALEMKF
NmLbpA_H44/76	905	LRQTAE	TANRHGGDSNYGRYAAPGRNFSLALEMKF
NmLbpA_M0579	910	LRQTAE	TANRHGGDSNYGRYAAPGRNFSLALEMKF
NmLbpA_G2136	905	LRQTAE	TANRHGGDSNYGRYAAPGRNFSLALEMKF
NmLbpA_NM2811	910	LRQTAE	TANRHGGDSNYGRYAAPGRNFSLALEMKF
NmLbpA_510612	910	LRQTAE	TANRHGGDSNYGRYAAPGRNFSLALEMKF
NmLbpA_WUE2594	910	LRQTAE	TANRHGGDSNYGRYAAPGRNFSLALEMKF
NmLbpA_M01-240013	909	LRQTAE	TANRHGGDSNYGRYAAPGRNFSLALEMKF
NmLbpA_D8	905	LRQTAE	TANRHGGDSNYGRYAAPGRNFSLALEMKF
NmLbpA_Z2491	909	LRQTAE	TANRHGGDSNYGRYAAPGRNFSLALEMKF
NmLbpA_alpha704	909	LRQTAE	TANRHGGDSNYGRYAAPGRNFSLALEMKF
NmLbpA_8013	910	LRQTAE	TANRHGGDSNYGRYAAPGRNFSLALEMKF
NmLbpA_120M	904	LRQTAE	TANRHGGDSNYGRYAAPGRNFSLALEMKF
NmLbpA_860800	904	LRQTAE	TANRHGGDSNYGRYAAPGRNFSLALEMKF
NmLbpA_F1576	904	LRQTAE	TANRHGGDSNYGRYAAPGRNFSLALEMKF
NmLbpA_M597	907	LRQTAE	TANRHGGDSNYGRYAAPGRNFSLALEMKF
NmLbpA_MA-5756	908	LRQTAE	TANRHGGDSNYGRYAAPGRNFSLALEMKF
NmLbpA_B16B6	908	LRQTAE	TANRHGGDSNYGRYAAPGRNFSLALEMKF
NmLbpA_M978	904	LRQTAE	TANRHGGDSNYGRYAAPGRNFSLALEMKF
NmLbpA_DNM2	908	LRQTAE	TANRHGGDSNYGRYAAPGRNFSLALEMKF
NmLbpA_CU385	908	LRQTAE	TANRHGGDSNYGRYAAPGRNFSLALEMKF
NmLbpA_NG144/82	904	LRQTAE	TANRHGGDSNYGRYAAPGRNFSLALEMKF
NgLbpA_FA19	908	LRQTAE	TANRHGGDSNYGRYAAPGRNFSLALEMKF
NgLbpA_WHO_M	908	LRQTAE	TANRHGGDSNYGRYAAPGRNFSLALEMKF
NgLbpA_WHO_P	908	LRQTAE	TANRHGGDSNYGRYAAPGRNFSLALEMKF
NgLbpA_WHO_U	908	LRQTAE	TANRHGGDSNYGRYAAPGRNFSLALEMKF
NgLbpA_WHO_Y	908	LRQTAE	TANRHGGDSNYGRYAAPGRNFSLALEMKF
NgLbpA_NCTC13798	908	LRQTAE	TANRHGGDSNYGRYAAPGRNFSLALEMKF
NgLbpA_GCGS110	908	LRQTAE	TANRHGGDSNYGRYAAPGRNFSLALEMKF
NgLbpA_WHO_O	908	LRQTAE	TANRHGGDSNYGRYAAPGRNFSLALEMKF
NgLbpA_MS11	908	LRQTAE	TANRHGGDSNYGRYAAPGRNFSLALEMKF
NgLbpA_WHO_G	908	LRQTAE	TANRHGGDSNYGRYAAPGRNFSLALEMKF
NgLbpA_WHO_N	908	LRQTAE	TANRHGGDSNYGRYAAPGRNFSLALEMKF

Supplementary Figure 4. Sequence alignment of LbpBs.

NmLbpB_MC58

NmLbpB_MC58
NmLbpB_120M
NmLbpB_M597
NmLbpB_020
NmLbpB_P2396
NmLbpB_H44/76
NmLbpB_G2136
NmLbpB_M1080
NmLbpB_931905
NmLbpB_NG144/82
NmLbpB_D8
NmLbpB_B16B6
NmLbpB_M978
NgLbpB_WHO_W
NgLbpB_FA19
NgLbpB_WHO_M
NgLbpB_WHO_P
NgLbpB_WHO_U
NgLbpB_WHO_Y

NmLbpB_MC58

65 AVGAA MRL PRRN IASYKQDGE IPDKHQAEHLPLKEKDILFLDGT LKEQADK LKKK INE RYS D V R V I T S
38 AVGAA MRL PRRN IAFYNKDGTE IPNKQAEHL LKKE DILFLDGT SEEQVGK LKNE IYK RNP D V K V I T S
34 AVGAA MRL PRRN IATSDK DGNDFPNSKQAEEL SFKEG DVLFLYGS KKKDQRLQ LKDDK I HQRNP NVE I T S
34 AVGAA MRL PRRN IAFHRE DGE IPNSKQAEEL SFKEG DILFLYGS KKKD LQ LKDDK I HQRNP NVE I T S
34 AVGAA MRL PRRN IATSDK DGNDFPNSKQAEEL SFKEG DVLFLYGS KGNELQ LKSE I HQRNP NVE I T S
67 AVGAA MRL PRRN IATSDK VGNDFPNSKQAEEL SFKEG DVLFLYGS KKKD LQ LKDDK I HQRNP NVE I T S
65 AVGAA MRL PRRN IATFDKNGEIPNRKQAEEL PLKKE DILFLDGT PQEQADK LKKE INERYP N V I T S
34 AVGAA MRL PRRN IATFDKNGEIPNRKQAEEL PLKKE DILFLDGT PQEQADK LKKE INERYP N V I T S
34 AVGAA MRL PRRN IASYKQDGE IPDKHQAEHLPLKEKDILFLDGT LKEQADK LKKK INE RYS D V R V I T S
34 AVGAA MRL PRRN IAFHRE DGT VIPDSKQAEEL SFKEG DILFLYGS KEDQRLQ LKDDK I RQPNSTAS I T S
65 AVGAA MRL PRRN IAFHRE DGE IPNSKQAEEL SFKEG DVLFLYGS KGNKLQ LKSE I HQRNP NVE I T S
34 AVGAA MRL PRRN IAFHRE DGT IPNSKQAEEL SFKEG DVLFLYGS KGNKLQ LKSE I HQRNP NVE I T S
1 MRL PRRN IAFHRE DGT IPNSKQAEEL SFKEG DVLFLYGS KGNKLQ LKSE I HQRNP NVE I T S
1 MRL PRRN IAFHRE DGT IPNSKQAEEL SFKEG DVLFLYGS KGNKLQ LKSE I HQRNP NVE I T S
1 MRL PRRN IAFHRE DGT IPNSKQAEEL SFKEG DVLFLYGS KGNKLQ LKSE I HQRNP NVE I T S
1 MRL PRRN IAFHRE DGT IPNSKQAEEL SFKEG DVLFLYGS KGNKLQ LKSE I HQRNP NVE I T S
1 MRL PRRN IAFHRE DGT IPNSKQAEEL SFKEG DVLFLYGS KGNKLQ LKSE I HQRNP NVE I T S
1 MRL PRRN IAFHRE DGT IPNSKQAEEL SFKEG DVLFLYGS KGNKLQ LKSE I HQRNP NVE I T S
1 MRL PRRN IAFHRE DGT IPNSKQAEEL SFKEG DVLFLYGS KGNKLQ LKSE I HQRNP NVE I T S

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135 KK EEE KY . Q Y F V R A G Y V T R A E G K D N E K E K T S D G K E F V N R F S Y D G F V Y S G E R P S Q S L P S A G T V Q Y S G
108 E N E N K K Y N Y N Y F V R A G Y V T R A E G K D N E K E K T S D G K E F V N R F S Y D G F V Y S G E R P S Q S L P S A G T V Q Y S G
104 E K K N K K Y . D Y K F V D A G Y V T K N G K D . . . E I E W T S N H K Q F T Y R F G Y D G F V Y S G E R P S Q S L P S A G T V Q Y S G
104 E N E N K K Y . G Y E F V D A G Y V T K N G K D . . . E I E W T S N H K Q F T Y R F G Y D G F V Y S G E R P S Q S L P S A G T V Q Y S G
104 E K E N K K Y . G Y K F V D A G Y V T K N G K D . . . E I E W T S N H K Q F S N R F G Y D G F V Y S G E R P S Q S L P S A G T V Q Y S G
137 E N E N K K Y . G Y E F V D A G Y V T K N G T D . . . E I E W T S N R K Q F S N R F G Y D G F V Y S G E R P S Q S L P S A G T V Q Y S G
135 D L K D A V Y . K Y E H V R A G Y V T R F G T D . . . E I E Q N S G G K R F T H R F G Y D G F V Y S G E R P S Q S L P S A G T V Q Y S G
104 T N E D A K Y . N Y R F V R A G Y V T K G G R Y D N E K E K T P D G K E F V N R F S Y D G F V Y S G E R P S Q S L P S A G T V Q Y S G
104 T N E D A K Y . N Y R F V R A G Y V T K G G R Y D N E K E K T P D G K E F V N R F S Y D G F V Y S G E R P S Q S L P S A G T V Q Y S G
104 K K E E E K Y . Q Y F V R A G Y V T R A E G K D N E K E K T S D G K E F V N R F S Y D G F V Y S G E R P S Q S L P S A G T V Q Y S G
104 E K K N E R Y . S Y K F V D A G Y V V R G E D . . . E I K W T S D Y K Q F S N R L G Y D G F V Y S G E R P S Q S L P S A G M V Q Y S G
135 E K E N K K Y . D Y K F V D A G Y V V R G K D . . . E I K W T S D Y K Q F S N R L G Y D G F V Y S G E R P S Q S L P S A G T V Q Y S G
104 E K E N K K Y . D Y K F V D A G Y V V R G K D . . . E I K W T S D Y K Q F S N R L G Y D G F V Y S G E R P S Q S L P S A G T V Q Y S G
66 E K E N K K Y . G Y E F V D A G Y V T K N G K D . . . E I E Q N S G G K R F T H R F G Y D G F V Y S G E R P S Q S L P S A G T V Q Y S G
66 E K E N K K Y . G Y E F V D A G Y V T K N G K D . . . E I E Q N S G G K R F T H R F G Y D G F V Y S G E R P S Q S L P S A G T V Q Y S G
66 E K E N K K Y . N Y K F V D A G Y V T K N G K D . . . E I E Q N S G G K R F T H R F G Y D G F V Y S G E R P S Q S L P S A G T V Q Y S G
66 E K E N K K Y . N Y K F V D A G Y V T K N G K D . . . E I E Q N S G G K R F T H R F G Y D G F V Y S G E R P S Q S L P S A G T V Q Y S G
66 E K E N K K Y . N Y K F V D A G Y V T K N G K D . . . E I E Q N S G G K R F T H R F G Y D G F V Y S G E R P S Q S L P S A G T V Q Y S G

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203 N W O Y M T D A K R H R T G K A V S . S T D L G Y T T Y Y G N E I G A T S Y A A R D A D D R E K H P A Y T V D F D N K T L N G K L I K N O
176 N W O F V T D A K R W R T R N A G G . G R D L G F D Y F Y G N D I G A T S Y A A R D A D Y R E K H P A Y T V D F D N K T L N G E L I K N O
170 N W O Y M T D A I R H R T G K A G D P S E D L G Y L V Y Y G Q N V G A T S Y A A T A D D R E K H P A Y T V D F D N K T L N G R L I K N O
170 N W O Y M T D A I R H R T G K A G D P S E D L G Y I V Y Y G Q N V G A T S Y A A T A D D R E G K H P A Y T V D F G K K T L T G K L I K N O
170 N W O Y M T D A I R H R T G K A G E P S E D L G Y L V Y Y G Q N V G A T S Y A A T A D D R E . K H P A Y T V D F D N K T L T G Q L I K N O
203 N W O Y M T D A I R H R T G K A G D P S E D L G Y L V Y Y G Q N V G A T S Y A A T A D D R E G K H P A Y T V D F D N K T L T G Q L I K N O
201 N W O Y M T D V K R H R A G K A V G . I D N L G Y I T F Y G N D V G A T S Y A A K D V D R E K H P A Y T V D F D N K T L T G L I K N O
172 N W O F V T D A K R W R T Q N D G G . G I N L G F S H F Y G N D I G A T S Y A A R D V D D R E K H P A Y T V D F G N K T L T G E L I K N O
172 N W O F V T D A K R W R T Q N D G G . G I N L G F S H F Y G N D I G A T S Y A A R D V D D R E K H P A Y T V D F G N K T L T G Q L I K N O
172 N W O Y M T D A K R H R T G K A V S . S T D L G Y T T Y Y G N E I G A T S Y A A R D A D D R E K H P A Y T V D F D N K T L N G E L I K N O
169 N W O Y M T D A K R H R A G K A V G . I D N L G Y I T F Y G N D V G A T S Y A A K D A D D R E K H P A Y T V D F Y N K T L N G E L I K N O
200 N W O Y M T D A K R H R A G K A V G . I D N L G Y I T F Y G N D V G A T S Y A A K D V D D R E K H P A Y T V D F G N K T L T G E L I K N O
169 N W O Y M T D A K R H R A G K A V G . I D N L G Y I T F Y G N D V G A T S Y A A K D V D D R E K H P A Y T V D F G N K T L T G E L I K N O
132 N W O Y M T D A K R H R T G K A V A . S D D L G Y I T F Y G N D I G A T S Y A A K D A D D R E K H P A Y T V D F D K K I L K G E L I K N O
132 N W O Y M T D A K R H R T G K A V A . S D D L G Y I T F Y G N D I G A T S Y A A K D A D D R E K H P A Y T V D F D K K I L K G E L I K N O
132 N W O Y M T D A K R H R T G K A V A . S D D L G Y I T F Y G N D I G A T S Y A A K D A D D R E K H P A Y T V D F D K K I L K G E L I K N O
132 N W O Y M T D A K R H R T G K A V A . S D D L G Y I T F Y G N D I G A T S Y A A K D A D D R E K H P A Y T V D F D K K I L K G E L I K N O
132 N W O Y M T D A K R H R T G K A V A . S D D L G Y I T F Y G N D I G A T S Y A A K D A D D R E K H P A Y T V D F D K K I L K G E L I K N O

		β12																				β13					β14																																											
NmLbpB_MC58		T T																	T T				T T																	T T		-																												
NmLbpB_MC58	272	YVQ	N	K	S	N	P	N	E	P	K	K	P	L	I	I	Y	D	I	T	A	T	L	D	G	N	R	F	T	G	S	A	K	V	S	T	E	V	K	T	Q	H	A	D	K	E	Y	L	F	F	H	T	D	A	D	O	R	L	E	G	G	F	F	G	D	N	G	E	E	
NmLbpB_120M	245	YVQ	K	K	D	G	E	.	.	.	.	K	K	P	L	I	I	Y	D	I	T	A	T	L	D	G	N	R	F	T	G	S	A	K	V	N	P	D	L	A	K	K	H	T	G	K	E	H	L	F	F	H	T	D	A	D	O	R	L	E	G	G	F	F	G	D	N	G	E	E
NmLbpB_M597	240	YVQ	K	K	T	D	E	.	.	.	.	K	K	P	L	I	I	Y	D	I	T	A	T	L	D	G	N	R	F	T	G	S	A	K	V	N	P	E	L	K	T	S	H	A	D	K	E	H	L	F	F	H	T	D	A	D	O	R	L	E	G	G	F	F	G	D	N	G	E	E
NmLbpB_020	240	YVQ	K	K	T	D	E	.	.	.	.	K	K	P	L	I	I	Y	D	I	T	A	T	L	D	G	N	R	F	T	G	S	A	K	V	N	P	D	L	A	T	N	H	A	N	K	E	H	L	F	F	H	T	D	A	D	O	R	L	E	G	G	F	F	G	D	N	G	E	E
NmLbpB_P2396	239	YVQ	N	K	N	N	P	N	E	P	K	K	P	L	I	I	Y	D	I	T	A	T	L	D	G	N	R	F	T	G	S	A	K	V	S	I	.	L	I	S	E	N	H	A	N	K	E	H	L	F	F	H	T	D	A	D	O	R	L	E	G	G	F	F	G	D	N	G	E	E
NmLbpB_H44/76	273	YVQ	K	K	T	.	.	.	D	E	K	K	P	L	I	I	Y	D	I	T	A	T	L	D	G	N	R	F	T	G	S	A	K	V	N	P	E	L	K	T	S	H	A	D	K	E	H	L	F	F	H	T	D	A	D	O	R	L	E	G	G	F	F	G	D	N	G	E	E	
NmLbpB_G2136	270	YVQ	K	K	.	.	.	T	D	E	K	K	P	L	I	I	Y	D	I	T	A	T	L	D	G	N	R	F	T	G	S	A	K	V	N	P	D	L	A	K	N	P	A	G	N	E	R	L	F	F	H	T	D	A	D	O	R	L	E	G	G	F	F	G	D	N	G	E	E	
NmLbpB_M1080	241	YVQ	K	P	N	.	.	.	E	Q	K	K	P	L	I	I	Y	D	I	T	A	T	L	D	G	N	R	F	T	G	S	A	K	V	N	P	D	L	A	T	N	H	A	N	K	E	H	L	F	F	H	T	D	A	D	O	R	L	E	G	G	F	F	G	D	N	G	E	E	
NmLbpB_931905	241	YVQ	K	K	.	.	.	D	E	K	K	P	L	I	I	Y	D	I	T	A	T	L	D	G	N	R	F	T	G	S	A	K	V	N	P	D	L	A	K	N	H	A	K	K	E	H	L	F	F	H	T	D	A	D	O	R	L	E	G	G	F	F	G	D	N	G	E	E		
NmLbpB_NG144/82	241	YVQ	N	K	S	N	P	N	E	P	K	K	P	L	I	I	Y	D	I	T	A	T	L	D	G	N	R	F	T	G	S	A	K	V	S	T	E	V	K	T	Q	H	A	D	K	E	Y	L	F	F	H	T	D	A	D	O	R	L	E	G	G	F	F	G	D	N	G	E	E	
NmLbpB_D8	238	YVQ	R	N	R	.	.	.	N	D	P	K	P	L	I	I	Y	D	I	T	A	T	L	D	G	N	R	F	T	G	S	A	K	V	N	P	E	L	K	T	S	H	A	D	K	E	Y	L	F	F	H	T	D	A	D	O	R	L	E	G	G	F	F	G	D	N	G	E	E	
NmLbpB_B16B6	269	YVQ	K	P	S	.	.	.	E	K	K	P	L	I	I	Y	D	I	T	A	T	L	D	G	N	R	F	T	G	S	A	K	V	N	P	D	L	A	K	S	H	A	N	K	E	H	L	F	F	H	T	D	A	D	O	R	L	E	G	G	F	F	G	D	N	G	E	E		
NmLbpB_M978	238	YVQ	K	P	S	.	.	.	E	K	K	P	L	I	I	Y	D	I	T	A	T	L	D	G	N	R	F	T	G	S	A	K	V	N	P	D	L	A	K	S	H	A	N	K	E	H	L	F	F	H	T	D	A	D	O	R	L	E	G	G	F	F	G	D	N	G	E	E		
NgLbpB_WHO_W	201	YVQ	K	R	N	D	P	.	.	.	K	K	P	L	I	I	Y	D	I	T	A	T	L	D	G	N	R	F	T	G	S	A	K	V	N	P	E	V	K	T	R	H	A	D	K	E	Y	L	F	F	H	T	D	A	D	O	R	L	E	G	G	F	F	G	D	N	G	E	E	
NgLbpB_FA19	201	YVQ	K	R	N	D	P	.	.	.	K	K	P	L	I	I	Y	D	I	T	A	T	L	D	G	N	R	F	T	G	S	A	K	V	N	P	E	V	K	T	R	H	A	D	K	E	Y	L	F	F	H	T	D	A	D	O	R	L	E	G	G	F	F	G	D	N	G	E	E	
NgLbpB_WHO_M	201	YVQ	K	R	N	D	P	K	E	P	K	K	P	L	I	I	Y	D	I	T	A	T	L	D	G	N	R	F	T	G	S	A	K	V	N	P	E	V	K	T	R	H	A	D	K	E	Y	L	F	F	H	T	D	A	D	O	R	L	E	G	G	F	F	G	D	N	G	E	E	
NgLbpB_WHO_P	201	YVQ	K	R	N	D	P	K	E	P	K	K	P	L	I	I	Y	D	I	T	A	T	L	D	G	N	R	F	T	G	S	A	K	V	N	P	E	V	K	T	R	H	A	D	K	E	Y	L	F	F	H	T	D	A	D	O	R	L	E	G	G	F	F	G	D	N	G	E	E	
NgLbpB_WHO_U	201	YVQ	K	R	N	D	P	K	E	P	K	K	P	L	I	I	Y	D	I	T	A	T	L	D	G	N	R	F	T	G	S	A	K	V	N	P	E	V	K	T	R	H	A	D	K	E	Y	L	F	F	H	T	D	A	D	O	R	L	E	G	G	F	F	G	D	N	G	E	E	
NgLbpB_WHO_Y	201	YVQ	K	R	N	D	P	K	E	P	K	K	P	L	I	I	Y	D	I	T	A	T	L	D	G	N	R	F	T	G	S	A	K	V	N	P	E	V	K	T	R	H	A	D	K	E	Y	L	F	F	H	T	D	A	D	O	R	L	E	G	G	F	F	G	D	N	G	E	E	

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NmLbpB_MC58		→ TT		→		○○○○		○○○○○○○○○○		→		→																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
NmLbpB_MC58	342	L	A	G	R	F	I	S	N	D	N	S	V	F	G	V	F	A	G	K	O	K	T	E	T	E	N	A	A	D	T	K	P	A	L	S	S	G	K	H	T	K	I	L	D	S	L	K	I	S	V	D	E	A	S	D	K	N	P	R	F	F	A	I	S	S	M	P	D	F	G																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
NmLbpB_120M	312	L	A	G	R	F	I	S	N	D	N	S	V	F	G	V	F	A	G	K	O	K	T	E	T	E	N	A	A	D	T	K	P	A	L	S	S	G	K	H	T	K	I	L	D	S	L	K	I	S	V	D	E	A	S	D	K	N	A	R	Q	F	A	I	S	T	M	P	D	F	G																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
NmLbpB_M597	307	L	A	G	R	F	I	S	N	D	N	S	V	F	G	V	F	A	G	K	O	K	T	N	.	.	.	A	S	G	T	N	P	A	M	P	S	E	K	H	T	K	I	L	D	S	L	K	I	S	V	D	E	A	S	D	K	N	A	R	Q	F	A	I	S	S	M	P	D	F	G																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
NmLbpB_020	307	L	A	G	R	F	I	S	N	D	N	S	V	F	G	V	F	A	G	K	O	K	T	D	.	.	.	A	S	G	T	N	P	A	M	P	S	E	K	H	T	K	I	L	D	S	L	K	I	S	V	D	E	A	S	D	D	H	A	R	Q	F	A	I	S	T	M	P	D	F	G																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
NmLbpB_P2396	308	L	A	G	R	F	I	S	N	D	N	S	V	F	G	V	F	A	G	K	O	K	T	E	A	A	N	A	A	D	T	K	P	A	L	S	S	G	K	H	T	K	I	L	D	S	L	K	I	S	V	D	E	A	S	D	K	N	A	R	P	F	A	V	S	P	M	P	D	F	G																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
NmLbpB_H44/76	340	L	A	G	R	F	I	S	N	D	N	S	V	F	G	V	F	A	G	K	O	K	T	E	A	A	N	A	A	D	T	K	P	A	L	S	S	G	K	H	T	K	I	L	D	S	L	K	I	S	V	D	E	A	S	D	K	N	A	R	P	F	A	I	S	T	M	P	D	F	G																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
NmLbpB_G2136	337	L	A	G	R	F	I	S	N	D	N	S	V	F	G	V	F	A	G	K	O	K	T	E	T	A	N	A	A	D	T	K	P	A	L	S	S	G	K	H	T	K	I	L	D	S	L	K	I	S	V	D	E	A	S	D	G	H	A	R	Q	F	A	I	S	S	M	P	D	F	G																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
NmLbpB_M1080	307	L	A	G	R	F	I	S	N	D	N	S	V	F	G	V	F	A	G	K	O	K	T	E	A	A	N	A	A	D	T	K	P	A	L	S	S	G	K	H	T	K	I	L	D	S	L	K	I	S	V	D	E	A	S	D	K	K	A	R	P	F	E	V	S	T	M	P	D	F	G																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
NmLbpB_931905	308	L	A	G	R	F	I	S	N	D	N	S	V	F	G	V	F	A	G	K	O	K	T	D	A	.	.	.	S	G	T	N	P	A	M	P	S	E	K	H	T	K	I	L	D	S	L	K	I	S	V	D	E	A	S	D	N	N	A	R	Q	F	A	I	S	T	M	P	D	F	G																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
NmLbpB_NG144/82	311	L	A	G	R	F	I	S	N	D	N	S	V	F	G	V	F	A	G	K	O	K	T	E	T	E	N	A	A	D	T	K	P	A	L	S	S	G	K	H	T	K	I	L	D	S	L	K	I	S	V	D	E	A	S	D	K	N	P	R	F	F	A	I	S	S	M	P	D	F	G																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
NmLbpB_D8	305	L	A	G	R	F	I	S	N	D	N	S	V	F	G	V	F	A	G	K	O	K	T	E	T	S	.	.	.	G	T	N	P	A	M	P	S	E	K	H	T	K	I	L	D	S	L	K	I	S	V	D	E	A	S	D	K	N	A	R	Q	F	A	I	S	T	M	P	D	F	G																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
NmLbpB_B16B6	335	L	A	G	R	F	I	S	N	D	N	S	V	F	G	V	F	A	G	K	O	N	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.</

