

twi

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Dper	MMS	T	RSVSPKVL	LDI	SYKPTLPNI	MELQHNVI	KLI	QVEQQAYV	HS	SH	YI	H	50	
Dpse	MMS	T	RSVSPKVL	LDI	SYKPTLPNI	MELQHNVI	KLI	QVEQQAYV	HS	SH	YI	H	50	
Dyak	MMS	A	RSVSPKVL	LDI	SYKPTLPNI	MELQ	NNVI	KLI	QVEQQAYMQS	GY	QL	Q	50	
Dere	MMS	A	RSVSPKVL	LDI	SYKPTLPNI	MELQ	NNVI	KLI	QVEQQAYMQS	GY	QL	Q	50	
DmelPB	MMS	A	RSVSPKVL	LDI	SYKPTLPNI	MELQ	NNVI	KLI	QVEQQAYMQS	GY	QL	Q	50	
DmelPA	MMS	A	RSVSPKVL	LDI	SYKPTLPNI	MELQ	NNVI	KLI	QVEQQAYMQS	GY	QL	Q	50	
Dsec	MMS	T	RSVSPKVL	LDI	SYKPTLPNI	MELQ	NNVI	KLI	QVEQQAYMQS	GY	QL	Q	50	
Dsim	MMS	T	RSVSPKVL	LDI	SYKPTLPNI	MELQ	NNVI	KLI	QVEQQAYMQS	GY	QL	Q	50	
Dana	MMS	A	RSVSPKVL	LDI	SYKPTLPNI	MELQHNVI	KLI	QVEQQAYMQS	GY	P	QH		50	
Dwil	MMS	A	SPKVL	LDI	SYKPTLPNI	MELQHNVI	KLI	QVEQQAYI	QS	GQ	YL	Q	50	
Dvir	-	M	SARSVSPKVL	LDI	SYKPTLPNI	MELQHNVI	KLI	QVEQ	HAYMQ	L	ME	QPT	49	
Dmoj	-	M	SARSVSPKVL	LDI	SYKPTLPNI	MELQHNVI	KLI	QVEQ	HAYMQ	L	MD	QPT	49	
Dgri	-	M	SARS	A	SPKVL	LDI	SYKPTLPNI	MELQHNVI	KLI	QVEQQAYMQS	T	P	H	47

Dper	QSPVH	QH	Q	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	QQQ	H	QQQQ	N	P	QYAPLP	-	-	-	-	-	SEYAA	79						
Dpse	QSPVH	QH	Q	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	QQQ	H	QQQQ	N	P	QYAPLP	-	-	-	-	-	SEYAA	79						
Dyak	H	QQQ	Q	HL	HS	H	QQ	-	-	-	-	-	-	-	-	-	-	-	HH	Q	H	Q	P	QQQQ	H	P	QYAPLP	-	-	-	-	SEYAA	87				
Dere	H	QQQ	HL	HS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	H	Q	HH	Q	H	Q	QQQQ	HT	QYAPLP	-	-	-	-	SEYAA	83				
DmelPB	H	QQQ	HL	HS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	H	Q	HH	Q	HH	Q	QQQ	HA	QYAPLP	-	-	-	-	SEYAA	82				
DmelPA	H	QQQ	HL	HS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	H	Q	HH	Q	HH	Q	QQQ	HA	QYAPLP	-	-	-	-	SEYAA	82				
Dsec	H	QQQ	HL	HA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	H	Q	HH	Q	HH	Q	QQQ	HT	QYAPLP	-	-	-	-	SEYAA	82				
Dsim	H	QQQ	HL	HA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	H	Q	HH	Q	HH	Q	QQQ	HT	QYAPLP	-	-	-	-	SEYAA	82				
Dana	A	I	M	Q	H	Q	Q	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	SEYAA	77				
Dwil	M	QQQ	Q	QH	Q	QH	QQQQ	-	-	-	-	-	-	-	-	-	-	-	-	H	HH	Q	QQQQ	Q	L	HH	QQQ	P	QYAPLP	-	-	-	-	TDYAA	92		
Dvir	A	H	YM	Q	QQ	Q	QQ	-	-	-	-	-	-	-	-	-	-	-	-	H	QQQ	QQQ	H	Q	Q	QQQQ	Q	QYAPLP	SL	APNA	ADYAA		92				
Dmoj	A	H	YM	Q	H	QH	QH	P	SN	QH	Q	H	Q	Q	H	Q	Q	Q	H	QQQ	P	Q	Q	QQQ	Q	QYAPLP	SL	APNA	ADYAA		99						
Dgri	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Y	M	QH	Q	L	Q	Q	H	P	QQQ	Q	QYAPLP	-	-	-	-	ADYAA	74

