

Supplementary Data

Section 1. Sequence Alignments.

ICAM 1 Protein Alignment. The deduced mature peptide sequence is shown in the one letter IUPAC code. Periods (.) indicate identities with respect to human sequence #1. Species: Hs, Human; Pt, Common Chimpanzee; Ppan, Bonobo (Pygmy Chimpanzee); Gg, Gorilla; Pp, Orangutan; Mm, Rhesus macaque. There are two human sequences from different individuals (that differ by a single amino acid residue). Our Hs1 sequence is identical to GenBank J03132. Our Pt sequence is identical to GenBank M86848.

Hs1	QTSVSPSKVI	LPRGGSVLVT	CSTSCDQPKL	LGIETPLPKK	ELLLPGNNRK	VYELSNVQED
Hs2	.....	.....	.....	.....	.....	.....
Pt	.....P...	.....Q..	.....D.	.....	....G...W.	.....
Ppan	.....P...	.....Q..	.....D.	.....	....G...W.	.....
Gg	.....P...	.....	.....T.	.....	....L...Q.	.....
Pp	H....SAN.F	.....N	.....T.	.....	..PG...W.	M.....
Mm	....F.PE..	.....K.N	..A.....IS	..M.....	.I.PG...W.	M.....
Hs1	SQPMCYSNCP	DGQSTAKTFL	TVYWTPERVE	LAPLPSWQPV	GKNLTLRCQV	EGGAPRANLT
Hs2	.....	.....	.....	.....	.....	.....
Pt	.....	.....	.....	.....	..D.....	.....
Ppan	.....	.....	.....	.....	..D.....	.....
Gg	.....	.....	.....	.....	..D.....	.....I
Pp	.....	....A....	.....	.....	.....	.....
Mm	.....	....S...L.	.....	.....P....	.....	.....
Hs1	VVLLRGEKEL	KREPAVGEP	EVTTTTLVRR	DHHGANFSCR	TELDLRPQGL	ELFENTSAPY
Hs2	.....	.....	.....	.....	.....	.....
Pt	.....	.....	.....E.	.....	.....	Q.....H
Ppan	.....	.....	.....E.	.....	.....	Q.....H
Gg	.....E..	.....	.....P.EK	.....L..	.....	K.....
Pp	.....E..	S.Q.....	...A...A.K	.D.....	.....	.....H
Mm	.M.....	S.QS.....	.....P.G.	.D.....	.....YV.	K.....H
Hs1	QLQTFVLPAT	PPQLVSPRVL	EVDTQGTVVC	SLDGLFPVSE	AQVHLALGDQ	RLNPTVTYGN
Hs2	.....	.....	.....	.....	.....	.....
Pt	.....	.....	.....	.....L.	.....	.....
Ppan	.....	.....	.....	.....L.	.....	.....
Gg	.....	.....	.....	.....	.....	.....
Pp	.....	.....	.....	.....	.....	.....V
Mm	.....D....	.....Q..	.....	.....	....S.....	K....I....

Hs1	DSFSAKASVS	VTADEGTQR	LTCAVILGNQ	SQETLQTVTI	YSFPAPNVIL	TKPEVSEGTE
Hs2	.....	.....	.....	.....	.....	.....
Pt	.....	.....	.....	.R.....	.....	.....
Ppan	.....	.....	.M.....	.R.....	.....	.....
Gg	.....	.....W	.....T.	.....	.....	.....
Pp	..L.....	...E...W	.W....R..	...R.....	.....T.	M.....
Mm	N.L.....K	...E...Q	.L.G.M....	T...R.....	.....N.	.....
Hs1	VTVKCEAHPR	AKVTLNGVPA	QPLGPRAQLL	LKATPEDNGR	SFSCSATLEV	AGQLIHKNT
Hs2	.....	.....	.....	.....	.....	.....
Pt	.....	.....	..V...V..	.....	.....	.....
Ppan	.....	.....	..V...V..	.....	.....	.....
Gg	.....	.....	..P...T.F.	.....	.....	.....
Pp	.I.....A	.N.....	..P.....F.	.....	.....	.....
Mm	.I.E.....	...M.....	..P.....F.	.....	.....	...V.....
Hs1	RELRVLYGPR	LDERDCPGNW	TWPENSQQTP	MCQAWGNPLP	ELKCLKDGTG	PLPIGESVTV
Hs2	.....	.....	.....	.....	.....	.....
Pt	.....	.....	.....	...S.....	.....	...V.....
Ppan	.....	.....	.....	...S.....	.....	...V.....
Gg	.....	.....	.....	.....	.....	...V.....
Pp	.....	.....	.....	.....	.....	.....
Mm	.....	...K.....	.....	.....	Q.....	...Q.....
Hs1	TRDLEGTYLC	RARSTQGEVT	REVTNVNLSP	RYEIVIIITV	AAAVIMGTAG	LSTYLYNRQR
Hs2	.....	.....	.K.....	.....	.....	.....
Pt	.....	.....	.K.....	.....	.....	.....
Ppan	.....	.....	.K.....	.....	.....	.....
Gg	.....	.....	.....	...F...A..	.....	.....
Pp	.....	.....	.....	.....	...A.L....	.....
Mm	.....	Q...R....	.....	...V...P..	.....L....	VA.....
Hs1	KIKKYRLQQA	QKGTPMKPNT	QATPP			
Hs2	.....	.....	.....
Pt	..R.....	.....	.....	
Ppan	..R.....	.....	.....	
Gg	..R.....	.....	.....	
Pp	..RI.....	.....	.T...			
Mm	..R.....	.N.....	.....		