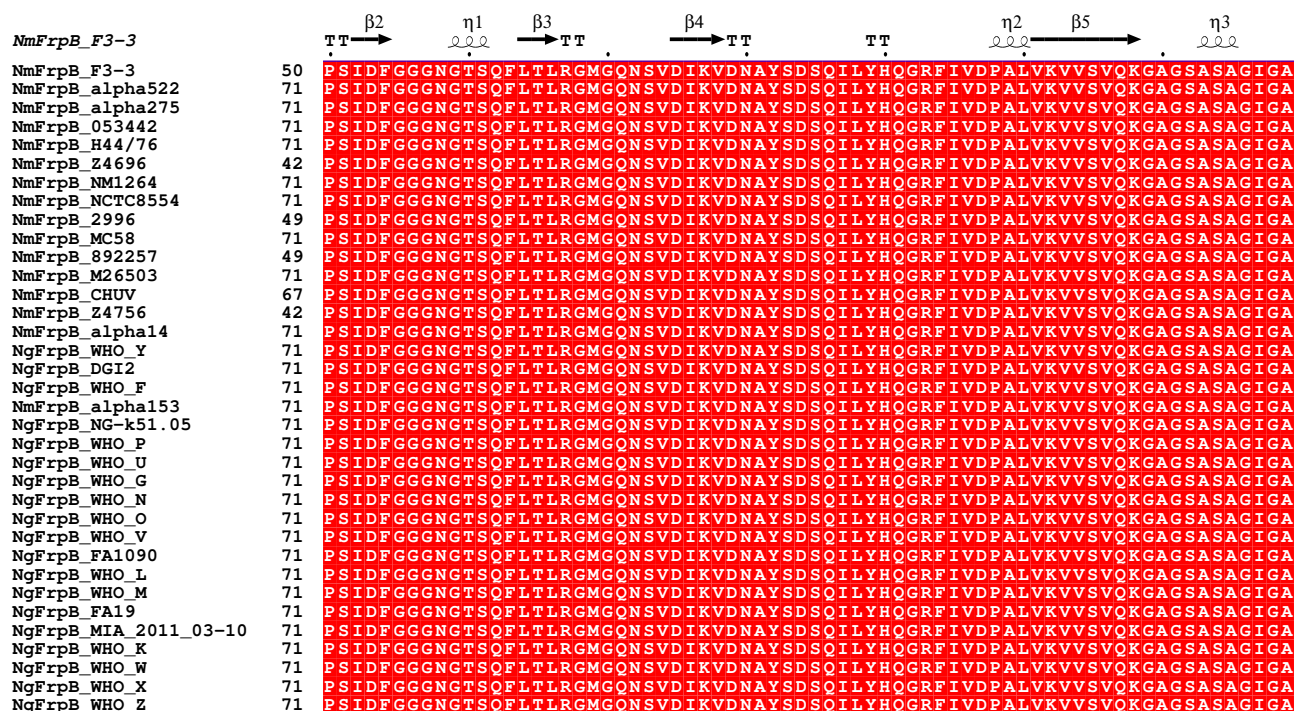
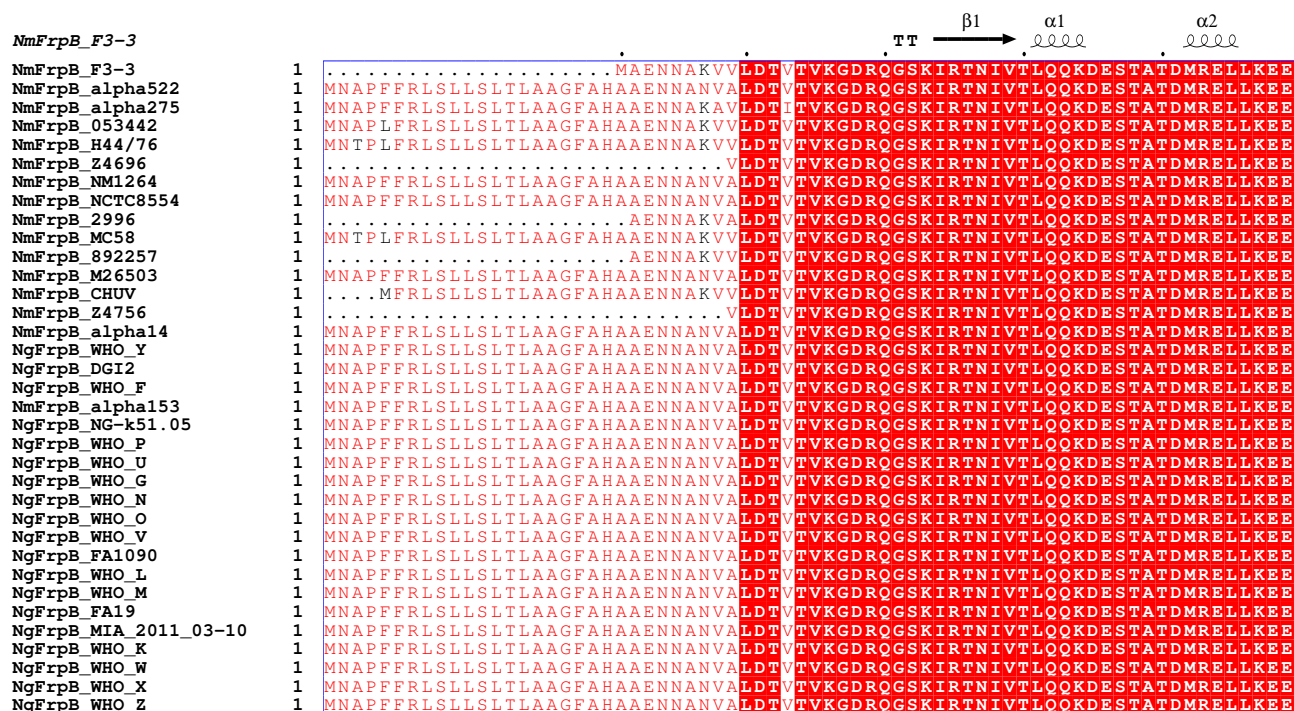
NmLbpB_MC58		β26	TT	β27	TT	β28	β29
NmLbpB_MC58	527	T E E G G S	G S D G I L P A P E A P	K G R N	I D L F L K G I R T A E T	D I P K T G E A H Y T G T W E A R I	G K P I Q W D N Q A
NmLbpB_120M	516	A E E G N G	G S G S I L P T P E A P	K G R D	I D L F L K G I R T A E A D	I P K T G K A H Y T G T W E A R I	G V P D K K D D Q . P G T T F I Q
NmLbpB_M597	505	V E E S G G	D S G S I L P T P E A P	K G S D	I D L F L K G I R T A E A D	I P K T G T A H Y T G T W E A R I	G V P D K K D D Q L Y G T T F I Q
NmLbpB_020	500	V E E S G G	D S G S I L P T P E A P	K G R D	I D L F L K G I R T A E A D	I P K T G T A H Y T G T W E A R I	G V P D K K D D Q L Y G T T F I Q
NmLbpB_P2396	507	A E E G G G	G S D G I L P A P E A P	K G R D	I D L F L K G I R T A E T	D I P K T G E A H Y T G T W E A R I	G K P I Q W D N Q A
NmLbpB_H44/76	533	A E G G G G	G S D G I L P A P E A P	K G R D	I D L F L K G I R T A E A D	I P T G K A R Y T G T W E A R I	S K P I Q W D N H A
NmLbpB_G2136	535	A E S G S G	S N A I L P A P E A P	K G R D	I D L F L K G I R T A E A D	I P Q T G K A R Y T G T W E A R I	G E P I Q W D N Q A
NmLbpB_M1080	496	A E S G S G	S N A I L P A P E A P	K G R D	I D L F L K G I R T A E T	D I P K T G E A H Y T G T W E A R I	G K P I Q W D N Q A
NmLbpB_931905	491	A E G N G	G S G S I L P T P E A P	K G R D	I D L F L K G I R T A E A E	I P R T G K A H Y T G T W E A R I	G K P I Q W D N H A
NmLbpB_NG144/82	496	T E E G G S	G S D G I L P A P E A P	K G R N	I D L F L K G I R T A E T	D I P K T G E A H Y T G T W E A R I	G K P I Q W D N Q A
NmLbpB_D8	491	E E G G G	G S D G I L P A P E A S	K G R D	I D L F L K G I R T A E T N	I P Q T G K A R Y T G T W E A R I	G K P I Q W D N H A
NmLbpB_B16B6	511	A E G N G	S S N A I L P V P E A S	K G R D	I D L F L K G I R T A E T N	I P Q T G E A R Y T G T W E A R I	G K P I Q W D N H A
NmLbpB_M978	480	A E G N G	S S N A I L P V P E A S	K G R D	I D L F L K G I R T A E T N	I P Q T G E A R Y T G T W E A R I	G K P I Q W D N H A
NgLbpB_WHO_W	456	E E G G G	G S D G I P P A Q E A P	K G R D	I D L F L K G I R T A E A D	I P K T G T A H Y T G T W E A R I	G E P I Q W
NgLbpB_FA19	457	E E G N .	G V S D G I P P A P E A L	K G R D	I D L F L K G I R T A E A D	I P K T G T A H Y T G T W E A R I	G E P I Q W
NgLbpB_WHO_M	459	E E G N .	G V S D G I P P A P E A L	K G R D	I D L F L K G I R T A E A D	I P K T G T A H Y T G T W E A R I	G E P I Q W
NgLbpB_WHO_P	459	E E G N .	G V S D G I P P A P E A L	K G R D	I D L F L K G I R T A E A D	I P K T G T A H Y T G T W E A R I	G E P I Q W
NgLbpB_WHO_U	459	E E G N .	G V S D G I P P A P E A L	K G R D	I D L F L K G I R T A E A D	I P K T G T A H Y T G T W E A R I	G E P I Q W
NgLbpB_WHO_Y	459	E E G N .	G V S D G I P P A P E A L	K G R D	I D L F L K G I R T A E A D	I P K T G T A H Y T G T W E A R I	G E P I Q W

NmLbpB_MC58		β30	β31	β32	TT	β33	TT
NmLbpB_MC58	590	 D K E	A A K A V F T V D F G K K S I	S G T L T E	E N G V E P A F H I	E N G K I E G N G F Y A T A R T R E N G I N	L S G N G S T D P K
NmLbpB_120M	585	K D S Y A N Q G	A K A B F D V D F G A K S I	S G K L T E	K N D T H P A V Y I	E N G V I D G N G F H A T A R T R D N G I D	L S G Q G S T S P Q
NmLbpB_M597	575	K D S Y A N Q G	A K A O F T V D F G K K S I	S G T L T E	K N D T H P A V Y I	E I E K G V I D G N G F H A T A R T R D N G I D	L S G Q G S T N P Q
NmLbpB_020	570	K D S Y A N Q G	A K A O F T V D F G K K S I	S G T L T E	K N D T H P A V Y I	E I E K G V I D G N G F H A T A R T R D N G I D	L S G Q G S T N P Q
NmLbpB_P2396	569	 D E K	A A K A V F T V D F G K K S I	S G T L T E	Q N G V K P A F H I	E N G K I E G N G F Y A T A R T R D T G I N	L S G T G S T N P T
NmLbpB_H44/76	596	 D K K	A A K A B F D V D F G K K S I	S G T L T E	K N G V Q P A F H I	E N G V I E G N G F H A T A R T R D N G I N	L S G N D S T N P P
NmLbpB_G2136	596	 D K E	A A K A V F T V D F D K K S I	S G T L T E	Q N G V E P A F H I	E I E K G I E G N G F Y A T A R T R D N G I D	L S G Q G S T K P Q
NmLbpB_M1080	557	 D E K	A A K A V F T V D F G K K S I	S G T L T E	Q N G V K P A F H I	E N G K I E G N G L Y A T A R T R D T G I N	L S G T G S T N P T
NmLbpB_931905	553	 D K E	A A K A B F T V D F G K K S I	S G K L T E	Q N G V E P A F H I	E N G K I E G N V F Y A T A R T R D D G I D	L S G Q G S T K P Q
NmLbpB_NG144/82	559	 D K E	A A K A V F T V D F G K K S I	S G T L T E	E N G V E P A F H I	E N G K I E G N G F Y A T A R T R E N G I N	L S G N G S T D E K
NmLbpB_D8	553	 D K A .	A K A B F D V D F G K K S I	S G T L T E	Q N G V E A A F H I	E N G K I E G N G F Y A T A R T R E N G I N	L S G N G S T D P K
NmLbpB_B16B6	573	 D K E	A A K A V F T V D F G K K S I	S G T L T E	K N G V E P A F R I	E N G V I E G N G F H A T A R T R D D G I D	L S G Q G S T K P Q
NmLbpB_M978	542	 D K E	A A K A V F T V D F G K K S I	S G T L T E	K N G V E P A F R I	E N G V I E G N G F H A T A R T R D D G I D	L S G Q G S T K P Q
NgLbpB_WHO_W	515	 D K E	A A K A B F D V D F G K K S I	S G T L T E	K N G V E P A F R I	E N G V I E G N G F H A T A R T R D D G I D	L S G Q G S T K P Q
NgLbpB_FA19	515	 D N K A D K	A A K A B F D V D F G N K S I	S G T L T E	Q N G V E P A F R I	E N G V I E G N G F H A T A R T R D N G I N	L S G N G S T N P Q
NgLbpB_WHO_M	517	 D N K A D K	A A K A B F D V D F G N K S I	S G T L T E	Q N G V E P A F R I	E N G V I E G N G F H A T A R T R D N G I N	L S G N G S T N P Q
NgLbpB_WHO_P	517	 D N K A D K	A A K A B F D V D F G N K S I	S G T L T E	Q N G V E P A F R I	E N G V I E G N G F H A T A R T R D N G I N	L S G N G S T N P Q
NgLbpB_WHO_U	517	 D N K A D K	A A K A B F D V D F G N K S I	S G T L T E	Q N G V E P A F R I	E N G V I E G N G F H A T A R T R D N G I N	L S G N G S T N P Q
NgLbpB_WHO_Y	517	 D N K A D K	A A K A B F D V D F G N K S I	S G T L T E	Q N G V E P A F R I	E N G V I E G N G F H A T A R T R D N G I N	L S G N G S T N P Q

NmLbpB_MC58		β34	η4	β35	α4	TT
NmLbpB_MC58	656	T F Q A S N	L R V E G G F Y G P Q A E L G G	I F N N D G K S L G I T E	G T E N K V D V E A E V	D A E V D V G K Q L E S E V K H
NmLbpB_120M	655	S F K A N N	L L V T G G F Y G P Q A A E L G G N	I I D S D		 R
NmLbpB_M597	645	R F E A N N	L L V T G G F Y G P Q A A E L G G N	I I D S D		 R
NmLbpB_020	640	R F E A N N	L L V T G G F Y G P Q A A E L G G N	I I D S D		 R
NmLbpB_P2396	635	T F Q A N G	L R V E G G F Y G P Q A E L G G	I F N N D G K S L G I T E	G T E N K A E A E A E A	 E V E A G V E Q L K P E I K P
NmLbpB_H44/76	662	S F K A N N	L L V T G G F Y G P Q A E L G G T	I F N N D G K S L G I T E	D T E N E A E A E V E N E A	 G V G E Q L K P E A K P
NmLbpB_G2136	662	I F Q A N D	L R V E G G F Y G P K A E L G G T	I F N K D G K S L G I T E	G T E N K V E A E V E V E V	 E A D V G K Q L E P D E V K H
NmLbpB_M1080	623	T F Q V N G	L R V E G G F Y G P Q A E L G G	I F N N D G K S L G I T E	G T E N K V E A E A E A E A	 E V E A G V E Q L K P E I K P
NmLbpB_931905	619	I F K A N D	L R V E G G F Y G P K A E L G G I	I F N N D G K S L G I T E	G T E N K V E A D V D V D V	 D V D A D A D V E Q L K P E V K P
NmLbpB_NG144/82	625	T F Q A S N	L R V E G G F Y G P Q A E L G G I	I F N N D G K S L G I T E	G T E N K V D V E A E V	D A E V D V G K Q L E S E V K H
NmLbpB_D8	618	T F Q A S N	L R V E G G F Y G P Q A E L G G	I F N N D G K S L G I T E	G T E N K V E V E A E A	 D V D V D V D V E Q L K P E V K P
NmLbpB_B16B6	639	I F K A N D	L R V E G G F Y G P K A E L G G I	I F N N D G K S L G I T E	G T E N K V E A D V D V	D V D V D V D A D V E Q L K P E V K P
NmLbpB_M978	608	I F K A N D	L R V E G G F Y G P K A E L G G I	I F N N D G K S L G I T E	G T E N K V E A D V D V	D V D V D V D A D A D V E Q L K P E V K P
NgLbpB_WHO_W	584	S F K A D N	L L V T G G F Y G P Q A A E L G G T	I F N K D G K S L G I T E	D I E N E V E N E A D V	 G E Q L E P E V K P
NgLbpB_FA19	584	S F K A D N	L L V T G G F Y G P Q A A E L G G T	I F N K D G K S L G I T E	D I E N E V E N E A D V	 G E Q L E P E V K P
NgLbpB_WHO_M	586	S F K A D N	L L V T G G F Y G P Q A A E L G G T	I F N K D G K S L G I T E	D I E N E V E N E A D V	 G E Q L E P E V K P
NgLbpB_WHO_P	586	S F K A D N	L L V T G G F Y G P Q A A E L G G T	I F N K D G K S L G I T E	D I E N E V E N E A D V	 G E Q L E P E V K P
NgLbpB_WHO_U	586	S F K A D N	L L V T G G F Y G P Q A A E L G G T	I F N K D G K S L G I T E	D I E N E V E N E A D V	 G E Q L E P E V K P
NgLbpB_WHO_Y	586	S F K A G N	L L V T G G F Y G P Q A A E L G G T	I F N K D G K S L G I T E	D I E N E V E N E A D V	 G E Q L E P E V K P

NmLbpB_MC58		β36
NmLbpB_MC58	721	Q F G V V F G A K K D M Q E V E K
NmLbpB_120M	685	K F G A V F G A K K D N K E V E K
NmLbpB_M597	675	K F G A V F G A K K D D K E A T R
NmLbpB_020	670	K F G A V F G A K K D D K E A T R
NmLbpB_P2396	701	Q F G V V F G A K K D N K E V E K
NmLbpB_H44/76	725	Q F G V V F G A K K D N K E V E K
NmLbpB_G2136	728	K F G V V F G A K K D M Q E V E K
NmLbpB_M1080	689	Q F G V V F G A K K D N K E V E K
NmLbpB_931905	687	Q F G V V F G A K K D N K E V E K
NmLbpB_NG144/82	690	Q F G V V F G A K K D M Q E V E K
NmLbpB_D8	684	Q F G V V F G A K K D M Q E V E K
NmLbpB_B16B6	709	Q F G V V F G A K K D N K E V E K
NmLbpB_M978	678	Q F G V V F G A K K D N K E V E K
NgLbpB_WHO_W	643	Q F G V V F G A K K D N K E V E K
NgLbpB_FA19	643	Q F G V V F G A K K D N K E V E K
NgLbpB_WHO_M	645	Q F G V V F G A K K D N K E V E K
NgLbpB_WHO_P	645	Q F G V V F G A K K D N K E V E K
NgLbpB_WHO_U	645	Q F G V V F G A K K D N K E V E K
NgLbpB_WHO_Y	645	Q F G V V F G A K K D N K E V E K

Supplementary Figure 5. Sequence alignment of FrpBs.



		β24 → TT → β25 → β26 → β27	
<i>NmFrpB_F3-3</i>			
<i>NmFrpB_F3-3</i>	536	VNA	GYIKNHGYELGASYRTGGLTAKVGVSHSKPRFY..DTHKD
<i>NmFrpB_alpha522</i>	558	VNA	GYIKNHGYELGASYRTGGLTAKVGVSHSKPRFY..DTHKD
<i>NmFrpB_alpha275</i>	558	VNA	GYIKNHGYELGASYRTGGLTAKVGVSHSKPRFY..DTHKD
<i>NmFrpB_053442</i>	557	VNA	GYIKNHGYELGASYRTGGLTAKVGVSHSKPRFY..DTHKD
<i>NmFrpB_H44/76</i>	557	VNA	GYIKNHGYELGASYRTGGLTAKVGVSHSKPRFY..DTHKD
<i>NmFrpB_Z4696</i>	528	VNA	GYIKNHGYELGASYRTGGLTAKVGVSHSKPRFY..DTHKD
<i>NmFrpB_NM1264</i>	557	VNA	GYIKNHGYELGASYRTGGLTAKVGVSHSKPRFYGYDTHKD
<i>NmFrpB_NCTC8554</i>	557	VNA	GYIKNHGYELGASYRTGGLTAKVGVSHSKPRFY..DTHPK
<i>NmFrpB_2996</i>	534	VNA	GYIKNHGYELGASYRTGGLTAKVGVSHSKPRFY..DTHPK
<i>NmFrpB_MC58</i>	551	VNA	GYIKNHGYELGASYRTGGLTAKVGVSHSKPRFY..DTHKD
<i>NmFrpB_892257</i>	529	VNA	GYIKNHGYELGASYRTGGLTAKVGVSHSKPRFY..DTHKD
<i>NmFrpB_M26503</i>	557	VNA	GYIKNHGYELGASYRTGGLTAKVGVSHSKPRFY..DTHPK
<i>NmFrpB_CHUV</i>	556	VNA	GYIKNHGYELGASYRTGGLTAKVGVSHSKPRFY..DTHPK
<i>NmFrpB_Z4756</i>	531	VNA	GYIKNHGYELGASYRTGGLTAKVGVSHSKPRFY..DTHPK
<i>NmFrpB_alpha14</i>	560	VNA	GYIKNHGYELGASYRTGGLTAKVGVSHSKPRFY..DTHPK
<i>NgFrpB_WHO_Y</i>	557	VNT	GYIKNHGYELGASYRTGGLTAKVGVSRSKPRFY..DTHKD
<i>NgFrpB_DGI2</i>	557	VNA	GYIKNHGYELGASYRTGGLTAKVGVSHSKPRFY..DTHKD
<i>NgFrpB_WHO_F</i>	557	VNA	GYIKNHGYELGASYRTGGLTAKVGVSRSKPRFY..DTHPK
<i>NmFrpB_alpha153</i>	550	VNA	GYIKNHGYELGASYRTGGLTAKVGVSHSKPRFY..DTHPK
<i>NgFrpB_NG-k51.05</i>	558	VNA	GYIKNHGYELGASYRTGGLTAKVGVSHSKPRFY..DTHKD
<i>NgFrpB_WHO_P</i>	558	VNA	GYIKNHGYELGASYRTGGLTAKVGVSRSKPRFY..DTHPK
<i>NgFrpB_WHO_U</i>	558	VNA	GYIKNHGYELGASYRTGGLTAKVGVSRSKPRFY..DTHPK
<i>NmFrpB_WHO_G</i>	558	VNT	GYIKNHGYELGASYRTGGLTAKVGVSRSKPRFY..DTHPK
<i>NgFrpB_WHO_N</i>	558	VNT	GYIKNHGYELGASYRTGGLTAKVGVSRSKPRFY..DTHPK
<i>NgFrpB_WHO_O</i>	558	VNT	GYIKNHGYELGASYRTGGLTAKVGVSRSKPRFY..DTHPK
<i>NgFrpB_WHO_V</i>	550	VNT	GYIKNHGYELGASYRTGGLTAKVGVSRSKPRFY..DTHPK
<i>NgFrpB_FA1090</i>	550	VNA	GYIKNHGYELGASYRTGGLTAKVGVSRSKPRFY..DTHPK
<i>NmFrpB_WHO_L</i>	550	VNA	GYIKNHGYELGASYRTGGLTAKVGVSHSKPRFY..DTHKD
<i>NgFrpB_WHO_M</i>	550	VNA	GYIKNHGYELGASYRTGGLTAKVGVSHSKPRFY..DTHKD
<i>NgFrpB_FA19</i>	550	VNA	GYIKNHGYELGASYRTGGLTAKVGVSHSKPRFY..DTHKD
<i>NgFrpB_MIA_2011_03-10</i>	550	VNA	GYIKNHGYELGASYRTGGLTAKVGVSHSKPRFY..DTHPK
<i>NgFrpB_WHO_K</i>	550	VNA	GYIKNHGYELGASYRTGGLTAKVGVSRSKPRFY..DTHPK
<i>NgFrpB_WHO_W</i>	550	VNA	GYIKNHGYELGASYRTGGLTAKVGVSRSKPRFY..DTHPK
<i>NgFrpB_WHO_X</i>	550	VNA	GYIKNHGYELGASYRTGGLTAKVGVSRSKPRFY..DTHPK
<i>NgFrpB_WHO_Z</i>	550	VNA	GYIKNHGYELGASYRTGGLTAKVGVSRSKPRFY..DTHPK

		β28 → β29 → TT → β30 → β31 → TT → TT → β32 → TT →	
<i>NmFrpB_F3-3</i>			
<i>NmFrpB_F3-3</i>	604	PNLEIGWRGRYVQKA	TGSILVAGQKDRGKLENVVRQ
<i>NmFrpB_alpha522</i>	626	PNLEIGWRGRYVQKA	TGSILVAGQKDRGKLENVVRQ
<i>NmFrpB_alpha275</i>	626	PNLEIGWRGRYVQKA	TGSILVAGQKDRGKLENVVRQ
<i>NmFrpB_053442</i>	625	PNLEIGWRGRYVQKA	TGSILVAGQKDRGKLENVVRQ
<i>NmFrpB_H44/76</i>	625	PNLEIGWRGRYVQKA	TGSILVAGQKDRGKLENVVRQ
<i>NmFrpB_Z4696</i>	596	PNLEIGWRGRYVQKA	TGSILVAGQKDRGKLENVVRQ
<i>NmFrpB_NM1264</i>	627	PNLEIGWRGRYVQKA	TGSILVAGQKDRGKLENVVRQ
<i>NmFrpB_NCTC8554</i>	625	PNLEIGWRGRYVQKA	TGSILVAGQKDRGKLENVVRQ
<i>NmFrpB_2996</i>	602	PNLEIGWRGRYVQKA	TGSILVAGQKDRGKLENVVRQ
<i>NmFrpB_MC58</i>	619	PNLEIGWRGRYVQKA	TGSILVAGQKDRGKLENVVRQ
<i>NmFrpB_892257</i>	597	PNLEIGWRGRYVQKA	TGSILVAGQKDRGKLENVVRQ
<i>NmFrpB_M26503</i>	625	PNLEIGWRGRYVQKA	TGSILVAGQKDRGKLENVVRQ
<i>NmFrpB_CHUV</i>	624	PNLEIGWRGRYVQKA	TGSILVAGQKDRGKLENVVRQ
<i>NmFrpB_Z4756</i>	599	PNLEIGWRGRYVQKA	TGSILVAGQKDRGKLENVVRQ
<i>NmFrpB_alpha14</i>	628	PNLEIGWRGRYVQKA	TGSILVAGQKDRGKLENVVRQ
<i>NgFrpB_WHO_Y</i>	625	PNLEIGWRGRYVQKA	TGSILVAGQKDRGKLENVVRQ
<i>NgFrpB_DGI2</i>	625	PNLEIGWRGRYVQKA	TGSILVAGQKDRGKLENVVRQ
<i>NgFrpB_WHO_F</i>	625	PNLEIGWRGRYVQKA	TGSILVAGQKDRGKLENVVRQ
<i>NmFrpB_alpha153</i>	618	PNLEIGWRGRYVQKA	TGSILVAGQKDRGKLENVVRQ
<i>NgFrpB_NG-k51.05</i>	626	PNLEIGWRGRYVQKA	TGSILVAGQKDRGKLENVVRQ
<i>NgFrpB_WHO_P</i>	626	PNLEIGWRGRYVQKA	TGSILVAGQKDRGKLENVVRQ
<i>NgFrpB_WHO_U</i>	626	PNLEIGWRGRYVQKA	TGSILVAGQKDRGKLENVVRQ
<i>NgFrpB_WHO_G</i>	626	PNLEIGWRGRYVQKA	TGSILVAGQKDRGKLENVVRQ
<i>NgFrpB_WHO_N</i>	626	PNLEIGWRGRYVQKA	TGSILVAGQKDRGKLENVVRQ
<i>NgFrpB_WHO_O</i>	626	PNLEIGWRGRYVQKA	TGSILVAGQKDRGKLENVVRQ
<i>NgFrpB_WHO_V</i>	618	PNLEIGWRGRYVQKA	TGSILVAGQKDRGKLENVVRQ
<i>NgFrpB_FA1090</i>	618	PNLEIGWRGRYVQKA	TGSILVAGQKDRGKLENVVRQ
<i>NgFrpB_WHO_L</i>	618	PNLEIGWRGRYVQKA	TGSILVAGQKDRGKLENVVRQ
<i>NgFrpB_WHO_M</i>	618	PNLEIGWRGRYVQKA	TGSILVAGQKDRGKLENVVRQ
<i>NgFrpB_FA19</i>	618	PNLEIGWRGRYVQKA	TGSILVAGQKDRGKLENVVRQ
<i>NgFrpB_MIA_2011_03-10</i>	618	PNLEIGWRGRYVQKA	TGSILVAGQKDRGKLENVVRQ
<i>NgFrpB_WHO_K</i>	618	PNLEIGWRGRYVQKA	TGSILVAGQKDRGKLENVVRQ
<i>NgFrpB_WHO_W</i>	618	PNLEIGWRGRYVQKA	TGSILVAGQKDRGKLENVVRQ
<i>NgFrpB_WHO_X</i>	618	PNLEIGWRGRYVQKA	TGSILVAGQKDRGKLENVVRQ
<i>NgFrpB_WHO_Z</i>	618	PNLEIGWRGRYVQKA	TGSILVAGQKDRGKLENVVRQ

		TTT	β33
NmFrpB_F3-3		.	→
NmFrpB_F3-3	674	YPHSQRWTNTLPGVGRDVRLGVNYKF	
NmFrpB_alpha522	696	YPHSQRWTNTLPGVGRDVRLGVNYKF	
NmFrpB_alpha275	696	YPHSQRWNNTLPGVGRDVRLGVNYKF	
NmFrpB_053442	695	YPHSQRWTNTLPGTGRDVRLGVNYKF	
NmFrpB_H44/76	695	YPHSQRWTNTLPGVGRDVRLGVNYKF	
NmFrpB_Z4696	666	YPHS.....	
NmFrpB_NM1264	697	YPHSQRWNNTLPGVGRDVRLGVNYKF	
NmFrpB_NCTC8554	695	YPHSQRWTNTLPGVGRDVRLGVNYKF	
NmFrpB_2996	672	YPHSQRWTNTLPDVGRDVRLGVNYKF	
NmFrpB_MC58	689	YPHSQRWTNTLPGVGRDVRLGVNYKF	
NmFrpB_892257	667	YPHSQRWTNTLPDVGRDVRLGVNYKF	
NmFrpB_M26503	695	YPHSQRWTNTLPGVGRDVRLGVNYKF	
NmFrpB_CHUV	694	YPHSQRWTNTLPGVGRDVRLGVNYKF	
NmFrpB_Z4756	669	YPHS.....	
NmFrpB_alpha14	698	YPHSQRWTNTLPGVGRDVRLGVNYKF	
NgFrpB_WHO_Y	695	YPHSQRWTNTLPGVGRDVRLGVNYKF	
NgFrpB_DGI2	695	YPHSQRWTNTLPGVGRDVRLGVNYKF	
NgFrpB_WHO_F	695	YPHSQRWTNTLPGVGRDVRLGVNYKF	
NmFrpB_alpha153	688	YPHSQRWTNTLPGVGRDVRLGVNYKF	
NgFrpB_NG-k51.05	696	YPHSQRWTNTLPGVGRDVRLGVNYKF	
NgFrpB_WHO_P	696	YPHSQRWTNTLPGVGRDVRLGVNYKF	
NgFrpB_WHO_U	696	YPHSQRWTNTLPGVGRDVRLGVNYKF	
NgFrpB_WHO_G	696	YPHSQRWTNTLPGVGRDVRLGVNYKF	
NgFrpB_WHO_N	696	YPHSQRWTNTLPGVGRDVRLGVNYKF	
NgFrpB_WHO_O	696	YPHSQRWTNTLPGVGRDVRLGVNYKF	
NgFrpB_WHO_V	688	YPHSQRWTNTLPGVGRDVRLGVNYKF	
NgFrpB_FA1090	688	YPHSQRWTNTLPGVGRDVRLGVNYKF	
NgFrpB_WHO_L	688	YPHSQRWTNTLPGVGRDVRLGVNYKF	
NgFrpB_WHO_M	688	YPHSQRWTNTLPGVGRDVRLGVNYKF	
NgFrpB_FA19	688	YPHSQRWTNTLPGVGRDVRLGVNYKF	
NgFrpB_MIA_2011_03-10	688	YPHSQRWTNTLPGVGRDVRLGVNYKF	
NgFrpB_WHO_K	688	YPHSQRWTNTLPGVGRDVRLGVNYKF	
NgFrpB_WHO_W	688	YPHSQRWTNTLPGVGRDVRLGVNYKF	
NgFrpB_WHO_X	688	YPHSQRWTNTLPGVGRDVRLGVNYKF	
NgFrpB_WHO_Z	688	YPHSQRWTNTLPGVGRDVRLGVNYKF	

Supplementary Figure 6. Sequence alignment of TdFHs.

