

Alignment_51_hum_PTP_Domains_D1_and_D2(Incl_PTPOST).apr

	(1)	10	20	30	40	50	60	70	80	90	101																																																													
hCD45 D1 (NP 002829) PTPRC	(1)	DILLETYKRKIAD	EG-----	RLFLAEFQS	LPVFSKFD	PIKEARKPFNQNK	RYVDIL	LPYDYNRV	ELSET	INGDAG	-----	SNY																																																												
hPTPalpa D1 (NP 002827) PTPRA	(1)	DKLEEEENRR	MADDN-----	KLFRFEFNA	LPCPIQA---	TCEASKEEN	EKNRYV	NILPYD	HSRVHL	TPVEGVPD	-----	SDY																																																												
hPTPepsilon D1 (NP 006495) PTPRE	(1)	EHLEEEER	IRSADD	C-----	KQFREFN	SLPSGHIQ	GFELANKEEN	EKNRYPN	ILPNDH	SRVIL	SQLD	GIPC	SDY																																																											
hPTPlamda D1 (NP 005695) PTPRU	(1)	ADLLQHHNQ	MKTAE	G-----	YGFKEE	YEFEG	-----	WDATKKK	DKVKGSR	QEP	PAYDR	HRVKL	HPMLGDPN	ADY																																																										
hPTPkappa D1 (NP 002835) PTPRK	(1)	ADLLQHNLM	KTSDS	-----	YGFKEE	YEFEG	QSA---	SWDVA	AKKDQ	NRAKNRY	GNIL	AYDHS	SRVIL	QPVEDDPS	SDY																																																									
hPTPmu D1 (NP 002836) PTPRM	(1)	ADLLQHH	TQMKCAE	G-----	YGFKEE	YEFEG	QSA---	SWDVA	AKKDE	NRMKNRY	GNIL	AYDHS	SRVRL	QTEGDTN	SDY																																																									
hPTPrho D1 (NP 573400) PTPRT	(1)	ADLLQHH	TQMKRGQ	G-----	YGFKEE	YEA	PEGQTA---	SWDTA	AKEDEN	RNKNRY	GNIL	SYDHS	SRVRL	LVDGDPH	SDY																																																									
hPTPsiigma D1 (NP 002841) PTPRS	(1)	ADMAEHT	ERLKANDS	-----	LKLSQE	YES	IDPGQQF---	TWEHS	NLEVN	RPKNRY	ANV	AYDHS	SRVIL	QPIEGIMG	SDY																																																									
hPTPdelta D1 (NP 002830) PTPRD	(1)	LELADH	ERLKANDN	-----	LKFSQE	YES	IDPGQQF---	TWEHS	NLEVN	RPKNRY	ANV	AYDHS	SRVRL	SAIEGIPG	SDY																																																									
hLAR D1 (NP 002831) PTPRF	(1)	TDLADN	ERLKANDG	-----	LKFSQE	YES	IDPGQQF---	TWENS	NLEVN	RPKNRY	ANV	AYDHS	SRVIL	TSIDGVPG	SDY																																																									
hPTPalpha D1 (NP 002832) PTPRG	(1)	KQFVKH	GELYSNNQ	-----	HGFSE	FE	EVQCTADM	NITAEHS	SNH	PEN	HKNRY	INIL	AYDHS	SRVRL	RPLPGKDSKH	SDY																																																								
hPTPzeta D1 (NP 002842) PTPRZ1	(1)	KHFPKH	WADHASSG	-----	FTEEF	TLK	FEYQ	RSTVDL	GITADS	NH	DN	HKNRY	INIL	AYDHS	SRVRL	LAQIAEKDGKL	TDY																																																							
hSAP1 D1 (NP 002833) PTPRH	(1)	EDFADH	TRKNERDSN	-----	CGFAD	EY	QQLSLV	GHSQ---	SQMV	ASASE	NNAKNRY	RNV	ILPYD	WSRV	PKPI	HEEPG	SDY																																																							