ICAM 2 Protein Alignment. The deduced mature peptide sequence is shown in the one letter IUPAC code. Periods (.) indicate identities with respect to human sequence #1. Species: Hs, Human; Pt, Common Chimpanzee; Gg, Gorilla; Mm, Rhesus macaque. There are two human sequences from different individuals (that differ by a single amino acid residue). Our Hs1 sequence is identical to GenBank BC003097.

Hs1	SDEKVFVHV	RPKKLAVEPK	GSLEVNCSTT	CNQPEVGGLE	TSLDKILLDE	QAQWKHYLVS
Hs2	.....	.....	.....	.....	...N.....	.....
Pt	.....	.....	...K.....	.....	.....	.....
Gg	.....	.....	A.....	.....	.....	.....
Mm	...A...M	.LE..I.K..	E.F.....	.....	...N...L.	.T.....I.
Hs1	NISHDTVLQC	HFTCSGKQES	MNSNVSVYQP	PRQVILTLPQ	TLVAVGKSFT	IECRVPTVEP
Hs2	.....	.....	.....	.....	.....	.....
Pt	.....	.....	.....	.....	.....	.....
Gg	.....	.....	.....	.....	.....	.....
Mm	.....W.	.....K.	.S.....	...F.....	.W.....	.....A...
Hs1	LDLSTLFLFR	GNETLHYETF	GKAAPAPQEA	TATFNSTADR	EDGHRNFSCL	AVLDLMSRGG
Hs2	.....	.....	.....	.....	.....	.....
Pt	.....	.....	.....	.V.....	D.....	.....
Gg	.....	.....NQ..	.....L...	.....	.....	.....I....
Mm	.....S.L.	.S.....SQ..	.....L...	.....S.M.H.	.....H.....	.....
Hs1	NIFHKHSAPK	MLEIYEPVSD	SQMVIIVTVV	SVLLSLFVTS	VLLCFIFGQH	LRQQRMGTYG
Hs2	.....	.....	.....	.....	.....	.....
Pt	.....	.....	.....	.....	.....	.....
Gg	...QE.....	.....	.....	.....	.....	.....
Mm	EV.CT.....	.....P.	.....	...F.....	.....S..	W..R.....
Hs1	VRAAWRRLPQ	AFRP				
Hs2	.....	.....		
Pt	.....	.....		
Gg	.....	.....		
Mm	.....	.....		

ICAM 3 Protein Alignment. The deduced mature peptide sequence is shown in the one letter IUPAC code. Periods (.) indicate identities with respect to human sequence #1. Species: Hs, Human; Pt, Common Chimpanzee; Gg, Gorilla; Pp, Orangutan; Mm, Rhesus macaque. There are two human sequences from different individuals (that differ by a single amino acid residue). Our Hs1 sequence is identical to GenBank X69819. There are two chimpanzee sequences that also differ by a single amino acid residue.

Hs1	QEFLLRVEPQ	NPVLSAGGSL	FVNCSTDCPS	SEKIALETSL	SKELVASGMG	WAAFNLSNVT
Hs2	.....	.....	.....	F.....	.....	.....
Pt1/2	.....	.....	.....	.....	.....	.....
Pt3	.....	.....	.....	.....	.....	.....
Gg	.....	.....	.....	.....	.....	.....
Pp	.....	...P....	L.....	.K.....	...DN...	...Y.....
Mm	.....	...FP....	L.....	.K..I....	...DN.T.	...Q.....

Hs1	GNSRILCSVY	CNGSQITGSS	NITVYGLPER	VELAPLPPWQ	PVGQNFTLRC	QVEGGSPRTS
Hs2	.....	.....	.....	.....	.....	.....
Pt1/2	.....	.....	.....R....	.....	R.....	.....
Pt3	.....	.....	.....R....	.....	R.....	.....
Gg	.....	.....	.....R....	.....	.....	.....
Pp	.....	.....I...	.....R....	.....L..	.....	.....
Mm	.....G.	.....F.	D....S....	.....	.....LI...	.....

Hs1	LTVVLLRWEE	ELSRQPAVEE	PAEVTATVLA	SRDDHGAPFS	CRTELDMQPQ	GLGLFVNTSA
Hs2	.....	.....	.....	.....	.....	.....
Pt1/2	.....	.....	.....	.....	.....	.....
Pt3	.....	.....	.....	.....	.....	.....
Gg	.....	.....	.....P...	..G.....	.....	.....
Pp	.....	.....	.....	..GH...H..	.....	.....
Mm	.....K	..T....G.	...NT...T	..E...H..	.....K..	..E..R....

Hs1	PRQLRTFVLP	VTPPRLVAPR	FLEVETSWPV	DCTLDGLFPA	SEAQVYLALG	DQMLNATVMN
Hs2	.....	.....	.....	.....	.....	.....
Pt1/2	.....	.....	.....	.....	.....	.....
Pt3	.....	.....	.....	.....	.....	.....
Gg	.....	M.....	.....	.....	.....	.....
Pp	.....	.....	...A.....	.....	.....	.....V.
Mm	.....A..	.....	...K....	N.....	.....	.....