NgTdfH_FA1090

NgTdfH_FA1090	1	.....	MRSSFRLKPICFYLMGVMLYHH	SYAEDAGRAGSEAQIQVLEDVHVKA	KRVPKDKKKVFTDARAV	
NgTdfH_WHO_M	1	.....	MRSSFRLKPICFYLMGVMLYHH	SYAEDAGRAGSEAQIQVLEDVHVKA	KRVPKDKKKVFTDARAV	
NgTdfH_WHO_O	1	.....	MRSSFRLKPICFYLMGVMLYHH	SYAEDAGRAGSEAQIQVLEDVHVKA	KRVPKDKKKVFTDARAV	
NgTdfH_WHO_U	1	.....	MRSSFRLKPICFYLMGVMLYHH	SYAEDAGRAGSEAQIQVLEDVHVKA	KRVPKDKKKVFTDARAV	
NgTdfH_WHO_P	1	.....	MRSSFRLKPICFYLMGVMLYHH	SYAEDAGRAGSEAQIQVLEDVHVKA	KRVPKDKKKVFTDARAV	
NgTdfH_MS11	1	.....	MRSSFRLKPICFYLMGVMLYHH	SYAEDAGRAGSEAQIQVLEDVHVKA	KRVPKDKKKVFTDARAV	
NgTdfH_F62	1	.....	MRSSFRLKPICFYLMGVMLYHH	SYAEDAGRAGSEAQIQVLEDVHVKA	KRVPKDKKKVFTDARAV	
NgTdfH_WHO_F	1			MLYHH	SYAEDAGRAGSEAQIQVLEDVHVKA	KRVPKDKKKVFTDARAV
NgTdfH_MIA_2011_03-10	1	MFIVEEN	IRSSFRLKPICFYLMGVMLYHH	SYAEDAGRAGSEAQIQVLEDVHVKA	KRVPKDKKKVFTDARAV	
NgTdfH_DGI18	1	.....	MRSSFRLKPICFYLMGVMLYHH	SYAEDAGRAGSEAQIQVLEDVHVKA	KRVPKDKKKVFTDARAV	
NgTdfH_FA19	1	.....	MRSSFRLKPICFYLMGVMLYHH	SYAEDAGRAGSEAQIQVLEDVHVKA	KRVPKDKKKVFTDARAV	
NgTdfH_WHO_L	1	.....	MRSSFRLKPICFYLMGVMLYHH	SYAEDAGRAGSEAQIQVLEDVHVKA	KRVPKDKKKVFTDARAV	
NgTdfH_DGI2	1			MKPICFYLMGVMLYHH	SYAEDAGRAGSEAQIQVLEDVHVKA	KRVPKDKKKVFTDARAV
NgTdfH_WHO_K	1			MLYHH	SYAEDAGRAGSEAQIQVLEDVHVKA	KRVPKDKKKVFTDARAV
NgTdfH_WHO_W	1			MLYHH	SYAEDAGRAGSEAQIQVLEDVHVKA	KRVPKDKKKVFTDARAV
NgTdfH_WHO_X	1			MLYHH	SYAEDAGRAGSEAQIQVLEDVHVKA	KRVPKDKKKVFTDARAV
NgTdfH_WHO_Z	1			MLYHH	SYAEDAGRAGSEAQIQVLEDVHVKA	KRVPKDKKKVFTDARAV
NgTdfH_WHO_G	1	.....	MRSSFRLKPICFYLMGVMLYHH	SYAEDAGRAGSEAQIQVLEDVHVKA	KRVPKDKKKVFTDARAV	
NgTdfH_WHO_N	1	.....	MRSSFRLKPICFYLMGVMLYHH	SYAEDAGRAGSEAQIQVLEDVHVKA	KRVPKDKKKVFTDARAV	
NgTdfH_NG-k51.05	1	MFIVEEN	IRSSFRLKPICFYLMGVMLYHH	SYAEDAGRAGSEAQIQVLEDVHVKA	KRVPKDKKKVFTDARAV	
NgTdfH_WHO_V	1			MLYHH	SYAEDAGRAGSEAQIQVLEDVHVKA	KRVPKDKKKVFTDARAV
NgTdfH_WHO_Y	1			MLYHH	SYAEDAGRAGSEAQIQVLEDVHVKA	KRVPKDKKKVFTDARAV
NgTdfH_BZG33	1	.....	MRSSFRLKPICFYLMGVMLYHH	SYAEDAGRAGSEAQIQVLEDVHVKA	KRVPKDKKKVFTDARAV	
NgTdfH_NCCP11945	1			MLYHH	SYAEDAGRAGSEAQIQVLEDVHVKA	KRVPKDKKKVFTDARAV
NmTdfH_020-06	1		MKTSFRLKPIYFCLLNVTLYH	SYAEDLPRHSHNTQV	QVLEDVHVKA	KRVPKDKKKVFTDARAV
NmTdfH_alpha710	1	.....	MRSSFRLKPICFYLMGVMLYHH	SYAEDAGRAGSEAQIQVLEDVHVKA	KRVPKDKKKVFTDARAV	
NmTdfH_NZ-05/33	1	.....	MRSSFRLKPICFYLMGVMLYHH	SYAEDAGRAGSEAQIQVLEDVHVKA	KRVPKDKKKVFTDARAV	
NmTdfH_93004	1	.....	MRSSFRLKPICFYLMGVMLYHH	SYAEDAGRAGSEAQIQVLEDVHVKA	KRVPKDKKKVFTDARAV	
NmTdfH_ATCC13091	1	.....	MKSSFRLKPICFYLMGVMLYHH	SYAEDAGRAGSEAQIQVLEDVHVKA	KRVPKDKKKVFTDARAV	
NmTdfH_alpha522	1	.....	MRSSFRLKPICFYLMGVMLYHY	SYAEDAGRAGSEAQIQVLEDVHVKA	KRVPKDKKKVFTDARAV	
NmTdfH_NM2795	1	.....	MKSSFRLKPICFYLMGVMLYHH	SYAEDAGRAGSEAQIQVLEDVHVKA	KRVPKDKKKVFTDARAV	
NmTdfH_81858	1	.....	MRSSFRLKPICFYLMGVMLYHY	SYAEDAGRAGSEAQIQVLEDVHVKA	KRVPKDKKKVFTDARAV	
NmTdfH_ERS514534	1	.....	MRSSFRLKPICFYLMGVMLYHH	SYAEDAGRAGSEAQIQVLEDVHVKA	KRVPKDKKKVFTDARAV	
NmTdfH_alpha153	1	.....	MRSSFRLKPICFYLMGVMLYHH	SYAEDAGRAGSEAQIQVLEDVHVKA	KRVPKDKKKVFTDARAV	
NmTdfH_053442	1			MGVMLYHH	SYAEDAGRAGSEAQIQVLEDVHVKA	KRVPKDKKKVFTDARAV
NmTdfH_M0579	1	.....	MRSSFRLKPICFYLTGVMLYHH	SYAEDAGRAGSEAQIQVLEDVHVKA	KRVPKDKKKVFTDARAV	
NmTdfH_MC58	1	.....	MRSSFRLKPICFYLMGVTLYHY	SYAEDAGRAGSEAQIQVLEDVHVKA	KRVPKDKKKVFTDARAV	
NmTdfH_LNP21362	1	.....	MRSSFRLKPICFYLMGVTLYHY	SYAEDAGRAGSEAQIQVLEDVHVKA	KRVPKDKKKVFTDARAV	
NmTdfH_IR1074	1	.....	MRSSFRLKPICFYLMGVTLYHY	SYAEDAGRAGSEAQIQVLEDVHVKA	KRVPKDKKKVFTDARAV	
NmTdfH_H44/76	1	.....	MRSSFRLKPICFYLMGVTLYHY	SYAEDAGRAGSEAQIQVLEDVHVKA	KRVPKDKKKVFTDARAV	
NmTdfH_FDAARGOS_210	1	.....	MRSSFRLKPICFYLMGVTLYHY	SYAEDAGRAGSEAQIQVLEDVHVKA	KRVPKDKKKVFTDARAV	
NmTdfH_FDAARGOS_215	1	.....	MRSSFRLKPICFYLMGVMLYHH	SYAEDAGRAGSEAQIQVLEDVHVKA	KRVPKDKKKVFTDARAV	
NmTdfH_510612	1			MLYHH	SYAEDAGRAGSEAQIQVLEDVHVKA	KRVPKDKKKVFTDARAV
NmTdfH_Z2491	1	.....	MRSSFRLKPICFYLMGVMLYHH	SYAEDAGRAGSEAQIQVLEDVHVKA	KRVPKDKKKVFTDARAV	
NmTdfH_NCTC8249	1	.....	MRSSFRLKPICFYLMGVMLYHH	SYAEDAGRAGSEAQIQVLEDVHVKA	KRVPKDKKKVFTDARAV	
NmTdfH_alpha14	1	.....	MRSSFRLKPICFYLMGVMLYHH	SYAEDAGRAGSEAQIQVLEDVHVKA	KRVPKDKKKVFTDARAV	
NmTdfH_2842STDY5881378	1	.....	MRSSFRLKPICFYLMGVMLYHH	SYAEDAGRAGSEAQIQVLEDVHVKA	KRVPKDKKKVFTDARAV	
NmTdfH_CHUV	1	.....	MRSSFRLKPICFYLMGVMLYHH	SYAEDAGRAGSEAQIQVLEDVHVKA	KRVPKDKKKVFTDARAV	
NmTdfH_FAM18	1	.....	MRSSFRLKPICFYLMGVMLYHH	SYAEDAGRAGSEAQIQVLEDVHVKA	KRVPKDKKKVFTDARAV	
NmTdfH_M09293	1	.....	MRSSFRLKPICFYLMGVMLYHH	SYAEDAGRAGSEAQIQVLEDVHVKA	KRVPKDKKKVFTDARAV	
NmTdfH_M26503	1	.....	MRSSFRLKPICFYLMGVMLYHH	SYAEDAGRAGSEAQIQVLEDVHVKA	KRVPKDKKKVFTDARAV	
NmTdfH_2842STDY5881093	1	.....	MRSSFRLKPICFYLMGVMLYHH	SYAEDAGRAGSEAQIQVLEDVHVKA	KRVPKDKKKVFTDARAV	
NmTdfH_PMB5301	1	.....	MRSSFRLKPICFYLMGVMLYHH	SYAEDAGRAGSEAQIQVLEDVHVKA	KRVPKDKKKVFTDARAV	

			α1	α2	β2	β3	TT	β4	β5	TT
			▸ 00000000	0000	TT→	→		→	→	
NgTdfH_FA1090										
NgTdfH_FA1090	64	STRQDVF	FKS	GENLDN	IVRSIPGAFTQ	QDKSSGIVSLNIRGDS	SGFGRVNTMVDGIT	QTFY	STSTDA	GRAGG
NgTdfH_WHO_M	64	STRQDVF	FKS	GENLDN	IVRSIPGAFTQ	QDKSSGIVSLNIRGDS	SGFGRVNTMVDGIT	QTFY	STSTDA	GRAGG
NgTdfH_WHO_O	64	STRQDVF	FKS	GENLDN	IVRSIPGAFTQ	QDKSSGIVSLNIRGDS	SGFGRVNTMVDGIT	QTFY	STSTDA	GRAGG
NgTdfH_WHO_U	64	STRQDVF	FKS	GENLDN	IVRSIPGAFTQ	QDKSSGIVSLNIRGDS	SGFGRVNTMVDGIT	QTFY	STSTDA	GRAGG
NgTdfH_WHO_P	64	STRQDVF	FKS	GENLDN	IVRSIPGAFTQ	QDKSSGIVSLNIRGDS	SGFGRVNTMVDGIT	QTFY	STSTDA	GRAGG
NgTdfH_MS11	64	STRQDVF	FKS	GENLDN	IVRSIPGAFTQ	QDKSSGIVSLNIRGDS	SGFGRVNTMVDGIT	QTFY	STSTDA	GRAGG
NgTdfH_F62	64	STRQDVF	FKS	GENLDN	IVRSIPGAFTQ	QDKSSGIVSLNIRGDS	SGFGRVNTMVDGIT	QTFY	STSTDA	GRAGG
NgTdfH_WHO_F	47	STRQDVF	FKS	GENLDN	IVRSIPGAFTQ	QDKSSGIVSLNIRGDS	SGFGRVNTMVDGIT	QTFY	STSTDA	GRAGG
NgTdfH_MIA_2011_03-10	71	STRQDVF	FKS	GENLDN	IVRSIPGAFTQ	QDKSSGIVSLNIRGDS	SGFGRVNTMVDGIT	QTFY	STSTDA	GRAGG
NgTdfH_DGI18	64	STRQDVF	FKS	GENLDN	IVRSIPGAFTQ	QDKSSGIVSLNIRGDS	SGFGRVNTMVDGIT	QTFY	STSTDA	GRAGG
NgTdfH_FA19	64	STRQDVF	FKS	GENLDN	IVRSIPGAFTQ	QDKSSGIVSLNIRGDS	SGFGRVNTMVDGIT	QTFY	STSTDA	GRAGG
NgTdfH_WHO_L	64	STRQDVF	FKS	GENLDN	IVRSIPGAFTQ	QDKSSGIVSLNIRGDS	SGFGRVNTMVDGIT	QTFY	STSTDA	GRAGG
NgTdfH_DG12	58	STRQDVF	FKS	GENLDN	IVRSIPGAFTQ	QDKSSGIVSLNIRGDS	SGFGRVNTMVDGIT	QTFY	STSTDA	GRAGG
NgTdfH_WHO_K	47	STRQDVF	FKS	SENLDN	IVRSIPGAFTQ	QDKSSGIVSLNIRGDS	SGFGRVNTMVDGIT	QTFY	STSTDA	GRAGG
NgTdfH_WHO_W	47	STRQDVF	FKS	SENLDN	IVRSIPGAFTQ	QDKSSGIVSLNIRGDS	SGFGRVNTMVDGIT	QTFY	STSTDA	GRAGG
NgTdfH_WHO_X	47	STRQDVF	FKS	SENLDN	IVRSIPGAFTQ	QDKSSGIVSLNIRGDS	SGFGRVNTMVDGIT	QTFY	STSTDA	GRAGG
NgTdfH_WHO_Z	47	STRQDVF	FKS	SENLDN	IVRSIPGAFTQ	QDKSSGIVSLNIRGDS	SGFGRVNTMVDGIT	QTFY	STSTDA	GRAGG
NgTdfH_WHO_G	64	STRQDVF	FKS	SENLDN	IVRSIPGAFTQ	QDKSSGIVSLNIRGDS	SGFGRVNTMVDGIT	QTFY	STSTDA	GRAGG
NgTdfH_WHO_N	64	STRQDVF	FKS	SENLDN	IVRSIPGAFTQ	QDKSSGIVSLNIRGDS	SGFGRVNTMVDGIT	QTFY	STSTDA	GRAGG
NgTdfH_NG-k51.05	71	STRQDVF	FKS	SENLDN	IVRSIPGAFTQ	QDKSSGIVSLNIRGDS	SGFGRVNTMVDGIT	QTFY	STSTDA	GRAGG
NgTdfH_WHO_V	47	STRQDVF	FKS	SENLDN	IVRSIPGAFTQ	QDKSSGIVSLNIRGDS	SGFGRVNTMVDGIT	QTFY	STSTDA	GRAGG
NgTdfH_WHO_Y	47	STRQDVF	FKS	SENLDN	IVRSIPGAFTQ	QDKSSGIVSLNIRGDS	SGFGRVNTMVDGIT	QTFY	STSTDA	GRAGG
NgTdfH_BZG33	64	STRQDVF	FKS	SENLDN	IVRSIPGAFTQ	QDKSSGIVSLNIRGDS	SGFGRVNTMVDGIT	QTFY	STSTDA	GRAGG
NgTdfH_NCCP11945	47	STRQDVF	FKS	SENLDN	IVRSIPGAFTQ	QDKSSGIVSLNIRGDS	SGFGRVNTMVDGIT	QTFY	STSTDA	GRAGG
NmTdfH_020-06	63	STRQDVF	FKS	GENLDN	IVRSIPGAFTQ	QDKSSGIVSLNIRGDS	SGFGRVNTMVDGIT	QTFY	STSTDA	GRAGG
NmTdfH_alpha710	64	STRQDVF	FKS	SENLDN	IVRSIPGAFTQ	QDKSSGIVSLNIRGDS	SGFGRVNTMVDGIT	QTFY	STSTDA	GRAGG
NmTdfH_NZ-05/33	64	STRQDVF	FKS	SENLDN	IVRSIPGAFTQ	QDKSSGIVSLNIRGDS	SGFGRVNTMVDGIT	QTFY	STSTDA	GRAGG
NmTdfH_93004	64	STRQDVF	FKS	SENLDN	IVRSIPGAFTQ	QDKSSGIVSLNIRGDS	SGFGRVNTMVDGIT	QTFY	STSTDA	GRAGG
NmTdfH_ATCC13091	64	STRQDVF	FKS	SENLDN	IVRSIPGAFTQ	QDKSSGIVSLNIRGDS	SGFGRVNTMVDGIT	QTFY	STSTDA	GRAGG
NmTdfH_alpha522	64	STRQDVF	FKS	SENLDN	IVRSIPGAFTQ	QDKSSGIVSLNIRGDS	SGFGRVNTMVDGIT	QTFY	STSTDA	GRAGG
NmTdfH_NM2795	64	STRQDVF	FKS	SENLDN	IVRSIPGAFTQ	QDKSSGIVSLNIRGDS	SGFGRVNTMVDGIT	QTFY	STSTDA	GRAGG
NmTdfH_81858	64	STRQDVF	FKS	SENLDN	IVRSIPGAFTQ	QDKSSGIVSLNIRGDS	SGFGRVNTMVDGIT	QTFY	STSTDA	GRAGG
NmTdfH_ERS514534	64	STRQDVF	FKS	SENLDN	IVRSIPGAFTQ	QDKSSGIVSLNIRGDS	SGFGRVNTMVDGIT	QTFY	STSTDA	GRAGG
NmTdfH_alpha153	64	STRQDVF	FKS	SENLDN	IVRSIPGAFTQ	QDKSSGIVSLNIRGDS	SGFGRVNTMVDGIT	QTFY	STSTDA	GRAGG
NmTdfH_053442	50	STRQDVF	FKS	SENLDN	IVRSIPGAFTQ	QDKSSGIVSLNIRGDS	SGFGRVNTMVDGIT	QTFY	STSTDA	GRAGG
NmTdfH_M0579	64	STRQDVF	FKS	SENLDN	IVRSIPGAFTQ	QDKSSGIVSLNIRGDS	SGFGRVNTMVDGIT	QTFY	STSTDA	GRAGG
NmTdfH_MC58	64	STRQDVF	FKS	SENLDN	IVRSIPGAFTQ	QDKSSGIVSLNIRGDS	SGFGRVNTMVDGIT	QTFY	STSTDA	GRAGG
NmTdfH_LNP21362	64	STRQDVF	FKS	SENLDN	IVRSIPGAFTQ	QDKSSGIVSLNIRGDS	SGFGRVNTMVDGIT	QTFY	STSTDA	GRAGG
NmTdfH_IR1074	64	STRQDVF	FKS	SENLDN	IVRSIPGAFTQ	QDKSSGIVSLNIRGDS	SGFGRVNTMVDGIT	QTFY	STSTDA	GRAGG
NmTdfH_H44/76	64	STRQDVF	FKS	SENLDN	IVRSIPGAFTQ	QDKSSGIVSLNIRGDS	SGFGRVNTMVDGIT	QTFY	STSTDA	GRAGG
NmTdfH_FDAARGOS_210	64	STRQDVF	FKS	SENLDN	IVRSIPGAFTQ	QDKSSGIVSLNIRGDS	SGFGRVNTMVDGIT	QTFY	STSTDA	GRAGG
NmTdfH_FDAARGOS_215	64	STRQDVF	FKS	SENLDN	IVRSIPGAFTQ	QDKSSGIVSLNIRGDS	SGFGRVNTMVDGIT	QTFY	STSTDA	GRAGG
NmTdfH_510612	47	STRQDVF	FKS	SENLDN	IVRSIPGAFTQ	QDKSSGIVSLNIRGDS	SGFGRVNTMVDGIT	QTFY	STSTDA	GRAGG
NmTdfH_Z2491	64	STRQDVF	FKS	SENLDN	IVRSIPGAFTQ	QDKSSGIVSLNIRGDS	SGFGRVNTMVDGIT	QTFY	STSTDA	GRAGG
NmTdfH_NCTC8249	64	STRQDVF	FKS	SENLDN	IVRSIPGAFTQ	QDKSSGIVSLNIRGDS	SGFGRVNTMVDGIT	QTFY	STSTDA	GRAGG
NmTdfH_alpha14	64	STRQDVF	FKS	SENLDN	IVRSIPGAFTQ	QDKSSGIVSLNIRGDS	SGFGRVNTMVDGIT	QTFY	STSTDA	GRAGG
NmTdfH_2842STDY5881378	64	STRQDVF	FKS	SENLDN	IVRSIPGAFTQ	QDKSSGIVSLNIRGDS	SGFGRVNTMVDGIT	QTFY	STSTDA	GRAGG
NmTdfH_CHUV	64	STRQDVF	FKS	SENLDN	IVRSIPGAFTQ	QDKSSGIVSLNIRGDS	SGFGRVNTMVDGIT	QTFY	STSTDA	GRAGG
NmTdfH_FAM18	64	STRQDVF	FKS	SENLDN	IVRSIPGAFTQ	QDKSSGIVSLNIRGDS	SGFGRVNTMVDGIT	QTFY	STSTDA	GRAGG
NmTdfH_M09293	64	STRQDVF	FKS	SENLDN	IVRSIPGAFTQ	QDKSSGIVSLNIRGDS	SGFGRVNTMVDGIT	QTFY	STSTDA	GRAGG
NmTdfH_M26503	64	STRQDVF	FKS	SENLDN	IVRSIPGAFTQ	QDKSSGIVSLNIRGDS	SGFGRVNTMVDGIT	QTFY	STSTDA	GRAGG
NmTdfH_2842STDY5881093	64	STRQDVF	FKS	SENLDN	IVRSIPGAFTQ	QDKSSGIVSLNIRGDS	SGFGRVNTMVDGIT	QTFY	STSTDA	GRAGG
NmTdfH_PMB5301	64	STRQDVF	FKS	SENLDN	IVRSIPGAFTQ	QDKSSGIVSLNIRGDS	SGFGRVNTMVDGIT	QTFY	STSTDA	GRAGG