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Dper	YGI TELED TDYNI PSNEI LSTSS	STHS	NHSAQSASLELNNNH	TASNS	NGS	129
Dpse	YGI TELED TDYNI PSNEI LSTSS	STHS	NHSAQSASLELNNNH	TASNS	NGS	129
Dyak	YGI TELED TDYNI PSNEVLSTSS	- - -	NQSAQSASLELNNNT	SSN	NTSS	133
Dere	YGI TELED TDYNI PSNEVLSTSS	- - -	NQSAQST SLE MNNNT	SSN	NTSS	129
DmelPB	YGI TELED TDYNI PSNEVLSTSS	- - -	NQSAQST SLELNNNT	SSN	TNSS	128
DmelPA	YGI TELED TDYNI PSNEVLSTSS	- - -	NQSAQST SLELNNNT	SSN	TNSS	128
Dsec	YGI TELED TDYNI PSHEVLSTSS	- - -	NQSAQSASLELNNNT	SSN	TTSS	128
Dsim	YGI TELED TDYNI PSNEVLSTSS	- - -	NQSAQSASLELNNNT	SSN	TTSS	128
Dana	YGI TELED TDYNI PSNEVLSTSS	- - -	NQSAQSASLELNNNT	SS	- - NTS	121
Dwil	YGL TEL DDTDYNI PSNEVLSTSS	- - -	NQSSQSV SLELNNN	QNGF	DQQQQ	138
Dvir	YGI TELED TDYNI PSNEVLSTSS	- - -	NHSAQS SLELNNN	QHNF	EQQQQ	137
Dmoj	YGI TELED TDYNI PSNEVLSTSS	- - -	NQSAQS SLELNNN	QNSF	D - - -	140
Dgri	YGI TELED TDYNI PSNEVLSTSS	- - -	NHSAQS SLELNNNN	QNNF	EQQ	119

Dper	SNN	Q	N	V	F	D	Q	Q	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
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Dper	GT L A M Q P D H K K L L H Q Q Q H Q Q Q Q Q H - - - - - Q Q Q Q Q Q Q Q I Y V D Y L P T T V	208
Dpse	GT L A M Q P D H K K L L H Q Q Q H Q Q Q Q Q H - - - - - Q Q Q Q Q Q Q Q I Y V D Y L P T T V	208
Dyak	G S L A M Q P E H K K L I H Q Q Q Q Q - - - - - Q Q Q H Q Q H I Y V D Y L P T T V	204
Dere	G S L V M Q P E H K K L I H Q Q Q Q Q P Q Q - - - - - Q Q Q H Q Q H I Y V D Y L P T T V	203
DmelPB	G S L V M Q P E H K K L I H Q Q Q Q Q Q - - - - - Q - Q H Q Q Q I Y V D Y L P T T V	199
DmelPA	G S L V M Q P E H K K L I H Q Q Q Q Q Q - - - - - Q - Q H Q Q Q I Y V D Y L P T T V	199
Dsec	G S L V M Q P E H K K L I H Q Q Q Q Q - - - - - Q H Q Q Q I Y V D Y L P T T V	197
Dsim	G S L V M Q P E H K K L I H Q Q Q Q Q Q - - - - - Q Q Q H Q Q Q I Y V D Y L P T T V	185
Dana	G S L V M Q P E H K K L I H Q Q H Q Q Q Q Q - - - - - H Q Q Q Q Q H I Y V D Y L P T T V	195
Dwil	GT L A M Q P E H K K L L Q Q Q Q Q Q Q Q - - - - - H Q Q Q Q Q I Y V D Y L P T T V	209
Dvir	DA L S M Q P E H K K L L Q Q Q Q Q Q Q Q Q Q Q Q Q Q - - - L Y V D Y L P T T V D E V A A A Q	228
Dmoj	DA L S M Q P E H K K L L Q Q Q Q Q Q Q Q Q Q Q Q Q Q L Y V D Y L P T T V D E V A A A Q	234
Dgri	DV L S L Q P E H K K L L Q Q Q Q Q Q - L Y V D Y L P T T V D E V A A A Q T Q T Q T Q T Q A P T T Q	218