Hs1	HGDTLTATAT	ATARADQEGA	REIVCNVTLG	GERREARENL	TVFSFLGPIV	NLSEPTAHEG
Hs2	.....	.....	.....	.....	.....	.....
Pt1/2	.....	.....	.....	.....	.....T.	.....P..
Pt3	.....	.....	.....	.....	.....T.	.....P..
Gg	.....	...L.....	.....	.....	.I.....	.....P..
Pp	.....	.M.....	Q.....	.....	.....L	.....S.P..
Mm	...M.....	.....	.....I..	...L.T....	.....L	.....S.P..
Hs1	STVTVSCMAG	ARVQVTLDGV	PAAAPGQPAQ	LQLNATESDD	GRSFFCSATL	EVDGEFLHRN
Hs2	.....	.....	.....	.....	.....	.....
Pt1/2	.....	.....	.....	.....	R.....	.....
Pt3	.....	.....	.....	.....	R.....	.....
Gg	.....	.....	.....	.....	.....	.....
Pp	.....	.....	.....	.....	.....	.....F...
Mm	.....	.....	.....	.....	..N.....	.....C..
Hs1	SSVQLRVLYG	PKIDRATCPQ	HLKWKDKTRH	VLQCQARGNP	YPELRCLKEG	SSREVPVGIP
Hs2	.....	.....	.....	.....	.....	.....
Pt1/2	.....	.....	.....T.	.....	.....	.....
Pt3	.....	.....	.....T.	.....	.....	.....
Gg	.....	.....	.....T.	.....	.....	.....
Pp	.....	.....	.....	.....	H.....	.....
Mm	.....	.....	.....	.....	..Q.....	..N.....
Hs1	FFVNVTHNGT	YQCQASSSRG	KYTLVVVMDI	EAGSSHFPVP	FVAVLLTLGV	VTIVLALMYV
Hs2	.....	.....	.....	.....	.....	.....
Pt1/2	.....	.....	.....	.....	.....	.....
Pt3	.....	.....	.....	.....	.....	.....
Gg	.....	.....	.....	.....	.....	.....
Pp	.....	.....	R.....	...N...L.	.L...V....	..V.V.....
Mm	.....	.....	.....	..PK.....	.L...V....	..V.V.....
Hs1	FREHQRSYSY	HVREESTYLP	LTSMQPTEAM	GEEPSRAE		
Hs2	.....	.....	.....	.....
Pt1/2	...K.....	.....	.....Q..	.....	
Pt3	...K.....	.....	.....	.....
Gg	...K.....	.....	.....	.....
Pp	...K...R.	...Q...S..	.....	.....T..		
Mm	.K..K...R.	...Q...S..	.....	.....

ICAM 4 Protein Alignment. The deduced mature peptide sequence is shown in the one letter IUPAC code. Periods (.) indicate identities with respect to Hs sequence. Species: Hs, Human; Pt, Common Chimpanzee. Human sequence is from GenBank NM_001544.

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Hs ALGRRTKRAQ SPKGSPLAPS GTSVPFWVRM SPEFVAVQPG KSVQLNCSNS CPQPQNSSLR
Pt .....

Hs TPLRQGKTLR GPGWVSYQLL DVRAWSSLAH CLVTCAGKTR WATSRLTAYK PPHSVILEPP
Pt .....

Hs VLKGRKYTLR CHVTQVFPVG YLVVTLRHGS RVIYSESLER FTGLDLANVT LTYEFAAGPR
Pt .....

Hs DFWQPVICHA RLNLDGLVVR NSSAPITLML AWSPAPTALA SGSIAALVGI LLTVGAAYLC
Pt .....S......V.....

Hs KCLAMKSQA
Pt .....

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ICAM 5 Protein Alignment. The deduced mature peptide sequence is shown in the one letter IUPAC code. Periods (.) indicate identities with respect to human sequence. Species: Hs, Human; Pt, Common Chimpanzee. There are two human sequences from different individuals (that differ by a single amino acid residue). Hs1: GenBank BC026338, Hs2: GenBank U72671.

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Hs1 AVSQEPFWAD LQPRVAFVER GGSLWLNCSST NCPRPERGGL ETSLRRNGTQ RGLRWLARQL
Hs2 .....
Pt .....

Hs1 VDIREPETQP VCFFRCARRT LQARGLIRTF QRPDRVELMP LPPWQPVGEN FTLSCRVPGA
Hs2 .....
Pt .....

Hs1 GPRASLTLTL LRGAQELIRR SFAGEPPRAR GAVLTATVLA RREDHGANFS CRAELDLP
Hs2 .....
Pt .....

Hs1 GLGLFENSSA PRELRTFSL S PDAPRLAAPR LLEVGSERPV SCTL DGLFPA SEARVYLALG
Hs2 .....
Pt .....P.....