			η1	β6	η2	β7	η3	β8	
			...	→	...	→	...	→	
NgTdfH_FA1090			...	...	...	...	...	...	
NgTdfH_FA1090	134	SSQFGASVDSNFIAGLDVVKGSFSGSAGINSLAGSANLRTLGVDDVVQGNNTYGLLLKGLTGTNSTKGNA							
NgTdfH_WHO_M	134	SSQFGASVDSNFIAGLDVVKGSFSGSAGINSLAGSANLRTLGVDDVVQGNNTYGLLLKGLTGTNSTKGNA							
NgTdfH_WHO_O	134	SSQFGASVDSNFIAGLDVVKGSFSGSAGINSLAGSANLRTLGVDDVVQGNNTYGLLLKGLTGTNSTKGNA							
NgTdfH_WHO_U	134	SSQFGASVDSNFIAGLDVVKGSFSGSAGINSLAGSANLRTLGVDDVVQGNNTYGLLLKGLTGTNSTKGNA							
NgTdfH_WHO_P	134	SSQFGASVDSNFIAGLDVVKGSFSGSAGINSLAGSANLRTLGVDDVVQGNNTYGLLLKGLTGTNSTKGNA							
NgTdfH_MS11	134	SSQFGASVDSNFIAGLDVVKGSFSGSAGINSLAGSANLRTLGVDDVVQGNNTYGLLLKGLTGTNSTKGNA							
NgTdfH_F62	134	SSQFGASVDSNFIAGLDVVKGSFSGSAGINSLAGSANLRTLGVDDVVQGNNTYGLLLKGLTGTNSTKGNA							
NgTdfH_WHO_F	117	SSQFGASVDSNFIAGLDVVKGSFSGSAGINSLAGSANLRTLGVDDVVQGNNTYGLLLKGLTGTNSTKGNA							
NgTdfH_MIA_2011_03-10	141	SSQFGASVDSNFIAGLDVVKGSFSGSAGINSLAGSANLRTLGVDDVVQGNNTYGLLLKGLTGTNSTKGNA							
NgTdfH_DGI18	134	SSQFGASVDSNFIAGLDVVKGSFSGSAGINSLAGSANLRTLGVDDVVQGNNTYGLLLKGLTGTNSTKGNA							
NgTdfH_FA19	134	SSQFGASVDSNFIAGLDVVKGSFSGSAGINSLAGSANLRTLGVDDVVQGNNTYGLLLKGLTGTNSTKGNA							
NgTdfH_WHO_L	134	SSQFGASVDSNFIAGLDVVKGSFSGSAGINSLAGSANLRTLGVDDVVQGNNTYGLLLKGLTGTNSTKGNA							
NgTdfH_DGI2	128	SSQFGASVDSNFIAGLDVVKGSFSGSAGINSLAGSANLRTLGVDDVVQGNNTYGLLLKGLTGTNSTKGNA							
NgTdfH_WHO_K	117	SSQFGASVDSNFIAGLDVVKGSFSGSAGINSLAGSANLRTLGVDDVVQGNNTYGLLLKGLTGTNSTKGNA							
NgTdfH_WHO_W	117	SSQFGASVDSNFIAGLDVVKGSFSGSAGINSLAGSANLRTLGVDDVVQGNNTYGLLLKGLTGTNSTKGNA							
NgTdfH_WHO_X	117	SSQFGASVDSNFIAGLDVVKGSFSGSAGINSLAGSANLRTLGVDDVVQGNNTYGLLLKGLTGTNSTKGNA							
NgTdfH_WHO_Z	117	SSQFGASVDSNFIAGLDVVKGSFSGSAGINSLAGSANLRTLGVDDVVQGNNTYGLLLKGLTGTNSTKGNA							
NgTdfH_WHO_G	134	SSQFGASVDSNFIAGLDVVKGSFSGSAGINSLAGSANLRTLGVDDVVQGNNTYGLLLKGLTGTNSTKGNA							
NgTdfH_WHO_N	134	SSQFGASVDSNFIAGLDVVKGSFSGSAGINSLAGSANLRTLGVDDVVQGNNTYGLLLKGLTGTNSTKGNA							
NgTdfH_NG-k51.05	141	SSQFGASVDSNFIAGLDVVKGSFSGSAGINSLAGSANLRTLGVDDVVQGNNTYGLLLKGLTGTNSTKGNA							
NgTdfH_WHO_V	117	SSQFGASVDSNFIAGLDVVKGSFSGSAGINSLAGSANLRTLGVDDVVQGNNTYGLLLKGLTGTNSTKGNA							
NgTdfH_WHO_Y	117	SSQFGASVDSNFIAGLDVVKGSFSGSAGINSLAGSANLRTLGVDDVVQGNNTYGLLLKGLTGTNSTKGNA							
NgTdfH_BZG33	134	SSQFGASVDSNFIAGLDVVKGSFSGSAGINSLAGSANLRTLGVDDVVQGNNTYGLLLKGLTGTNSTKGNA							
NgTdfH_NCCP11945	117	SSQFGASVDSNFIAGLDVVKGSFSGSAGINSLAGSANLRTLGVDDVVQGNNTYGLLLKGLTGTNSTKGNA							
NmTdfH_020-06	133	SSQFGASVDSNFIAGLDVVKGSFSGSAGINSLAGSANLRTLGVDDVVQGNNTYGLLLKGLTGTNSTKGNA							
NmTdfH_alpha710	134	SSQFGASVDSNFIAGLDVVKGSFSGSAGINSLAGSANLRTLGVDDVVQGNNTYGLLLKGLTGTNSTKGNA							
NmTdfH_NZ-05/33	134	SSQFGASVDSNFIAGLDVVKGSFSGSAGINSLAGSANLRTLGVDDVVQGNNTYGLLLKGLTGTNSTKGNA							
NmTdfH_93004	134	SSQFGASVDSNFIAGLDVVKGSFSGSAGINSLAGSANLRTLGVDDVVQGNNTYGLLLKGLTGTNSTKGNA							
NmTdfH_ATCC13091	134	SSQFGASVDSNFIAGLDVVKGSFSGSAGINSLAGSANLRTLGVDDVVQGNNTYGLLLKGLTGTNSTKGNA							
NmTdfH_alpha522	134	SSQFGASVDSNFIAGLDVVKGSFSGSAGINSLAGSANLRTLGVDDVVQGNNTYGLLLKGLTGTNSTKGNA							
NmTdfH_NM2795	134	SSQFGASVDSNFIAGLDVVKGSFSGSAGINSLAGSANLRTLGVDDVVQGNNTYGLLLKGLTGTNSTKGNA							
NmTdfH_81858	134	SSQFGASVDSNFIAGLDVVKGSFSGSAGINSLAGSANLRTLGVDDVVQGNNTYGLLLKGLTGTNSTKGNA							
NmTdfH_ERS514534	134	SSQFGASVDSNFIAGLDVVKGSFSGSAGINSLAGSANLRTLGVDDVVQGNNTYGLLLKGLTGTNSTKGNA							
NmTdfH_alpha153	134	SSQFGASVDSNFIAGLDVVKGSFSGSAGINSLAGSANLRTLGVDDVVQGNNTYGLLLKGLTGTNSTKGNA							
NmTdfH_053442	120	SSQFGASVDSNFIAGLDVVKGSFSGSAGINSLAGSANLRTLGVDDVVQGNNTYGLLLKGLTGTNSTKGNA							
NmTdfH_M0579	134	SSQFGASVDSNFIAGLDVVKGSFSGSAGINSLAGSANLRTLGVDDVVQGNNTYGLLLKGLTGTNSTKGNA							
NmTdfH_MC58	134	SSQFGASVDSNFIAGLDVVKGSFSGSAGINSLAGSANLRTLGVDDVVQGNNTYGLLLKGLTGTNSTKGNA							
NmTdfH_LNP21362	134	SSQFGASVDSNFIAGLDVVKGSFSGSAGINSLAGSANLRTLGVDDVVQGNNTYGLLLKGLTGTNSTKGNA							
NmTdfH_IR1074	134	SSQFGASVDSNFIAGLDVVKGSFSGSAGINSLAGSANLRTLGVDDVVQGNNTYGLLLKGLTGTNSTKGNA							
NmTdfH_H44/76	134	SSQFGASVDSNFIAGLDVVKGSFSGSAGINSLAGSANLRTLGVDDVVQGNNTYGLLLKGLTGTNSTKGNA							
NmTdfH_FDAARGOS_210	134	SSQFGASVDSNFIAGLDVVKGSFSGSAGINSLAGSANLRTLGVDDVVQGNNTYGLLLKGLTGTNSTKGNA							
NmTdfH_FDAARGOS_215	134	SSQFGASVDSNFIAGLDVVKGSFSGSAGINSLAGSANLRTLGVDDVVQGNNTYGLLLKGLTGTNSTKGNA							
NmTdfH_510612	134	SSQFGASVDSNFIAGLDVVKGSFSGSAGINSLAGSANLRTLGVDDVVQGNNTYGLLLKGLTGTNSTKGNA							
NmTdfH_Z2491	117	SSQFGASVDSNFIAGLDVVKGSFSGSAGINSLAGSANLRTLGVDDVVQGNNTYGLLLKGLTGTNSTKGNA							
NmTdfH_NCTC8249	134	SSQFGASVDSNFIAGLDVVKGSFSGSAGINSLAGSANLRTLGVDDVVQGNNTYGLLLKGLTGTNSTKGNA							
NmTdfH_alpha14	134	SSQFGASVDSNFIAGLDVVKGSFSGSAGINSLAGSANLRTLGVDDVVQGNNTYGLLLKGLTGTNSTKGNA							
NmTdfH_2842STDY5881378	134	SSQFGASVDSNFIAGLDVVKGSFSGSAGINSLAGSANLRTLGVDDVVQGNNTYGLLLKGLTGTNSTKGNA							
NmTdfH_CHUV	134	SSQFGASVDSNFIAGLDVVKGSFSGSAGINSLAGSANLRTLGVDDVVQGNNTYGLLLKGLTGTNSTKGNA							
NmTdfH_FAM18	134	SSQFGASVDSNFIAGLDVVKGSFSGSAGINSLAGSANLRTLGVDDVVQGNNTYGLLLKGLTGTNSTKGNA							
NmTdfH_M09293	134	SSQFGASVDSNFIAGLDVVKGSFSGSAGINSLAGSANLRTLGVDDVVQGNNTYGLLLKGLTGTNSTKGNA							
NmTdfH_M26503	134	SSQFGASVDSNFIAGLDVVKGSFSGSAGINSLAGSANLRTLGVDDVVQGNNTYGLLLKGLTGTNSTKGNA							
NmTdfH_2842STDY5881093	134	SSQFGASVDSNFIAGLDVVKGSFSGSAGINSLAGSANLRTLGVDDVVQGNNTYGLLLKGLTGTNSTKGNA							
NmTdfH_PMB5301	134	SSQFGASVDSNFIAGLDVVKGSFSGSAGINSLAGSANLRTLGVDDVVQGNNTYGLLLKGLTGTNSTKGNA							

		β9		η4	α3	TT		β10		β11
NgTdfH_FA1090		→		222	222			→		→
NgTdfH_FA1090	204	MAAIGARKWLES	SGASV	GVLYGHSRR	GVAQNYRVGGGGQHIGNFG	EYLERRKO	YFVQEGGLKFNA	AGSGK		
NgTdfH_WHO_M	204	MAAIGARKWLES	SGASV	GVLYGHSRR	GVAQNYRVGGGGQHIGNFG	EYLERRKO	YFVQEGGLKFNA	AGSGK		
NgTdfH_WHO_O	204	MAAIGARKWLES	SGASV	GVLYGHSRR	GVAQNYRVGGGGQHIGNFG	EYLERRKO	YFVQEGGLKFNA	AGSGK		
NgTdfH_WHO_U	204	MAAIGARKWLES	SGASV	GVLYGHSRR	GVAQNYRVGGGGQHIGNFG	EYLERRKO	YFVQEGGLKFNA	AGSGK		
NgTdfH_WHO_P	204	MAAIGARKWLES	SGASV	GVLYGHSRR	GVAQNYRVGGGGQHIGNFG	EYLERRKO	YFVQEGGLKFNA	AGSGK		
NgTdfH_MS11	204	MAAIGARKWLES	SGASV	GVLYGHSRR	GVAQNYRVGGGGQHIGNFG	EYLERRKO	YFVQEGGLKFNA	AGSGK		
NgTdfH_F62	204	MAAIGARKWLES	SGASV	GVLYGHSRR	GVAQNYRVGGGGQHIGNFG	EYLERRKO	YFVQEGGLKFNA	AGSGK		
NgTdfH_WHO_F	187	MAAIGARKWLES	SGASV	GVLYGHSRR	GVAQNYRVGGGGQHIGNFG	EYLERRKO	YFVQEGGLKFNA	AGSGK		
NgTdfH_MIA_2011_03-10	211	MAAIGARKWLES	SGASV	GVLYGHSRR	GVAQNYRVGGGGQHIGNFG	EYLERRKO	YFVQEGGLKFNA	AGSGK		
NgTdfH_DGI18	204	MAAIGARKWLES	SGASV	GVLYGHSRR	GVAQNYRVGGGGQHIGNFG	EYLERRKO	YFVQEGGLKFNA	AGSGK		
NgTdfH_FA19	204	MAAIGARKWLES	SGASV	GVLYGHSRR	GVAQNYRVGGGGQHIGNFG	EYLERRKO	YFVQEGGLKFNA	AGSGK		
NgTdfH_WHO_L	204	MAAIGARKWLES	SGASV	GVLYGHSRR	GVAQNYRVGGGGQHIGNFG	EYLERRKO	YFVQEGGLKFNA	AGSGK		
NgTdfH_DG12	198	MAAIGARKWLES	SGASV	GVLYGHSRR	GVAQNYRVGGGGQHIGNFG	EYLERRKO	YFVQEGGLKFNA	AGSGK		
NgTdfH_WHO_K	187	MAAIGARKWLES	SGASV	GVLYGHSRR	GVAQNYRVGGGGQHIGNFG	EYLERRKO	YFVQEGGLKFNA	AGSGK		
NgTdfH_WHO_W	187	MAAIGARKWLES	SGASV	GVLYGHSRR	GVAQNYRVGGGGQHIGNFG	EYLERRKO	YFVQEGGLKFNA	AGSGK		
NgTdfH_WHO_X	187	MAAIGARKWLES	SGASV	GVLYGHSRR	GVAQNYRVGGGGQHIGNFG	EYLERRKO	YFVQEGGLKFNA	AGSGK		
NgTdfH_WHO_Z	187	MAAIGARKWLES	SGASV	GVLYGHSRR	GVAQNYRVGGGGQHIGNFG	EYLERRKO	YFVQEGGLKFNA	AGSGK		
NgTdfH_WHO_G	204	MAAIGARKWLES	SGASV	GVLYGHSRR	GVAQNYRVGGGGQHIGNFG	EYLERRKO	YFVQEGGLKFNA	AGSGK		
NgTdfH_WHO_N	204	MAAIGARKWLES	SGASV	GVLYGHSRR	GVAQNYRVGGGGQHIGNFG	EYLERRKO	YFVQEGGLKFNA	AGSGK		
NgTdfH_NG-k51.05	211	MAAIGARKWLES	SGASV	GVLYGHSRR	GVAQNYRVGGGGQHIGNFG	EYLERRKO	YFVQEGGLKFNA	AGSGK		
NgTdfH_WHO_V	187	MAAIGARKWLES	SGASV	GVLYGHSRR	GVAQNYRVGGGGQHIGNFG	EYLERRKO	YFVQEGGLKFNA	AGSGK		
NgTdfH_WHO_Y	187	MAAIGARKWLES	SGASV	GVLYGHSRR	GVAQNYRVGGGGQHIGNFG	EYLERRKO	YFVQEGGLKFNA	AGSGK		
NgTdfH_BZG33	204	MAAIGARKWLES	SGASV	GVLYGHSRR	GVAQNYRVGGGGQHIGNFG	EYLERRKO	YFVQEGGLKFNA	AGSGK		
NgTdfH_NCCP11945	187	MAAIGARKWLES	SGASV	GVLYGHSRR	GVAQNYRVGGGGQHIGNFG	EYLERRKO	YFVQEGGLKFNA	AGSGK		
NmTdfH_020-06	203	MAAIGARKWLES	SGASV	GVLYGHSRR	GVAQNYRVGGGGQHIGNFG	EYLERRKO	YFVQEGGLKFNA	AGSGK		
NmTdfH_alpha710	204	MAAIGARKWLES	SGASV	GVLYGHSRR	GVAQNYRVGGGGQHIGNFG	EYLERRKO	YFVQEGGLKFNA	AGSGK		
NmTdfH_NZ-05/33	204	MAAIGARKWLES	SGASV	GVLYGHSRR	GVAQNYRVGGGGQHIGNFG	EYLERRKO	YFVQEGGLKFNA	AGSGK		
NmTdfH_93004	204	MAAIGARKWLES	SGASV	GVLYGHSRR	GVAQNYRVGGGGQHIGNFG	EYLERRKO	YFVQEGGLKFNA	AGSGK		
NmTdfH_ATCC13091	204	MAAIGARKWLES	SGASV	GVLYGHSRR	GVAQNYRVGGGGQHIGNFG	EYLERRKO	YFVQEGGLKFNA	AGSGK		
NmTdfH_alpha522	204	MAAIGARKWLES	SGASV	GVLYGHSRR	GVAQNYRVGGGGQHIGNFG	EYLERRKO	YFVQEGGLKFNA	AGSGK		
NmTdfH_NM2795	204	MAAIGARKWLES	SGASV	GVLYGHSRR	GVAQNYRVGGGGQHIGNFG	EYLERRKO	YFVQEGGLKFNA	AGSGK		
NmTdfH_81858	204	MAAIGARKWLES	SGASV	GVLYGHSRR	GVAQNYRVGGGGQHIGNFG	EYLERRKO	YFVQEGGLKFNA	AGSGK		
NmTdfH_ERS514534	204	MAAIGARKWLES	SGASV	GVLYGHSRR	GVAQNYRVGGGGQHIGNFG	EYLERRKO	YFVQEGGLKFNA	AGSGK		
NmTdfH_alpha153	204	MAAIGARKWLES	SGASV	GVLYGHSRR	GVAQNYRVGGGGQHIGNFG	EYLERRKO	YFVQEGGLKFNA	AGSGK		
NmTdfH_053442	190	MAAIGARKWLES	SGASV	GVLYGHSRR	GVAQNYRVGGGGQHIGNFG	EYLERRKO	YFVQEGGLKFNA	AGSGK		
NmTdfH_M0579	204	MAAIGARKWLES	SGASV	GVLYGHSRR	GVAQNYRVGGGGQHIGNFG	EYLERRKO	YFVQEGGLKFNA	AGSGK		
NmTdfH_MC58	204	MAAIGARKWLES	SGASV	GVLYGHSRR	GVAQNYRVGGGGQHIGNFG	EYLERRKO	YFVQEGGLKFNA	AGSGK		
NmTdfH_LNP21362	204	MAAIGARKWLES	SGASV	GVLYGHSRR	GVAQNYRVGGGGQHIGNFG	EYLERRKO	YFVQEGGLKFNA	AGSGK		
NmTdfH_IR1074	204	MAAIGARKWLES	SGASV	GVLYGHSRR	GVAQNYRVGGGGQHIGNFG	EYLERRKO	YFVQEGGLKFNA	AGSGK		
NmTdfH_H44/76	204	MAAIGARKWLES	SGASV	GVLYGHSRR	GVAQNYRVGGGGQHIGNFG	EYLERRKO	YFVQEGGLKFNA	AGSGK		
NmTdfH_FDAARGOS_210	204	MAAIGARKWLES	SGASV	GVLYGHSRR	GVAQNYRVGGGGQHIGNFG	EYLERRKO	YFVQEGGLKFNA	AGSGK		
NmTdfH_FDAARGOS_215	204	MAAIGARKWLES	SGASV	GVLYGHSRR	GVAQNYRVGGGGQHIGNFG	EYLERRKO	YFVQEGGLKFNA	AGSGK		
NmTdfH_	204	MAAIGARKWLES	SGASV	GVLYGHSRR	GVAQNYRVGGGGQHIGNFG	EYLERRKO	YFVQEGGLKFNA	AGSGK		
NmTdfH_510612	187	MAAIGARKWLES	SGASV	GVLYGHSRR	GVAQNYRVGGGGQHIGNFG	EYLERRKO	YFVQEGGLKFNA	AGSGK		
NmTdfH_Z2491	204	MAAIGARKWLES	SGASV	GVLYGHSRR	GVAQNYRVGGGGQHIGNFG	EYLERRKO	YFVQEGGLKFNA	AGSGK		
NmTdfH_NCTC8249	204	MAAIGARKWLES	SGASV	GVLYGHSRR	GVAQNYRVGGGGQHIGNFG	EYLERRKO	YFVQEGGLKFNA	AGSGK		
NmTdfH_alpha14	204	MAAIGARKWLES	SGASV	GVLYGHSRR	GVAQNYRVGGGGQHIGNFG	EYLERRKO	YFVQEGGLKFNA	AGSGK		
NmTdfH_2842STDY5881378	204	MAAIGARKWLES	SGASV	GVLYGHSRR	GVAQNYRVGGGGQHIGNFG	EYLERRKO	YFVQEGGLKFNA	AGSGK		
NmTdfH_CHUV	204	MAAIGARKWLES	SGASV	GVLYGHSRR	GVAQNYRVGGGGQHIGNFG	EYLERRKO	YFVQEGGLKFNA	AGSGK		
NmTdfH_FAM18	204	MAAIGARKWLES	SGASV	GVLYGHSRR	GVAQNYRVGGGGQHIGNFG	EYLERRKO	YFVQEGGLKFNA	AGSGK		
NmTdfH_M09293	204	MAAIGARKWLES	SGASV	GVLYGHSRR	GVAQNYRVGGGGQHIGNFG	EYLERRKO	YFVQEGGLKFNA	AGSGK		
NmTdfH_M26503	204	MAAIGARKWLES	SGASV	GVLYGHSRR	GVAQNYRVGGGGQHIGNFG	EYLERRKO	YFVQEGGLKFNA	AGSGK		
NmTdfH_2842STDY5881093	204	MAAIGARKWLES	SGASV	GVLYGHSRR	GVAQNYRVGGGGQHIGNFG	EYLERRKO	YFVQEGGLKFNA	AGSGK		
NmTdfH_PMB5301	204	MAAIGARKWLES	SGASV	GVLYGHSRR	GVAQNYRVGGGGQHIGNFG	EYLERRKO	YFVQEGGLKFNA	AGSGK		

$$\xrightarrow{\beta_{12}} \quad \underbrace{\circ \circ \circ \circ \circ \circ \circ \circ}_{\alpha_4} \quad \mathbf{TT} \quad \mathbf{TT} \quad \underbrace{\circ \circ \circ \circ}_{\eta_5} \quad \xrightarrow{\beta_{13}} \quad \underline{\beta_{14}}$$

NgTdfH_FA1090	274	WERDLQRQYWKTKWYKKYEDPOELOKYIEHDKSWRENLAPOYDITPIDPSGLKQOSAGNLFKLEYDGVF
NgTdfH_WHO_M	274	WERDLQRQYWKTKWYKKYEDPOELOKYIEHDKSWRENLAPOYDITPIDPSGLKQOSAGNLFKLEYDGVF
NgTdfH_WHO_O	274	WERDLQRQYWKTKWYKKYEDPOELOKYIEHDKSWRENLAPOYDITPIDPSGLKQOSAGNLFKLEYDGVF
NgTdfH_WHO_U	274	WERDLQRQYWKTKWYKKYEDPOELOKYIEHDKSWRENLAPOYDITPIDPSGLKQOSAGNLFKLEYDGVF
NgTdfH_WHO_P	274	WERDLQRQYWKTKWYKKYEDPOELOKYIEHDKSWRENLAPOYDITPIDPSGLKQOSAGNLFKLEYDGVF
NgTdfH_MS11	274	WERDLQRQYWKTKWYKKYEDPOELOKYIEHDKSWRENLAPOYDITPIDPSGLKQOSAGNLFKLEYDGVF
NgTdfH_F62	274	WERDLQRQYWKTKWYKKYEDPOELOKYIEHDKSWRENLAPOYDITPIDPSGLKQOSAGNLFKLEYDGVF
NgTdfH_WHO_F	257	WERDLQRQYWKTKWYKKYEDPOELOKYIEHDKSWRENLAPOYDITPIDPSGLKQOSAGNLFKLEYDGVF
NgTdfH_MIA_2011_03-10	281	WERDFORPYWKTKWYQKNDPOELOKYIEHDKSWRENLAPOYDITPIDPSGLKQOSAGNLFKLEYDGVF
NgTdfH_DG118	274	WERDFORPYWKTKWYQKNDPOELOKYIEHDKSWRENLAPOYDITPIDPSGLKQOSAGNLFKLEYDGVF
NgTdfH_FA19	274	WERDFORPYWKTKWYQKNDPOELOKYIEHDKSWRENLAPOYDITPIDPSGLKQOSAGNLFKLEYDGVF
NgTdfH_WHO_L	274	WERDFORPYWKTKWYQKNDPOELOKYIEHDKSWRENLAPOYDITPIDPSGLKQOSAGNLFKLEYDGVF
NgTdfH_DG12	268	WERDFORPYWKTKWYQKNDPOELOKYIEHDKSWRENLAPOYDITPIDPSGLKQOSAGNLFKLEYDGVF
NgTdfH_WHO_K	257	WERDFORPYWKTKWYQKNDPOELOKYIEHDKSWRENLAPOYDITPIDPSGLKQOSAGNLFKLEYDGVF
NgTdfH_WHO_W	257	WERDFORPYWKTKWYQKNDPOELOKYIEHDKSWRENLAPOYDITPIDPSGLKQOSAGNLFKLEYDGVF
NgTdfH_WHO_X	257	WERDFORPYWKTKWYQKNDPOELOKYIEHDKSWRENLAPOYDITPIDPSGLKQOSAGNLFKLEYDGVF
NgTdfH_WHO_Z	257	WERDFORPYWKTKWYQKNDPOELOKYIEHDKSWRENLAPOYDITPIDPSGLKQOSAGNLFKLEYDGVF
NgTdfH_WHO_G	274	WERDFORPYWKTKWYQKNDPOELOKYIEHDKSWRENLAPOYDITPIDPSGLKQOSAGNLFKLEYDGVF
NgTdfH_WHO_N	274	WERDFORPYWKTKWYQKNDPOELOKYIEHDKSWRENLAPOYDITPIDPSGLKQOSAGNLFKLEYDGVF
NgTdfH_NG-k51.05	281	WERDFORPYWKTKWYQKNDPOELOKYIEHDKSWRENLAPOYDITPIDPSGLKQOSAGNLFKLEYDGVF
NgTdfH_WHO_V	257	WERDFORPYWKTKWYQKNDPOELOKYIEHDKSWRENLAPOYDITPIDPSGLKQOSAGNLFKLEYDGVF
NgTdfH_WHO_Y	257	WERDFORPYWKTKWYQKNDPOELOKYIEHDKSWRENLAPOYDITPIDPSGLKQOSAGNLFKLEYDGVF
NgTdfH_BZG33	274	WERDFORPYWKTKWYQKNDPOELOKYIEHDKSWRENLAPOYDITPIDPSGLKQOSAGNLFKLEYDGVF
NgTdfH_NCCP11945	257	WERDFORPYWKTKWYQKNDPOELOKYIEHDKSWRENLAPOYDITPIDPSGLKQOSAGNLFKLEYDGVF
NmTdfH_020-06	273	WERDFORPYWNTIYYKQNDPOKLYKYEHDKSWRENLAPOYDITPIDPSGLKQOSAGNLFKLEYDGVF
NmTdfH_alpha710	274	WERDLQRQWKYPWYKKYENPOELOKYIEHDKSWRENLAPOYDITPIDPSGLKQOSAGNLFKLEYDGVF
NmTdfH_NZ-05/33	274	WERDLQRQWKYPWYKKYENPOELOKYIEHDKSWRENLAPOYDITPIDPSGLKQOSAGNLFKLEYDGVF
NmTdfH_93004	274	WERDLQRQWKYYSWKYKENPOELOKYIEDHDKSWRENLAPOYDITPIDPSGLKQOSAGNLFKLEYDGVF
NmTdfH_ATCC13091	274	WERDLQRQWKYSWKYKENPOELOKYIEHDKSWRENLAPOYDITPIDPSGLKQOSAGNLFKLEYDGVF
NmTdfH_alpha522	274	WERDLQRQWKYPWYKKYENPOELOKYIEHDKSWRENLAPOYDITPIDPSGLKQOSAGNLFKLEYDGVF
NmTdfH_NM2795	274	WERDLQRQWKYPWYKKYENPOELOKYIEHDKSWRENLAPOYDITPIDPSGLKQOSAGNLFKLEYDGVF
NmTdfH_81858	274	WERDLQRQWKYPWYKKYENPOELOKYIEHDKSWRENLAPOYDITPIDPSGLKQOSAGNLFKLEYDGVF
NmTdfH_ERS514534	274	WERDLQRQWKYPWYKKYENPOELOKYIEHDKSWRENLAPOYDITPIDPSGLKQOSAGNLFKLEYDGVF
NmTdfH_alpha153	274	WERDLQRQWKYPWYKKYENPOELOKYIEHDKSWRENLAPOYDITPIDPSGLKQOSAGNLFKLEYDGVF
NmTdfH_053442	260	WERDLQRQWKYPWYKKYENPOELOKYIEHDKSWRENLAPOYDITPIDPSGLKQOSAGNLFKLEYDGVF
NmTdfH_M0579	274	WERDLQRQWKYPWYKKYENPOELOKYIEHDKSWRENLAPOYDITPIDPSGLKQOSAGNLFKLEYDGVF
NmTdfH_MC58	274	WERDLQRQWKYPWYKKYENPOELOKYIEHDKSWRENLAPOYDITPIDPSGLKQOSAGNLFKLEYDGVF
NmTdfH_LNP21362	274	WERDLQRQWKYPWYKKYENPOELOKYIEHDKSWRENLAPOYDITPIDPSGLKQOSAGNLFKLEYDGVF
NmTdfH_IR1074	274	WERDLQRQWKYPWYKKYENPOELOKYIEHDKSWRENLAPOYDITPIDPSGLKQOSAGNLFKLEYDGVF
NmTdfH_H44/76	274	WERDLQRQWKYPWYKKYENPOELOKYIEHDKSWRENLAPOYDITPIDPSGLKQOSAGNLFKLEYDGVF
NmTdfH_FDAARGOS_210	274	WERDLQRQWKYPWYKKYENPOELOKYIEHDKSWRENLAPOYDITPIDPSGLKQOSAGNLFKLEYDGVF
NmTdfH_FDAARGOS_215	274	WERDFORPYWKTKWYQKNDPOELOKYIEHDKSWRENLAPOYDITPIDPSGLKQOSAGNLFKLEYDGVF
NmTdfH_	274	WERDFOKSYWKTKWYQKNDPOELOKYIEHDKSWRENLAPOYDITPIDPSGLKQOSAGNLFKLEYDGVF
NmTdfH_510612	257	WERDFOKSYWKTKWYQKNDPOELOKYIEHDKSWRENLAPOYDITPIDPSGLKQOSAGNLFKLEYDGVF
NmTdfH_Z2491	274	WERDFOKSYWKTKWYQKNDPOELOKYIEHDKSWRENLAPOYDITPIDPSGLKQOSAGNLFKLEYDGVF
NmTdfH_NCTC8249	274	WERDFORPYWNTIYYKQNDPOKLYKYEHDKSWRENLAPOYDITPIDPSGLKQOSAGNLFKLEYDGVF
NmTdfH_alpha14	274	WERDLQRQWKYSWKYKENPOKLYKYEHDKSWRENLAPOYDITPIDPSGLKQOSAGNLFKLEYDGVF
NmTdfH_2842STDY5881378	274	WERDLQRQWKYSWKYKENPOKLYKYEHDKSWRENLAPOYDITPIDPSGLKQOSAGNLFKLEYDGVF
NmTdfH_CHUV	274	WERDLQRQWKYSWKYKENPOKLYKYEHDKSWRENLAPOYDITPIDPSGLKQOSAGNLFKLEYDGVF
NmTdfH_FAM18	274	WERDLQRQWKYSWKYKENPOKLYKYEHDKSWRENLAPOYDITPIDPSGLKQOSAGNLFKLEYDGVF
NmTdfH_M09293	274	WERDLQRQWKYSWKYKENPOKLYKYEHDKSWRENLAPOYDITPIDPSGLKQOSAGNLFKLEYDGVF
NmTdfH_M26503	274	WERDLQRQWKTRYKQKNDPOKLYKYEHDKSWRENLAPOYDITPIDPSGLKQOSAGNLFKLEYDGVF
NmTdfH_2842STDY5881093	274	WERDFORQFWKHLKYKNDPOELOKYIEHDKSWRENLAPOYDITPIDPSGLKQOSAGNLFKLEYDGVF
NmTdfH_PMB5301	274	WERDFORQFWKHLKYKNDPOELOKYIEHDKSWRENLAPOYDITPIDPSGLKQOSAGNLFKLEYDGVF