hDEP1 D1 (NP 002834) PTPRJ	(1)	ENFEAY	FKKQADS	N-----	CGFAE	EY	EELKLV	GISQ---	PKYA	AELAE	N	GKNRY	NNV	ILPYD	I	SRVKL	SVQTHST	DDY																																																						
hPTPbeta D1 (NP 002828) PTPRB	(1)	NQFEGH	FMKLQADS	N-----	YLLSK	E	EELKDV	GRNQ---	SCDI	ALL	PEN	GKNRY	NNV	ILPYD	A	TRVKL	SNV	DDDDPC	SDY																																																					
hGLEPP1 D1 (NP 109592) PTPRO	(1)	DDFDAY	TKDMAKDS	D-----	YKFSL	Q	EELKLV	GLDI---	PHFA	ADL	PLN	ECKNRY	TN	ILPYD	F	SRVRL	VS	MNEEEG	ADY																																																					
hPTPS31 D1 (AR073855) PTPGMC1	(1)	KSFLQH	VEELCTNN	N-----	LKQFE	F	SELPKF	LQDL---	SSTD	ADL	PN	AKNRY	EPN	KPY	NNN	RVK	L	IADASVPG	SDY																																																					
hOSTPTP D1 (NT 004671) Chr1	(1)	HSFRQS	YEAKSAHAH	-----	QAF	LQ	FEELKE	VGKEQ---	PRLE	AEYAA	N	TKNHY	PH	VLPYD	H	SRVRL	TQ	LEGE	HDY																																																					
hHePTP D1 (NP 002823) PTPN7	(1)	HPLTRW	ALQRQPPSP	-----	KQLEE	F	LKLV	SNFVS---	PEDLDI	PH	ASKD	RYKT	ILP	NPQ	SRV	CL	GR	AQSQED	SDY																																																					
hPCPTP1 D1 (NP 002840) PTPRR	(1)	SRLTRS	SQLRDVVASS	-----	HLLQS	F	MEIP	MNFVD---	PKEIDI	PR	HGT	KNRY	KT	ILP	NPL	SRV	CL	RPNV	TDS	L	SDY																																																			
hSTEP D1 (NP 116170) PTPN5	(1)	SRLVQAE	EELHEKALDP	-----	FLLQA	F	FEIP	MNFVD---	PKEYDI	P	GLV	KNRY	KT	ILP	NPH	SRV	CL	TSP	DDDD	L	SDY																																																			
hSHP1 D1 (NP 002822) PTPN6	(1)	ADLENR	VLELNKKQES	-----	EDTAK	AG	FWEF	ESLQ	QEVKN	LHQR	LEG	QR	PEN	GKNRY	KN	ILP	F	DHS	RVIL	QGRDS	NI	PG	SDY																																																	
hSHP2 D1 (NP 002825) PTPN11	(1)	AEIESR	VRELKSLAET	-----	TDKVK	Q	GFWE	FETL	QQEQ	EKL	LYSR	KE	QR	QEN	KNRY	KN	ILP	F	DH	TRV	IL	HDG	DPNEPV	SDY																																																
hPTPD1 D1 (NP 008970) PTPN21	(1)	ATNDER	CKILEQRLEQG	-----	MVF	T	EYER	LK	RRLVD---	GECST	ARL	PEN	AER	NRE	QD	VLPYD	D	ARV	EL	VPT	KENN	---	TDY																																																	
hPTPD2 D1 (NP 005392) PTPN14	(1)	VPMDER	FRTLKKKLEEG	-----	MVF	T	EYEQ	L	PKK	KANG---	IFST	AAL	PEN	AER	SR	IRE	V	VPY	E	NRV	EL	VPT	KENN	TDY																																																
hMEG1 D1 (NP 002821) PTPN4	(1)	HSLRES	TIQLAEG	LITG-----	TVLTQ	F	DQ	LYR	KKPGM---	TMSC	AKL	PQ	N	IKNRY	RD	ILP	SPY	D	ARV	IL	KGN	---	EDY																																																	
hPTPH1 D1 (NP 002820) PTPN3	(1)	DTLEGS	MAQLKKGLESG	-----	TVLIQ	F	EQ	LYR	KKPGL---	AITF	AKL	PQ	N	LDKNRY	KD	ILP	YD	T	RV	LL	QGN	---	EDY																																																	
