

Supporting information 1 Fig: MAFFT Sequence alignment with gaps

Hsa1C	MABEAHQAVGF	RPSLSTSDGAE	VELSAPVLQE	IYLSGLRSWK	RHLRSFVWDF	LTGVFPASP	SWLFLFSAIQ	L-AWFLQLDP	SLGLMEKIKE	LLPDW----	94	
SSc1C	.....P.....G.....P.L.....	.....P.....G.....P.L.....	.....P.....G.....P.L.....	.....P.....G.....P.L.....	.....P.....G.....P.L.....	.....P.....G.....P.L.....	.....P.....G.....P.L.....	.....P.....G.....P.L.....	.....P.....G.....P.L.....	.....P.....G.....P.L.....	94
MmulC	.....SSL	LS.S.....S.W.....	.....CA.....	.....W.V.....	.....A.V.....	.....T.....	.....CL.....	.....	.....	.....	94
Hsa1A	.....A	QFTV.P.ID	LR.HEA.RQ	.....H.....	KKFI.K.GI	I...Y...S	...IVVVGVM	T-TMYAKI..	...IIA.NR	T.ETA----	94
MmulA	.....A	QFTV.P.ID	LR.HEA.RQ	.....C.....H.....	KKFI.K.GI	I...Y...S	...IVVVGVI	S-SMHTKV..	...MIA.NR	T.DTT----	94
Mdola	.....A	QFTV.P.ID	LR.HEA.RQ	.....H.....	KKFI.K.GI	I...Y...S	...IVVVGVM	S-TMYAKV..	...IIA.NQ	T.DMT----	94
GgalA	.....A	QFTV.P.ID	LRM.HEA.KQ	.....VH.....	KKFI.K.GI	I...Y...S	...IVVVGVM	S-TMYAKI..	...IIA.NR	T.DTT----	94
FpelA	.....A	QFTV.P.ID	LRM.HEA.KQ	.....VH.....	KKFI.K.GI	I...Y...S	...IVVVGVM	S-TMYAKI..	...IIA.NR	T.DTT----	94
AcalA	.....A	QFTV.P.ID	LRM.HEA.RQ	.....Y.....	KKFI.K.GI	I...Y...S	...IVVVGVM	S-TMYAKI..	...IIA.NR	T.DIT----	94
XtrlA	.....A	QFTV.P.ID	LR.HEA.RQ	.....H.....	KKFI.K.GI	I...Y...S	...IVVVGVT	SASMYTKV..	...F.II..NN	A.SAT----	95
LchlA	.....A	QFTV.P.ID	LR.HEA.RQ	.....H.....	KKFI.K.GI	I...Y...S	...VVVGVV	S-TMYTRV..	...MIAR.SQ	R.VT----	94
Ler1A	.....A	QFTV.P.ID	LQ.HEA.KQ	V.....	KRFR.YK.GI	I...Y...S	...VVV.VI	A-TMYARV..	...MI..RC	H..TN----	94
XtrlC	.....A	QFTV.PE.ID	LR.HEA.KQ	V.....	KKFA.VK.S	I...Y...S	...VVI..M	G-TLYARV..	...M.MI..LR	H..AS----	94
Ler1C	.....A	QFTV.PE.ID	LQ.RHA.K	.....I.....	KKCN.IK.N	M...Y...S	...I.VVLTVV	G-TMYTRV..	...M.IAMLR	HI.LR----	94
CmilC	.....A	QFTV.PE.ID	LQ.HQA.K	.....V.A.....	KRCA.IR.NI	V...Y...S	...VALTVV	G-TMYTRV..	...M.MIG...	H..VK----	94
AcalC	.....A	QFTVSPE.ID	LQ.HVAFK	.....V.....	KKCNQLR.G	V...Y...S	...MVT..L	V-TQYSR..	...M.MID...	H..VS----	94
LchlC	.....A	QFTV.PE.ID	LK.HEA.KQ	VF...Q.....	KR.A.LK.S	I...M.Y...S	...VI..M	A-TLYARV..	...M.MID...	H..VKVQEFY	99
Tnl1A	.....A	QFTV.P.ID	LQ.CHEA.RQ	V.....H.....	KRPI.K.GV	M...Y.G.A	GFMIVVGSYM	SYNKYNR..	...M.VV.LGQ	YI.IG----	95
Tru1A	.....A	QFTVSP.ID	LQ.CHEA.RQ	.....H.....	KRPI.K.GV	M...Y.G.G	GFMIVVGSYM	SYNKYNR..	...M.FVV.LGQ	YI.IS----	95
On1A	.....A	QFTV.PE.ID	LH.HEA.RQ	V.....IH...	KRFV.K.GI	M...Y.G.A	GFSIVVGSYM	AYNK.K.....	...FT.LGQ	HI.IS----	95
Gac1A	.....A	QFTVSP.ID	LQ.HEA.RQ	.....H.....	KRPI.K.GV	M...Y.G.G	GFMVVVVSYM	SYNKQYQ..	...IA.LGQ	HM.IS----	95
Dre1Aa	.....A	QFTV.P.ID	LH.CHEA.RQ	.....IH...	KRPI.K.GV	M...Y.G.S	GLVVVLVGYM	SSTKYAKI..	...LLT.LST	H..VS----	95