Dper	DE V A S A Q T C A G P Q S T C T S P H S H F D F P D E E L S E H K A Q V F L P L Y T N Q H Q P Q -	257
Dpse	DE V A S A Q T C A G P Q S T C T S P H S H F D F P D E E L S E H K A Q V F L P L Y T N Q H Q P Q -	257
Dyak	DE V A S A Q S C P G V Q S T C T S P Q S H F D F P D E E L P E H K T Q V F L P L Y S N - - - - -	248
Dere	DE V A A A Q S C P G V Q S T C T S P Q S H F D F P D E E L P E H K A Q V F L P L Y N N - - - - -	247
DmelPB	DE V A S A Q S C P G V Q S T C T S P Q S H F D F P D E E L P E H K A Q V F L P L Y N N Q Q Q Q - -	247
DmelPA	DE V A S A Q S C P G V Q S T C T S P Q S H F D F P D E E L P E H K A Q V F L P L Y N N Q Q Q Q - -	247
Dsec	DE V A S A Q S C P G V Q S T C T S P Q S H F D F P D E E L P E H K A Q V F L P L Y N N Q Q Q Q - -	245
Dsim	DE V A S A Q S C P G V Q S T C T S P Q S H F D F P D E E L P E H K A Q V F L P L Y N N Q Q Q Q - -	233
Dana	DE V A S A Q A C P G V Q S T C T S P H S H F D F P D E E L P E H K T Q V F L P L Y T N Q Q Q Q Q -	244
Dwil	DE V A S S A Q Q - - - S N C N S P H S H F D F A A E E E L K Y A T T A L Y A N G G A G G N P L N	255
Dvir	T Q A Q A P T Q Q S A C L S P H S H S H S H F D F A A D E E L Q D H K A H I F K Y G G Y P Q T I A H	278
Dmoj	T Q A Q A P S Q Q T S C V S P H S H S Q S H F D F A A D E E L Q D H K P H I F K Y G G Y P Q A I N Q	284
Dgri	Q Q Q Q Q Q Q Q Q N G C I S P L S H S H S H F D F A G D E E L Q D H K P H I F K Y G I Y P Q T I A P	268

twi

2R HLH basic

Dper	- - - -	QQATH	QQQQ	QQ	PQ	NT	Q	- - - - -	LHFQNSYR	-	QSFD	G	YEPANSL	NG	295																		
Dpse	- - - -	QQATH	QQQQ	QQ	PQ	NP	Q	- - - - -	LHFQNSYR	-	QSFD	G	YEPANSL	NG	295																		
Dyak	- - - -	QQQS	QQQQ	S	HQQ	NH	AQ	- - - - -	MHFQNA YR	-	QSFE	G	YEPANSL	NG	286																		
Dere	- - - -	QQQS	QQQ	-	P	HQQ	NH	AQ	- - - - -	MHFQNA YR	-	QSFE	S	YEPANSL	NG	284																	
DmelPB	- - - -	S	QQL	QQQQ	P	HQQ	S	HAQ	- - - - -	MHFQNA YR	-	QSFE	G	YEPANSL	NG	285																	
DmelPA	- - - -	S	QQL	QQQQ	P	HQQ	S	HAQ	- - - - -	MHFQNA YR	-	QSFE	G	YEPANSL	NG	285																	
Dsec	- - - -	S	QQQQQQQQ	P	HQQ	S	HAQ	- - - - -	MHFQNA YR	-	QSYD	G	YEPANSL	NG	283																		
Dsim	- - - -	S	QQQQQQQQ	P	HQQ	S	HAQ	- - - - -	MHFQNA YR	-	QSFD	G	YEPANSL	NG	271																		
Dana	- - - -	QQQQ	P	QH	L	HQQ	S	QAQ	- - - - -	MHFQA A YR	-	QSFE	G	YEPANSL	NG	282																	
Dwil	PSSN	TTTT	PP	QL	I	NFP	A	NH	N	- - - - -	S	NTS	A	N	YR	-	QSFD	A	E	A	N	S	L	N	G	297							
Dvir	QQQQ	QQQQQQQQQQ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	315
Dmoj	QQQQ	QQQQQQQQQQ	Q	QQ	QQ	HQ	H	P	QQQQ	L	H	F	Q	S	N	Y	R	A	G	P	N	Y	D	A	E	P	A	N	S	L	N	G	334
Dgri	L	QQQ	QQQQQQQQQQ	Q	QQ	QQ	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	312