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Hs1	DQNLSPDVTL	EGDAFVATAT	ATASAEQEGA	RQLICNVTLG	GENRETRENV	TIYSFPAPLL
Hs2	.....	.....	.....	.....	.....	.....
Pt	.....	.....	.....	...V.....	.....	.....
Hs1	TLSEPSVSEG	QMVTVTCAAG	TQALVTLEGV	PAAVPGQPAQ	LQLNATENDD	RRSFFCDATL
Hs2	.....	.....	.....	.....	.....	.....
Pt	.....	.....S..	A.....	.....	.....	.....
Hs1	DVDGETLIKN	RSAELRVLYA	PRLDDSDCPR	SWTWPEGPEQ	TLRCEARGNP	EPSVHCARSD
Hs2	.....	.....	.....	.....	.....	.....
Pt	.....	.....	.....	.....	.....	.....
Hs1	GGAVLALGLL	GPVTRALSGT	YRCKAANDQG	EAVKDVTLTV	EYAPALDSVG	CPERITWLEG
Hs2	.....	.....	.....	.....	.....	.....
Pt	.....	.....	.....	.....	.....	.....
Hs1	TEASLSCVAH	GVPPPDVICV	RSGELGAVIE	GLLRVAREHA	GTYRCEATNP	RGSAAKNVAV
Hs2	.....	.....	.....	.....	.....	.....
Pt	.....	.....	.....	.....	.....	.....
Hs1	TVEYGPRFEE	PSCPSNWTWV	EGSGRLFSCE	VDGKPQPSVK	CVGSGGATEG	VLLPLAPPDP
Hs2	.....	.....	.....	.....	.....	.....
Pt	.....	.....	.....	.....	.....	.....
Hs1	SPRAPRIPRV	LAPGIYVCNA	TNRHGSAVKT	VVVSASPPE	MDESTCPSHQ	TWLEGAEASA
Hs2	.....	.....	.....	.....	.....	.....
Pt	.....	.....	.....	.....	.....	.....
Hs1	LACAARGRPS	PGVRCAREGI	PWPEQQRVSR	EDAGTYHCVA	TNAHGTDSTRT	VTVGVEYRPV
Hs2	.....	.....	.....	.....	.....	.....
Pt	.....	.....	.....	.....	.....	.....
Hs1	VAELAASPPG	GVRPGGNFTL	TCRAEAWPPA	QISWRAPPGA	LNIGLSSNNS	TL
Hs2	.....	.....	.....	.....	.....	..
Pt	.....	.....	.....	.....	.....	..

LFA-1 α Protein Alignment. The deduced mature peptide sequence is shown in the one letter IUPAC code. Periods (.) indicate identities with respect to Hs sequence. Species: Hs, Human; Pt, Common Chimpanzee. Human sequence is from GenBank Y00796.

Hs	YNLDVRGARS	FSPPRAGRHF	GYRVLQVGNG	VIVGAPGEGN	STGSLYQCQS	GTGHCLPVTL
Pt	.....	.....	.....	.....	.....	.....
Hs	RGSNYTSKYL	GMTLATDPTD	GSILACDPGL	SRTCDQNTYL	SGLCYLFRQN	LQGPMLQGRP
Pt	.....	.....	.....	.....	.....	.....
Hs	GFQECIKGNV	DLVFLFDGSM	SLQPDEFQKI	LDFMKDVMKK	LSNTSYQFAA	VQFSTSYKTE
Pt	.....	.....	.....	.....	.....	.....
Hs	FDFS DYVKKW	DPDALLKHVK	HMLLLTNTFG	AINYVATEVF	REELGARPDA	TKVLIITDGT
Pt	.....R.	.....	.....	.....	.....	.....
Hs	EATDSGNIDA	AKDIIRYIIG	IGKHFQTKES	QETLHKFASK	PASEFVKILD	TFEKLKDLFT
Pt	.....	.....	.....	.....	.....	.....
Hs	ELQKKIYVIE	GTSKQDLTSF	NMELSSSGIS	ADLSRGHAVV	GAVGAKDWAG	GFLDLKADLQ
Pt	.....	.....	.....	.....	.....	.....
Hs	DDTFIGNEPL	TPEVRAGYLG	YTVT WLPSRQ	KTSL LASGAP	RYQHMGRVLL	FQEPQGGGHW
Pt	.....	.....	.....E	.....	....V.....	.....
Hs	SQVQTIHGTO	IGSYFGGELC	GVDVDQDGET	ELLLIGAPLF	YGEQRGGRVF	IYQRRQLGFE
Pt	.....	.....	...M.....	.....	.....	.....
Hs	EVSELQGDPG	YPLGRFGEAI	TALTDINGDG	LVDVAVGAPL	EEQGAVYIFN	GRHGGLSPQP
Pt	.....	...Q.....	.....	.....	.....	.....
Hs	SQRIEGTQVL	SGIQWFGRSI	HGVKDLEGDG	LADVAVGAES	QMIVLSSRPV	VDMVT LMSFS
Pt	.....	.....	.....	.....	.....	..V.....
Hs	PAEIPVHEVE	CSYSTSNKMK	EGVNITICFQ	IKSLYPQFQG	RLVANLTYTL	QLDGHRTRRR
Pt	.....	.....	.....	....I.....	.....	.....
Hs	GLFPGGRHEL	RRNIAVT TSM	SCTDFS FHFPP	VCVQDLISPI	NVSLN FSLWE	EEGTPRDQRA
Pt	.....	.....	.....	.....	.....	.....
Hs	QKDIPIILR	PSLHSETWEI	PFEKNCGEDK	KCEANLRVSF	SPARSRALRL	TAFASLSVEL
Pt	.....	.....	.....	.....	.....	.....
Hs	SLSNLEEDAY	WVQLDLHFPP	GLSFRKVEML	KPHSQIPVSC	EELPEESRLI	SRALSCNVSS
Pt	.....	.....	.....	.....	.....	.....
Hs	PIFKAGHSVA	LQMMFN TLVN	SSWGDSVELH	ANVTCNNEDS	DLLEDNSATT	IIPILYPINI
PtR

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Hs LIQDQEDSTL YVSFTPKGPK IHQVKHMYQV RIQPSIHDHN IPTLEAVVGV PQQPSEGPIT
Pt .....N... ..... ..... ..... ..... .....Q.....

Hs HQWSVQMEPP VPCHYEDLER LPDAAECLP GALFRCPVVF RQEILVQVIG TLELVGEIEA
Pt ..... ..... .....L..... ..... .....