TfulA2	.....A	QFTV.P.ID	LQ.CHEA.RQ	.....A.H.....	KRPI.K.GV	M...Y.G.T	GL.GVVGGYL	IFTKYANI..	...T.VVA.LAP	H..VC----	95
Dre1Ab	.....A	QFTVGP.ID	LQ.HEA.RQ	V.....IH...	KKFI.K.GI	N...Y.G.AP	GFLVLLAGYL	GR.QY.KV..	...LF.LGN	YV.IS----	95
TfulA1	.....A	QFTVSP.ID	LQ.HEA.RQ	V.....H.....	KKFI.K.GI	M...Y.G.AP	GLMLVLAGYM	GR.KYA.V..	...VFR.GK	YV.IS----	95
OlalCa	.....A	QFTV.PE.ID	LR.HQA.S	.....V.....	KRII.IK.SV	I...Y...S	...VVI..L	A-TMYTRS..	...M.IIA..Q	H..VS----	94
On1Cb	.....A	QFTV.PE.ID	LQ.HQA.T	.....M.....	KRIV.VK.SV	I...Y...S	...VVI..L	A-TMYTRS..	...M.IA..Q	H..VS----	94
AmelC	.....A	QFTI.PE.ID	LQ.HEA.RQ	V.....	KRIV.LK.NV	I...Y...S	...VVI..L	A-TMYTRS..	...M.IA..Q	H..AS----	94
Gac1C	.....A	QFTVSP.ID	LH.HQA.T	.....V.....	KRVIGL.K.SV	V...Y...LS	...VVI..L	A-TMYTRS..	...M.IA..Q	H..RP----	94
Tru1C	.....A	EFTVIPE.D	AQ.HQA.T	.....AVN...	KCII.IK.SV	I...Y...F	...VVI..L	A-TMYTRS..	...M.IA..Q	N..VS----	94
Tnl1C	.....A	EFTVIPE.TD	AQ.HQA.T	.....AVH...	KCII.IK.SV	IK..Y...F	...VVI..L	A-TMYTRS..	...M.IA..Q	N..VS----	94
OlalCb	.....A	QFTI.PE.ID	LQ.YQA.NQ	.....V.....	KRV..MR.RV	IK..Y...S	...VAIG.L	A-TIYM.S..	...M.IAE.QQ	R..LS----	94
On1Ca	.....A	QFTI.PE.ID	LQ.YQA.NQ	.....V.....	KRV..VR.SL	IK..Y...S	...VAIG.L	A-TMYM.S..	...M.IT..QQ	H..LS----	94
Gac1C	.....A	QFTI.PE.ID	LQ.HQA.NQ	F...V.....	KRV..MR.RV	IK..Y...S	...VVI..L	A-TMYMRS..	...M.IKM.QQ	H..LR----	94
Tr1C	.....A	QFTI.PE.ID	LQ.YQA.NQ	.....V.....	KRV..VR.SL	IK..Y...S	...VSI..L	A-TMYMRS..	...M.IT..QH	H..LS----	94
Dre1C	.....A	QFTISPE.IN	LH.YQA.NQ	.....	KRI..IK.RI	IK.AY...S	...IVI..L	A-TMYM.S..	...M.IA..Q	H..LS----	94
Dre1B	.....A	QFTV.P.ID	LQ.RE..KH	.....I..VT...	KRAI.K.SV	I...Y...S	...VVI..M	S-TMYARI..	...M.TID..T	S..VS----	94
On1B	.....A	QFTVRP.VD	FK.QE.IKN	.....VTA...	KKAIQ.K.GV	A..Y...S	...IVVI.MM	S-SLYIHI..	...M.DA..	N..YR----	94
Gac1B	.....A	QFTVRP.VD	LK.QE.IKT	.....VTA...	KKAIQ.K.GV	A..Y...S	...IVVI.MM	S-SLYIHI..	...M.IALQ	N..HR----	94
OlalB	.....A	QFTVRP.V	LK.QE.IKN	.....TV...	KKAIQ.K.SV	I...Y...S	...IVVI.MM	S-SLYTNT.L	...MIDA..	N..HR----	94
Tru1B	.....A	QFTVRP.V	LK.QE.IKN	.....TA...	KKAIQ.K.GV	A..Y...S	...IVVI.MM	S-SLYTRV..	...M.IAM..	N..YR----	94
Tnl1B	.....A	QFTVRP.V	LK.QE.IKN	.....TA...	KKAIQ.K.GV	A..Y...S	...IVVI.MM	S-SLYI.V.L	...M.IAM..	N..YR----	94
Hsa1B	.....A	QFTV.P.VD	FR.REA.KH	V.....IN...	KR.I.IK.GI	R..Y.G.T	...VVIM.TV	G-SS.CNV.I	...VSC.QR	C..QGGC---	96
MmulB	.....A	QFTV.P.VD	FR.REA.RH	V.....IN...	KR.I.IK.GI	R..Y.G.T	...VVVM.TV	G-SNYCKV.I	...M.VDC.QR	C..ERYG---	96
MdolaB	.....A	QFTV.P.VD	FQ.REA.KH	V.....IN...	KR.I.IK.GI	R..Y.G.T	...VVVMTM	G-SSYCNV.L	...M.MICR	KY.IEGCC---	96