[illegible]

NgTdfh_FA1090	414	NAKILDNLNNT	TFRLPRETELO	TTTLGFNYFHNEYGKNRFPEELGLFFDGP	QDNGLYSYLGRFKGDKGL
NgTdfh_WHO_M	414	NAKILDNLNNT	TFRLPRETELO	TTTLGFNYFHNEYGKNRFPEELGLFFDGP	QDNGLYSYLGRFKGDKGL
NgTdfh_WHO_O	414	NAKILDNLNNT	TFRLPRETELO	TTTLGFNYFHNEYGKNRFPEELGLFFDGP	QDNGLYSYLGRFKGDKGL
NgTdfh_WHO_U	414	NAKILDNLNNT	TFRLPRETELO	TTTLGFNYFHNEYGKNRFPEELGLFFDGP	QDNGLYSYLGRFKGDKGL
NgTdfh_MS11	414	NAKILDNLNNT	TFRLPRETELO	TTTLGFNYFHNEYGKNRFPEELGLFFDGP	QDNGLYSYLGRFKGDKGL
NgTdfh_F62	414	NAKILDNLNNT	TFRLPRETELO	TTTLGFNYFHNEYGKNRFPEELGLFFDGP	QDNGLYSYLGRFKGDKGL
NgTdfh_WHO_F	397	NAKILDNLNNT	TFRLPRETELO	TTTLGFNYFHNEYGKNRFPEELGLFFDGP	QDNGLYSYLGRFKGDKGL
NgTdfh_MIA_2011_03-10	421	NAKILDNLNNT	TFRLPRETELO	TTTLGFNYFHNEYGKNRFPEELGLFFDGP	QDNGLYSYLGRFKGDKGL
NgTdfh_DGI18	414	NAKILDNLNNT	TFRLPRETELO	TTTLGFNYFHNEYGKNRFPEELGLFFDGP	QDNGLYSYLGRFKGDKGL
NgTdfh_FA19	414	NAKILDNLNNT	TFRLPRETELO	TTTLGFNYFHNEYGKNRFPEELGLFFDGP	QDNGLYSYLGRFKGDKGL
NgTdfh_WHO_L	414	NAKILDNLNNT	TFRLPRETELO	TTTLGFNYFHNEYGKNRFPEELGLFFDGP	QDNGLYSYLGRFKGDKGL
NgTdfh_DG12	408	NAKILDNLNNT	TFRLPRETELO	TTTLGFNYFHNEYGKNRFPEELGLFFDGP	QDNGLYSYLGRFKGDKGL
NgTdfh_WHO_K	397	NAKILDNLNNT	TFRLPRETELO	TTTLGFNYFHNEYGKNRFPEELGLFFDGP	QDNGLYSYLGRFKGDKGL
NgTdfh_WHO_W	397	NAKILDNLNNT	TFRLPRETELO	TTTLGFNYFHNEYGKNRFPEELGLFFDGP	QDNGLYSYLGRFKGDKGL
NgTdfh_WHO_X	397	NAKILDNLNNT	TFRLPRETELO	TTTLGFNYFHNEYGKNRFPEELGLFFDGP	QDNGLYSYLGRFKGDKGL
NgTdfh_WHO_Z	397	NAKILDNLNNT	TFRLPRETELO	TTTLGFNYFHNEYGKNRFPEELGLFFDGP	QDNGLYSYLGRFKGDKGL
NgTdfh_WHO_G	414	NAKILDNLNNT	TFRLPRETELO	TTTLGFNYFHNEYGKNRFPEELGLFFDGP	QDNGLYSYLGRFKGDKGL
NgTdfh_WHO_N	414	NAKILDNLNNT	TFRLPRETELO	TTTLGFNYFHNEYGKNRFPEELGLFFDGP	QDNGLYSYLGRFKGDKGL
NgTdfh_NG-k51.05	421	NAKILDNLNNT	TFRLPRETELO	TTTLGFNYFHNEYGKNRFPEELGLFFDGP	QDNGLYSYLGRFKGDKGL
NgTdfh_WHO_V	397	NAKILDNLNNT	TFRLPRETELO	TTTLGFNYFHNEYGKNRFPEELGLFFDGP	QDNGLYSYLGRFKGDKGL
NgTdfh_WHO_Y	397	NAKILDNLNNT	TFRLPRETELO	TTTLGFNYFHNEYGKNRFPEELGLFFDGP	QDNGLYSYLGRFKGDKGL
NgTdfh_BZG33	414	NAKILDNLNNT	TFRLPRETELO	TTTLGFNYFHNEYGKNRFPEELGLFFDGP	QDNGLYSYLGRFKGDKGL
NgTdfh_NCCP11945	397	NAKILDNLNNT	TFRLPRETELO	TTTLGFNYFHNEYGKNRFPEELGLFFDGP	QDNGLYSYLGRFKGDKGL
NgTdfh_020-06	413	NAKILDNLNNT	TFRLPRETELO	TTTLGFNYFHNEYGKNRFPEELGLFFDGP	QDNGLYSYLGRFKGDKGL
NmTdfh_alpha710	414	NAKILDNLNNT	TFRLPRETELO	TTTLGFNYFHNEYGKNRFPEELGLFFDGP	QDNGLYSYLGRFKGDKGL
NmTdfh_NZ-05/33	414	NAKILDNLNNT	TFRLPRETELO	TTTLGFNYFHNEYGKNRFPEELGLFFDGP	QDNGLYSYLGRFKGDKGL
NmTdfh_93004	414	NAKILDNLNNT	TFRLPRETELO	TTTLGFNYFHNEYGKNRFPEELGLFFDGP	QDNGLYSYLGRFKGDKGL
NmTdfh_ATCC13091	414	NAKILDNLNNT	TFRLPRETELO	TTTLGFNYFHNEYGKNRFPEELGLFFDGP	QDNGLYSYLGRFKGDKGL
NmTdfh_alpha522	414	NAKILDNLNNT	TFRLPRETELO	TTTLGFNYFHNEYGKNRFPEELGLFFDGP	QDNGLYSYLGRFKGDKGL
NmTdfh_NM2795	414	NAKILDNLNNT	TFRLPRETELO	TTTLGFNYFHNEYGKNRFPEELGLFFDGP	QDNGLYSYLGRFKGDKGL
NmTdfh_81858	414	NAKILDNLNNT	TFRLPRETELO	TTTLGFNYFHNEYGKNRFPEELGLFFDGP	QDNGLYSYLGRFKGDKGL
NmTdfh_ERS514534	414	NAKILDNLNNT	TFRLPRETELO	TTTLGFNYFHNEYGKNRFPEELGLFFDGP	QDNGLYSYLGRFKGDKGL
NmTdfh_alpha153	414	NAKILDNLNNT	TFRLPRETELO	TTTLGFNYFHNEYGKNRFPEELGLFFDGP	QDNGLYSYLGRFKGDKGL
NmTdfh_053442	399	NAKILDNLNNT	TFRLPRETELO	TTTLGFNYFHNEYGKNRFPEELGLFFDGP	QDNGLYSYLGRFKGDKGL
NmTdfh_M0579	413	NAKILDNLNNT	TFRLPRETELO	TTTLGFNYFHNEYGKNRFPEELGLFFDGP	QDNGLYSYLGRFKGDKGL
NmTdfh_MC58	413	NAKILDNLNNT	TFRLPRETELO	TTTLGFNYFHNEYGKNRFPEELGLFFDGP	QDNGLYSYLGRFKGDKGL
NmTdfh_LNP21362	413	NAKILDNLNNT	TFRLPRETELO	TTTLGFNYFHNEYGKNRFPEELGLFFDGP	QDNGLYSYLGRFKGDKGL
NmTdfh_IR1074	413	NAKILDNLNNT	TFRLPRETELO	TTTLGFNYFHNEYGKNRFPEELGLFFDGP	QDNGLYSYLGRFKGDKGL
NmTdfh_H44/76	413	NAKILDNLNNT	TFRLPRETELO	TTTLGFNYFHNEYGKNRFPEELGLFFDGP	QDNGLYSYLGRFKGDKGL
NmTdfh_FDAARGOS_210	413	NAKILDNLNNT	TFRLPRETELO	TTTLGFNYFHNEYGKNRFPEELGLFFDGP	QDNGLYSYLGRFKGDKGL
NmTdfh_FDAARGOS_215	414	NAKILDNLNNT	TFRLPRETELO	TTTLGFNYFHNEYGKNRFPEELGLFFDGP	QDNGLYSYLGRFKGDKGL
NmTdfh_	414	NAKILDNLNNT	TFRLPRETELO	TTTLGFNYFHNEYGKNRFPEELGLFFDGP	QDNGLYSYLGRFKGDKGL
NmTdfh_510612	397	NAKILDNLNNT	TFRLPRETELO	TTTLGFNYFHNEYGKNRFPEELGLFFDGP	QDNGLYSYLGRFKGDKGL
NmTdfh_Z2491	414	NAKILDNLNNT	TFRLPRETELO	TTTLGFNYFHNEYGKNRFPEELGLFFDGP	QDNGLYSYLGRFKGDKGL
NmTdfh_NCTC8249	414	NAKILDNLNNT	TFRLPRETELO	TTTLGFNYFHNEYGKNRFPEELGLFFDGP	QDNGLYSYLGRFKGDKGL
NmTdfh_alpha14	414	NAKILDNLNNT	TFRLPRETELO	TTTLGFNYFHNEYGKNRFPEELGLFFDGP	QDNGLYSYLGRFKGDKGL
NmTdfh_2842STDY5881378	414	NAKILDNLNNT	TFRLPRETELO	TTTLGFNYFHNEYGKNRFPEELGLFFDGP	QDNGLYSYLGRFKGDKGL
NmTdfh_CHUV	414	NAKILDNLNNT	TFRLPRETELO	TTTLGFNYFHNEYGKNRFPEELGLFFDGP	QDNGLYSYLGRFKGDKGL
NmTdfh_FAM18	414	NAKILDNLNNT	TFRLPRETELO	TTTLGFNYFHNEYGKNRF	

			η6	β24	TT	β25	TTT	β26
NgTdfH_FA1090			222					
NgTdfH_FA1090	484	PQKSTIVQPAGS	QYFNTFFYFDAALKKDIYRLNYSTN	ATN	YRFGGEYTGYYG	SENEFKKRAFGENSP	AYKEH	
NgTdfH_WHO_M	484	PQKSTIVQPAGS	QYFNTFFYFDAALKKDIYRLNYSTN	ATN	YRFGGEYTGYYG	SENEFKKRAFGENSP	AYKEH	
NgTdfH_WHO_O	484	PQKSTIVQPAGS	QYFNTFFYFDAALKKDIYRLNYSTN	ATN	YRFGGEYTGYYG	SENEFKKRAFGENSP	AYKEH	
NgTdfH_WHO_U	484	PQKSTIVQPAGS	QYFNTFFYFDAALKKDIYRLNYSTN	ATN	YRFGGEYTGYYG	SENEFKKRAFGENSP	AYKEH	
NgTdfH_WHO_P	484	PQKSTIVQPAGS	QYFNTFFYFDAALKKDIYRLNYSTN	ATN	YRFGGEYTGYYG	SENEFKKRAFGENSP	AYKEH	
NgTdfH_MS11	484	PQKSTIVQPAGS	QYFNTFFYFDAALKKDIYRLNYSTN	ATN	YRFGGEYTGYYG	SENEFKKRAFGENSP	AYKEH	
NgTdfH_F62	484	PQKSTIVQPAGS	QYFNTFFYFDAALKKDIYRLNYSTN	ATN	YRFGGEYTGYYG	SENEFKKRAFGENSP	AYKEH	
NgTdfH_WHO_F	467	PQKSTIVQPAGS	QYFNTFFYFDAALKKDIYRLNYSTN	ATN	YRFGGEYTGYYG	SENEFKKRAFGENSP	AYKEH	
NgTdfH_MIA_2011_03-10	491	PQKSTIVQPAGS	QYFNTFFYFDAALKKDIYRLNYSTN	ATN	YRFGGEYTGYYG	SENEFKKRAFGENSP	AYKEH	
NgTdfH_DGI18	484	PQKSTIVQPAGS	QYFNTFFYFDAALKKDIYRLNYSTN	ATN	YRFGGEYTGYYG	SENEFKKRAFGENSP	AYKEH	
NgTdfH_FA19	484	PQKSTIVQPAGS	QYFNTFFYFDAALKKDIYRLNYSTN	ATN	YRFGGEYTGYYG	SENEFKKRAFGENSP	AYKEH	
NgTdfH_WHO_L	484	PQKSTIVQPAGS	QYFNTFFYFDAALKKDIYRLNYSTN	ATN	YRFGGEYTGYYG	SENEFKKRAFGENSP	AYKEH	
NgTdfH_DGI2	478	PQKSTIVQPAGS	QYFNTFFYFDAALKKDIYRLNYSTN	ATN	YRFGGEYTGYYG	SENEFKKRAFGENSP	AYKEH	
NgTdfH_WHO_K	467	PQKSTIVQPAGS	QYFNTFFYFDAALKKDIYRLNYSTN	ATN	YRFGGEYTGYYG	SENEFKKRAFGENSP	AYKEH	
NgTdfH_WHO_W	467	PQKSTIVQPAGS	QYFNTFFYFDAALKKDIYRLNYSTN	ATN	YRFGGEYTGYYG	SENEFKKRAFGENSP	AYKEH	
NgTdfH_WHO_X	467	PQKSTIVQPAGS	QYFNTFFYFDAALKKDIYRLNYSTN	ATN	YRFGGEYTGYYG	SENEFKKRAFGENSP	AYKEH	
NgTdfH_WHO_Z	467	PQKSTIVQPAGS	QYFNTFFYFDAALKKDIYRLNYSTN	ATN	YRFGGEYTGYYG	SENEFKKRAFGENSP	AYKEH	
NgTdfH_WHO_G	484	PQKSTIVQPAGS	QYFNTFFYFDAALKKDIYRLNYSTN	ATN	YRFGGEYTGYYG	SENEFKKRAFGENSP	AYKEH	
NgTdfH_WHO_N	484	PQKSTIVQPAGS	QYFNTFFYFDAALKKDIYRLNYSTN	ATN	YRFGGEYTGYYG	SENEFKKRAFGENSP	AYKEH	
NgTdfH_NG-k51.05	491	PQKSTIVQPAGS	QYFNTFFYFDAALKKDIYRLNYSTN	ATN	YRFGGEYTGYYG	SENEFKKRAFGENSP	AYKEH	
NmTdfH_WHO_V	467	PQKSTIVQPAGS	QYFNTFFYFDAALKKDIYRLNYSTN	ATN	YRFGGEYTGYYG	SENEFKKRAFGENSP	AYKEH	
NgTdfH_WHO_Y	467	PQKSTIVQPAGS	QYFNTFFYFDAALKKDIYRLNYSTN	ATN	YRFGGEYTGYYG	SENEFKKRAFGENSP	AYKEH	
NgTdfH_BZG33	484	PQKSTIVQPAGS	QYFNTFFYFDAALKKDIYRLNYSTN	ATN	YRFGGEYTGYYG	SENEFKKRAFGENSP	AYKEH	
NgTdfH_NCCP11945	467	PQKSTIVQPAGS	QYFNTFFYFDAALKKDIYRLNYSTN	ATN	YRFGGEYTGYYG	SENEFKKRAFGENSP	AYKEH	
NmTdfH_020-06	483	PQKSTIVQPAGN	QYFNTFFYFDAALKKDIYRLNYSTN	TVG	YRFGGEYTGYYG	SENEFKKRAFGENSP	TYKHH	
NmTdfH_alpha710	484	PQKSTIVQPAGS	QYFNTFFYFDAALKKDIYRLNYSTN	TVG	YRFGGEYTGYYG	SENEFKKRAFGENSP	TYREH	
NmTdfH_NZ-05/33	484	PQKSTIVQPAGS	QYFNTFFYFDAALKKDIYRLNYSTN	TVG	YRFGGEYTGYYG	SENEFKKRAFGENSP	TYREH	
NmTdfH_93004	484	PQKSTIVQPAGS	QYFNTFFYFDAALKKDIYRLNYSTN	TVG	YRFGGEYTGYYG	SENEFKKRAFGENSP	TYREH	
NmTdfH_ATCC13091	484	PQKSTIVQPAGS	QYFNTFFYFDAALKKDIYRLNYSTN	TVG	YRFGGEYTGYYG	SENEFKKRAFGENSP	TYREH	
NmTdfH_alpha522	484	PQKSTIVQPAGS	QYFNTFFYFDAALKKDIYRLNYSTN	TVG	YRFGGEYTGYYG	SENEFKKRAFGENSP	TYKHH	
NmTdfH_NM2795	484	PQKSTIVQPAGS	QYFNTFFYFDAALKKDIYRLNYSTN	TVG	YRFGGEYTGYYG	SENEFKKRAFGENSP	TYKHH	
NmTdfH_81858	484	PQKSTIVQPAGS	QYFNTFFYFDAALKKDIYRLNYSTN	TVG	YRFGGEYTGYYG	SENEFKKRAFGENSP	TYKHH	
NmTdfH_ERS514534	484	PQKSTIVQPAGS	QYFNTFFYFDAALKKDIYRLNYSTN	TVG	YRFGGEYTGYYG	SENEFKKRAFGENSP	TYKHH	
NmTdfH_alpha153	484	PQKSTIVQPAGS	QYFNTFFYFDAALKKDIYRLNYSTN	TVG	YRFGGEYTGYYG	SENEFKKRAFGENSP	TYKHH	
NmTdfH_053442	469	PQKSTIVQPAGS	QYFNTFFYFDAALKKDIYRLNYSTN	TVG	YRFGGEYTGYYG	SENEFKKRAFGENSP	TYKHH	
NmTdfH_M0579	483	PQKSTIVQPAGS	QYFNTFFYFDAALKKDIYRLNYSTN	TVG	YRFGGEYTGYYG	SENEFKKRAFGENSP	TYREH	
NmTdfH_MC58	483	PQKSTIVQPAGS	QYFNTFFYFDAALKKDIYRLNYSTN	TVG	YRFGGEYTGYYG	SENEFKKRAFGENSP	TYKHH	
NmTdfH_LNP21362	483	PQKSTIVQPAGS	QYFNTFFYFDAALKKDIYRLNYSTN	TVG	YRFGGEYTGYYG	SENEFKKRAFGENSP	TYKHH	
NmTdfH_IR1074	483	PQKSTIVQPAGS	QYFNTFFYFDAALKKDIYRLNYSTN	TVG	YRFGGEYTGYYG	SENEFKKRAFGENSP	TYKHH	
NmTdfH_H44/76	483	PQKSTIVQPAGS	QYFNTFFYFDAALKKDIYRLNYSTN	TVG	YRFGGEYTGYYG	SENEFKKRAFGENSP	TYKHH	
NmTdfH_FDAARGOS_210	483	PQKSTIVQPAGS	QYFNTFFYFDAALKKDIYRLNYSTN	TVG	YRFGGEYTGYYG	SENEFKKRAFGENSP	TYKHH	
NmTdfH_FDAARGOS_215	484	PQKSTIVQPAGS	QYFNTFFYFDAALKKDIYRLNYSTN	TVG	YRFGGEYTGYYG	SENEFKKRAFGENSP	TYKHH	
NmTdfH	484	PQKSTIVQPAGS	QYFNTFFYFDAALKKDIYRLNYSTN	TVG	YRFGGEYTGYYG	SENEFKKRAFGENSP	TYKHH	
NmTdfH_510612	467	PQKSTIVQPAGS	QYFNTFFYFDAALKKDIYRLNYSTN	TVG	YRFGGEYTGYYG	SENEFKKRAFGENSP	TYKHH	
NmTdfH_Z2491	484	PQKSTIVQPAGS	QYFNTFFYFDAALKKDIYRLNYSTN	TVG	YRFGGEYTGYYG	SENEFKKRAFGENSP	TYKHH	
NmTdfH_NCTC8249	484	PQKSTIVQPAGS	QYFNTFFYFDAALKKDIYRLNYSTN	TVG	YRFGGEYTGYYG	SENEFKKRAFGENSP	TYKHH	
NmTdfH_alpha14	484	PQKSTIVQPAGS	QYFNTFFYFDAALKKDIYRLNYSTN	TVG	YRFGGEYTGYYG	SENEFKKRAFGENSP	TYREH	
NmTdfH_2842STDY5881378	484	PQKSTIVQPAGS	QYFNTFFYFDAALKKDIYRLNYSTN	TVG	YRFGGEYTGYYG	SENEFKKRAFGENSP	TYKHH	
NmTdfH_CHUV	484	PQKSTIVQPAGS	QYFNTFFYFDAALKKDIYRLNYSTN	TVG	YRFGGEYTGYYG	SENEFKKRAFGENSP	TYKHH	
NmTdfH_FAM18	484	PQKSTIVQPAGS	QYFNTFFYFDAALKKDIYRLNYSTN	TVG	YRFGGEYTGYYG	SENEFKKRAFGENSP	TYKHH	
NmTdfH_M09293	484	PQKSTIVQPAGS	QYFNTFFYFDAALKKDIYRLNYSTN	TVG	YRFGGEYTGYYG	SENEFKKRAFGENSP	TYKHH	
NmTdfH_M26503	484	PQKSTIVQPAGS	QYFNTFFYFDAALKKDIYRLNYSTN	TVG	YRFGGEYTGYYG	SENEFKKRAFGENSP	TYKHH	
NmTdfH_2842STDY5881093	484	PQKSTIVQPAGS	QYFNTFFYFDAALKKDIYRLNYSTN	TVG	YRFGGEYTGYYG	SENEFKKRAFGENSP	TYKHH	
NmTdfH_PMB5301	484	PQKSTIVQPAGS	QYFNTFFYFDAALKKDIYRLNYSTN	TVG	YRFGGEYTGYYG	SENEFKKRAFGENSP	TYKHH	