hMEG2 D1 (NP 002824) PTPN9	(1)	MTIQEL	FDYVVARQKQ	-----	GIYE	F	QD	TR	EN	PVG---	TFHCS	MS	PG	N	EKNRY	GD	V	CLD	Q	TRV	KL	TKRS	GHTQ	TDY																																																
hPTP1B D1 (NP 002818) PTPN1	(1)	MEMEKE	FQIDKSGS	-----	WAAIY	Q	D	IR	HEAD	DF---	PCR	V	AKL	P	K	N	R	N	R	Y	R	D	V	SD	SDY																																															
hTCTPT D1 (NP 002819) PTPN2	(1)	TTIERE	FEELDTQRR	-----	WQPL	Y	LE	R	NESH	DY---	PHRV	AKF	PEN	R	N	R	Y	R	D	S	P	D	H	S	R	V	K	L	QNAE	NDY																																										
hPTPBAS D1 (NP 006255) PTPN13	(1)	ANLKS	VTRVLRGLLDQ	-----	GIPSK	E	LEN	L	QEL	KPLD---	QCLIG	Q	T	K	E	R	E	K	N	R	Y	K	N	ILP	Y	D	A	T	R	V	P	L	GDE	GGY																																						
hPTPTyp D1 (AL050040) PTPN20	(1)	TAIKDC	KLILEEKTA	A-----	YDIMQ	E	FMA	EL	KNL	PLG---	EFYS	GN	Q	P	S	N	E	K	N	R	Y	R	D	ILP	Y	D	S	T	R	V	P	L	GKS	---	KDY																																					
hBDP1 D1 (NP 055184) PTPN18	(1)	DSARS	FLEAREAGGREG	AVLAGEFSDIQACSA	AWKADG	VCSTVA	GS	R	PEN	V	R	K	N	R	Y	K	D	ILP	Y	D	Q	T	R	V	I	L	S	L	L	Q	E	E	G	H	---	SDY																																				
hLyPTP D1 (NP 057051) PTPN22	(1)	EILQ	KFDEAQS	KKIT-KEEFAN	EFLK	L	K	R	Q	STY	K	ADK	TY	PTT	AE	K	P	N	I	K	N	R	Y	K	D	ILP	Y	D	S	R	V	E	L	S	L	T	S	D	E	D																																
hPEST D1 (NP 002826) PTPN12	(1)	RKFIQR	QAMKSPDHNG	EDNFARMLRRL	STKYRTEK	IYPTAT	E	K	E	E	N	V	K	N	R	Y	K	D	ILP	F	D	H	S	R	V	K	L	T	L	K	T	P	S	Q	D	---	SDY																																			
hHDPTP D1 (NP 056281) PTPN23	(1)	ERLRQL	QELAEFRG	QLGDV---GALD	TVWRE	L	Q	D	A	Q	E	H	A	R	G	R	S	I	A	I	A	R	C	S	L	K	N	R	H	Q	D	V	P	Y	D	S	N	R	V	L	R	S	G	K	---	DDY																										
hiA2 D1 (NP 002837) PTPRN	(1)	HMILAY	EDHLRNRDR	-----	LAK	E	W	Q	A	L	C	A	Y	Q	A	E	P	---	N	T	C	A	T	A	Q	G	E	G	I	K	N	R	H	P	D	F	L	P	D	H	A	R	I	K	L	K	V	E	S	S	P	S	R	---	SDY																	
hiA2beta D1 (NP 002838) PTPRN2	(1)	HMILSY	EDHLKKNR	N-----	LEK	E	W	E	A	L	C	A	Y	Q	A	E	P	---	N	S	S	F	V	A	Q	R	E	E	N	V	P	K	N	R	S	L	A	V	I	T	Y	D	H	S	R	V	L	L	K	A	E	N	S	H	S	H	---	SDY														
hPTPalpa D2 (NP 002827) PTPRA	(1)	SLETHE	QKTYNKIP	PGTSN---NGL	EE	F	K	L	T	S	I	K	I	Q	N	---	DKMRT	G	N	L	P	A	N	M	K	K	A	R	V	I	Q	T	P	Y	D	F	N	R	V	I	L	S	M	K	R	G	Q	E	Y	---	TDY																					
hCD45 D2 (NP 002829) PTPRC	(1)	SEAHFY	HNMKKR	DPSEP---SPL	EAF	Q	R	L	P	S	Y	S	R	W	---	TQHI	G	N	Q	E	E	N	S	K	N	R	N	S	N	V	P	Y	D	Y	N	R	V	I	L	S	M	K	H	E	L	M	S	K	E	S	E	H	D	S	D	E	S	S	D	D	D	S	D	S	E	E	P	S	K	Y	---	SDY
hPTPkappa D2 (NP 002835) PTPRK	(1)	KAA	YFD	IR	IDS	Q	T	N	S	---	SHL	K	D	F	Q	T	L	N	S	V	T	P	R	L	Q	A	E	D	C	S	I	A	C	L	P	R	N	H	D	K	N	R	E	M	D	L	F	P	D	R	C	L	P	F	I	T	I	D	G	E	S	---	SDY									