Dper	S	A	Y	S	S	S	D	R	D	M	E	Y	V	R	H	T	A	L	S	S	V	S	D	L	A	A	G	G	G	V	N	G	G	-	-	G	M	S	P	A	C	L	A	D	D	G	S	S	G	343
Dpse	S	A	Y	S	S	S	D	R	D	M	E	Y	V	R	H	T	A	L	S	S	V	S	D	L	A	A	G	G	G	V	N	G	G	-	-	G	M	S	P	A	C	L	A	D	D	G	S	S	G	343
Dyak	S	A	Y	S	S	S	D	R	D	M	E	Y	A	R	H	N	G	L	S	S	V	S	D	L	N	G	G	-	-	-	-	-	-	-	V	M	S	P	A	C	L	A	D	D	G	S	A	G	328	
Dere	S	A	Y	S	S	S	D	R	D	M	E	Y	A	R	H	N	A	L	S	S	V	S	D	L	N	G	G	-	-	-	-	-	-	-	V	M	S	P	A	C	L	A	D	D	G	S	A	G	326	
DmelPB	S	A	Y	S	S	S	D	R	D	M	E	Y	A	R	H	N	A	L	S	S	V	S	D	L	N	G	G	-	-	-	-	-	-	-	V	M	S	P	A	C	L	A	D	D	G	S	A	G	327	
DmelPA	S	A	Y	S	S	S	D	R	D	M	E	Y	A	R	H	N	A	L	S	S	V	S	D	L	N	G	G	-	-	-	-	-	-	-	V	M	S	P	A	C	L	A	D	D	G	S	A	G	327	
Dsec	S	A	Y	S	S	S	D	R	D	M	E	Y	A	R	H	N	A	L	S	S	V	S	D	L	N	G	G	-	-	-	-	-	-	-	V	M	S	P	A	C	L	A	D	D	G	S	A	G	325	
Dsim	S	A	Y	S	S	S	D	R	D	M	E	Y	A	R	H	N	A	L	S	S	V	S	D	L	N	G	G	-	-	-	-	-	-	-	V	M	S	P	A	C	L	A	D	D	G	S	A	G	313	
Dana	S	A	Y	S	S	S	D	R	D	E	M	E	Y	A	R	H	T	A	L	S	S	V	N	D	L	N	G	-	-	-	-	-	-	-	G	M	S	P	A	C	L	G	D	D	G	S	A	G	323	
Dwil	S	T	Y	S	S	S	D	R	D	I	E	Y	A	R	Q	S	A	L	S	S	V	H	D	L	A	G	G	M	S	P	A	C	L	N	D	D	L	A	D	G	V	D	D	D	G	V	L	G	347	
Dvir	S	T	Y	S	S	S	D	R	D	M	E	Y	A	R	Q	T	A	L	S	S	V	G	G	Y	A	K	-	-	-	-	-	-	-	E	D	E	L	E	D	M	S	P	T	C	L	G	D	D	S	358
Dmoj	S	A	Y	S	S	S	D	R	D	M	E	Y	A	R	H	T	A	L	S	S	V	G	G	Y	A	K	-	-	-	-	-	-	-	E	D	E	L	E	D	M	S	P	T	C	L	G	D	E	G	377
Dgri	S	T	Y	S	S	S	D	R	D	M	E	Y	V	R	Q	T	A	L	S	S	V	G	G	Y	A	K	N	-	-	-	-	-	-	E	D	E	L	E	D	M	S	P	T	C	L	V	D	D	S	356