Hs SSMFSLCSSL SISFNSSKHF HLYGSNASLA QVVMKVDVVY EKQMLYLYVL SGIGGLLLLLL
Pt ..... ..... ..... ..... ..... .....

Hs LIFIVLYKVG FFKRNLKEKM EAGRGVNGI PAEDSEQLAS GQEAGDPGCL KPLHEKDSSES
Pt ..... ..... ..... ..... ..... .....

Hs GGGKD
Pt .....

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Mac-1 α Protein Alignment. The deduced mature peptide sequence is shown in the one letter IUPAC code. Periods (.) indicate identities with respect to human sequence. Species: Hs, Human; Pt, Common Chimpanzee. There are two slightly different human sequences from different individuals. Hs1: GenBank J04145, Hs2: GenBank M18044.

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Hs1 FNLDTENAMT FQENARGFGQ SVVQLQGSRV VVGAPQEIVA ANQRGSLYQC DYSTGSCEPI
Hs2 ..... ..... ..... ..... ..... .....
Pt .....T..... ..... ..... ..... .....

Hs1 RLQVPVEAVN MSLGLSLAAT TSPQQLACG PTVHQTCSEN TYVKGLCFLF GSNLRQQPQK
Hs2 ..... ..... ..... ..... ..... .....
Pt ..... ..... ..... ..... ..... .....

Hs1 FPEALRGCPQ EDSDIAFLID GSGSIIPHDF RRMKEFVSTV MEQLKSKTL FSLMQYSEEF
Hs2 ..... ..... ..... ..... ..... .....
Pt .....N.Y.. ..... ..... ..... .....

Hs1 RIHFTFKEFQ NNPNPRSLVK PITQLLGRTH TATGIRKVVR ELFNITNGAR KNAFKILVVI
Hs2 ..... ..... ..... ..... ..... .....
Pt ..... ..... ..... ..... ..... .....

Hs1 TDGEKFGDPL GYEDVIPEAD REGVIRYVIG VGDAFRSEKS RQELNTIASK PPRDHVFQVN
Hs2 ..... ..... ..... ..... ..... .....
Pt .....H..... ..... ..... ..... .....

Hs1 NFEALKTIQN QLREKIFAIE GTQTGSSSSF EHEMSQEGFS AAITSNGPLL STVGSYDWAG
Hs2 ..... ..... ..... ..... ..... .....
Pt .....G..... ..... ..... ..... .....

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Hs1	GVFLYTSKEK	STFINMTRVD	SDMNDAYLGY	AAAIILRNRV	QSLVLGAPRY	QHIGLVAMFR
Hs2	.....	.....	.....	.....	.....	.....
Pt	.....	.....	.....	.....	.....	.....
Hs1	QNTGMWESNA	NVKGTQIGAY	FGASLCSVDV	DSNGSTDLVL	IGAPHYYEQT	RGQVSVCPPL
Hs2	.....	.....	.....	.....	.....	.....
Pt	.....	.....	.....	.....	.....	.....
Hs1	PRGQRARWQC	DAVLYGEQOQ	PWGRFGAALT	VLGDVNGDKL	TDVAIGAPGE	EDNRGAVYLF
Hs2	...-.....	.....	.....	.....	.....	.....
Pt	.....	.....	.....	.....	.....	.....
Hs1	HGTSGSGISP	SHSQRIAGSK	LSPRLQYFGQ	SLSGGQDLTM	DGLVDLTVGA	QGHVLLLRSQ
Hs2	.....	.....	.....	.....	.....	.....
Pt	.....I.....	.....	.....	.....	.....	.....
Hs1	PVLRVKAIME	FNPREVARNV	FECNDQVVKG	KEAGEVRVCL	HVQKSTRDRL	REGQIQSVVT
Hs2	.....	.....	.....	.....	.....	.....
Pt	.....	.....	.....	.....	.....	.....
Hs1	YDLALDSGRP	HSRAVFNETK	NSTRRQTQVL	GLTQTCETLK	LQLPNCIEDP	VSPIVLRINF
Hs2	.....	.....	.....	.....	.....	.....
Pt	.....	R.....	.....	.....	.....	.....
Hs1	SLVGTPLSAF	GNLRPVLAED	AQRLFTALFP	FEKNCGNDNI	CQDDLSITFS	FMSLDCLVVG
Hs2	.....	.....	.....	.....	.....	.....
Pt	.....	.....	.....	.....	.....	.....
Hs1	GPREFNVTVT	VRNDGEDSYR	TQVTFFFPLD	LSYRKVSTLQ	NQRSQRSWRL	ACESASSTEV
Hs2	.....	.....	.....	.....	.....	.....
Pt	.....M.	.....	.....G	.....	.....	.....V.....
Hs1	SGALKSTSCS	INHPIFPENS	EVTFNITFDV	DSKASLGNKL	LLKANVTSEN	NMPRTNKTEF
Hs2	.....	.....	.....	.....	.....	.....
Pt	.....	.....	.....	.....	.....	.....
Hs1	QLELPVKYAV	YMVVTSHGVS	TKYLNFTASE	NTSRVMQHGY	QVSNLQORSL	PISLVFLVPV
Hs2	.....	.....	.....	.....	.....P	.....
Pt	.....	.....	.....	.....	.....	.....
Hs1	RLNQTVIWDR	PQVTFSENLS	STCHTKERLP	SHSDFLAELR	KAPVVNCSIA	VCQRIQCDIP
Hs2	.....	.....	.....	.....	.....	.....
Pt	.....	.....	.....	.....	.....	.....
Hs1	FFGIQEEFNA	TLKGNLSFDW	YIKTSHNHLL	IVSTAEILFN	DSVFLLPGQ	GAFVRSQTET
Hs2	.....	.....	.....	.....	.....	.....
Pt	.....V..	.....	.....	.....	.....	.....
Hs1	KVEPFVPPNP	LPLIVGSSVG	GLLLLALITA	ALYKLGFFKR	QYKDMMSEGG	PPGAEPQ
Hs2	.....	.....	.....	.....	.....	.....
Pt	.....	.....	.....	.....	.....	.....