ShalB	.....A	QFTV.P.VD	FQ.REA.KH	V.....IN...	KRPI.IK.GI	R..Y.G.T	...VVVM.TM	G-SSYCNV.I	...M.MICH	KY.IEGCS---	96
AcalB	.....A	QFTV.PE.VD	FQ.REA.KQ	V.....VS...	KR.A.LK.SI	I...Y...S	...G..AVVAVT	G-TYFGI.V	...V.IFR.QK	RY.NSCR---	96
FpelB	.....A	QFTV.PE.LD	FH.REAVRQ	L..A.IS...	KR.V.AK.S	I...Y...S	...MVVVM.TA	G-SFYC.V..	...MIAR.RH	C..ES----	94
XtrlBA	QFTV.P.ID	LQ.HEA.RH	LW.....	VACR	KR.ITLKSSV	S..Y...S	T.FAVVAMTL	G-SLYGK...	...IT..NS	I..GK----	94
LchlB	.....A	.....	.....	.....MNL.L	H--VFVQ.SL	I...Y...S	...VVVV.TI	G-TRVVKM..	...I.DY.RS	AI.RS----	57
Dm	.....A	SFAI.HE.FD	INVDHE..NL	VWN..V.....	KR.A.AR.GV	RN..Y..HIQ	..LWLISAIAL	G-LH.AGYQA	PFN.TNR.LV	H..SN----	94
ci	.....A	SF.V.QE.LN	QI.HEAM.A	V.F.V...R	KR.T.R.RV	S...VKYT	..LVG.TAIVL	..S..SY.I	TW.FKNNRTN	II.PR----	94

Hsa1C	---GG----	-QHHLGRGVL	AAALFASCLW	GALIFTLHVA	LRLLLSYHGW	LLEPH---GA	MSSPTKTWL-	-ALVRIF---	-----SG-R	H-PMLFSYQR	169
SSc1C	---A-----	...R...I..	.....	.....	.....	...T....V	.....	.....	.....	.....	169
MmulC	.....	...Q.Q.F.	S..V.....	.....H.....	.....	.....	.....	.....	.....	...R...F..	169
Hsa1A	---NC-----	-MSSQTKNIV	SGV..GTG..	V...V.MRYS	.KV.....	MFTE....K	..RA..I.M-	-GM.K....	.....	K...Y.F.T	169
MmulA	---R-----	-MSSQTKNIV	SGV..GTG..	V.I.M.MRYS	.KV.....	MFAE....K	..RS.RI.M-	-M.KV....	.....	K...Y.F.T	169
Mdola	---S-----	-MSSQTKNIV	SGI..GTG..	VT..VAMRYS	.KM.....	MFAE....K	L.RG.RI.M-	-GM.K....	.....	K...Y.F.T	169
GgalA	---Y-----	-MSNQTQNI	SGI..GTG..	V...V.MRYS	.KM.....	MFAE....K	L.AG..L.M-	-T.KL....	.....	K...Y.F.T	169
FpelA	---Y-----	-MSNQTQNI	SGV..GTG..	V...V.MRYS	.KM.....	MFAE....K	L.AG..F.M-	...KL....	.....	K...Y.F.T	169
AcalA	---Y-----	-MSNQTQNI	SGV..GTG..	V...SMRYT	.KM.....	MFAE....K	L.TG..I.M-	-T.KL....	.....	K...Y.F.T	169
XtrlA	---Y-----	-MTPQTQNI	SGV..GTG..	VS..A.MRYS	.KK.....	MF.E....K	L.AS.RI.M-	-GM.KLL--	.....	K...Y.F.T	170
LchlA	---TH-----	-LSSQSQNI	SGV..GTG..	V..F..MRYS	.KM.....	MFIE....K	VPFG.RI.I-	-R.KL....	...V-C	K...Y.F.T	169
Ler1A	---Y-----	-LSNQSESI	SGL..STG..	I..V..MRQT	.K.....	MFV....K	TPTSV.L.M-	-LI.K....	.....	K...LTY.F.T	169
XtrlC	---SY-----	-LS.QGQSIV	S.L..STG..	F...M.MRFI	.KQ.....	MY.Q....K	..AT..L..-	...K....	.....	N...Y..A	169
Ler1C	---RY-----	-MS.HGQSMV	S.M...TG..	L...VMRQI	.KT.....	MF.E....K	V..T..V.F-	-T.K....	.....	K...Y.F.N	169
CmilC	---RC-----	-LS.QGQNIM	S.L...TV..	L...YMRQI	.KT.....	MF.E....K	A.NM.RI.F-	-TM.K....	.....	K...Y.F.A	169
AcalC	---Y-----	-LSDQGMNI	S..T.STV..	L...M.MRSI	.KM...C...	MY.E....K	..NT..I..-	...KM....	...A-	K...Y..A	169
LchlC	QTARTKTNP	QITDKRINL	CTN.YQCIGY	SEILL----	.....	MF.E....K	NR.V.LT..I.I-	-T.K....	.....	K...Y..A	168
Tnl1A	---RY-----	-LSTDTQKIV	GGV.VGTG..	VTI.MIMRNV	.KS...W...	MH.R....S	V.WTSRA.M-	-L.KV....	.....	K...Y.F.N	170