			β27	β28	β29	α5	
NgTdfh_FA1090			→	→	→	00000	
NgTdfh_FA1090	554	CDP	SCGL	YEPVLKKYGKKRANNH	SVSISADF	GDFYMPFA	YSRTHRMPNIOEMYFSQIGDSGVHTALKPE
NgTdfh_WHO_M	554	CDP	SCGL	YEPVLKKYGKKRANNH	SVSISADF	GDFYMPFA	YSRTHRMPNIOEMYFSQIGDSGVHTALKPE
NgTdfh_WHO_O	554	CDP	SCGL	YEPVLKKYGKKRANNH	SVSISADF	GDFYMPFA	YSRTHRMPNIOEMYFSQIGDSGVHTALKPE
NgTdfh_WHO_U	554	CDP	SCGL	YEPVLKKYGKKRANNH	SVSISADF	GDFYMPFA	YSRTHRMPNIOEMYFSQIGDSGVHTALKPE
NgTdfh_WHO_P	554	CDP	SCGL	YEPVLKKYGKKRANNH	SVSISADF	GDFYMPFA	YSRTHRMPNIOEMYFSQIGDSGVHTALKPE
NgTdfh_MS11	554	CDP	SCGL	YEPVLKKYGKKRANNH	SVSISADF	GDFYMPFA	YSRTHRMPNIOEMYFSQIGDSGVHTALKPE
NgTdfh_F62	554	CDP	SCGL	YEPVLKKYGKKRANNH	SVSISADF	GDFYMPFA	YSRTHRMPNIOEMYFSQIGDSGVHTALKPE
NgTdfh_WHO_F	537	CDP	SCGL	YEPVLKKYGKKRANNH	SVSISADF	GDFYMPFA	YSRTHRMPNIOEMYFSQIGDSGVHTALKPE
NgTdfh_MIA_2011_03-10	561	CDP	SCGL	YEPVLKKYGKKRANNH	SVSISADF	GDFYMPFA	YSRTHRMPNIOEMYFSQIGDSGVHTALKPE
NgTdfh_DGI18	554	CDP	SCGL	YEPVLKKYGKKRANNH	SVSISADF	GDFYMPFA	YSRTHRMPNIOEMYFSQIGDSGVHTALKPE
NgTdfh_FA19	554	CDP	SCGL	YEPVLKKYGKKRANNH	SVSISADF	GDFYMPFA	YSRTHRMPNIOEMYFSQIGDSGVHTALKPE
NgTdfh_WHO_L	554	CDP	SCGL	YEPVLKKYGKKRANNH	SVSISADF	GDFYMPFA	YSRTHRMPNIOEMYFSQIGDSGVHTALKPE
NgTdfh_DGI2	548	CDP	SCGL	YEPVLKKYGKKRANNH	SVSISADF	GDFYMPFA	YSRTHRMPNIOEMYFSQIGDSGVHTALKPE
NgTdfh_WHO_K	537	CDP	SCGL	YEPVLKKYGKKRANNH	SVSISADF	GDFYMPFA	YSRTHRMPNIOEMYFSQIGDSGVHTALKPE
NgTdfh_WHO_W	537	CDP	SCGL	YEPVLKKYGKKRANNH	SVSISADF	GDFYMPFA	YSRTHRMPNIOEMYFSQIGDSGVHTALKPE
NgTdfh_WHO_X	537	CDP	SCGL	YEPVLKKYGKKRANNH	SVSISADF	GDFYMPFA	YSRTHRMPNIOEMYFSQIGDSGVHTALKPE
NgTdfh_WHO_Z	537	CDP	SCGL	YEPVLKKYGKKRANNH	SVSISADF	GDFYMPFA	YSRTHRMPNIOEMYFSQIGDSGVHTALKPE
NgTdfh_WHO_G	554	CDP	SCGL	YEPVLKKYGKKRANNH	SVSISADF	GDFYMPFA	YSRTHRMPNIOEMYFSQIGDSGVHTALKPE
NgTdfh_WHO_N	554	CDP	SCGL	YEPVLKKYGKKRANNH	SVSISADF	GDFYMPFA	YSRTHRMPNIOEMYFSQIGDSGVHTALKPE
NgTdfh_NG-k51.05	561	CDP	SCGL	YEPVLKKYGKKRANNH	SVSISADF	GDFYMPFA	YSRTHRMPNIOEMYFSQIGDSGVHTALKPE
NgTdfh_WHO_V	537	CDP	SCGL	YEPVLKKYGKKRANNH	SVSISADF	GDFYMPFA	YSRTHRMPNIOEMYFSQIGDSGVHTALKPE
NgTdfh_WHO_Y	537	CDP	SCGL	YEPVLKKYGKKRANNH	SVSISADF	GDFYMPFA	YSRTHRMPNIOEMYFSQIGDSGVHTALKPE
NgTdfh_BZG33	554	CDP	SCGL	YEPVLKKYGKKRANNH	SVSISADF	GDFYMPFA	YSRTHRMPNIOEMYFSQIGDSGVHTALKPE
NgTdfh_NCCP11945	537	CDP	SCGL	YEPVLKKYGKKRANNH	SVSISADF	GDFYMPFA	YSRTHRMPNIOEMYFSQIGDSGVHTALKPE
NmTdfh_020-06	553	CDP	SCGL	YEPVLKKYGKKRANNH	SVSISADF	GDFYMPFA	YSRTHRMPNIOEMYFSQIGDSGVHTALKPE
NmTdfh_alpha710	554	CNQ	SCGL	YEPVLKKYGKKRANNH	SVSISADF	GDFYMPFA	YSRTHRMPNIOEMYFSQIGDSGVHTALKPE
NmTdfh_NZ-05/33	554	CNQ	SCGL	YEPVLKKYGKKRANNH	SVSISADF	GDFYMPFA	YSRTHRMPNIOEMYFSQIGDSGVHTALKPE
NmTdfh_93004	554	CNP	SCGL	YEPVLKKYGKKRANNH	SVSISADF	GDFYMPFA	YSRTHRMPNIOEMYFSQIGDSGVHTALKPE
NmTdfh_ATCC13091	554	CNP	SCGL	YEPVLKKYGKKRANNH	SVSISADF	GDFYMPFA	YSRTHRMPNIOEMYFSQIGDSGVHTALKPE
NmTdfh_alpha522	554	CNP	SCGL	YEPVLKKYGKKRANNH	SVSISADF	GDFYMPFA	YSRTHRMPNIOEMYFSQIGDSGVHTALKPE
NmTdfh_NM2795	554	CNP	SCGL	YEPVLKKYGKKRANNH	SVSISADF	GDFYMPFA	YSRTHRMPNIOEMYFSQIGDSGVHTALKPE
NmTdfh_81858	554	CNP	SCGL	YEPVLKKYGKKRANNH	SVSISADF	GDFYMPFA	YSRTHRMPNIOEMYFSQIGDSGVHTALKPE
NmTdfh_ERS514534	554	CNP	SCGL	YEPVLKKYGKKRANNH	SVSISADF	GDFYMPFA	YSRTHRMPNIOEMYFSQIGDSGVHTALKPE
NmTdfh_alpha153	554	CNP	SCGL	YEPVLKKYGKKRANNH	SVSISADF	GDFYMPFA	YSRTHRMPNIOEMYFSQIGDSGVHTALKPE
NmTdfh_053442	539	CNR	SCGL	YEPVLKKYGKKRANNH	SVSISADF	GDFYMPFA	YSRTHRMPNIOEMYFSQIGDSGVHTALKPE
NmTdfh_M0579	553	CNQ	SCGL	YEPVLKKYGKKRANNH	SVSISADF	GDFYMPFA	YSRTHRMPNIOEMYFSQIGDSGVHTALKPE
NmTdfh_MC58	553	CNR	SCGL	YEPVLKKYGKKRANNH	SVSISADF	GDFYMPFA	YSRTHRMPNIOEMYFSQIGDSGVHTALKPE
NmTdfh_LNP21362	553	CNR	SCGL	YEPVLKKYGKKRANNH	SVSISADF	GDFYMPFA	YSRTHRMPNIOEMYFSQIGDSGVHTALKPE
NmTdfh_IR1074	553	CNR	SCGL	YEPVLKKYGKKRANNH	SVSISADF	GDFYMPFA	YSRTHRMPNIOEMYFSQIGDSGVHTALKPE
NmTdfh_H44/76	553	CNR	SCGL	YEPVLKKYGKKRANNH	SVSISADF	GDFYMPFA	YSRTHRMPNIOEMYFSQIGDSGVHTALKPE
NmTdfh_FDAARGOS_210	553	CNR	SCGL	YEPVLKKYGKKRANNH	SVSISADF	GDFYMPFA	YSRTHRMPNIOEMYFSQIGDSGVHTALKPE
NmTdfh_FDAARGOS_215	554	CNQ	SCGL	YEPVLKKYGKKRANNH	SVSISADF	GDFYMPFA	YSRTHRMPNIOEMYFSQIGDSGVHTALKPE
NmTdfh_510612	554	CNQ	SCGL	YEPVLKKYGKKRANNH	SVSISADF	GDFYMPFA	YSRTHRMPNIOEMYFSQIGDSGVHTALKPE
NmTdfh_Z2491	554	CNQ	SCGL	YEPVLKKYGKKRANNH	SVSISADF	GDFYMPFA	YSRTHRMPNIOEMYFSQIGDSGVHTALKPE
NmTdfh_NCTC8249	554	CNP	SCGL	YEPVLKKYGKKRANNH	SVSISADF	GDFYMPFA	YSRTHRMPNIOEMYFSQIGDSGVHTALKPE
NmTdfh_alpha14	554	CDP	SCGL	YEPVLKKYGKKRANNH	SVSISADF	GDFYMPFA	YSRTHRMPNIOEMYFSQIGDSGVHTALKPE
NmTdfh_2842STDY5881378	554	CNP	SCGL	YEPVLKKYGKKRANNH	SVSISADF	GDFYMPFA	YSRTHRMPNIOEMYFSQIGDSGVHTALKPE
NmTdfh_CHUV	554	CNP	SCGL	YEPVLKKYGKKRANNH	SVSISADF	GDFYMPFA	YSRTHRMPNIOEMYFSQIGDSGVHTALKPE
NmTdfh_FAM18	554	CNP	SCGL	YEPVLKKYGKKRANNH	SVSISADF	GDFYMPFA	YSRTHRMPNIOEMYFSQIGDSGVHTALKPE
NmTdfh_M09293	554	CNP	SCGL	YEPVLKKYGKKRANNH	SVSISADF	GDFYMPFA	YSRTHRMPNIOEMYFSQIGDSGVHTALKPE
NmTdfh_M26503	554	CNQ	SCGL	YEPVLKKYGKKRANNH	SVSISADF	GDFYMPFA	YSRTHRMPNIOEMYFSQIGDSGVHTALKPE
NmTdfh_2842STDY5881093	554	CNR	SCGL	YEPVLKKYGKKRANNH	SVSISADF	GDFYMPFA	YSRTHRMPNIOEMYFSQIGDSGVHTALKPE
NmTdfh_PMB5301	554	CNR	SCGL	YEPVLKKYGKKRANNH	SVSISADF	GDFYMPFA	YSRTHRMPNIOEMYFSQIGDSGVHTALKPE

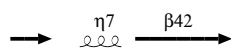
NgTdfH_FA1090

			β30	β31	β32	β33	TT	TT	
NgTdfH_FA1090	624	RANTWQ	GFNTYKKGLLKQDD	LGLKLVGYRSRIDNYIHNVY	GKWWDLNGD	IPSWVG	STGLAYTI	QHRNF	
NgTdfH_WHO_M	624	RANTWQ	GFNTYKKGLLKQDD	LGLKLVGYRSRIDNYIHNVY	GKWWDLNGD	IPSWVG	STGLAYTI	QHRNF	
NgTdfH_WHO_O	624	RANTWQ	GFNTYKKGLLKQDD	LGLKLVGYRSRIDNYIHNVY	GKWWDLNGD	IPSWVG	STGLAYTI	QHRNF	
NgTdfH_WHO_U	624	RANTWQ	GFNTYKKGLLKQDD	LGLKLVGYRSRIDNYIHNVY	GKWWDLNGD	IPSWVG	STGLAYTI	QHRNF	
NgTdfH_WHO_P	624	RANTWQ	GFNTYKKGLLKQDD	LGLKLVGYRSRIDNYIHNVY	GKWWDLNGD	IPSWVG	STGLAYTI	QHRNF	
NgTdfH_MS11	624	RANTWQ	GFNTYKKGLLKQDD	LGLKLVGYRSRIDNYIHNVY	GKWWDLNGD	IPSWVG	STGLAYTI	QHRNF	
NgTdfH_F62	624	RANTWQ	GFNTYKKGLLKQDD	LGLKLVGYRSRIDNYIHNVY	GKWWDLNGD	IPSWVG	STGLAYTI	QHRNF	
NgTdfH_WHO_F	607	RANTWQ	GFNTYKKGLLKQDD	LGLKLVGYRSRIDNYIHNVY	GKWWDLNGD	IPSWVG	STGLAYTI	QHRNF	
NgTdfH_MIA_2011_03-10	631	RANTWQ	GFNTYKKGLLKQDD	LGLKLVGYRSRIDNYIHNVY	GKWWDLNGD	IPSWVG	STGLAYTI	QHRNF	
NgTdfH_DGI18	624	RANTWQ	GFNTYKKGLLKQDD	LGLKLVGYRSRIDNYIHNVY	GKWWDLNGD	IPSWVG	STGLAYTI	QHRNF	
NgTdfH_FA19	624	RANTWQ	GFNTYKKGLLKQDD	LGLKLVGYRSRIDNYIHNVY	GKWWDLNGD	IPSWVG	STGLAYTI	QHRNF	
NgTdfH_WHO_L	624	RANTWQ	GFNTYKKGLLKQDD	LGLKLVGYRSRIDNYIHNVY	GKWWDLNGD	IPSWVG	STGLAYTI	QHRNF	
NgTdfH_DG12	618	RANTWQ	GFNTYKKGLLKQDD	LGLKLVGYRSRIDNYIHNVY	GKWWDLNGD	IPSWVG	STGLAYTI	QHRNF	
NgTdfH_WHO_K	607	RANTWQ	GFNTYKKGLLKQDD	LGLKLVGYRSRIDNYIHNVY	GKWWDLNGD	IPSWVG	STGLAYTI	QHRNF	
NgTdfH_WHO_W	607	RANTWQ	GFNTYKKGLLKQDD	LGLKLVGYRSRIDNYIHNVY	GKWWDLNGD	IPSWVG	STGLAYTI	QHRNF	
NgTdfH_WHO_X	607	RANTWQ	GFNTYKKGLLKQDD	LGLKLVGYRSRIDNYIHNVY	GKWWDLNGD	IPSWVG	STGLAYTI	QHRNF	
NgTdfH_WHO_Z	607	RANTWQ	GFNTYKKGLLKQDD	LGLKLVGYRSRIDNYIHNVY	GKWWDLNGD	IPSWVG	STGLAYTI	QHRNF	
NgTdfH_WHO_G	624	RANTWQ	GFNTYKKGLLKQDD	LGLKLVGYRSRIDNYIHNVY	GKWWDLNGD	IPSWVG	STGLAYTI	QHRNF	
NgTdfH_WHO_N	624	RANTWQ	GFNTYKKGLLKQDD	LGLKLVGYRSRIDNYIHNVY	GKWWDLNGD	IPSWVG	STGLAYTI	QHRNF	
NgTdfH_NG-k51.05	631	RANTWQ	GFNTYKKGLLKQDD	LGLKLVGYRSRIDNYIHNVY	GKWWDLNGD	IPSWVG	STGLAYTI	QHRNF	
NgTdfH_WHO_V	607	RANTWQ	GFNTYKKGLLKQDD	LGLKLVGYRSRIDNYIHNVY	GKWWDLNGD	IPSWVG	STGLAYTI	QHRNF	
NgTdfH_WHO_Y	607	RANTWQ	GFNTYKKGLLKQDD	LGLKLVGYRSRIDNYIHNVY	GKWWDLNGD	IPSWVG	STGLAYTI	QHRNF	
NgTdfH_BZG33	624	RANTWQ	GFNTYKKGLLKQDD	LGLKLVGYRSRIDNYIHNVY	GKWWDLNGD	IPSWVG	STGLAYTI	QHRNF	
NgTdfH_NCCP11945	607	RANTWQ	GFNTYKKGLLKQDD	LGLKLVGYRSRIDNYIHNVY	GKWWDLNGD	IPSWVG	STGLAYTI	QHRNF	
NmTdfH_020-06	623	RANTWQ	GFNTYKKGLLKQDD	LGLKLVGYRSRIDNYIHNVY	GKWWDLNGD	IPSWVG	STGLAYTI	QHRNF	
NmTdfH_alpha710	624	RANTWQ	GFNTYKKGLLKQDD	LGLKLVGYRSRIDNYIHNVY	GKWWDLNGD	IPSWVG	STGLAYTI	QHRNF	
NmTdfH_NZ-05/33	624	RANTWQ	GFNTYKKGLLKQDD	LGLKLVGYRSRIDNYIHNVY	GKWWDLNGD	IPSWVG	STGLAYTI	QHRNF	
NmTdfH_93004	624	RANTWQ	GFNTYKKGLLKQDD	LGLKLVGYRSRIDNYIHNVY	GKWWDLNGD	IPSWVG	STGLAYTI	QHRNF	
NmTdfH_ATCC13091	624	RANTWQ	GFNTYKKGLLKQDD	LGLKLVGYRSRIDNYIHNVY	GKWWDLNGD	IPSWVG	STGLAYTI	QHRNF	
NmTdfH_alpha522	624	RANTWQ	GFNTYKKGLLKQDD	LGLKLVGYRSRIDNYIHNVY	GKWWDLNGD	IPSWVG	STGLAYTI	QHRNF	
NmTdfH_NM2795	624	RANTWQ	GFNTYKKGLLKQDD	LGLKLVGYRSRIDNYIHNVY	GKWWDLNGD	IPSWVG	STGLAYTI	QHRNF	
NmTdfH_81858	624	RANTWQ	GFNTYKKGLLKQDD	LGLKLVGYRSRIDNYIHNVY	GKWWDLNGD	IPSWVG	STGLAYTI	QHRNF	
NmTdfH_ERS514534	624	RANTWQ	GFNTYKKGLLKQDD	LGLKLVGYRSRIDNYIHNVY	GKWWDLNGD	IPSWVG	STGLAYTI	QHRNF	
NmTdfH_alpha153	624	RANTWQ	GFNTYKKGLLKQDD	LGLKLVGYRSRIDNYIHNVY	GKWWDLNGD	IPSWVG	STGLAYTI	QHRNF	
NmTdfH_053442	609	RANTWQ	GFNTYKKGLLKQDD	LGLKLVGYRSRIDNYIHNVY	GKWWDLNGD	IPSWVG	STGLAYTI	QHRNF	
NmTdfH_M0579	623	RANTWQ	GFNTYKKGLLKQDD	LGLKLVGYRSRIDNYIHNVY	GKWWDLNGD	IPSWVG	STGLAYTI	QHRNF	
NmTdfH_MC58	623	RANTWQ	GFNTYKKGLLKQDD	LGLKLVGYRSRIDNYIHNVY	GKWWDLNGD	IPSWVG	STGLAYTI	QHRNF	
NmTdfH_LNP21362	623	RANTWQ	GFNTYKKGLLKQDD	LGLKLVGYRSRIDNYIHNVY	GKWWDLNGD	IPSWVG	STGLAYTI	QHRNF	
NmTdfH_IR1074	623	RANTWQ	GFNTYKKGLLKQDD	LGLKLVGYRSRIDNYIHNVY	GKWWDLNGD	IPSWVG	STGLAYTI	QHRNF	
NmTdfH_H44/76	623	RANTWQ	GFNTYKKGLLKQDD	LGLKLVGYRSRIDNYIHNVY	GKWWDLNGD	IPSWVG	STGLAYTI	QHRNF	
NmTdfH_FDAARGOS_210	623	RANTWQ	GFNTYKKGLLKQDD	LGLKLVGYRSRIDNYIHNVY	GKWWDLNGD	IPSWVG	STGLAYTI	QHRNF	
NmTdfH_FDAARGOS_215	624	RANTWQ	GFNTYKKGLLKQDD	LGLKLVGYRSRIDNYIHNVY	GKWWDLNGD	IPSWVG	STGLAYTI	QHRNF	
NmTdfH_510612	607	RANTWQ	GFNTYKKGLLKQDD	LGLKLVGYRSRIDNYIHNVY	GKWWDLNGD	IPSWVG	STGLAYTI	QHRNF	
NmTdfH_Z2491	624	RANTWQ	GFNTYKKGLLKQDD	LGLKLVGYRSRIDNYIHNVY	GKWWDLNGD	IPSWVG	STGLAYTI	QHRNF	
NmTdfH_NCTC8249	624	RANTWQ	GFNTYKKGLLKQDD	LGLKLVGYRSRIDNYIHNVY	GKWWDLNGD	IPSWVG	STGLAYTI	QHRNF	
NmTdfH_alpha14	624	RANTWQ	GFNTYKKGLLKQDD	LGLKLVGYRSRIDNYIHNVY	GKWWDLNGD	IPSWVG	STGLAYTI	QHRNF	
NmTdfH_2842STDY5881378	624	RANTWQ	GFNTYKKGLLKQDD	LGLKLVGYRSRIDNYIHNVY	GKWWDLNGD	IPSWVG	STGLAYTI	QHRNF	
NmTdfH_CHUV	624	RANTWQ	GFNTYKKGLLKQDD	LGLKLVGYRSRIDNYIHNVY	GKWWDLNGD	IPSWVG	STGLAYTI	QHRNF	
NmTdfH_FAM18	624	RANTWQ	GFNTYKKGLLKQDD	LGLKLVGYRSRIDNYIHNVY	GKWWDLNGD	IPSWVG	STGLAYTI	QHRNF	
NmTdfH_M09293	624	RANTWQ	GFNTYKKGLLKQDD	LGLKLVGYRSRIDNYIHNVY	GKWWDLNGD	IPSWVG	STGLAYTI	QHRNF	
NmTdfH_M26503	624	RANTWQ	GFNTYKKGLLKQDD	LGLKLVGYRSRIDNYIHNVY	GKWWDLNGD	IPSWVG	STGLAYTI	QHRNF	
NmTdfH_2842STDY5881093	624	RANTWQ	GFNTYKKGLLKQDD	LGLKLVGYRSRIDNYIHNVY	GKWWDLNGD	IPSWVG	STGLAYTI	QHRNF	
NmTdfH_PMB5301	624	RANTWQ	GFNTYKKGLLKQDD	LGLKLVGYRSRIDNYIHNVY	GKWWDLNGD	IPSWVG	STGLAYTI	QHRNF	

Sequence logo for the 1000 Genomes Project. The logo shows nucleotide conservation across 1000 samples. The x-axis is labeled with positions 37, 38, 39, 40, and 41. The y-axis is labeled with nucleotides A, C, G, and T. The logo shows a strong preference for T at position 37, G at position 38, and A at position 39. Positions 40 and 41 show a strong preference for G. The logo is color-coded: A (blue), C (green), G (red), and T (yellow).

Position	A	C	G	T
37	0.00	0.00	0.00	1.00
38	0.00	0.00	1.00	0.00
39	0.00	0.00	0.00	1.00
40	0.00	0.00	1.00	0.00
41	0.00	0.00	1.00	0.00

NgTdfH_FA1090



TT TT

NgTdfH_FA1090	834	AAAYEPKKNLIFRAEVKNLFDRRYIDPLDAGNDAATQRYYSFDPKDKDE	DVTCNADK	TL	CNGKYGGTSKS
NgTdfH_WHO_M	834	AAAYEPKKNLIFRAEVKNLFDRRYIDPLDAGNDAATQRYYSFDPKDKDE	DVTCNADK	TL	CNGKYGGTSKS
NgTdfH_WHO_O	834	AAAYEPKKNLIFRAEVKNLFDRRYIDPLDAGNDAATQRYYSFDPKDKDE	DVTCNADK	TL	CNGKYGGTSKS
NgTdfH_WHO_U	834	AAAYEPKKNLIFRAEVKNLFDRRYIDPLDAGNDAATQRYYSFDPKDKDE	DVTCNADK	TL	CNGKYGGTSKS
NgTdfH_WHO_P	834	AAAYEPKKNLIFRAEVKNLFDRRYIDPLDAGNDAATQRYYSFDPKDKDE	DVTCNADK	TL	CNGKYGGTSKS
NgTdfH_MS11	834	AAAYEPKKNLIFRAEVKNLFDRRYIDPLDAGNDAATQRYYSFDPKDKDE	DVTCNADK	TL	CNGKYGGTSKS
NgTdfH_F62	834	AAAYEPKKNLIFRAEVKNLFDRRYIDPLDAGNDAATQRYYSFDPKDKDE	DVTCNADK	TL	CNGKYGGTSKS
NgTdfH_WHO_F	817	AAAYEPKKNLIFRAEVKNLFDRRYIDPLDAGNDAATQRYYSFDPKDKDE	DVTCNADK	TL	CNGKYGGTSKS
NgTdfH_MIA_2011_03-10	841	AAAYEPKKNLIFRAEVKNLFDRRYIDPLDAGNDAATQRYYSFDPKDKDE	EVTCTND	DL	CNGKYGGTSKS
NgTdfH_DGI18	834	AAAYEPKKNLIFRAEVKNLFDRRYIDPLDAGNDAATQRYYSFDPKDKDE	DVTCNADK	TL	CNGKYGGTSKS
NgTdfH_FA19	834	AAAYEPKKNLIFRAEVKNLFDRRYIDPLDAGNDAATQRYYSFDPKDKDE	EVTCTND	DL	CNGKYGGTSKS
NgTdfH_WHO_L	834	AAAYEPKKNLIFRAEVKNLFDRRYIDPLDAGNDAATQRYYSFDPKDKDE	EVTCTND	DL	CNGKYGGTSKS
NgTdfH_DG12	828	AAAYEPKKNLIFRAEVKNLFDRRYIDPLDAGNDAATQRYYSFDPKDKDE	DVTCNADK	TL	CNGKYGGTSKS
NgTdfH_WHO_K	817	AAAYEPKKNLIFRAEVKNLFDRRYIDPLDAGNDAATQRYYSFDPKDKDE	DVTCNADK	TL	CNGKYGGTSKS
NgTdfH_WHO_W	817	AAAYEPKKNLIFRAEVKNLFDRRYIDPLDAGNDAATQRYYSFDPKDKDE	DVTCNADK	TL	CNGKYGGTSKS
NgTdfH_WHO_X	817	AAAYEPKKNLIFRAEVKNLFDRRYIDPLDAGNDAATQRYYSFDPKDKDE	DVTCNADK	TL	CNGKYGGTSKS
NgTdfH_WHO_Z	817	AAAYEPKKNLIFRAEVKNLFDRRYIDPLDAGNDAATQRYYSFDPKDKDE	DVTCNADK	TL	CNGKYGGTSKS
NgTdfH_WHO_G	834	AAAYEPKKNLIFRAEVKNLFDRRYIDPLDAGNDAATQRYYSFDPKDKDE	DVTCNADK	TL	CNGKYGGTSKS
NgTdfH_WHO_N	834	AAAYEPKKNLIFRAEVKNLFDRRYIDPLDAGNDAATQRYYSFDPKDKDE	DVTCNADK	TL	CNGKYGGTSKS
NgTdfH_NG-k51.05	841	AAAYEPKKNLIFRAEVKNLFDRRYIDPLDAGNDAATQRYYSFDPKDKDE	DVTCNADK	TL	CNGKYGGTSKS
NmTdfH_WHO_V	817	AAAYEPKKNLIFRAEVKNLFDRRYIDPLDAGNDAATQRYYSFDPKDKDE	DVTCNADK	TL	CNGKYGGTSKS
NgTdfH_WHO_Y	817	AAAYEPKKNLIFRAEVKNLFDRRYIDPLDAGNDAATQRYYSFDPKDKDE	DVTCNADK	TL	CNGKYGGTSKS
NgTdfH_BZG33	834	AAAYEPKKNLIFRAEVKNLFDRRYIDPLDAGNDAATQRYYSFDPKDKDE	DVTCNADK	TL	CNGKYGGTSKS
NgTdfH_NCCP11945	817	AAAYEPKKNLIFRAEVKNLFDRRYIDPLDAGNDAATQRYYSFDPKDKDE	DVTCNADK	TL	CNGKYGGTSKS
NmTdfH_020-06	833	AAAYEPKKNLIFRAEVKNLFDRRYIDPLDAGNDAATQRYYSFDPKDKDE	DVTCNAD	GL	CNGKYGGTSKS
NmTdfH_alpha710	834	AAAYEPKKNLIFRAEVKNLFDRRYIDPLDAGNDAATQRYYSFDPKDKDE	DVTCNAD	GL	CNGKYGGTSKS
NmTdfH_NZ-05/33	834	AAAYEPKKNLIFRAEVKNLFDRRYIDPLDAGNDAATQRYYSFDPKDKDE	DVTCNAD	GL	CNGKYGGTSKS
NmTdfH_93004	834	AAAYEPKKNLIFRAEVKNLFDRRYIDPLDAGNDAATQRYYSFDPKDKDE	EVTCTND	DL	CNGKYGGTSKS
NmTdfH_ATCC13091	834	AAAYEPKKNLIFRAEVKNLFDRRYIDPLDAGNDAATQRYYSFDPKDKDE	EVTCTND	DL	CNGKYGGTSKS
NmTdfH_alpha522	834	AAAYEPKKNLIFRAEVKNLFDRRYIDPLDAGNDAATQRYYSFDPKDKDE	DVTCNAD	GL	CNGKYGGTSKS
NmTdfH_NM2795	834	AAAYEPKKNLIFRAEVKNLFDRRYIDPLDAGNDAATQRYYSFDPKDKDE	EVTCTND	DL	CNGKYGGTSKS
NmTdfH_81858	834	AAAYEPKKNLIFRAEVKNLFDRRYIDPLDAGNDAATQRYYSFDPKDKDE	DVTCNADK	TL	CNGKYGGTSKS
NmTdfH_ERS514534	834	AAAYEPKKNLIFRAEVKNLFDRRYIDPLDAGNDAATQRYYSFDPKDKDE	DVTCNADK	TL	CNGKYGGTSKS
NmTdfH_alpha153	834	AAAYEPKKNLIFRAEVKNLFDRRYIDPLDAGNDAATQRYYSFDPKDKDE	DVTCNADK	TL	CNGKYGGTSKS
NmTdfH_053442	819	AAAYEPKKNLIFRAEVKNLFDRRYIDPLDAGNDAATQRYYSFDPKDKDE	EVTCTND	DL	CNGKYGGTSKS
NmTdfH_M0579	833	AAAYEPKKNLIFRAEVKNLFDRRYIDPLDAGNDAATQRYYSFDPKDKDE	DVTCNAD	GL	CNGKYGGTSKS
NmTdfH_MC58	833	AAAYEPKKNLIFRAEVKNLFDRRYIDPLDAGNDAATQRYYSFDPKDKDE	DVTCNADK	TL	CNGKYGGTSKS
NmTdfH_LNP21362	833	AAAYEPKKNLIFRAEVKNLFDRRYIDPLDAGNDAATQRYYSFDPKDKDE	DVTCNADK	TL	CNGKYGGTSKS
NmTdfH_IR1074	833	AAAYEPKKNLIFRAEVKNLFDRRYIDPLDAGNDAATQRYYSFDPKDKDE	DVTCNADK	TL	CNGKYGGTSKS
NmTdfH_H44/76	833	AAAYEPKKNLIFRAEVKNLFDRRYIDPLDAGNDAATQRYYSFDPKDKDE	DVTCNADK	TL	CNGKYGGTSKS
NmTdfH_FDAARGOS_210	833	AAAYEPKKNLIFRAEVKNLFDRRYIDPLDAGNDAATQRYYSFDPKDKDE	DVTCNAD	GL	CNGKYGGTSKS
NmTdfH_FDAARGOS_215	834	AAAYEPKKNLIFRAEVKNLFDRRYIDPLDAGNDAATQRYYSFDPKDKDE	EVTCTND	DL	CNGKYGGTSKS
NmTdfH_510612	834	AAAYEPKKNLIFRAEVKNLFDRRYIDPLDAGNDAATQRYYSFDPKDKDE	EVTCTND	DL	CNGKYGGTSKS
NmTdfH_Z2491	817	AAAYEPKKNLIFRAEVKNLFDRRYIDPLDAGNDAATQRYYSFDPKDKDE	EVTCTND	DL	CNGKYGGTSKS
NmTdfH_NCTC8249	834	AAAYEPKKNLIFRAEVKNLFDRRYIDPLDAGNDAATQRYYSFDPKDKDE	DVTCNAD	GL	CNGKYGGTSKS
NmTdfH_alpha14	834	AAAYEPKKNLIFRAEVKNLFDRRYIDPLDAGNDAATQRYYSFDPKDKDE	EVTCTND	DL	CNGKYGGTSKS
NmTdfH_2842STDY5881378	834	AAAYEPKKNLIFRAEVKNLFDRRYIDPLDAGNDAATQRYYSFDPKDKDE	DVTCNADK	TL	CNGKYGGTSKS
NmTdfH_CHUV	834	AAAYEPKKNLIFRAEVKNLFDRRYIDPLDAGNDAATQRYYSFDPKDKDE	DVTCNAD	GL	CNGKYGGTSKS
NmTdfH_FAM18	834	AAAYEPKKNLIFRAEVKNLFDRRYIDPLDAGNDAATQRYYSFDPKDKDE	DVTCNAD	GL	CNGKYGGTSKS
NmTdfH_M09293	834	AAAYEPKKNLIFRAEVKNLFDRRYIDPLDAGNDAATQRYYSFDPKDKDE	DVTCNAD	GL	CNGKYGGTSKS
NmTdfH_M26503	834	AAAYEPKKNLIFRAEVKNLFDRRYIDPLDAGNDAATQRYYSFDPKDKDE	DVTCNAD	GL	CNGKYGGTSKS
NmTdfH_2842STDY5881093	834	AAAYEPKKNLIFRAEVKNLFDRRYIDPLDAGNDAATQRYYSFDPKDKDE	DVTCNAD	GL	CNGKYGGTSKS
NmTdfH_PMB5301	834	AAAYEPKKNLIFRAEVKNLFDRRYIDPLDAGNDAATQRYYSFDPKDKDE	DVTCNAD	GL	CNGKYGGTSKS