Section 2. Important Amino Acid Residues: ICAMs, LFA-1.

ICAM 1 amino acid residues known or implicated to be important for LFA-1 binding. All of these residues are identical between human ICAM 1 and our chimpanzee ICAM 1 sequences. In fact, most of these residues are identical (or at least very well conserved) in all the primate sequences we have examined (see ICAM 1 protein alignment in Section 1). Residues that are identical in all primate ICAM 1 sequences are underlined; residues that are identical in all but one sequence are in *italics*.

Human	Chimpanzee	Reference
<u>Asp-26</u>	<u>Asp-26</u>	12
<i>Leu-30</i>	<i>Leu-30</i>	4
<u>Leu-31</u>	<u>Leu-31</u>	4
<i>Ile-33</i>	<i>Ile-33</i>	4
<u>Glu-34</u>	<u>Glu-34</u>	1, 4, 5, 6
<u>Thr-35</u>	<u>Thr-35</u>	5
<u>Pro-36</u>	<u>Pro-36</u>	5
<u>Lys-39</u>	<u>Lys-39</u>	5, 6
<u>Gly-46</u>	<u>Gly-46</u>	12
<u>Gln-62</u>	<u>Gln-62</u>	5
<u>Met-64</u>	<u>Met-64</u>	5, 6
<u>Tyr-66</u>	<u>Tyr-66</u>	5, 6
<u>Asn-68</u>	<u>Asn-68</u>	5, 6
<u>Gln-62</u>	<u>Gln-62</u>	5
<u>Gln-73</u>	<u>Gln-73</u>	5, 6

ICAM 1 amino acid residues known or implicated to be important for Mac-1 binding. All of these residues are identical between human ICAM 1 and our chimpanzee ICAM 1 sequences. In fact, most of these residues are identical (or at least very well conserved) in all the primate sequences we have examined (see ICAM 1 protein alignment in Section 1). Residues that are identical in all primate ICAM 1 sequences are underlined; residues that are identical in all but one sequence are in *italics*.

Human	Chimpanzee	Reference
<u>Asp-229</u>	<u>Asp-229</u>	12
<u>Asn-240</u>	<u>Asn-240</u>	12
<u>Glu-254</u>	<u>Glu-254</u>	12
<i>Asn-269</i>	<i>Asn-269</i>	12

ICAM 1 amino acid residues known or implicated to be important for ICAM 1 dimerization. All of these residues are identical (except residue 18: see text) between human ICAM and our chimpanzee ICAM 1 sequences, and most of these are identical or at least very well conserved in all the primate sequences we have examined (see ICAM 1 protein alignment in Section 1). Residues that are identical in all primate ICAM 1 sequences are underlined; residues that are identical in all but one sequence are in *italics*. The residue that differs between human and chimpanzee ICAM 1 is in **bold**.

Human	Chimpanzee	Reference
Leu-18	Gln-18	3
<i>Leu-42</i>	<i>Leu-42</i>	3
<u>Leu-43</u>	<u>Leu-43</u>	3
<u>Leu-44</u>	<u>Leu-44</u>	3
Val-51	Val-51	7

ICAM 1 amino acid residues known or implicated to be important for rhinovirus binding. All

these of these residues are identical (except residues 29 and 49: see text) between human ICAM 1 and our chimpanzee ICAM 1 sequences. In fact, most of these residues are identical (or at least very well conserved) in all the primate sequences we have examined (see ICAM 1 protein alignment in Section 1). Residues that are identical in all primate ICAM 1 sequences are underlined; residues that are identical in all but one sequence are in *italics*. The two residues that differ between human and chimpanzee ICAM 1 are in **bold**.

Human	Chimpanzee	Reference
<i>Gln-1</i>	<i>Gln-1</i>	1
<u>Thr-2</u>	<u>Thr-2</u>	10
<u>Asp-26</u>	<u>Asp-26</u>	1
<u>Gln-27</u>	<u>Gln-27</u>	10
<u>Pro-28</u>	<u>Pro-28</u>	2
Lys-29	Asp-29	2, 9
<i>Leu-30</i>	<i>Leu-30</i>	2
<u>Glu-34</u>	<u>Glu-34</u>	1
<u>Leu-37</u>	<u>Leu-37</u>	2
<u>Lys-40</u>	<u>Lys-40</u>	2
<u>Leu-43</u>	<u>Leu-43</u>	10
<u>Gly-46</u>	<u>Gly-46</u>	1
<u>Asn-47</u>	<u>Asn-47</u>	10
<u>Asn-48</u>	<u>Asn-48</u>	10
Arg-49	Trp-49	1
<i>Gln-58</i>	<i>Gln-58</i>	1
<u>Ser-67</u>	<u>Ser-67</u>	2
<u>Pro-70</u>	<u>Pro-70</u>	2
<u>Asp-71</u>	<u>Asp-71</u>	1
<u>Gly-72</u>	<u>Gly-72</u>	10
<u>Thr-75</u>	<u>Thr-75</u>	10
<u>Ala-76</u>	<u>Ala-76</u>	10
<u>Lys-77</u>	<u>Lys-77</u>	1
<u>Arg-166</u>	<u>Arg-166</u>	1