Tru1A	---RY-----	-LSTDTQKIV	GGV.VGTG..	VTI.MIMRNV	.KS...W...	MY.R....S	I.WTSRA.M-	-L.KV....	.....	K...Y.F.N	170
On1A	---RY-----	-MSTDSQKIV	GGI.VGTG..	VTI.MIMRTV	.KS...W...	MQ.R....S	L.WSSRI.M-	-V.KV....	.....	K...Y.F.N	170
Gac1A	---RY-----	-MSTDSQKIV	GGV.VGTG..	VSI.MIMRSV	.KS...W...	MYTS....S	VAWS.RL.M-	-V.KV....	.....	K...Y.F.N	170
Dre1Aa	---KY-----	-ITEDGQRIV	GGV.VGTG..	I.VT.VMRN	.KY...W...	MFNQ....T	L.LK..I..-	-V.KL....	...P	K...Y.F.S	170
TfulA2	---KY-----	-ITEDTQQIV	GGI.VGTG..	T.V..FMRNM	.KC...W...	MFNR....T	..IR..I..-	...KL....	...P	K...Y.F.S	170
Dre1Ab	---RY-----	-MSEBQKMLV	GGVMVGTG..	I.I..GMRTV	.KG...W...	MFAS....R	..TWKIRL..-	-VF.KV....	.....	MQ T...Y.F.N	171
TfulA1	---KY-----	-MSLDNQSRV	GGI.VGTG..	VVI..MRSI	.KC...W...	MR.R....S	LTWK.QI..-	-V.KV....	...M	KT.N.Y.F.T	171
OlalCa	---QS-----	-MSSQCCA.V	S.V..STM..	LL...MRLC	.KQ....R..	MF.Q....K	..TT..I.V-	.....	.....	K..L.Y..G	169
On1Cb	---QS-----	-MSTQCCA.V	S.V..STM..	LM...MRLC	.KQ....R..	MF.Q....K	..TT..I.V-	.....	.....	K..L.Y..G	169
AmelC	---S-----	-MSMQCCT.V	S.V..STL..	LS...MKLC	.KQ....R..	MF.Q....K	N.V.TT..V.V-	-M.....	.....	Q..L.Y..G	169
Gac1C	-----	-YVM..	S.S.AVTM..	LL...MRMC	.KQ....R..	MF.K....K	..NT..V.V-	-V.ASHRSL	FVTVNQPS-	K..L.Y..G	171

TrulC	--QS----	-LSTQCKVL	S.VI.STM..	LL....MRLC	.KQ....R	MF.....K	.TT.V.V-	-----	-----	K-R.Y...A	169
Tn1c	--QS----	-LSTQCKVL	S.VI.STM..	LL....MRLC	.KQ....R	MF.....K	.TT.V.V-	-----	-----	K-R.Y...G	169
Ola1Cb	--LHVS---	-LSAQGQTMV	S.LV.STL..	LS..LA.RFC	.K.....Q	MF.Q....R	V.NT.V.V-	-T.L.LL---	-----	K-L.Y...T	171
OnilCa	--FF----	-LFTQGGTMV	S.LV.STL..	LS..LA.RFC	.K.....Q	MF.K....R	I.NT.V.V-	-P...LL---	-----S-	K-L.Y...S	169
Gac1C	--QPF----	-LSTQGGTMV	S.LV.STL..	LS..LA.RFC	.K.....Q	MF.Q....R	V.NT.V.V-	-T.L.LL---	-----S-	K-L.Y...T	170
TrilC	--LHMS---	-LSAQGQTM	S.LV.STL..	LS..LA.RFC	.K.....R	MF.Q....R	V.NF.V.V-	-T.LGLL---	-----S-	K-L.Y...T	171
Dre1C	--LS----	-LSPOGGTM	S.L.STL..	MS..L.RFC	.K.....R	MF.Q....H	.TK.V.V.A-	-T.KLL---	-----S-	K-L.Y...T	169
Dre1B	--EF----	-MTVQQT..	S.I...TG..	LSV..L.RYL	.KA.....A	IF.S....K	.YS.V.V-	-S.KLL---	-----	R-L.Y.F.G	169
OnilB	--DC----	-MSVQT.A.	S.I...TG..	LF..YL.RYT	.KA.....	IF.S....K	.TS.V.V-	-C.KM---	-----	R-L.Y.F.A	169
Gac1B	--DY----	-LSVQSA.A.	S.I...TG..	LF..YL.RYM	.KA.....	IF.S....K	.RS.V.V-	-S.KM---	-----	R-L.Y.F.A	169
Ola1B	--Y-----	-MSAQT.A.	S.I...GTG..	LF..YL.RYT	.KA.....	IF.S....K	.S.L.V-	-Y.KM---	-----	R-L.Y.F.A	169
TrulB	--DC----	-MSVQT.A.	S.I...TG..	LF..YL.RYT	.KA.....	IF.S....K	.TS.V.V-	-T.KM---	-----	R-L.Y.F.A	169
Tn11B	--D-----	-MSVQT.A.V	S.I...TG..	LF..YL.RYT	.KA.....	IF.S....K	.TS.V.V.L	QT.KM---	-----	R-L.Y.F.A	171