		η8 β43
NgTdfH_FA1090		000
NgTdfH_FA1090	904	VLTNFARGRTFLMTMSYKF
NgTdfH_WHO_M	904	VLTNFARGRTFLMTMSYKF
NgTdfH_WHO_O	904	VLTNFARGRTFLMTMSYKF
NgTdfH_WHO_U	904	VLTNFARGRTFLMTMSYKF
NgTdfH_WHO_P	904	VLTNFARGRTFLMTMSYKF
NgTdfH_MS11	904	VLTNFARGRTFLMTMSYKF
NgTdfH_F62	904	VLTNFARGRTFLMTMSYKF
NgTdfH_WHO_F	887	VLTNFARGRTFLMTMSYKF
NgTdfH_MIA_2011_03-10	911	VLTNFARGRTFLMTMSYKF
NgTdfH_DGI18	904	VLTNFARGRTFLMTMSYKF
NgTdfH_FA19	904	VLTNFARGRTFLMTMSYKF
NgTdfH_WHO_L	904	VLTNFARGRTFLMTMSYKF
NgTdfH_DG12	898	VLTNFARGRTFLMTMSYKF
NgTdfH_WHO_K	887	VLTNFARGRTFLMTMSYKF
NgTdfH_WHO_W	887	VLTNFARGRTFLMTMSYKF
NgTdfH_WHO_X	887	VLTNFARGRTFLMTMSYKF
NgTdfH_WHO_Z	887	VLTNFARGRTFLMTMSYKF
NgTdfH_WHO_G	904	VLTNFARGRTFLMTMSYKF
NgTdfH_WHO_N	904	VLTNFARGRTFLMTMSYKF
NgTdfH_NG-k51.05	911	VLTNFARGRTFLMTMSYKF
NgTdfH_WHO_V	887	VLTNFARGRTFLMTMSYKF
NgTdfH_WHO_Y	887	VLTNFARGRTFLMTMSYKF
NgTdfH_BZG33	904	VLTNFARGRTFLMTMSYKF
NgTdfH_NCCP11945	887	VLTNFARGRTFLMTMSYKF
NmTdfH_020-06	902	VLTNFARGRTFLMTMSYKF
NmTdfH_alpha710	903	VLTNFARGRTFLMTMSYKF
NmTdfH_NZ-05/33	903	VLTNFARGRTFLMTMSYKF
NmTdfH_93004	904	VLTNFARGRTFLMTMSYKF
NmTdfH_ATCC13091	904	VLTNFARGRTFLMTMSYKF
NmTdfH_alpha522	903	VLTNFARGRTFLMTMSYKF
NmTdfH_NM2795	904	VLTNFARGRTFLMTMSYKF
NmTdfH_81858	904	VLTNFARGRTFLMTMSYKF
NmTdfH_ERS514534	904	VLTNFARGRTFLMTMSYKF
NmTdfH_alpha153	904	VLTNFARGRTFLMTMSYKF
NmTdfH_053442	889	VLTNFARGRTFLMTMSYKF
NmTdfH_M0579	902	VLTNFARGRTFLMTMSYKF
NmTdfH_MC58	903	VLTNFARGRTFLMTMSYKF
NmTdfH_LNP21362	903	VLTNFARGRTFLMTMSYKF
NmTdfH_IR1074	903	VLTNFARGRTFLMTMSYKF
NmTdfH_H44/76	903	VLTNFARGRTFLMTMSYKF
NmTdfH_FDAARGOS_210	902	VLTNFARGRTFLMTMSYKF
NmTdfH_FDAARGOS_215	904	VLTNFARGRTFLMTMSYKF
NmTdfH_	904	VLTNFARGRTFLMTMSYKF
NmTdfH_510612	887	VLTNFARGRTFLMTMSYKF
NmTdfH_Z2491	904	VLTNFARGRTFLMTMSYKF
NmTdfH_NCTC8249	903	VLTNFARGRTFLMTMSYKF
NmTdfH_alpha14	904	VLTNFARGRTFLMTMSYKF
NmTdfH_2842STDY5881378	904	VLTNFARGRTFLMTMSYKF
NmTdfH_CHUV	903	VLTNFARGRTFLMTMSYKF
NmTdfH_FAM18	903	VLTNFARGRTFLMTMSYKF
NmTdfH_M09293	903	VLTNFARGRTFLMTMSYKF
NmTdfH_M26503	903	VLTNFARGRTFLMTMSYKF
NmTdfH_2842STDY5881093	903	VLTNFARGRTFLMTMSYKF
NmTdfH_PMB5301	903	VLTNFARGRTFLMTMSYKF

Supplementary Figure 7. Sequence alignment of ZnuDs.

	1	10	20	30	40	50
NEISp0944_35	..		MTQN	TLKP	IVLS	SILLISTP
NEISp0944_39	..		MTQN	TLKP	IVLS	SILLISTP
NEISp0944_5	..		MTQN	TLKP	IVLS	SILLISTP
NEISp0944_75	..		MTQN	TLKP	IVLS	SILLISTP
NEISp0944_180	..		MTQN	TLKP	IVLS	SILLISTP
NEISp0944_22	..		MTQN	TLKP	IVLS	SILLISTP
NEISp0944_25	..		MTQN	TLKP	IVLS	SILLISTP
NEISp0944_142	..		MTQN	TLKP	IVLS	SILLISTP
NEISp0944_135	..		MTQN	TLKP	IVLS	SILLISTP
NEISp0944_126	..		MTQN	TLKP	IVLS	SILLISTP
NEISp0944_901	..		MTQN	TLKP	IVLS	SILLISTP
NEISp0944_131	..		MTQN	TLKP	IVLS	SILLISTP
NEISp0944_777	..		MTQN	TLKP	IVLS	SILLISTP
NEISp0944_207	..		MTQN	TLKP	IVLS	SILLISTP
NEISp0944_198	..		MTQN	TLKP	IVLS	SILLISTP
NEISp0944_863	..		MTQN	TLKP	IVLS	SILLISTP
NEISp0944_160	..		MTQN	TLKP	IVLS	SILLISTP
NEISp0944_859	..		MTQN	TLKP	IVLS	SILLISTP
NEISp0944_912	..		MTQN	TLKP	IVLS	SILLISTP
NEISp0944_251	..		MTQN	TLKP	IVLS	SILLISTP
NEISp0944_196	..		MTQN	TLKP	IVLS	SILLISTP
NEISp0944_263	..		MTQN	TLKP	IVLS	SILLISTP
NEISp0944_897	..		MTQN	TLKP	IVLS	SILLISTP
NEISp0944_79	..		MTQN	TLKP	IVLS	SILLISTP
NEISp0944_13	..		MTQN	TLKP	IVLS	SILLISTP
NEISp0944_574	..		MTQN	TLKP	IVLS	SILLISTP
NEISp0944_478	..		MTQN	TLKP	IVLS	SILLISTP
NEISp0944_347	..		MTQN	TLKP	IVLS	SILLISTP
NEISp0944_177	..		MTQN	TLKP	IVLS	SILLISTP
NEISp0944_140	..		MTQN	TLKP	IVLS	SILLISTP
NEISp0944_534	..		MTQN	TLKP	IVLS	SILLISTP
NEISp0944_37	..		MTQN	TLKP	IVLS	SILLISTP
NEISp0944_176	..		MTQN	TLKP	IVLS	SILLISTP
NEISp0944_907	..		MTQN	TLKP	IVLS	SILLISTP
NEISp0944_12	..		MTQN	TLKP	IVLS	SILLISTP
NEISp0944_69	..		MTQN	TLKP	IVLS	SILLISTP
NEISp0944_373	..		MTQN	TLKP	IVLS	SILLISTP
NEISp0944_86	..		MTQN	TLKP	IVLS	SILLISTP
NEISp0944_821	..		MTQN	TLKP	IVLS	SILLISTP
NEISp0944_369	..		MTQN	TLKP	IVLS	SILLISTP
NEISp0944_87	..		MTQN	TLKP	IVLS	SILLISTP
NEISp0944_88	..		MTQN	TLKP	IVLS	SILLISTP
NEISp0944_33	..		MTQN	TLKP	IVLS	SILLISTP
NEISp0944_70	..		MTQN	TLKP	IVLS	SILLISTP
NEISp0944_61	..		MTQN	TLKP	IVLS	SILLISTP
NEISp0944_83	..		MTQN	TLKP	IVLS	SILLISTP
NEISp0944_122	..		MTQN	TLKP	IVLS	SILLISTP
NEISp0944_778	..		MTQN	TLKP	IVLS	SILLISTP
NEISp0944_107	..		MTQN	TLKP	IVLS	SILLISTP
NEISp0944_56	..		MTQN	TLKP	IVLS	SILLISTP
NEISp0944_607	..		MTQN	TLKP	IVLS	SILLISTP
NEISp0944_318	..		MTQN	TLKP	IVLS	SILLISTP
NEISp0944_134	..		MTQN	TLKP	IVLS	SILLISTP
NEISp0944_129	..		MTQN	TLKP	IVLS	SILLISTP
NEISp0944_18	..		MTQN	TLKP	IVLS	SILLISTP
NEISp0944_1	..		MTQN	TLKP	IVLS	SILLISTP
NEISp0944_381	..		MTQN	TLKP	IVLS	SILLISTP
NEISp0944_157	..		MTQN	TLKP	IVLS	SILLISTP
NEISp0944_60	..		MTQN	TLKP	IVLS	SILLISTP
NEISp0944_606	..		MTQN	TLKP	IVLS	SILLISTP
NEISp0944_908	..		MTQN	TLKP	IVLS	SILLISTP
NEISp0944_130	..		MTQN	TLKP	IVLS	SILLISTP
NEISp0944_46	..		MTQN	TLKP	IVLS	SILLISTP
NEISp0944_23	..		MTQN	TLKP	IVLS	SILLISTP
NEISp0944_499	..		MTQN	TLKP	IVLS	SILLISTP
NEISp0944_81	..		MTQN	TLKP	IVLS	SILLISTP
NEISp0944_41	..		MTQN	TLKP	IVLS	SILLISTP
NEISp0944_3	..		MTQN	TLKP	IVLS	SILLISTP
NEISp0944_553	..		MTQN	TLKP	IVLS	SILLISTP
NEISp0944_271	..		MTQN	TLKP	IVLS	SILLISTP
NEISp0944_82	..		MTQN	TLKP	IVLS	SILLISTP
NEISp0944_20	..		MTQN	TLKP	IVLS	SILLISTP
NEISp0944_2	..		MTQN	TLKP	IVLS	SILLISTP
NEISp0944_9	..		MTQN	TLKP	IVLS	SILLISTP

	60	70	80	90	100	110
NEISp0944_35	TSTA	SDKII	IAGD	TLRQ	KAVN	LGDA
NEISp0944_39	TSTA	SDKII	IAGD	TLRQ	KAVN	LGDA
NEISp0944_5	TSTA	SDKII	IAGD	TLRQ	KAVN	LGDA
NEISp0944_75	TSTA	SDKII	IAGD	TLRQ	KAVN	LGDA
NEISp0944_180	TSTA	SDKII	IAGD	TLRQ	KAVN	LGDA
NEISp0944_22	TSTA	SDKII	IAGD	TLRQ	KAVN	LGDA
NEISp0944_25	TSTA	SDKII	IAGD	TLRQ	KAVN	LGDA
NEISp0944_142	TSTA	SDKII	IAGD	TLRQ	KAVN	LGDA
NEISp0944_135	TSTA	SDKII	IAGD	TLRQ	KAVN	LGDA
NEISp0944_126	TSTA	SDKII	IAGD	TLRQ	KAVN	LGDA
NEISp0944_901	ASTA	SDKII	IAGD	TLRQ	KAVN	LGDA
NEISp0944_131	TSTA	SDKII	IAGD	TLRQ	KAVN	LGDA
NEISp0944_777	TSTA	SDKII	IAGD	TLRQ	KAVN	LGDA
NEISp0944_207	TSTA	SDKII	IAGD	TLRQ	KAVN	LGDA
NEISp0944_198	TSTA	SDKII	IAGD	TLRQ	KAVN	LGDA
NEISp0944_863	TSTA	SDKII	IAGD	TLRQ	KAVN	LGDA
NEISp0944_160	TSTA	SDKII	IAGD	TLRQ	KAVN	LGDA
NEISp0944_859	TSTA	SDKII	IAGD	TLRQ	KAVN	LGDA
NEISp0944_912	TSTA	SDKII	IAGD	TLRQ	KAVN	LGDA
NEISp0944_251	TSTA	SDKII	IAGD	TLRQ	KAVN	LGDA
NEISp0944_196	TSTA	SDKII	IAGD	TLRQ	KAVN	LGDA
NEISp0944_263	TSTA	SDKII	IAGD	TLRQ	KAVN	LGDA
NEISp0944_897	TSTA	SDKII	IAGD	TLRQ	KAVN	LGDA
NEISp0944_79	TSTA	SDKII	IAGD	TLRQ	KAVN	LGDA
NEISp0944_13	TSTA	SDKII	IAGD	TLRQ	KAVN	LGDA
NEISp0944_574	TSTA	SDKII	IAGD	TLRQ	KAVN	LGDA
NEISp0944_478	TSTA	SDKII	IAGD	TLRQ	KAVN	LGDA
NEISp0944_347	TSTA	SDKII	IAGD	TLRQ	KAVN	LGDA
NEISp0944_177	TSTA	SDKII	IAGD	TLRQ	KAVN	LGDA
NEISp0944_140	TSTA	SDKII	IAGD	TLRQ	KAVN	LGDA
NEISp0944_534	TSTA	SDKII	IAGD	TLRQ	KAVN	LGDA
NEISp0944_37	TSTA	SDKII	IAGD	TLRQ	KAVN	LGDA
NEISp0944_176	TSTA	SDKII	IAGD	TLRQ	KAVN	LGDA
NEISp0944_907	TSTA	SDKII	IAGD	TLRQ	KAVN	LGDA
NEISp0944_12	TSTA	SDKII	IAGD	TLRQ	KAVN	LGDA
NEISp0944_69	TSTA	SDKII	IAGD	TLRQ	KAVN	LGDA
NEISp0944_373	TSTA	SDKII	IAGD	TLRQ	KAVN	LGDA
NEISp0944_86	TSTA	SDKII	IAGD	TLRQ	KAVN	LGDA
NEISp0944_821	TSTA	SDKII	IAGD	TLRQ	KAVN	LGDA
NEISp0944_369	TSTA	SDKII	IAGD	TLRQ	KAVN	LGDA
NEISp0944_87	TSTA	SDKII	IAGD	TLRQ	KAVN	LGDA
NEISp0944_88	TSTA	SDKII	IAGD	TLRQ	KAVN	LGDA
NEISp0944_33	TSTA	SDKII	IAGD	TLRQ	KAVN	LGDA
NEISp0944_70	TSTA	SDKII	IAGD	TLRQ	KAVN	LGDA
NEISp0944_61	TSTA	SDKII	IAGD	TLRQ	KAVN	LGDA
NEISp0944_83	TSTA	SDKII	IAGD	TLRQ	KAVN	LGDA
NEISp0944_122	TSTA	SDKII	IAGD	TLRQ	KAVN	LGDA
NEISp0944_778	TSTA	SDKII	IAGD	TLRQ	KAVN	LGDA
NEISp0944_107	TSTA	SDKII	IAGD	TLRQ	KAVN	LGDA
NEISp0944_56	TSTA	SDKII	IAGD	TLRQ	KAVN	LGDA
NEISp0944_607	TSTA	SDKII	IAGD	TLRQ	KAVN	LGDA
NEISp0944_318	ASTA	SDKII	IAGD	TLRQ	KAVN	LGDA
NEISp0944_134	TSTA	SDKII	IAGD	TLRQ	KAVN	LGDA
NEISp0944_129	TSTA	SDKII	IAGD	TLRQ	KAVN	LGDA
NEISp0944_18	TSTA	SDKII	IAGD	TLRQ	KAVN	LGDA
NEISp0944_1	ASTA	SDKII	IAGD	TLRQ	KAVN	LGDA
NEISp0944_381	TSTA	SDKII	IAGD	TLRQ	KAVN	LGDA
NEISp0944_157	TSTA	SDKII	IAGD	TLRQ	KAVN	LGDA
NEISp0944_60	TSTA	SDKII	IAGD	TLRQ	KAVN	LGDA
NEISp0944_606	TSTA	SDKII	IAGD	TLRQ	KAVN	LGDA
NEISp0944_908	TSTA	SDKII	IAGD	TLRQ	KAVN	LGDA
NEISp0944_130	TSTA	SDKII	IAGD	TLRQ	KAVN	LGDA
NEISp0944_46	TSTA	SDKII	IAGD	TLRQ	KAVN	LGDA
NEISp0944_23	TSTA	SDKII	IAGD	TLRQ	KAVN	LGDA
NEISp0944_499	TSTA	SDKII	IAGD	TLRQ	KAVN	LGDA
NEISp0944_81	TSTA	SDKII	IAGD	TLRQ	KAVN	LGDA
NEISp0944_41	ASTA	SDKII	IAGD	TLRQ	KAVN	LGDA
NEISp0944_3	TSTA	SDKII	IAGD	TLRQ	KAVN	LGDA
NEISp0944_553	TSTA	SDKII	IAGD	TLRQ	KAVN	LGDA
NEISp0944_271	TSTA	SDKII	IAGD	TLRQ	KAVN	LGDA
NEISp0944_82	TSTA	SDKII	IAGD	TLRQ	KAVN	LGDA
NEISp0944_20	TSTA	SDKII	IAGD	TLRQ	KAVN	LGDA
NEISp0944_2	TSTA	SDKII	IAGD	TLRQ	KAVN	LGDA
NEISp0944_9	TSTA	SDKII	IAGD	TLRQ	KAVN	LGDA

[illegible]

	180	190	200	210	220	230
NEISp0944_35	S	G	E	I	N	V
NEISp0944_39	S	G	E	I	N	V
NEISp0944_5	S	G	E	I	N	V
NEISp0944_75	S	G	E	I	N	V
NEISp0944_180	S	G	E	I	N	V
NEISp0944_22	S	G	E	I	N	V
NEISp0944_25	S	G	E	I	N	V
NEISp0944_142	S	G	E	I	N	V
NEISp0944_135	S	G	E	I	N	V
NEISp0944_126	S	G	E	I	N	V
NEISp0944_901	S	G	E	I	N	V
NEISp0944_131	S	G	E	I	N	V
NEISp0944_777	S	G	E	I	N	V
NEISp0944_207	S	G	E	I	N	V
NEISp0944_198	S	G	E	I	N	V
NEISp0944_863	S	G	E	I	N	V
NEISp0944_160	S	G	E	I	N	V
NEISp0944_859	S	G	E	I	N	V
NEISp0944_912	S	G	E	I	N	V
NEISp0944_251	S	G	E	I	N	V
NEISp0944_196	S	G	E	I	N	V
NEISp0944_263	S	G	E	I	N	V
NEISp0944_897	S	G	E	I	N	V
NEISp0944_79	S	G	E	I	N	V
NEISp0944_13	S	G	E	I	N	V
NEISp0944_574	S	G	E	I	N	V
NEISp0944_478	S	G	E	I	N	V
NEISp0944_347	S	G	E	I	N	V
NEISp0944_177	S	G	E	I	N	V
NEISp0944_140	S	G	E	I	N	V
NEISp0944_534	S	G	E	I	N	V
NEISp0944_37	S	G	E	I	N	V
NEISp0944_176	S	G	E	I	N	V
NEISp0944_907	S	G	E	I	N	V
NEISp0944_12	S	G	E	I	N	V
NEISp0944_69	S	G	E	I	N	V
NEISp0944_373	S	G	E	I	N	V
NEISp0944_86	S	G	E	I	N	V
NEISp0944_821	S	G	E	I	N	V
NEISp0944_369	S	G	E	I	N	V
NEISp0944_87	S	G	E	I	N	V
NEISp0944_88	S	G	E	I	N	V
NEISp0944_33	S	G	E	I	N	V
NEISp0944_70	S	G	E	I	N	V
NEISp0944_61	S	G	E	I	N	V
NEISp0944_83	S	G	E	I	N	V
NEISp0944_122	S	G	E	I	N	V
NEISp0944_778	S	G	E	I	N	V
NEISp0944_107	S	G	E	I	N	V
NEISp0944_56	S	G	E	I	N	V
NEISp0944_607	S	G	E	I	N	V
NEISp0944_318	S	G	E	I	N	V
NEISp0944_134	S	G	E	I	N	V
NEISp0944_129	S	G	E	I	N	V
NEISp0944_18	S	G	E	I	N	V
NEISp0944_1	S	G	E	I	N	V
NEISp0944_381	S	G	E	I	N	V
NEISp0944_157	S	G	E	I	N	V
NEISp0944_60	S	G	E	I	N	V
NEISp0944_606	S	G	E	I	N	V
NEISp0944_908	S	G	E	I	N	V
NEISp0944_130	S	G	E	I	N	V
NEISp0944_46	S	G	E	I	N	V
NEISp0944_23	S	G	E	I	N	V
NEISp0944_499	S	G	E	I	N	V
NEISp0944_81	S	G	E	I	N	V
NEISp0944_41	S	G	E	I	N	V
NEISp0944_3	S	G	E	I	N	V
NEISp0944_553	S	G	E	I	N	V
NEISp0944_271	S	G	E	I	N	V
NEISp0944_82	S	G	E	I	N	V
NEISp0944_20	S	G	E	I	N	V
NEISp0944_2	S	G	E	I	N	V
NEISp0944_9	S	G	E	I	N	V

[illegible]