ICAM 2 amino acid residues known or implicated to be important for LFA-1 binding. All but one of these residues are identical between human ICAM 1 and our chimpanzee ICAM 1 sequences, and most of these residues are identical, or at least very well conserved in all the primate sequences we have examined (see ICAM 2 protein alignment in Section 1). Residues that are identical in all primate ICAM 2 sequences are underlined; residues that are identical in all but one sequence are in *italics*. The one residue that differs between human and chimpanzee ICAM 2 is in **bold**. Our human sequences (from different individuals) differ at residue 41: one sequence is identical to chimpanzee (Asp), while the other shows Asn, which is identical to published human ICAM 2 sequences.

Human	Chimpanzee	Reference
<u>Val-33</u>	<u>Val-33</u>	13
<u>Gly-35</u>	<u>Gly-35</u>	13
<u>Glu-37</u>	<u>Glu-37</u>	4, 13
<u>Leu-40</u>	<u>Leu-40</u>	13
Asp-41/ Asn-41	Asp-41	13
<u>Lys-42</u>	<u>Lys-42</u>	13
<u>Leu-44</u>	<u>Leu-44</u>	13
<u>Leu-45</u>	<u>Leu-45</u>	13
<u>Glu-47</u>	<u>Glu-47</u>	4
<u>Lys-52</u>	<u>Lys-52</u>	13
<u>Tyr-54</u>	<u>Tyr-54</u>	13
<u>Gln-66</u>	<u>Gln-66</u>	4
<u>His-68</u>	<u>His-68</u>	4
<u>Thr-70</u>	<u>Thr-70</u>	4
<u>Gln-75</u>	<u>Gln-75</u>	4

ICAM 3 amino acid residues known or implicated to be important for LFA-1 binding. All of these are identical between human ICAM 1 and our chimpanzee ICAM 1 sequences, or at least very well conserved in all the primate sequences we have examined (see ICAM 3 protein alignment in Section 1). Residues that are identical in all primate ICAM 3 sequences are underlined; residues that are identical in all but one sequence are in *italics*.

Human	Chimpanzee	Reference
<u>Glu-2</u>	<u>Glu-2</u>	18
<u>Arg-6</u>	<u>Arg-6</u>	18
<u>Glu-8</u>	<u>Glu-8</u>	18
<u>Asn-23</u>	<u>Asn-23</u>	14
<u>Ser-25</u>	<u>Ser-25</u>	14
<u>Glu-32</u>	<u>Glu-32</u>	16, 18
<u>Lys-33</u>	<u>Lys-33</u>	18
<u>Glu-37</u>	<u>Glu-37</u>	14, 15, 18
<u>Thr-38</u>	<u>Thr-38</u>	16
<u>Lys-42</u>	<u>Lys-42</u>	18
<u>Phe-54</u>	<u>Phe-54</u>	14
<u>Arg-64</u>	<u>Arg-64</u>	18
<u>Leu-66</u>	<u>Leu-66</u>	15, 18
<u>Ser-68</u>	<u>Ser-68</u>	15, 18
<u>Gln-75</u>	<u>Gln-75</u>	14, 15, 18
<u>Arg-127</u>	<u>Arg-127</u>	15
<u>His-155</u>	<u>His-155</u>	18
<u>Asp-166</u>	<u>Asp-166</u>	15

LFA-1 amino acid residues known or implicated to be important for binding to ICAM 1. All of

these residues are identical between human LFA-1 and our chimpanzee LFA-1 sequence.

Human	Chimpanzee	Reference
Met-140	Met-140	5
Ser-141	Ser-141	4
Leu-142	Leu-142	5
Gln-143	Gln-143	5
Glu-146	Glu-146	4, 5
Ile-150	Ile-150	5
Phe-153	Phe-153	5
Thr-175	Thr-175	4
Leu-204	Leu-204	5
Leu-205	Leu-205	4, 5
Thr-206	Thr-206	4, 5
Lys-232	Lys-232	8
Ile-237	Ile-237	5
Asp-239	Asp-239	5
Gly-240	Gly-240	5
Glu-241	Glu-241	4, 5
Thr-243	Thr-243	4, 5
Ile-259	Ile-259	5
Ile-261	Ile-261	5
His-264	His-264	4
Phe-265	Phe-265	5
Ser-270	Ser-270	4
Lys-287	Lys-287	8
Phe-292	Phe-292	5
Glu-293	Glu-293	4
Gln-303	Gln-303	8
Lys-304	Lys-304	8
Lys-305	Lys-305	8
Tyr-307	Tyr-307	8
Glu-310	Glu-310	8

LFA-1 amino acid residues known or implicated to be important for binding to ICAM 2. All are

identical between human LFA-1 and our chimpanzee LFA-1 sequence.

Human	Chimpanzee	Reference
Glu-146	Glu-146	4
Thr-175	Thr-175	4
Leu-205	Leu-205	4, 5
Glu-241	Glu-241	4, 5
Thr-243	Thr-243	4, 5
His-264	His-264	4
Lys-263	Lys-263	4
Glu-293	Glu-293	4

LFA-1 amino acid residues known or implicated to be important for binding to ICAM 3. All are

identical between human LFA-1 and our chimpanzee LFA-1 sequence.