twi

2R HLH basic

Dper	S	L	L	D	G	V	D	G	A	G	K	A	F	R	K	P	R	R	L	K	R	K	P	S	K	T	E	E	T	D	E	F	S	N	Q	R	V	M	A	N	V	R	E	R	Q	R	T	Q	S	393
Dpse	S	L	L	D	G	V	D	G	A	G	K	A	F	R	K	P	R	R	L	K	R	K	P	S	K	T	E	E	T	D	E	F	S	N	Q	R	V	M	A	N	V	R	E	R	Q	R	T	Q	S	393
Dyak	S	L	L	D	G	S	D	A	G	G	K	A	F	R	K	P	R	R	L	K	R	K	P	S	K	T	E	E	T	D	E	F	S	N	Q	R	V	M	A	N	V	R	E	R	Q	R	T	Q	S	378
Dere	S	L	L	D	G	S	D	A	G	G	K	A	F	R	K	P	R	R	L	K	R	K	P	S	K	T	E	E	T	D	E	F	S	N	Q	R	V	M	A	N	V	R	E	R	Q	R	T	Q	S	376
DmelPB	S	L	L	D	G	S	D	A	G	G	K	A	F	R	K	P	R	R	L	K	R	K	P	S	K	T	E	E	T	D	E	F	S	N	Q	R	V	M	A	N	V	R	E	R	Q	R	T	Q	S	377
DmelPA	S	L	L	D	G	S	D	A	G	G	K	A	F	R	K	P	R	R	L	K	R	K	P	S	K	T	E	E	T	D	E	F	S	N	Q	R	V	M	A	N	V	R	E	R	Q	R	T	Q	S	377
Dsec	S	L	L	D	G	S	D	A	G	G	K	A	F	R	K	P	R	R	L	K	R	K	P	S	K	T	E	E	T	D	E	F	S	N	Q	R	V	M	A	N	V	R	E	R	Q	R	T	Q	S	375
Dsim	S	L	L	D	G	S	D	A	G	G	K	A	F	R	K	P	R	R	L	K	R	K	P	S	K	T	E	E	T	D	E	F	S	N	Q	R	V	M	A	N	V	R	E	R	Q	R	T	Q	S	363
Dana	S	L	L	D	G	S	D	A	G	G	K	A	F	R	K	P	R	R	L	K	R	K	P	S	K	T	E	D	T	D	E	F	S	N	Q	R	V	M	A	N	V	R	E	R	Q	R	T	Q	S	373
Dwil	M	G	G	G	G	G	G	G	A	G	K	A	F	R	K	P	R	R	L	K	R	K	P	S	K	S	E	D	T	D	E	F	S	N	Q	R	V	M	A	N	V	R	E	R	Q	R	T	Q	S	397
Dvir	S	L	L	D	A	G	D	A	A	G	K	A	F	R	K	P	R	R	L	K	R	K	P	S	K	T	E	E	T	D	E	F	S	N	Q	R	V	M	A	N	V	R	E	R	Q	R	T	Q	S	408
Dmoj	S	L	L	D	A	G	D	V	T	G	K	A	F	R	K	P	R	R	L	K	R	K	P	S	K	S	E	E	T	D	E	F	S	N	Q	R	V	M	A	N	V	R	E	R	Q	R	T	Q	S	427
Dgri	S	L	M	D	A	S	D	V	A	G	K	A	F	R	K	P	R	R	L	K	R	K	P	S	K	T	E	E	T	D	E	F	S	N	Q	R	V	M	A	N	V	R	E	R	Q	R	T	Q	S	406

Dper	L	N	D	A	F	K	S	L	Q	Q	I	P	T	L	P	S	D	K	L	S	K	I	Q	T	L	K	L	A	T	R	Y	I	D	F	L	C	R	M	L	S	S	S	D	I	S	L	L	K	A	443
Dpse	L	N	D	A	F	K	S	L	Q	Q	I	P	T	L	P	S	D	K	L	S	K	I	Q	T	L	K	L	A	T	R	Y	I	D	F	L	C	R	M	L	S	S	S	D	I	S	L	L	K	A	443
Dyak	L	N	D	A	F	K	S	L	Q	Q	I	P	T	L	P	S	D	K	L	S	K	I	Q	T	L	K	L	A	T	R	Y	I	D	F	L	C	R	M	L	S	S	S	D	I	S	L	L	K	A	428
Dere	L	N	D	A	F	K	S	L	Q	Q	I	P	T	L	P	S	D	K	L	S	K	I	Q	T	L	K	L	A	T	R	Y	I	D	F	L	C	R	M	L	S	S	S	D	I	S	L	L	K	A	426
DmelPB	L	N	D	A	F	K	S	L	Q	Q	I	P	T	L	P	S	D	K	L	S	K	I	Q	T	L	K	L	A	T	R	Y	I	D	F	L	C	R	M	L	S	S	S	D	I	S	L	L	K	A	427
DmelPA	L	N	D	A	F	K	S	L	Q	Q	I	P	T	L	P	S	D	K	L	S	K	I	Q	T	L	K	L	A	T	R	Y	I	D	F	L	C	R	M	L	S	S	S	D	I	S	L	L	K	A	427
Dsec	L	N	D	A	F	K	S	L	Q	Q	I	P	T	L	P	S	D	K	L	S	K	I	Q	T	L	K	L	A	T	R	Y	I	D	F	L	C	R	M	L	S	S	S	D	I	S	L	L	K	A	425
Dsim	L	N	D	A	F	K	S	L	Q	Q	I	P	T	L	P	S	D	K	L	S	K	I	Q	T	L	K	L	A	T	R	Y	I	D	F	L	C	R	M	L	S	S	S	D	I	S	L	L	K	A	413
Dana	L	N	D	A	F	K	A	L	Q	Q	I	P	T	L	P	S	D	K	L	S	K	I	Q	T	L	K	L	A	T	R	Y	I	D	F	L	C	R	M	L	S	S	S	D	I	S	L	L	K	A	423
Dwil	L	N	D	A	F	K	S	L	Q	Q	I	P	T	L	P	S	D	K	L	S	K	I	Q	T	L	K	L	A	T	R	Y	I	D	F	L	C	R	M	L	S	S	S	D	I	S	L	L	K	A	447
Dvir	L	N	D	A	F	K	A	L	Q	Q	I	P	T	L	P	S	D	K	L	S	K	I	Q	T	L	K	L	A	T	R	Y	I	D	F	L	C	R	M	L	S	S	S	D	I	S	L	L	K	A	458
Dmoj	L	N	D	A	F	K	A	L	Q	Q	I	P	T	L	P	S	D	K	L	S	K	I	Q	T	L	K	L	A	T	R	Y	I	D	F	L	C	R	M	L	S	S	S	D	I	S	L	L	K	A	477
Dgri	L	N	D	A	F	K	S	L	Q	Q	I	P	T	L	P	S	D	K	L	S	K	I	Q	T	L	K	L	A	T	R	Y	I	D	F	L	C	R	M	L	S	S	S	D	I	S	L	L	K	A	456