hPTPlamda D2 (NP 005695) PTPRU	(1)	KATYKE	IRIDP	Q	S	N	S	---	SQL	R	E	F	Q	T	L	N	S	V	T	P	P	L	D	V	E	E	C	S	I	A	L	L	P	R	N	H	D	K	N	R	S	M	D	L	F	P	D	R	C	L	P	F	I	T	D	G	E	S	---	SDY												
hPTPmu D2 (NP 002836) PTPRM	(1)	RSLYYD	MNKID	P	Q	T	N	S	---	SQ	K	E	F	R	T	L	N	M	V	T	P	T	L	R	V	E	D	C	S	I	A	L	L	P	R	N	H	E	K	N	R	C	M	D	L	F	P	D	R	C	L	P	F	I	T	I	D	G	E	S	---	SDY										
hPTPrho D2 (NP 573400) PTPRT	(1)	RSLYYN	SRLD	P	Q	T	N	S	---	SQ	K	D	F	Q	T	L	N	I	V	T	P	R	V	R	P	E	D	C	S	I	A	L	L	P	R	N	H	D	K	N	R	S	M	D	L	F	P	D	R	C	L	P	F	I	S	V	D	G	E	S	---	SDY										
hLAR D2 (NP 002831) PTPRF	(1)	RNLYAH	QKLG	V	P	P	G	E	S	---	V	T	A	M	L	E	F	K	L	A	S	S	K	A	H	T	S	---	R	F	I	S	A	N	L	P	C	N	R	F	K	N	R	L	V	N	I	M	P	Y	E	L	T	R	V	C	L	Q	P	T	R	G	V	E	G	---	SDY					
hPTPdelta D2 (NP 002830) PTPRD	(1)	RNLYAY	QKLT	Q	I	E	T	G	E	N	---	V	T	G	M	L	E	F	K	R	L	A	S	S	K	A	H	T	S	---	R	F	I	S	A	N	L	P	C	N	R	F	K	N	R	L	V	N	I	M	P	Y	E	S	T	R	V	C	L	Q	P	T	R	G	V	E	G	---	SDY			
hPTPsiigma D2 (NP 002841) PTPRS	(1)	RSLYAY	QKLA	Q	V	E	G	E	H	---	V	T	G	M	L	E	F	K	R	L	A	S	S	K	A	H	T	S	---	R	F	I	S	A	N	L	P	C	N	R	F	K	N	R	L	V	N	I	M	P	Y	E	S	T	R	V	C	L	Q	P	T	R	G	V	E	G	---	SDY				
hPTPalpha D2 (NP 002832) PTPRG	(1)	NQLHSY	NSLIP	G	V	G	G	---	K	T	R	L	E	K	F	K	L	T	Q	C	N	A	K	Y	V	---	E	C	F	S	A	Q	K	E	C	N																																				

	(102)	102	110	120	130	140	150	160	170	180	190	202																									
hCD45 D1 (NP 002829) PTPRC (73)	INASYIDG	-----	KEPRK	YIAA	QGP	RDET	YDF	WRMI	WEQ	KAT	VIVM	TRCE	EG-N	ENKCAE	YWP	--	SMEEG	TRAF	G	GV	VV	K	IN	GH	KR	CP	D	Y	I	Q	K	L					
hPTPalpa D1 (NP 002827) PTPRA (73)	INASFINDG	-----	QEKNK	FIAA	QGP	KEET	VNDF	WRMI	WEQ	KAT	VIVM	TRCE	EG-N	ENKCAE	YWP	---	DQGC	WT	Y	GN	TR	VS	VE	ED	V	V	L	V	D	Y	T	VR	K	F			
hPTPepsilon D1 (NP 006495) PTPRE (73)	INANYIDGY	-----	KEKNK	FIAA	QGP	KQET	VNDF	WRMI	WEQ	KAT	VIVM	TRCE	EG-N	ENKCAE	YWP	---	DQGC	WT	Y	GN	TR	VS	VE	ED	V	V	L	V	D	Y	T	VR	K	F			
hPTPlamda D1 (NP 005695) PTPRU (68)	INANYIDGY	-----	HRSNH	FIAA	QGP	KPEM	YDF	WRMV	WEQ	HCS	IVM	TRCE	EG-N	ENKCAE	YWP	---	EDSD	T	Y	GD	IK	ML	V	K	T	E	L	A	E	Y	V	VR	T	F			
hPTPkappa D1 (NP 002835) PTPRK (72)	INANYIDGY	-----	QRPSH	YIAT	QGP	VHET	YDF	WRMI	WEQ	SAC	IVM	TRCE	EG-N	ENKCAE	YWP	---	DDTE	V	Y	GD	IK	ML	V	K	T	E	L	A	E	Y	V	VR	T	F			
hPTPmu D1 (NP 002836) PTPRM (72)	INGNYIDGY	-----	HRPNH	YIAT	QGP	MQET	YDF	WRMV	WEQ	HCS	IVM	TRCE	EG-N	ENKCAE	YWP	---	DDTE	V	Y	GD	IK	ML	V	K	T	E	L	A	E	Y	V	VR	T	F			
hPTPrho D1 (NP 573400) PTPRT (72)	INANYIDGY	-----	HRPRH	YIAT	QGP	MQET	YDF	WRMI	WEQ	HCS	IVM	TRCE	EG-N	ENKCAE	YWP	---	DDTE	V	Y	GD	IK	ML	V	K	T	E	L	A	E	Y	V	VR	T	F			
hPTPsiigma D1 (NP 002841) PTPRS (72)	INANYIDGY	-----	RRQNA	YIAT	QGP	LPET	YDF	WRMV	WEQ	SAC	IVM	TRCE	EG-N	ENKCAE	YWP	---	NRGT	T	Y	GD	IK	ML	V	K	T	E	L	A	E	Y	V	VR	T	F			