Human	Chimpanzee	Reference
Ile-126	Ile-126	17
Asn-129	Asn-129	17
Asp-182	Asp-182	17
Ser-184	Ser-184	17

Section 3. Experimental Procedures: Details.

PCR

The PCR reactions were carried out using HotStar Master Mix (Qiagen cat #203443) or Taq PCR Core Kit (Qiagen cat #201223). Each reaction contained 100 ng of each primer and variable amounts of cDNA or genomic template depending on the individual used. Cycling conditions were optimized for each template and gene: these are available upon request. Each 20 µl PCR reaction was run on a nuclease free agarose gel and purified using gel extraction spin columns (Qiagen cat #28706). The purified PCR products were concentrated and then sequenced.

Cloning

The AdvanTAge PCR Cloning kit (Clontech cat # K1901-1) was used for PCR cloning of ICAM 3 in chimp and human to search for potential new subunit. This is a standard TA cloning protocol for PCR products. The PCR products were gel purified using a nuclease free agarose gel and Qiagen gel extraction columns (cat # 28706). These cleaned up PCR products were ligated into the pT-Adv vector: 6 (1 of fresh PCR product, 1 (1 of 10x ligation buffer, 2 (1 of pT-Adv Vector (25 ng/1), and 1 (1 of T4 DNA ligase (4.0 Weiss units). The approximate ratio of vector to PCR insert was 1:1. The ligation reaction was allowed to proceed at 14(C for fifteen hours on a thermal cycler. The ligation was then transformed into TOP10F *E. coli* competent cells as per Clontech's recommended protocol. White colonies were picked and grown in 3 ml overnights of Terrific Broth/Amp. Plasmid DNA was isolated from these overnights using the Qiagen Turbo prep protocol on the Qiagen BioRobot 9600.

Sequencing

For dye terminator sequencing, each reaction contained 2 µl of Perkin-Elmer's Big Dye Terminator mix (PE cat #430151), 1 µl of sequencing primer (5 pmol/µl), 1 µl of Perkin-Elmer sequencing reaction buffer (5x) (PE cat #4305605), 1-6 µl of template DNA, and 1-5 µl of water for a final reaction volume of 10 µl.

Cycling conditions were followed as recommended for Perkin-Elmer's Big Dye Terminators on a Perkin-Elmer 9700 Thermal Cycler. A standard NaOAc/Ethanol precipitation method was used to clean up the terminators and to concentrate the samples. The samples were resuspended in a formamide/EDTA solution and loaded onto a Perkin-Elmer ABI 373A sequencer. The sequencer was run as per Perkin Elmer's standard conditions with FMC Long Ranger gels (FMC cat #50693 or #50692) for either 34 cm or 48 cm well-to-read gels.

Section 4. Sequencing Summary: Genes, species, number of individuals from which

sequences were obtained. We sequenced *ICAM* genes 1-3 from several individuals from several species whenever possible (number of individuals appears in parentheses after the species name. *ICAMs* 4 and 5 were sequenced from chimpanzee only.

ICAM 1

Species	Our Sequence	Length (nt)	GenBank	
Human (3)	Hs1	1807	AF340038	(Hs1 \equiv GenBank J03132)
	Hs2	1690	AF340039	
	Hs3	1723		(Hs3 \equiv Hs1 \equiv GenBank J03132)
Chimp (3)	Pt1	1813	AF340033	(Pt1 \equiv GenBank M86848)
	Pt2	1812	AF340034	(Pt2 \equiv Pt1 \equiv GenBank M86848)
	Pt3	1811	AF340035	(Pt3 \equiv Pt2 \equiv Pt1)
Bonobo (1)	Ppan exon1	217	AF340042	
	Ppan exon2	297	AF340043	
	Ppan exon3	428	AF340044	
	Ppan exon4	405	AF340045	
	Ppan exon5	376	AF340046	
	Ppan exon6	308	AF340047	
	Ppan exon7	208	AF340048	
Gorilla (2)	Gg1	1794	AF340036	
	Gg2	1793	AF340037	(Gg2 \equiv Gg1)
Orang (1)	Pp	1770	AF340041	
Rhesus (1)	Mm	1605	AF340040	

ICAM 2

Species	Our Sequence	Length (nt)	GenBank	
Human (2)	Hs1	1011	AF340052	(Hs1 \equiv GenBank BC003097)
	Hs2	1020	AF340053	
Chimp (2)	Pt1	997	AF340050	(Pt2 \equiv Pt1)
	Pt2	990	AF340049	
Gorilla (1)	Gg	970	AF340051	
Rhesus (1)	Mm	793	AF340054	

ICAM 3

Species	Our Sequence	Length (nt)	GenBank	
Human (2)	Hs1	1641	AF340060	(Hs \equiv GenBank X68711)
	Hs2	1630	AF340061	
Chimp (3)	Pt1	1638	AF340055	(Pt2 \equiv Pt1)
	Pt2	1674	AF340056	
	Pt3	1639	AF340057	
Gorilla (2)	Gg1	1649	AF340058	(Gg2 \equiv Gg1)
	Gg2	1676	AF340059	
Orang (1)	Pp	1650	AF340062	
Rhesus (1)	Mm	1607	AF340063	

ICAM 4

Species	Our Sequence	Length (nt)	GenBank
Chimp		826	AF340064

ICAM 5

Species	Our Sequence	Length (nt)	GenBank
Chimp		2316	AF340065

Supplementary Data References

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