Hsa1B	--PY----	-TPQT.AL	SM.I.STGV	VTG..FFRQT	.K...C...	MF.M....K	T.NL.RI.A-	-MCI.LL---	-----S-	...Y.F.T	171
MmulB	--HF----	-GTPQTEAL	SMVI.STGV	ATG..FFRQT	.K.....	MF.M....SK	T.HA..I.A-	-IC.LL---	-----S-	...Y.F.T	171
Mdo1B	--RY----	-LTLQT.TLI	SVGI.STGV	VTG..LFRQT	.K.....	MF.L....Q	T.RT..I.A-	-IC.LL---	-----N-	R...Y.F.T	171
Sha1B	--NY----	-LTLQT.TLI	SVGI.STGV	VTG..LFRQT	.K.....	MF.M....Q	T.RI..I.A-	-IC.LL---	-----N-	R...Y.F.T	171
Aca1B	--RC----	-LGVRS.SL	S.LI.S.GA	MLGVLLRRQ	.....	MF.....K	TRPS..I.A-	-SM.VM---	-----	...Y.F.T	171
Fpe1B	--RL----	-LSYES.TMV	STVI.STGA	LSAVLLFRQ	.K.....	MF.....K	.RS.RI.V-	-L.MKVL---	-----I-	K-L.Y.F.T	169
Xtr1B	--SI----	-LAPVS.T.	S.VI.S.GV	VSG.LIYRQT	.I.....	MF.....KK	T.MK..I.A-	-GCMK.M---	-----S-	Q...Y.F.M	169
LchB	--C-----	-MSFRS.TL	S.T...TGV	VTG.LAVRYS	.A.C....	MF.....S	TRIR.RI.A-	-T.K...---	-----	...Y.F.T	131
Dm	--TI----	-NWQ.T	.CF.A.LVV	VLSIC.MRYT	.K...M.K.	MY.SRAPGSR	V.L.ML.V-	-V.VL---	-----SWN	K-G.Y.F.G	169
ci	--K-----	-DSKTRN-T	SYLVSSTL..	LLAVLVIRYL	.K...C.Q.	MF..R---K	.LK..L.AV	-SYLQLL---	-----K-YFT	Q-NVM.LLVC	169

Hsa1C	SLPRQPVPVSV	QDTRVRYLES	VRPILSDEDF	DWTAVALQEF	LRLQASLLQW	YLRKLSKSWAS	NYVSDWEEF	VYLRSRNPLM	VNSNYMMDF	LYVTPPLQA	269
SSc1CAV.CE	E.ISA.R.R	.K.....	.Q.Y...SI.TG.SI.TN.V	269
MmulC	A.....A	E.....V.G.DA	.RATA.NDH.PR.L	.Q...CTYG.SI.TA.LIL.HI	268
Hsa1A	...L...A	K...NR..Q	..LMKE...D	KRMTA..D	AVGLGPR..	.K.....TY	I...G.G.IA.LIL.HI	269
MmulA	...L...A	K...SR...	..LMKEG..	QRMTA..D	AVNLGPK..	.K.....TY	I...G.G.IA.EMI..HI	269
Mdo1A	...L...A	K...NR...	.Q.L.NKDN	QRMKG..ED	STNLGPR..	.K.....TY	I...G.S.IA.LIL.TI	269
Gga1A	...L...A	K...NR...	..LMN..E	KRMEG..KD	AFNLGPR..	.K.....TY	I...G.G.IFA...HLS.TI	269
Fpe1A	...L...A	N...NR...	..LMD..E	RRMEG..KD	AFNLGPR..	.K.....TY	I...G.G.IFA...LS.T	269
Aca1A	...L...L	KN.NR...	.H.LMNE.Q	KRMEA.GKD	ATNLGPK..	.K.....AY	I...G.G.IFA...F..SV	269
Xtr1A	...L...P	K...KR..D	.K.LMDK.K	ERMEG..KD	ANNLGP...R	.K.....TY	I...G.G.IA...L.HI	270
Lch1A	...L...A	K...MTR...	..LMD..Q	RRMTK..KD	ELKLGRR..	.K.....TY	I...G.G.IA.L	269
Ler1A	...L...T	K...M.....	..L.N.KE	QRMQA..	ELKVGPR..	.K.....TY	I...G.G.IA.YIV..V	269
Xtr1C	V...L...G	KE..QR..D	..LMN..EY	KRMTG..KD	EVNL.PR...	.K.....AY	I...G.G.IA...V	269
Ler1C	...L...P	..L.RF...	..LMN...	RR.KA..KD	E.NL.PR...	.I.....Y	..QG.E.IA...TS	269
CmilC	...L...TI	..MQR...	..LMN..E	HRMEA..KD	EVKLGPR..	.K.....TYG.E.IA...I	269
Aca1C	...L...AL	K...MQ...	I..LTT.AE	QRM.A.RD	EQTLGPR..	.K.....Y	...G.G.A...I..V	269
Lch1C	C...L...PI	AK.MQR...	.H.LMD.K	KRMTA..KD	EVNL.PR...	.K.....Y	I...G.G.IG...I.AS.YI.T	268
Tn11A	...L...DI	S...C.RH...	..ALMD..Q	ERMTA.TKD	EKNLGP...R	.K.....Y	I...G.G.IA...I.SI	270
TrulA	...L...A	S...C.R...	.H.LMDE.R	ERMTA..KD	EKNLGP...R	.K.....SY	I...G.S.IA...F.SI	270