	300	310	320	330	340	350
NEISp0944_35	QLYPHLLTEED	IYDNPGLSC	GFHDD	DNAAHAH	AHSGRPWIDL	RNKKRYE
NEISp0944_39	QLYPHLLTEED	IYDNPGLSC	GFHDD	DNAAHAH	AHSGRPWIDL	RNKKRYE
NEISp0944_5	QLYPHLLTEED	VYDNPGLSC	GFHDD	DNAAHAH	AHSGRPWIDL	RNKKRYE
NEISp0944_75	QLYPHLLTEED	VYDNPGLSC	GFHDD	DNAAHAH	AHSGRPWIDL	RNKKRYE
NEISp0944_180	RLYPHLLTEED	VYDNPGLSC	GSHDG	DGAHAH	AHSGRPWIDL	RNKKRYE
NEISp0944_22	QLYPHLLTEED	VYDNPGLSC	GFHDD	DNAAHAH	AHSGRPWIDL	RNKKRYE
NEISp0944_25	QLYPHLLTEED	VYDNPGLSC	GFHDD	DNAAHAH	AHSGRPWIDL	RNKKRYE
NEISp0944_142	QLYPHLLTEED	VYDNPGLSC	GFHDD	DNAAH	TVHNGKPWIDL	RNKKRYE
NEISp0944_135	QLYPHLLTEED	VYDNPGLSC	GFHDD	DNVAAH	AHNGKPWIDL	RNKKRYE
NEISp0944_126	QLYPHLLTEED	VYDNPGLSC	GFHDD	DNAAH	TAHNGKPWIDL	RNKKRYE
NEISp0944_901	QLYPHLLTEED	IYDNPGLSC	GFHDD	DNAAHAH	AHNGKPWIDL	RNKKRYE
NEISp0944_131	RLYPHLLTEED	IYDNPGLSC	GSHDG	DGAHAH	AHNGRPWIDL	RNKKRYE
NEISp0944_777	RLYPHLLTEED	IYDNPGLSC	GSHDG	DGAHAH	AHNGRPWIDL	RNKKRYE
NEISp0944_207	RLYPHLLTEED	IYDNPGLSC	GSHDG	DGAHAH	AHSGRPWIDL	RNKKRYE
NEISp0944_198	QLYPHLLTEED	IYDNPGLSC	GFHDD	DNAAHAH	AHSGRPWIDL	RNKKRYE
NEISp0944_863	QLYPHLLTEED	IYDNPGLSC	GFHDD	DNAAHAH	AHSGRPWIDL	RNKKRYE
NEISp0944_160	RLYPHLLTEED	VYDNPGLSC	GFHDD	DNAAHAH	AHSGRPWIDL	RNKKRYE
NEISp0944_859	QLYPHLLTEED	VYDNPGLSC	GFHDD	DNAAHAH	AHSGRPWIDL	RNKKRYE
NEISp0944_912	QLYPHLLTEED	IYDNPGLSC	GFHDD	DNAAHAH	AHNGRPWIDL	RNKKRYE
NEISp0944_251	QLYPHLLTEED	IYDNPGLSC	GFHDD	DNAAHAH	AHNGKPWIDL	RNKKRYE
NEISp0944_196	QLYPHLLTEED	VYDNPGLSC	GFHDD	DNAAHAH	AHSGRPWIDL	RNKKRYE
NEISp0944_263	QLYPHLLTEED	VYDNPGLSC	GFHDD	DNAAHAH	AHNGKPWIDL	RNKKRYE
NEISp0944_897	QLYPHLLTEED	IYDNPGLSC	GFHDD	DNAAHAH	AHNGRPWIDL	RNKKRYE
NEISp0944_79	RLYPHLLTEED	VYDNPGLSC	GFHDD	DNAAHAH	AHNGRPWIDL	RNKKRYE
NEISp0944_13	QIYPHLLTEED	IYDNPGLSC	GFHDD	DNAAHAH	AHSGRPWIDL	RNKKRYE
NEISp0944_574	RLYPHLLTEED	VYDNPGLSC	GFHDD	DNAAHAH	AHNGKPWIDL	RNKKRYE
NEISp0944_478	RLYPHLLTEED	VYDNPGLSC	GFHDD	DNAAHAH	AHSGRPWIDL	RNKKRYE
NEISp0944_347	RLYPHLLTEED	VYDNPGLSC	GSHDG	DGTAHAH	AHNGKPWIDL	RNKKRYE
NEISp0944_177	RLYPHLLTEED	VYDNPGLSC	GFHDD	DNAAHAH	AHNGKPWIDL	RNKKRYE
NEISp0944_140	RLYPHLLTEED	VYDNPGLSC	GFHDD	DNAAHAH	AHNGKPWIDL	RNKKRYE
NEISp0944_534	RLYPHLLTEED	VYDNPGLSC	GFHDD	DNAAHAH	AHNGKPWIDL	RNKKRYE
NEISp0944_37	QLYPHLLTEED	IYDNPGLSC	GFHDD	DNAAHAH	AHNGRPWIDL	RNKKRYE
NEISp0944_176	QLYPHLLTEED	IYDNPGLSC	GFHDD	DNAAHAH	AHNGRPWIDL	RNKKRYE
NEISp0944_907	QLYPHLLTEED	IYDNPGLSC	GFHDD	DNAAHAH	AHNGRPWIDL	RNKKRYE
NEISp0944_12	QLYPHLLTEED	IYDNPGLSC	GFHDD	DGAHAH	AHNGKPWIDL	RNKKRYE
NEISp0944_69	RLYPHLLTEED	IYDNPGLSC	GSHDG	DGAHAH	AHNGRPWIDL	RNKKRYE
NEISp0944_373	RLYPHLLTEED	IYDNPGLSC	GSHDG	DGAHAH	AHNGRPWIDL	RNKKRYE
NEISp0944_86	QLYPHLLTEED	IYDNPGLSC	GSHDG	DGAHAH	AHSGRPWIDL	RNKKRYE
NEISp0944_821	QLYPHLLTEED	IYDNPGLSC	GFHDD	DNAAHAH	AHNGRPWIDL	RNKKRYE
NEISp0944_369	QFYPHLLTEED	VYDNPGLSC	GFHDD	DNAAHAH	AHNGRPWIDL	RNKKRYE
NEISp0944_87	QLYPHLLTEED	VYDNPGLSC	GFHDD	DNAAHAH	AHSSRPWIDL	RNKKRYE
NEISp0944_88	QLYPHLLTEED	VYDNPGLSC	GFHDD	DNAAHAH	AHSSRPWIDL	RNKKRYE
NEISp0944_33	RLYPHLLTEED	VYDNPGLSC	GFHDD	DNAAHAH	AHSGRPWIDL	RNKKRYE
NEISp0944_70	QLYPHLLTEED	VYDNPGLSC	GFHDD	DNAAHAH	AHSGKPWIDL	RNKKRYE
NEISp0944_61	QLYPHLLTEED	IYDNPGLSC	GFHDD	DNAAHAH	AHSGRPWIDL	RNKKRYE
NEISp0944_83	QLYPHLLTEED	IYDNPGLSC	GFHDD	DNAAHAH	AHNGRPWIDL	RNKKRYE
NEISp0944_122	QLYPHLLTEED	IYDNPGLSC	GFHDD	DNAAHAH	AHSGRPWIDL	RNKKRYE
NEISp0944_778	QLYPHLLTEED	IYDNPGLSC	GFHDD	DNAAHAH	AHNGKPWIDL	RNKKRYE
NEISp0944_107	QLYPHLLTEED	IYDNPGLSC	GFHDD	DNAAHAH	AHNGRPWIDL	RNKKRYE
NEISp0944_56	QLYPHLLTEED	VYDNPGLSC	GFHDD	DNAAHAH	AHSGRPWIDL	RNKKRYE
NEISp0944_607	QLYPHLLTEED	IYDNPGLSC	GFHDD	DNAAHAH	AHNGKPWIDL	RNKKRYE
NEISp0944_318	QLYPHLLTEED	VYDNPGLSC	GFHDD	DNAAHAH	AHNGKPWIDL	RNKKRYE

[illegible]

[illegible]

	480	490	500	510	520	530
NEISp0944_35	YYN	QPLPDLGAHRQ	ARSFALS	GNWYFT	PQHKLSTL	TASHOERLP
NEISp0944_39	YYN	QPLPDLGAHRQ	ARSFALS	GNWYFT	PHHKLSTL	TASHOERLP
NEISp0944_5	YYN	QPLPDLGAHRQ	ARSFALS	GNWYFT	SPYKHLSTL	TASHOERLP
NEISp0944_75	YYN	QPLPDLGAHRQ	ARSFALS	GNWYFT	SPYHKLSTL	TASHOERLP
NEISp0944_180	YYN	YPLPDLGAHRQ	ARSFALS	GNWYFT	PQHKLSTL	TASHOERLP
NEISp0944_22	YYN	QPLPDLGAHRQ	ARSFALS	GNWYFT	PQHKLSTL	TASHOERLP
NEISp0944_25	YYN	QPLPDLGAHRQ	ARSFALS	GNWYFT	PHHKLSTL	TASHOERLP
NEISp0944_142	YYN	QPLPDLGAHRQ	ARSFALS	GNWYFT	PQHKLSTL	TASHOERLP
NEISp0944_135	YYN	QPLPDLGAHRQ	ARSFALS	GNWYFT	PQHKLSTL	TASHOERLP
NEISp0944_126	YYN	QPLPDLGAHRQ	ARSFALS	GNWYFT	PQHKLSTL	TASHOERLP
NEISp0944_901	YYN	QPLPDLGAHRQ	ARSFALS	GNWYFT	PYHKLSTL	TASHOERLP
NEISp0944_131	YYN	HPLPDLGAHRQ	ARSFALS	GNWYFT	PHHKLSTL	TASHOERLP
NEISp0944_777	YYN	HPLPDLGAHRQ	ARSFALS	GNWYFT	PHHKLSTL	TASHOERLP
NEISp0944_207	YYN	QPLPDLGAHRQ	ARSFALS	GNWYFT	PHHKLSTL	TASHOERLP
NEISp0944_198	YYK	QPLPDLGAHRQ	ARSFALS	GNWYFT	PQHKLSTL	TASHOERLP
NEISp0944_863	YYN	QPLPDLGAHRQ	ARSFALS	GNWYFT	PHHKLSTL	TASHOERLP
NEISp0944_160	YYK	QPLPDLGAHRQ	ARSFALS	GNWYFT	PQHKLSTL	TASHOERLP
NEISp0944_859	YYN	QPLPDLGAHRQ	ARSFALS	GNWYFT	PQHKLSTL	TASHOERLP
NEISp0944_912	YYN	HPLPDLGAHRQ	ARSFALS	GNWYFT	PHHKLSTL	TASHOERLP
NEISp0944_251	YYN	QPLPDLGAHRQ	ARSFALS	GNWYFT	PQHKLSTL	TASHOERLP
NEISp0944_196	YYN	YPLPDLGAHRQ	ARSFALS	GNWYFT	PQHKLSTL	TASHOERLP
NEISp0944_263	YYK	HPLPDLGAHRQ	ARSFALS	GNWYFT	PQHKLSTL	TASHOERLP
NEISp0944_897	YYK	QPLPDLGAHRQ	ARSFALS	GNWYFT	PHHKLSTL	TASHOERLP
NEISp0944_79	YYK	HPLPDLGAHRQ	ARSFALS	GNWYFT	PQHKLSTL	TASHOERLP
NEISp0944_13	YYN	YPLPDLGAHRQ	ARSFALS	GNWYFT	PHHKLSTL	TASHOERLP
NEISp0944_574	YYN	HPLPDLGAHRQ	ARSFALS	GNWYFT	PQHKLSTL	TASHOERLP
NEISp0944_478	YYN	HPLPDLGAHRQ	ARSFALS	GNWYFT	PQHKLSTL	TASHOERLP
NEISp0944_347	YYN	HPLPDLGAHRQ	ARSFALS	GNWYFT	PQHKLSTL	TASHOERLP
NEISp0944_177	YYN	QPLPDLGAHRQ	ARSFALS	GNWYFT	PQHKLSTL	TASHOERLP
NEISp0944_140	HYN	YPLPDLGAHRQ	ARSFALS	GNWYFT	PHHKLSTL	TASHOERLP
NEISp0944_534	HYN	YPLPDLGAHRQ	ARSFALS	GNWYFT	PYHKLSTL	TASHOERLP
NEISp0944_37	YYN	HPLPDLGAHRQ	ARSFALS	GNWYFT	PQHKLSTL	TASHOERLP
NEISp0944_176	YYN	QPLPDLGAHRQ	ARSFALS	GNWYFT	PQHKLSTL	TASHOERLP
NEISp0944_907	YYN	QPLPDLGAHRQ	ARSFALS	GNWYFT	PQHKLSTL	TASHOERLP
NEISp0944_12	YYN	QPLPDLGAHRQ	ARSFALS	GNWYFT	PHHKLSTL	TASHOERLP
NEISp0944_69	YYN	HPLPDLGAHRQ	ARSFALS	GNWYFT	PHHKLSTL	TASHOERLP
NEISp0944_373	YYN	HPLPDLGAHRQ	ARSFALS	GNWYFT	PQHKLSTL	TASHOERLP
NEISp0944_86	YYN	HPLPDLGAHRQ	ARSFALS	GNWYFT	PQHKLSTL	TASHOERLP
NEISp0944_821	YYN	QPLPDLGAHRQ	ARSFALS	GNWYFT	PHHKLSTL	TASHOERLP
NEISp0944_369	YYN	QPLPDLGAHRQ	ARSFALS	GNWYFT	PQHKLSTL	TASHOERLP
NEISp0944_87	YYN	HPLPDLGAHRQ	ARSFALS	GNWYFT	PQHKLSTL	TASHOERLP
NEISp0944_88	YYN	QPLPDLGAHRQ	ARSFALS	GNWYFT	PQHKLSTL	TASHOERLP
NEISp0944_33	YYN	YPLPDLGAHRQ	ARSFALS	GNWYFT	PQHKLSTL	TASHOERLP
NEISp0944_70	YYN	QPLPDLGAHRQ	ARSFALS	GNWYFT	SPQHKLSTL	TASHOERLP
NEISp0944_61	YYN	HPLPDLGAHRQ	ARSFALS	GNWYFT	PQHKLSTL	TASHOERLP
NEISp0944_83	YYK	QPLPDLGAHRQ	ARSFALS	GNWYFT	PQHKLSTL	TASHOERLP
NEISp0944_122	YYN	QPLPDLGAHRQ	ARSFALS	GNWYFT	PQHKLSTL	TASHOERLP
NEISp0944_778	YYN	HPLPDLGAHRQ	ARSFALS	GNWYFT	PHHKLSTL	TASHOERLP
NEISp0944_107	YYN	HPLPDLGAHRQ	ARSFALS	GNWYFT	SPYHKLSTL	TASHOERLP
NEISp0944_56	YYN	QPLPDLGAHRQ	ARSFALS	GNWYFT	PHHKLSTL	TASHOERLP
NEISp0944_607	YYN	HPLPDLGAHRQ	ARSFALS	GNWYFT	PQHKLSTL	TASHOERLP
NEISp0944_318	YYK	QPLPDLGAHRQ	ARSFALS	GNWYFT	PQHKLSTL	TASHOERLP
NEISp0944_134	YYN	QPLPDLGAHRQ	ARSFALS	GNWYFT	PQHKLSTL	TASHOERLP
NEISp0944_129	YYN	QPLPDLGAHRQ	ARSFALS	GNWYFT	PQHKLSTL	TASHOERLP
NEISp0944_18	YYN	HPLPDLGAHRQ	ARSFALS	GNWYFT	PQHKLSTL	TASHOERLP
NEISp0944_1	YYN	QPLPDLGAHRQ	ARSFALS	GNWYFT	PHHKLSTL	TASHOERLP
NEISp0944_381	YYN	QPLPDLGAHRQ	ARSFALS	GNWYFT	PQHKLSTL	TASHOERLP
NEISp0944_157	YYN	QPLPDLGAHRQ	ARSFALS	GNWYFT	PHHKLSTL	TASHOERLP
NEISp0944_60	YYN	QPLPDLGAHRQ	ARSFALS	GNWYFT	PQHKLSTL	TASHOERLP
NEISp0944_606	YYN	QPLPDLGAHRQ	ARSFALS	GNWYFT	PQHKLSTL	TASHOERLP
NEISp0944_908	YYN	QPLPDLGAHRQ	ARSFALS	GNWYFT	PQHKLSTL	TASHOERLP
NEISp0944_130	YYN	HPLPDLGAHRQ	ARSFALS	GNWYFT	PQHKLSTL	TASHOERLP
NEISp0944_46	YYN	HPLPDLGAHRQ	ARSFALS	GNWYFT	PQHKLSTL	TASHOERLP
NEISp0944_23	YYN	QPLPDLGAHRQ	ARSFALS	GNWYFT	PQHKLSTL	TASHOERLP
NEISp0944_499	YYN	HPLPDLGAHRQ	ARSFALS	GNWYFT	PQHKLSTL	TASHOERLP
NEISp0944_81	YYK	QPLPDLGAHRQ	ARSFALS	GNWYFT	PQHKLSTL	TASHOERLP
NEISp0944_41	YYN	QPLPDLGAHRQ	ARSFALS	GNWYFT	PQHKLSTL	TASHOERLP
NEISp0944_3	YYN	QPLPDLGAHRQ	ARSFALS	GNWYFT	PQHKLSTL	TASHOERLP
NEISp0944_553	YYK	HPLPDLGAHRQ	ARSFALS	GNWYFT	PQHKLSTL	TASHOERLP
NEISp0944_271	YYK	HPLPDLGAHRQ	ARSFALS	GNWYFT	PHHKLSTL	TASHOERLP
NEISp0944_82	YYN	HPLPDLGAHRQ	ARSFALS	GNWYFT	PQHKLSTL	TASHOERLP
NEISp0944_20	YYN	QPLPDLGAHRQ	ARSFALS	GNWYFT	PQHKLSTL	TASHOERLP
NEISp0944_2	YYN	HPLPDLGAHRQ	ARSFALS	GNWYFT	PQHKLSTL	TASHOERLP
NEISp0944_9	YYK	QPLPDLGAHRQ	ARSFALS	GNWYFT	PQHKLSTL	TASHOERLP

[illegible]

[illegible]

	660	670	680	690	700	710
NEISp0944_35	IAQAD	QNA	PRV	PAAR	LGF	HLKASL
NEISp0944_39	IAQAD	QNA	PRV	PAAR	LGF	HLKASL
NEISp0944_5	IAQAD	QNA	PRV	PAAR	LGF	HLKASL
NEISp0944_75	IAQAD	QNA	PRV	PAAR	LGF	HLKASL
NEISp0944_180	IAQAD	QNA	PRV	PAAR	LGF	HLKASL
NEISp0944_22	IAQAD	QNA	PRV	PAAR	LGF	HLKASL
NEISp0944_25	IAQAD	QNA	PRV	PAAR	LGF	HLKASL
NEISp0944_142	IAQAD	QNA	PRV	PAAR	LGF	HLKASL
NEISp0944_135	IAQAD	QNA	PRV	PAAR	LGF	HLKASL
NEISp0944_126	IAQAD	QNA	PRV	PAAR	LGF	HLKASL
NEISp0944_901	IAQAD	QNA	PRV	PAAR	LGF	HLKASL
NEISp0944_131	IAQAD	QNA	PRV	PAAR	LGF	HLKASL
NEISp0944_777	IAQAD	QNA	PRV	PAAR	LGF	HLKASL
NEISp0944_207	IAQAD	QNA	PRV	PAAR	LGF	HLKASL
NEISp0944_198	IAQAD	QNA	PRV	PAAR	LGF	HLKASL
NEISp0944_863	IAQAD	QNA	PRV	PAAR	LGF	HLKASL
NEISp0944_160	IAQAD	QNA	PRV	PAAR	LGF	HLKASL
NEISp0944_859	IAQAD	QNA	PRV	PAAR	LGF	HLKASL
NEISp0944_912	IAQAD	QNA	PRV	PAAR	LGF	HLKASL
NEISp0944_251	IAQAD	QNA	PRV	PAAR	LGF	HLKASL
NEISp0944_196	IAQAD	QNA	PRV	PAAR	LGF	HLKASL
NEISp0944_263	IAQAD	QNA	PRV	PAAR	LGF	HLKASL
NEISp0944_897	IAQAD	QNA	PRV	PAAR	LGF	HLKASL
NEISp0944_79	IAQAD	QNA	PRV	PAAR	LGF	HLKASL
NEISp0944_13	IAQAD	QNA	PRV	PAAR	LGF	HLKASL
NEISp0944_574	IAQAD	QNA	PRV	PAAR	LGF	HLKASL
NEISp0944_478	IAQAD	QNA	PRV	PAAR	LGF	HLKASL
NEISp0944_347	IAQAD	QNA	PRV	PAAR	LGF	HLKASL
NEISp0944_177	IAQAD	QNA	PRV	PAAR	LGF	HLKASL
NEISp0944_140	IAQAD	QNA	PRV	PAAR	LGF	HLKASL
NEISp0944_534	IAQAD	QNA	PRV	PAAR	LGF	HLKASL
NEISp0944_37	IAQAD	QNA	PRV	PAAR	LGF	HLKASL
NEISp0944_176	IAQAD	QNA	PRV	PAAR	LGF	HLKASL
NEISp0944_907	IAQAD	QNA	PRV	PAAR	LGF	HLKASL
NEISp0944_12	IAQAD	QNA	PRV	PAAR	LGF	HLKASL
NEISp0944_69	IAQAD	QNA	PRV	PAAR	LGF	HLKASL
NEISp0944_373	IAQAD	QNA	PRV	PAAR	LGF	HLKASL
NEISp0944_86	IAQAD	QNA	PRV	PAAR	LGF	HLKASL
NEISp0944_821	IAQAD	QNA	PRV	PAAR	LGF	HLKASL
NEISp0944_369	IAQAD	QNA	PRV	PAAR	LGF	HLKASL
NEISp0944_87	IAQAD	QNA	PRV	PAAR	LGF	HLKASL
NEISp0944_88	IAQAD	QNA	PRV	PAAR	LGF	HLKASL
NEISp0944_33	IAQAD	QNA	PRV	PAAR	LGF	HLKASL
NEISp0944_70	IAQAD	QNA	PRV	PAAR	LGF	HLKASL
NEISp0944_61	IAQAD	QNA	PRV	PAAR	LGF	HLKASL
NEISp0944_83	IAQAD	QNA	PRV	PAAR	LGF	HLKASL
NEISp0944_122	IAQAD	QNA	PRV	PAAR	LGF	HLKASL
NEISp0944_778	IAQAD	QNA	PRV	PAAR	LGF	HLKASL
NEISp0944_107	IAQAD	QNA	PRV	PAAR	LGF	HLKASL
NEISp0944_56	IAQAD	QNA	PRV	PAAR	LGF	HLKASL
NEISp0944_607	IAQAD	QNA	PRV	PAAR	LGF	HLKASL
NEISp0944_318	IAQAD	QNA	PRV	PAAR	LGF	HLKASL
NEISp0944_134	IAQAD	QNA	PRV	PAAR	LGF	HLKASL
NEISp0944_129	IAQAD	QNA	PRV	PAAR	LGF	HLKASL
NEISp0944_18	IAQAD	QNA	PRV	PAAR	LGF	HLKASL
NEISp0944_1	IAQAD	QNA	PRV	PAAR	LGF	HLKASL
NEISp0944_381	IAQAD	QNA	PRV	PAAR	LGF	HLKASL
NEISp0944_157	IAQAD	QNA	PRV	PAAR	LGF	HLKASL
NEISp0944_60	IAQAD	QNA	PRV	PAAR	LGF	HLKASL
NEISp0944_606	IAQAD	QNA	PRV	PAAR	LGF	HLKASL
NEISp0944_908	IAQAD	QNA	PRV	PAAR	LGF	HLKASL
NEISp0944_130	IAQAD	QNA	PRV	PAAR	LGF	HLKASL
NEISp0944_46						

	720	730	740	750	760												
NEISp0944.35	NYR	RGY	GEWNWYV	KADNLFN	QSVYAHSSFLS	DT	PQ	MG	RS	FT	TG	GV	NV	KF			
NEISp0944.39	NYR	R	RGY	GEWNWYV	KADNLLN	QSVYAHSSFLS	DT	P	Q	I	GR	S	FT	TG	GV	NV	KF
NEISp0944.5	NYR	R	RGY	GEWNWYV	KADNLFN	QSVYAHSSFLS	DT	P	Q	M	GR	S	FT	TG	GV	NV	KF
NEISp0944.75	NYR	R	RGY	GEWNWYV	KADNLFN	QSVYAHSSFLS	DT	P	Q	M	GR	S	FT	TG	GV	NV	KF
NEISp0944.180	NYR	R	RGY	GEWNWYV	KADNLLN	QSVYAHSSFLS	DT	P	Q	M	GR	S	FT	TG	GV	NV	KF
NEISp0944.22	NYR	R	RGY	GEWNWYV	KADNLLN	QSVYAHSSFLS	DT	P	Q	M	GR	S	FT	TG	GV	NV	KF
NEISp0944.25	NYR	R	RGY	GEWNWYV	KADNLLN	QSVYAHSSFLS	DT	P	Q	M	GR	S	FT	TG	GV	NV	KF
NEISp0944.142	NYR	R	RGY	GEWNWYV	KADNLLN	QSVYAHSSFLS	DT	P	Q	M	GR	S	FT	TG	GV	NV	KF
NEISp0944.135	NYR	R	RGY	GEWNWYV	KADNLLN	QSVYAHSSFLS	DT	P	Q	M	GR	S	FT	TG	GV	NV	KF
NEISp0944.126	NYR	R	RGY	GEWNWYV	KADNLLN	QSVYAHSSFLS	DT	P	Q	M	GR	S	FT	TG	GV	NV	KF
NEISp0944.901	NYR	R	RGY	GEWNWYV	KADNLLN	QSVYAHSSFLS	DT	P	Q	M	GR	S	FT	TG	GV	NV	KF
NEISp0944.131	NYR	R	RGY	GEWNWYV	KADNLLN	QSVYAHSSFLS	DT	P	Q	M	GR	S	FT	TG	GV	NV	KF
NEISp0944.777	NYR	R	RGY	GEWNWYV	KADNLLN	QSVYAHSSFLS	DT	P	Q	M	GR	S	FT	TG	GV	NV	KF
NEISp0944.207	NYR	R	RGY	GEWNWYV	KADNLLN	QSVYAHSSFLS	DT	P	Q	M	GR	S	FT	TG	GV	NV	KF
NEISp0944.198	NYR	R	RGY	GEWNWYV	KADNLLN	QSVYAHSSFLS	DT	P	Q	M	GR	S	FT	TG	GV	NV	KF
NEISp0944.863	NYR	R	RGY	GEWNWYV	KADNLLN	QSVYAHSSFLS	DT	P	Q	M	GR	S	FT	TG	GV	NV	KF
NEISp0944.160	NYR	R	RGY	GEWNWYV	KADNLLN	QSVYAHSSFLS	DT	P	Q	M	GR	S	FT	TG	GV	NV	KF
NEISp0944.859	NYR	R	RGY	GEWNWYV	KADNLLN	QSVYAHSSFLS	DT	P	Q	M	GR	S	FT	TG	GV	NV	KF
NEISp0944.912	NYR	R	RGY	GEWNWYV	KADNLLN	QSVYAHSSFLS	DT	P	Q	M	GR	S	FT	TG	GV	NV	KF
NEISp0944.251	NYR	R	RGY	GEWNWYV	KADNLLN	QSVYAHSSFLS	DT	P	Q	M	GR	S	FT	TG	GV	NV	KF
NEISp0944.196	NYR	R	RGY	GEWNWYV	KADNLLN	QSVYAHSSFLS	DT	P	Q	M	GR	S	FT	TG	GV	NV	KF
NEISp0944.263	NYR	R	RGY	GEWNWYV	KADNLLN	QSVYAHSSFLS	DT	P	Q	M	GR	S	FT	TG	GV	NV	KF
NEISp0944.897	NYR	R	RGY	GEWNWYV	KADNLLN	QSVYAHSSFLS	DT	P	Q	M	GR	S	FT	TG	GV	NV	KF
NEISp0944.79	NYR	R	RGY	GEWNWYV	KADNLLN	QSVYAHSSFLS	DT	P	Q	M	GR	S	FT	TG	GV	NV	KF
NEISp0944.13	NYR	R	RGY	GEWNWYV	KADNLLN	QSVYAHSSFLS	DT	P	Q	M	GR	S	FT	TG	GV	NV	KF
NEISp0944.574	NYR	R	RGY	GEWNWYV	KADNLLN	QSVYAHSSFLS	DT	P	Q	M	GR	S	FT	TG	GV	NV	KF
NEISp0944.478	NYR	R	RGY	GEWNWYV	KADNLLN	QSVYAHSSFLS	DT	P	Q	M	GR	S	FT	TG	GV	NV	KF
NEISp0944.347	NYR	R	RGY	GEWNWYV	KADNLLN	QSVYAHSSFLS	DT	P	Q	M	GR	S	FT	TG	GV	NV	KF
NEISp0944.177	NYR	R	RGY	GEWNWYV	KADNLLN	QSVYAHSSFLS	DT	P	Q	M	GR	S	FT	TG	GV	NV	KF
NEISp0944.140	NYR	R	RGY	GEWNWYV	KADNLLN	QSVYAHSSFLS	DT	P	Q	M	GR	S	FT	TG	GV	NV	KF
NEISp0944.534	NYR	R	RG														