hPTPdelta D1 (NP 002830) PTPRD (72)	INANYIDGY	-----	RKQNA	YIAT	QGP	LPET	YDF	WRMV	WEQ	SAC	IVM	TRCE	EG-N	ENKCAE	YWP	---	ARGT	T	Y	GD	IK	ML	V	K	T	E	L	A	E	Y	V	VR	T	F			
hLAR D1 (NP 002831) PTPRF (72)	INANYIDGY	-----	RKQNA	YIAT	QGP	LPET	YDF	WRMV	WEQ	SAC	IVM	TRCE	EG-N	ENKCAE	YWP	---	ARGT	T	Y	GD	IK	ML	V	K	T	E	L	A	E	Y	V	VR	T	F			
hPTPalpha D1 (NP 002832) PTPRG (77)	INANYIDGY	-----	NKAKA	YIAT	QGP	LPKST	YDF	WRMI	WEQ	HCS	IVM	TRCE	EG-N	ENKCAE	YWP	---	TENSE	Y	GN	TR	VS	VE	ED	V	V	L	V	D	Y	T	VR	K	F				
hPTPzeta D1 (NP 002842) PTPRZ1 (82)	INANYIDGY	-----	NRPKA	YIAA	QGP	LPKST	YDF	WRMI	WEQ	HCS	IVM	TRCE	EG-N	ENKCAE	YWP	---	ADGSE	Y	GN	TR	VS	VE	ED	V	V	L	V	D	Y	T	VR	K	F				
hSAP1 D1 (NP 002833) PTPRH (73)	INASFMPGL	-----	WSPQE	FIAA	QGP	LPQT	YDF	WRMV	WEQ	SAC	IVM	TRCE	EG-N	ENKCAE	YWP	---	LDSQ	P	CT	H	GL	RV	TV	L	V	L	A	E	E	A	D	Y	T	VR	K	F	
hDEP1 D1 (NP 002834) PTPRJ (72)	INANYMPGY	-----	HSKKD	FIAA	QGP	LPNT	YDF	WRMV	WEQ	SAC	IVM	TRCE	EG-N	ENKCAE	YWP	---	SKQA	Q	D	Y	GN	TR	VS	VE	ED	V	V	L	V	D	Y	T	VR	K	F		
hPTPbeta D1 (NP 002828) PTPRB (73)	INASYIPGN	-----	NFRRE	YIAT	QGP	LPNT	YDF	WRMV	WEQ	SAC	IVM	TRCE	EG-N	ENKCAE	YWP	---	ADQD	S	L	Y	GN	TR	VS	VE	ED	V	V	L	V	D	Y	T	VR	K	F		
hGLEPP1 D1 (NP 109592) PTPRO (73)	INANYIPGY	-----	NSPQE	FIAA	QGP	LPET	YDF	WRMV	WEQ	SAC	IVM	TRCE	EG-N	ENKCAE	YWP	---	FTEE	P	I	Y	GN	TR	VS	VE	ED	V	V	L	V	D	Y	T	VR	K	F		
hPTPS31 D1 (AR073855) PTPGMC1 (73)	INASYISGY	-----	LCPNE	FIAA	QGP	LPGT	YDF	WRMV	WEQ	SAC	IVM	TRCE	EG-N	ENKCAE	YWP	---	EDNK	P	V	T	Y	GN	TR	VS	VE	ED	V	V	L	V	D	Y	T	VR	K	F	
hOSTPTP D1 (NT 004671) Chr1 (73)	INANFIPPP	-----	THPQE	FIAA	QGP	LPKKT	YDF	WRMV	WEQ	SAC	IVM	TRCE	EG-N	ENKCAE	YWP	---	DSTP	V	T	Y	GN	TR	VS	VE	ED	V	V	L	V	D	Y	T	VR	K	F		
hHePTP D1 (NP 002823) PTPN7 (71)	INANYIRGYD	-----	GKEKV	YIAT	QGP	MPNT	YDF	WRMV	WEQ	SAC	IVM	TRCE	EG-N	ENKCAE	YWP	---	TEET	Y	GN	TR	VS	VE	ED	V	V	L	V	D	Y	T	VR	K	F				
hPCPTP1 D1 (NP 002840) PTPRR (73)	INANYIRGYS	-----	GKEKA	YIAT	QGP	MPNT	YDF	WRMV	WEQ	SAC	IVM	TRCE	EG-N	ENKCAE	YWP	---	EKR	G	I	Y	GN	TR	VS	VE	ED	V	V	L	V	D	Y	T	VR	K	F		
hSTEP D1 (NP 116170) PTPN5 (73)	INANYIRGYS	-----	GEEKV	YIAT	QGP	IPST	YDF	WRMV	WEQ	SAC	IVM	TRCE	EG-N	ENKCAE	YWP	---	EEQV	Y	GN	TR	VS	VE	ED	V	V	L	V	D	Y	T	VR	K	F				
hSHP1 D1 (NP 002822) PTPN6 (82)	INANYIKNQLGPD	-----	ENAKT	YIAA	QGP	LEAT	YDF	WRMV	WEQ	SAC	IVM	TRCE	EG-N	ENKCAE	YWP	---	EVGM	Q	R	A	Y	GN	TR	VS	VE	ED	V	V	L	V	D	Y	T	VR	K	F	
hSHP2 D1 (NP 002825) PTPN11 (82)	INANIMPEFETKCNNSKPKKS	-----	SIINQ	YIAT	QGP	LPHT	YDF	WRMV	WEQ	SAC	IVM	TRCE	EG-N	ENKCAE	YWP	---	DEYA	L	K	E	Y	GN	TR	VS	VE	ED	V	V	L	V	D	Y	T	VR	K	F	