OnilA	...L...I	K...CER...	..LMD.QQ	ERMKG.T.D	EKNLGP...R	.K.....Y	I...G.G.IA...F.SI	270
Gac1A	...L...I	K...CKR...	..LME.QY	QRMKG.TKD	EKNLGP...R	.K.....Y	I...G.G.IA...F.SI	270
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FpelBPQ .G.R..... .GE----- VP..EA.ARF FSHGKNKVS. D.I.R..... L T..E.EH.YV -----AGK E-GCM.T..K S..H.QCY.. 449
XtrlB Y...S..PQ .G.K..... .GN----- VH..A..NF FSNGLNRT. SC..R.V..I ..E.E..YN -----E.. K-S..S..SK ..H.NCYN. 449
LchBKIIT.YIK YERKGSVRIS LSC----- IP..KA.SEF FSHGKNKIS. T.I.R..... M T..D.EQAYD -----K.N .-TT..S..K S..H.KCF.. 406
Dm E..KKGATPV EG..... .WN----- SK..EA.NTF FSWGVNQT.S. RTI.S...VL ..D..FEFD -----LAR .-EL..NFGK K..H.N.YN. 449
ci S..N.T..P. EG..... .GE----- IP..KA.NTY FVDGVNKK.S. H.I.K...IL V..D.EHVVS -----D.. S-...SK.GR S..H.KCYN. 443

HsalC WFDKSFLLIV FSNGLGLSV EHSWADCPIS GHMWEFTLAT ECFQLGYSTD GHCKGHPDPT LPQPQLQWD LPDQIHSSIS ----LALRGA KILSENVDC 544
SSc1CS..IA.....A.....S.....H.....K..L... -----QA.A..I... 551
MmulCV..... .L..... .A.....E..QP... -----T..G.I... 543
HsalAFV..K..M..NAA.V A.L..YVMSI DSL...AE.DIN.N I.Y.T... I.GECQEV.E -----TS.NT. NL.AND..F. 547
MmulAI.FV..K.S.I..INAA.V .L..YVM. DV.....E.DKN.N I.K.T... I.GECQEV.E ----TS.SS. SF.AND..L. 547
Mdo1AT..F..K..M..NAA.V .L..YVM. D.....TE.DTN.N I.Y.T... I.EECQDV.E -----ES.SL. ST.AND..F. 547
GgalAT..V..K..M..NAA.V .L..NVM. .YLE..LE.DTNQ I.I.TK... I.EECQDV.E ----RS.ST. RA.ADD..FY 547
FpelAT.....K..RI..NAA.V .L..NVM. .YLE..LE.DINQN I.I.TK... I.AECQEV.E ----RS.ST. IA.ADD..FY 547
AcalAK..M..NTA.V .L..NVMFS D.LE..TE.ESSG ILM.S... ILEECQEV.E ----RS.AV. RP.ADD..F. 547
XtrlATMSFV..K..M..MN.A.V .L..YVM. DKME..NE.DVNGN I.P.S... I.EECQVVE -----S.TV. .A.ADD..F. 548
LchlALSFV..K..M..NAA.V .L..YV. DS.....TEE.E.K.S I.F...R.E I.EECQEV.E ----IS.KV. .A.ADD..F. 546
Ler1ALSF.I..K..I..NAA.I .L..YV... DQ.....TDE .N..E.N.Q IQP..... ILEPCQEV.H ----RS.SV. QQ.ADD..F. 544
XtrlCF..K..I..NAA.VV... D.....NEE .N..QV.SN .V..... ISEECQEV.Q ----SS.AV. QA.ADD..F. 546
Ler1CF..A..V..NAA.I .L..YA... DT.....KE. .N..D.A.N V.L..... I.KECQEV.M ----SS.KV. QT.AND..FY 547
CmilCE..V..NAA.I .L..YV... DS.....NDQDAES. VLS..... I.EACQEV. ----GS.KV. QS.AND..F. 547
AcalCYR..S..NAA.V .L..YC... DA.T...DAY .N..DM..N V.P..K... I.PECEAV.M ----QS.F.V. YN.ASDI.F. 546
LchlCV..K..TM..NAA.I .L..YV... DT..I..KP.EA.S. ILP..... I.AECREV.K ----MS.AV. QT.AND..F. 545
TnilAN..K..TM..NAA.V .L..QV.SM DPKN..TE.R.A.H.N .G..... ISTECCQV.Q ----SS.TV. QK.ADD..S. 548
TrulAN..K..TM..NAA.V .L..HV.SM DPNN..TEE.R.V.H.N .G..K... I.AECQV.Q ----NS.TV. QN.ADD..S. 550
OnilALNM..K..TM..NAA.V .L..HV.SM DP..K..TE.V.K.H.N .G..... T I.AECQEA.E ----SS.TV. RA.ADD..S. 546