twi

2R HLH basic

Dper	LEAQVSPMGSSS- - - PYGAA	STLLSAAANGADADLKCLRKANGAPI I PPE	490
Dpse	LEAQVSPMGSSS- - - PYGAA	STLLSAAANGADADLKCLRKANGAPI I PPE	490
Dyak	LEAQGSPSA- - - - - YGSA	SSLLSAAANGAEADLKCLRKANGAPI I PPE	471
Dere	LEAQGSPSA- - - - - YGSA	SSLLSAAANGAEADLKCLRKANGAPI I PPE	469
DmelPB	LEAQGSPSA- - - - - YGSA	SSLLSAAANGAEADLKCLRKANGAPI I PPE	470
DmelPA	LEAQGSPSA- - - - - YGSA	SSLLSAAANGAEADLKCLRKANGAPI I PPE	470
Dsec	LEAQGSPSA- - - - - YGSA	SSLLSAAANGAEADLKCLRKANGAPI I PPE	468
Dsim	LEAQGSPSA- - - - - YGSA	SSLLSAAANGAEADLKCLRKANGAPI I PPE	456
Dana	LEAQGSPSS- - - - - YGSA	SSLLSAAANGAEADLKCLRKANGAPI I PPE	466
Dwil	LEAQTS SVSAGYG- - NVT TT	TSLLSAAANGAEADLKCLRKANGAPI I PPE	495
Dvir	LEAQSSPVS PGYG- - - - - NAST	LLSAANGAEADLKCLRKANGAPI I PPE	502
Dmoj	LEAQSSPLSP PGYG- - - - - NANT	LLSAANGAEADLKCLRKANGAPI I PPE	521
Dgri	LEAQSSPVS PGYGNNNMNI NAST	LLSAANGAEADLKCLRKANGAPI I PPE	506

Dper	KL SYL FGVWRMEGDV QHQKA	510
Dpse	KL SYL FGVWRMEGDV QHQKA	510
Dyak	KL SYL FGVWRMEGDAQHQKA	491
Dere	KL SYL FGVWRMEGDAQHQKA	489
DmelPB	KL SYL FGVWRMEGDAQHQKA	490
DmelPA	KL SYL FGVWRMEGDAQHQKA	490
Dsec	KL SYL FGVWRMEGDAQHQKA	488
Dsim	KL SYL FGVWRMEGDAQHQKA	476
Dana	KL SYL FGVWRMEGDAQHQKA	486
Dwil	KL SYL FGVWRMEGDAQHQKA	515
Dvir	KL SYL FGVWRMEGDAQHQKA	522
Dmoj	KL SYL FGVWRMEGDAQHQK	540
Dgri	KL SYL FGVWRMEGDAQHQKA	526