hPTPD1 D1 (NP 008970) PTPN21 (74)	INASHIKVSVS	-----	GIEWD	YIAT	QGP	LPNT	YDF	WRMV	WEQ	SAC	IVM	TRCE	EG-N	ENKCAE	YWP	---	RLGS	R	H	N	T	Y	GN	TR	VS	VE	ED	V	V	L	V	D	Y	T	VR	K	F
hPTPD2 D1 (NP 005392) PTPN14 (73)	INASHIKVSVS	-----	GAEWH	YIAT	QGP	LPHT	YDF	WRMV	WEQ	SAC	IVM	TRCE	EG-N	ENKCAE	YWP	---	GRTK	S	H	R	Y	GN	TR	VS	VE	ED	V	V	L	V	D	Y	T	VR	K	F	
hMEG1 D1 (NP 002821) PTPN4 (69)	INANYINMEIPSS	-----	SIINQ	YIAT	QGP	LPHT	YDF	WRMV	WEQ	SAC	IVM	TRCE	EG-N	ENKCAE	YWP	---	EPTG	S	S	Y	GN	TR	VS	VE	ED	V	V	L	V	D	Y	T	VR	K	F		
hPTPH1 D1 (NP 002820) PTPN3 (69)	INASYVMEIPAA	-----	NLVNK	YIAT	QGP	LPHT	YDF	WRMV	WEQ	SAC	IVM	TRCE	EG-N	ENKCAE	YWP	---	DPPD	V	M	N	Y	GN	TR	VS	VE	ED	V	V	L	V	D	Y	T	VR	K	F	
hMEG2 D1 (NP 002824) PTPN9 (73)	INASFMDGY	-----	KQKNA	YIAT	QGP	LPHT	YDF	WRMV	WEQ	SAC	IVM	TRCE	EG-N	ENKCAE	YWP	---	LEKD	S	R	I	Y	GN	TR	VS	VE	ED	V	V	L	V	D	Y	T	VR	K	F	
hPTP1B D1 (NP 002818) PTPN1 (67)	INASLILKME	-----	EAQRS	YIAT	QGP	LPNT	YDF	WRMV	WEQ	SAC	IVM	TRCE	EG-N	ENKCAE	YWP	---	QKEE	K	E	I	Y	GN	TR	VS	VE	ED	V	V	L	V	D	Y	T	VR	K	F	
hTCTPT D1 (NP 002819) PTPN2 (67)	INASLILKME	-----	EAQRS	YIAT	QGP	LPNT	YDF	WRMV	WEQ	SAC	IVM	TRCE	EG-N	ENKCAE	YWP	---	TDDQ	E	M	L	F	Y	GN	TR	VS	VE	ED	V	V	L	V	D	Y	T	VR	K	F
hPTPBAS D1 (NP 006255) PTPN13 (69)	INASFILKIPVG	-----	KEEFY	YIAT	QGP	LPHT	YDF	WRMV	WEQ	SAC	IVM	TRCE	EG-N	ENKCAE	YWP	---	NILG	K	T	M	V	Y	GN	TR	VS	VE	ED	V	V	L	V	D	Y	T	VR	K	F
hPTPTyp D1 (AL050040) PTPN20 (69)	INANYIRIVNC	-----	GEEFY	YIAT	QGP	LPHT	YDF	WRMV	WEQ	SAC	IVM	TRCE	EG-N	ENKCAE	YWP	---	ISL	K	P	L	E	Y	GN	TR	VS	VE	ED	V	V	L	V	D	Y	T	VR	K	F
hBDP1 D1 (NP 055184) PTPN18 (82)	INGNFRIGV	-----	DGSLA	YIAT	QGP	LPHT	YDF	WRMV	WEQ	SAC	IVM	TRCE	EG-N	ENKCAE	YWP	---	QE	P	L	T	Y	GN	TR	VS	VE	ED	V	V	L	V	D	Y	T	VR	K	F	
hLyPTP D1 (NP 057051) PTPN22 (81)	INANFIRKGV	-----	YGPKA	YIAT	QGP	LPHT	YDF	WRMV	WEQ	SAC	IVM	TRCE	EG-N	ENKCAE	YWP	---	EP	V	E	M	Q	Y	GN	TR	VS	VE	ED	V	V	L	V	D	Y	T	VR	K	F
hPEST D1 (NP 002826) PTPN12 (82)	INANFIRKGV	-----	YGPKA	YIAT	QGP	LPHT	YDF	WRMV	WEQ	SAC	IVM	TRCE	EG-N	ENKCAE	YWP	---	LY	G	E	D	P	Y	GN	TR	VS	VE	ED	V	V	L	V	D	Y	T	VR	K	F
hHDPTP D1 (NP 056281) PTPN23 (76)	INASCVEGLS	-----	PYCPPL	YIAT	QGP	LPHT	YDF	WRMV	WEQ	SAC	IVM	TRCE	EG-N	ENKCAE	YWP	---	TER	G	Q	P	M	Y	GN	TR	VS	VE	ED	V	V	L	V	D	Y	T	VR	K	F
hiA2 D1 (NP 002837) PTPRN (73)	INASPIED	-----	PRMPA	YIAT	QGP	LPHT	YDF	WRMV	WEQ	SAC	IVM	TRCE	EG-N	ENKCAE	YWP	---	DE	G	A	S	L	Y	GN	TR	VS	VE	ED	V	V	L	V	D	Y	T	VR	K	F
hiA2beta D1 (NP 002838) PTPRN2 (73)	INASPIED	-----	PRMPA	YIAT	QGP	LPHT	YDF	WRMV	WEQ	SAC	IVM	TRCE	EG-N	ENKCAE	YWP	---	DE	G	A	S	L	Y	GN	TR	VS	VE	ED	V	V	L	V	D	Y	T	VR	K	F