Gac1AN..I..YK..TM..NAA.V .L..HV.SM DPIK..TEA.E.H.N .G..K.S. I.AECQEV.Q ----SS.KV. RT.ADD..S. 548
DrelAaLN..K..TM..NAA.V .L..QV.SS DPVR..TEE.N.H.N M.G..... I.EECQTV. ----SS.KV. NT.ADD..M. 547
TfulA2N..I..K..TM..NA .T..A.V .L..HV.SM DPIT..TE.R.K.H.N .G.L... ISVECQ.V.R ----SS.KV. NA.ADD..M. 547
DrelAbIN..I..K..TM..NAA.V .L..QV.SM DPVK..TE.E.HAN .G..... N I.TECQTM.T ----NS.SV. EA.ADD..S. 552
TfulA1N..I..YK.ATI..NAA.I .L..NV.S. DAIK..TD.A.QTHN .G..... N I.PECQTM.A ----NS.SV. QA.ADD..MV 548
OlalCaSV.Y..K..S..INGA.VV A.V..YV... DS.....NEEEV.ASK.N.E ISPECEEQ. ----RS.AV. QA.ADD..F. 547
OnilCbVVY..K..N..INAA.VL A.V..Y..N DS.....NAEDV..S .R.VK.S.E I.PECEEQ.A ----QS.AV. QA.ADD..F. 548
Ame1CSVVI..K..N..NAA.V S...YV... DS.....NEEDVN.ST... I.K.CQEQVA ----QC.AV. QP.ADDI.F. 547
Gac1CSVVY..K..M..NGA.VL S.A.QYV.T. D.....NAEEV.SS .G..K.N.E I.PECEEQ. ----GS.AV. QA.ADD..V. 550
TrulCSVVF..YK..S..NGG.A.VL T.L..Y...NAEEV.AS .AE..K.N.E ISSECEEQ. ----QS.EV. QA.AND..M. 549
TnilCSVVF..YK..S..NGG.A.VL S.L..Y...NAEEV.AS .K..K.N.E I.SCEEQ.C ----QS.AL. QA.AND..M. 549
OlalCbSIVI..YK..S..NAA.TV A.L..Y... DA...TE.EV.RS .P.H..S.E I.SEVQD.F ----SS.TL. .A.ADD... 549
OnilCaSVVI..YK..S..NAA.TV A.L..Y... DA...TE.EVE.SV.N I.AEVQAQV. ----SS.AV. QA.ADD... 547
Gac1CSIVI..YK..S..NAA.TV A.L..Y... DA...TE.DV.RS .P...A... I.SEVQAQV. ----SS.AV. QA.ADD... 552
TnilCSIVI..YK..S..NAA.TV A.L..Y... DA.H..TE.EVE.L .H...L... I.LECNTQV AQCCSS.VV. QA.ADD... 554
DrelCSVV..YK..N..NAA.V A.L..Y... DT.H..NS. .N.R.DV.HS .H...S... I.FEVQTV. ----ES.AV. QA.ADE... 547
DrelBN..YK..M.VNTS..I .L..YV... D.H..TAEDVNK .AP.T... I.KACQEI.E ----GSY.I. .GIADD..F. 545
OnilBS..YK..M.VN.A.VYI... D.H..TEEDVNKN .H.T... Q I.NECQNV.E ----TSYLS. .QIADD..F. 545
Gac1BS..YK..M.VN.A.VYV... D.H..TEEDVNKG .H.S... Q I.NECQEV.E ----TSYLS. .LIADD..F. 545
OlalBS..YK..M.VN.A.VYV... D.H..C..EEDANRG .F.T... Q ISKECQDV.E ----ASYLS. .KIADD..F. 545
TrulBS..YK..M.IN.A.VYV.S. D.H..TEEDVNKG .Y.S... Q I.VECK.I.E ----ASYVS. .RIADD..FY 546
TnilBS..YK..M.IN.A.VVV... D.H..TEEDVNKG .Y.S... Q I.VECK.I.E ----ASYVS. .QIADD..F. 547
HsalBS..K..Q..NAA..A.I .L..V.G. DS.H..TET .L.K.N.A .AP.T... I.K.CQAV.E ----SSYQV. .A.ADD.ELY 547
MmulBS..CK..L..NTA..I .L..V.G. DT.H..TET .V.E.NT. .P...P... I.E.CREA.E ----NSYQV. .A.ADD.ELY 547
Mdo1BN..S..K.A..NTA.V .L..V... DA.H.D.TDA .Q.K.NHS .AP...L... I.EECQLE.E ----SSYQV. .T.ADD.ELY 547
ShalBVA..K..NTA..A.VV .L..V... DA.H.D.NES .Q.K.NHS .AP...E I.EECQLE.E ----SSYEV. .A.ADD.ELY 547
AcalBS.V..YR...ANAA..I .L..M... DH...CS. .H.V.NTA .P...T... I.EECCNV.D ----ASYAV. RA.ADDI.F. 546
FpelBV..YK...ANAA..I .L..A... .K...TDR .R.E.NTO .AP... I.QCRDTE.E ----SSY.L. .A.ADD..FC 545
XtrlBS.V..R...NAA..I .L... D.E..TE. .N.R.DAGSP .P.Y... I.PKCRVE.E ----RSYVT. .AIADD..F. 545
LchBF..K...INTA..VI .L..V... D.E.S.TES .EMNKK .P...T... .EBCKEQ.Q ----QSYKV. .A.ADD.NFC 502
DmC..VC. GT..RV.FNA .T.S.AA.A S...NLIVD DLVSD..DET .NT..T.AFO P.T.P.T... .KP-CLAQ.E ----E.TIDV TK.INE.NLC 544
ciT.NC..K..RW.INAA..M SYVV.EA.GF .YQS...TQ. .RV..R.TVQ PIT.H...Q .TPCEQEV.E ----TS.SV. NN.ADD.HLN 539

HsalC VVPFSLFGKS FIRCHLSSD SFIQIALQLA HFRDRGQFCL TYESAMTRLF LEGRTETVRS CTREACNFVR AMEDK---EK TDPQCLALFR VAVDKHQALL 641
SSc1CF..H..... .K..... .T..... .R.....S..... .HQ----- L..... 648
MmulCF..H..... .K.C.V... .LV.....Q..... .DN-----E .QH..... 639
HsalA SF..VA...G I.KK.RT.P. A.V.L... .YK.M.K... .AS... R..... .T.S.D... .V.P---AQ .VE.R.K.K.L SE...HMY 644
MmulA SF..DT...G L.KK.RT.P. A..L... .YK.M.K... .AS... R..... .T.S.L... .M.P---TT .AE.RFK.K I.CE...H.Y 644
Mdo1A SF..DA...E L.KKSRT.P. A.V.L... .YK.M.K... .AS... R..... .M.S...L .VNP---TE SVENK.K.L I.AE...HMY 644
GgalA SFY.DV...G L.KKAKT.P. A..L... .Y.M.K.K.S. .AS... R..... .I.S...Q T..NP---SE SNEKNMKS. L.AT...H.Y 644
FpelA SFF.DA...G L.KKAKT.P. A.V.L... .Y.M.K.K.S. .AS... R..... .V.S...T .P---TE SSENK.KF.. I.AA...H.Y 644
AcalA SF..DT...G LMKKAKT.P. A.V.L... .Y.M.K.K... .AS... R..... .TQS.K.K .D.P---SE .LEKKI..K A.ATH..L.Y 644
XtrlA SF..NS...G L.KKSRT.P. A.V.LS... .Y..KEK... .AS... R..... .I.S.D.L .S.P---SQ .NEKR.Q.K E.AE...QMY 645
LchlA SF..DS...G L.KK.RT.P. A..L... .Y.W.K.K.Y. .AS... R..... .V.S...L S.V.P---KQ .NE.R.K.K I.SE...NMY 643
Ler1A SF..DK...G V.KK.WL.P. A.V.M... .Y..K.K... .AS... R..... .SQSTQ..L .VNS---SQ .NEEK.K... L.A...SMY 641
XtrlC TF..K...G L.KK.RT.P. A..... .Y..K.K... .AS... R..... .MNP---SQ .NEER.K... L.AE...M.Y 643
Ler1C AF..TR...G V.KK.RT.P. A..... NY..K.T... .S... R..... .V.T...T .LDG.---KH SNEE..N... I.AKN..HIS 644
CmilC TF..TK...G L.KK.RT.P. A..L... N..K.K... .S... R..... .IQSS... .H---L SASE..K.H L.AKT..HIS 643
AcalC AFT.KD...G L.KK.RT.P. G..L... .KKK... .AS... R..... .I.S...K .M.P---TQ .SAR.H... .AE...N.Y 643
LchlC .FT.KD...G L.KK.RT.P. A..... .Y..K.K... .AS... R..... .S.S.A.K .V.A---GY .NAAR.K.K .AE...QMY 642
TnilA II..E...G K.KK.RT.P. A..... .Y..K.K... .AS... R..... .V.S.A... S.IRD---E .TEER.R.LK K.AE...N.Y 644
TrulA II..E...G K.KK.RT.P. A..... .Y..K.K... .AS... R..... .M.S.A... S.IRD---E .TEER.R.LK K.AE...N.Y 646
OnilA II..TD...G L.KK.RT.P. A..... .Y..K.K... .AS... M... R..... .I.T.A... .VGD---E .REER.R.LK L.AE...N.Y 642
Gac1A IM..D...G L.KK.RT.P. A..... .Y..K.K... .AS... R..... .S.S.A... .IKG---E .RDE.R.LK Q.AE...NMY 644
DrelAa IF..ND...G L.KK.KT.P. G..L... .K.K... .AS... R..... .N.T.A..H .M.E---KA .REER.K.LK A.AE...N.Y 644