hPTPalpa D2 (NP 002827) PTPRA (78)	INASFIDGYR	-----	QKDSY	YIAT	QGP	LPHT	YDF	WRMV	WEQ	SAC	IVM	TRCE	EG-N	ENKCAE	YWP	---	SD	G	L	V	Y	GN	TR	VS	VE	ED	V	V	L	V	D	Y	T	VR	K	F	
hPTPepsilon D2 (NP 006495) PTPRE (78)	INASFIDGYR	-----	QKDSY	YIAT	QGP	LPHT	YDF	WRMV	WEQ	SAC	IVM	TRCE	EG-N	ENKCAE	YWP	---	TE	G	S	V	T	Y	GN	TR	VS	VE	ED	V	V	L	V	D	Y	T	VR	K	F
hCD45 D2 (NP 002829) PTPRC (96)	INASFIMSYW	-----	KPEVM	FIAA	QGP	LPKST	YDF	WRMI	WEQ	HCS	IVM	TRCE	EG-N	ENKCAE	YWP	---	EG	K	T	Y	GN	TR	VS	VE	ED	V	V	L	V	D	Y	T	VR	K	F		
hPTPkappa D2 (NP 002835) PTPRK (76)	INAAALMDSYR	-----	QPAA	FIVT	Q	Y	LP	N	T	Y	DF	WR	M	W	E	Q	S	A	C	I	V</																

	(304)	304	310	320	330	346				
hCD45 D1 (NP 002829) PTPRC (240)	AENK---	VDVYGYVVKLR	QRCL	MVQVEA	OYILTH	QALVEYNQ				
hPTPalpa D1 (NP 002827) PTPRA (241)	TERK---	VDVYGFVSRIFA	QRCC	MVQTD	DMOYVFIY	QALLEHYL				
hPTPepsilon D1 (NP 006495) PTPRE (240)	AEQK---	VDVFEFVSRIR	NQRPO	MVQTD	DMOYTFTY	QALLEYYL				
hPTPlamda D1 (NP 005695) PTPRU (231)	CEGV---	VDIYNCKVKTLC	SRRVN	MVQTE	EQYIFIHDA	ILEACL				
hPTPkappa D1 (NP 002835) PTPRK (235)	REGV---	VDIYNCKVKA	SRRIN	MVQTE	EQYIFIHDA	ILEACL				
hPTPmu D1 (NP 002836) PTPRM (235)	REGV---	VDIYNCKVRE	SRRVN	MVQTE	EQYVFHDA	ILEACL				
hPTPrho D1 (NP 573400) PTPRT (235)	NEGV---	VDIFNCVRE	RAQRVN	LVQTE	EQYVFVHDA	ILEACL				
hPTPsiigma D1 (NP 002841) PTPRS (236)	PEKT---	VDVYGHVTL	MRSQRNY	MVQTE	EDQYSFIH	EALLEAVG				
hPTPdelta D1 (NP 002830) PTPRD (236)	HEKT---	VDIYGHVTL	MRAQRNY	MVQTE	EDQYIFIHDA	ALLEAVT				
hLAR D1 (NP 002831) PTPRF (236)	HEKT---	VDIYGHVTC	MRSQRNY	MVQTE	EDQYVFHDA	ALLEAAT				
hPTPqamma D1 (NP 002832) PTPRG (252)	DKST---	VNVLGF	LKHIRT	QRNY	LVQTE	EQYIFIHDA	ALLEAIL			
hPTPzeta D1 (NP 002842) PTPRZ1 (254)	HGFT---	VNIFGF	LKHIRT	SQRNY	LVQTE	EQYVFHDA	LDLVEAIL			
hSAP1 D1 (NP 002833) PTPRH (240)	SEGL---	LGPFSF	VRKMR	ESRPL	MVQTE	EAQYVFLH	QCICGSSN			
hDEP1 D1 (NP 002834) PTPRJ (238)	NENT---	VDVYGI	VYDLR	MHRL	MVQTE	EDQYVFLH	NQCVLDIVR			
hPTPbeta D1 (NP 002828) PTPRB (241)	SKDS---	VDIYGAVH	DLRHRVH	MVQTE	ECQYVFLH	QCVRDVL	R			
hGLEPP1 D1 (NP 109592) PTPRO (238)	DHEF---	VDILGL	VSEMR	SYRMS	MVQTE	EQYIFH	QCQVQLMWM			
hPTPS31 D1 (AR073855) PTPGMC1 (237)	DHDF---	VDIYGL	VAELE	RSE	RMC	MVQNLA	OYIFLH	QCILDL	LS	
hOSTPTP D1 (NT 004671) Chr1 (237)	EEQM---	VDVFAV	FVAFWM	HGPM	TQTL	LSQYVFLH	SCLLNK	IL		
hHePTP D1 (NP 002823) PTPN7 (234)	ARGE---	VDILGI	VCQLR	LD	RGG	MIQTAE	OYQFLH	HHTLAL	YAG	
hPCPTP1 D1 (NP 002840) PTPRR (236)	EEGV---	VDALSI	VCQLR	MD	RGG	MVQTE	EQYEFVH	HALCL	YES	
hSTEP D1 (NP 116170) PTPN5 (237)	QEGV---	VDILKT	TCQLR	QD	RGG	MIQTCE	OYQFVH	HVM	SLYEK	
hSHP1 D1 (NP 002822) PTPN6 (255)	TKGLDCD	LDIQKT	IQM	VRA	QRSG	MVQTE	EAQYKFIY	VIAQ	FDIE	
hSHP2 D1 (NP 002825) PTPN11 (258)	EKGVD	CDLDP	VPKTI	QM	VRS	QRSG	MVQTE	EAQYRFIY	MVAVQHYIE	
hPTPD1 D1 (NP 008970) PTPN21 (253)	HNEV---	LDIPRV	LDMLR	QRMM	LVQTE	LCQYTFVY	RVLIQ	FLK		
hPTPD2 D1 (NP 005392) PTPN14 (253)	HNEK---	VEVPM	MLRL	LR	QRMP	MIQT	IAQYKFIY	QVLIQ	FLQ	
hMEG1 D1 (NP 002821) PTPN4 (238)	CNQP---	YPLDI	VRTMR	DORAM	MIQT	PSQYRFV	CEAL	LK	VYE	
hPTPH1 D1 (NP 002820) PTPN3 (237)	RNLP---	YPLDI	VRKMR	DORAM	MVQTE	SSQYKFIY	CEAL	LR	VYE	
hMEG2 D1 (NP 002824) PTPN9 (252)	ELGT---	LNVFQT	VSRMR	TQRAFS	TQTE	PEQYFY	CKAILE	FAE		
hPTP1B D1 (NP 002818) PTPN1 (237)	KRKPSS	VDIKKV	LLEMR	KFRMG	LIQT	ADQLRFS	NLAVIE	GAK		
hTCTP D1 (NP 002819) PTPN2 (236)	KGDD---	FNKQV	LLNMR	KYRMG	LIQT	PDQLRFS	SYMAIE	GAK		
hPTPbas D1 (NP 006255) PTPN13 (236)	QDLN---	FDISDL	VRCMR	LQRHG	MVQTE	EDQYIF	CYQVIL	LYVLT		
hPTPtyp D1 (AL050040) PTPN20 (235)	KDCS---	FNIMDI	VQAQR	QRSG	MVQTE	KEQYHFC	DIVLE	VLR		
hBDP1 D1 (NP 055184) PTPN18 (246)	TQMIP	PDFSL	FDV	VLKMR	KORPAA	VQTE	EQYRFV	HHTVA	QMFC	
hLvPTP D1 (NP 057051) PTPN22 (245)	DGIIP	ENFV	FSLIRE	MFTQ	RPS	LVQTE	QEYELV	NAVLE	LFK	
hPEST D1 (NP 002826) PTPN12 (246)	AGKIPE	EFNV	NLQEMR	TQRHSA	VQTE	KEQYELV	HRAIA	QLFE		
hHDPTP D1 (NP 056281) PTPN23 (246)	AGNG---	IEPLP	QLVRRMR	QQRKH	MIQ	EKLHLR	FCYEA	VVRHVE		
hIA2 D1 (NP 002837) PTPRN (239)	KGVK---	EDIAAT	LEHVR	DQRP	GVRS	KDQEF	FALTA	VAAE	VN	
hIA2beta D1 (NP 002838) PTPRN2 (239)	KGAK---	EDIAAT	LEHLR	DQRP	MVQTE	KEQEF	FALTA	VAAE	VN	
hPTPalpa D2 (NP 002827) PTPRA (243)	AEGI---	LDVFT	VKSLE	LQRPH	MVQTE	LEQYEF	CKVQ	QD	FID	
hPTPepsilon D2 (NP 006495) PTPRE (248)	AEGV---	LDVFT	VKSLE	LQRPH	MVQTE	LEQYEF	CKVQ	QD	FID	
hCD45 D2 (NP 002829) PTPRC (269)	TEEV---	VDIFQV	VKALR	KARPG	MVST	FEQYQF	LV	DVIA	STYP	
hPTPkappa D2 (NP 002835) PTPRK (244)	RQNV---	VDVFAV	KTLRNS	KPN	MVEAPE	QYRF	CDVA	LE	YLE	
hPTPlamda D2 (NP 005695) PTPRU (245)	CHNL---	VDVFAAK	TLRNY	KPN	MVET	MDQYHFC	CDVA	LE	YLE	
hPTPmu D2 (NP 002836) PTPRM (244)	HQRT---	VDVFAV	KTLR	NNKPN	MVDLLD	QYKFC	EV	LE	YLE	
hPTPrho D2 (NP 573400) PTPRT (244)	QQNI---	VDVFI	VKTLR	NNKSN	MVET	LEQYKFIY	EV	LE	YLE	
hLAR D2 (NP 002831) PTPRF (244)	YEGV---	VDMFQ	VKTLR	TORPA	MVQTE	EDQYQL	CVRA	LE	YLE	
hPTPdelta D2 (NP 002830) PTPRD (244)	YEGV---	VDIFQT	VKMLR	TORPA	MVQTE	EDQYQF	SVRA	LE	YLE	
hPTPsiigma D2 (NP 002841) PTPRS (244)	YEGV---	VDIFQT	VKMLR	TORPA	MVQTE	EDQYQF	CVRA	LE	YLE	
hPTPqamma D2 (NP 002832) PTPRG (244)	NENA---	VDVQVAK	MENLM	RPG	VFTDIE	EQYQFIY	KARLS	SLVS		
hPTPzeta D2 (NP 002842) PTPRZ1 (243)	KENS---	VDVYQVAK	MENLM	RPG	VFTDIE	EQYQFIY	KARLS	SLVS		
hOSTPTP_D2 (NT_004671) Chr1 (232)	SECT---	VDVFN	VALQ	QSQACDL	MTPL	HLKQYI	LYNCL	NSA	L	
Consensus (304)	E	VDIF	V	LR	QR	MVQT	EQY	FIY	AILE	L