

A

RING DOMAIN

1 2 3 4 5 6 7 8
 CxxCx₍₉₋₁₆₎ CxHxxCxxCx₍₇₋₁₃₆₎ CxxC
 Cx(ILV)Cx₍₂₋₄₎(FLYI)x₍₂₋₇₎(PAS)x₍₂₋₃₎(ILVT)xCxHx(FLYVI)CxxC(AFILV)x₍₆₋₁₃₅₎C(PF)xC

TRIM65: lt CaICl-glFqd----Pvt-LpCgHnFCGaCIrdwwdrcg-----kaCPeC re
 TRIM43: lt CvICl-nyFvd----Pvt-IcCgHsFCRpCLclswaeaasp-----anCPaC re
 TRIM48*: lt CpICm-nyFid----Pvt-IdCgHsFCRpCFylnwqdipil-----tqCFeC ik
 TRIM49: li CpICm-nyFid----Pvt-IdCgHsFCRpCFylnwqdipfl-----vgCPeC tk
 TRIM64: li CcICv-nyFid----Pvt-IdCgHsFCRpCLclcseegram-----prCPsC rk
 TRIM11: at CaICl-dyFtd----Pvm-TdCgHnFCReCIrrcwggqpegp-----yaCPeC re
 TRIM39: as CsVCl-eyLke----Pvi-IcCgHnFCkaCItrweddlerd-----fpCPvC rk
 TRIM7: at CsICl-elFre----Pvs-VcCgHsFCRaCIgrcwergpagsvgaatrappfp---lpCPqC re
 TRIM27: tt CpVCl-gyFae----Pmm-LdCgHnICCaCLarcwgtatn-----vsCPqC re
 TRIM17: at CsICl-dyFtd----Pvm-TtCgHnFCRaCIqlswekargkgrkrkrkgs-----fpCPeC re
 TRIM4: lt CpICl-dyFqd----Pvs-IcCgHnFCRgCLhrnwagpgggp-----fpCPeC rh
 TRIM52*: av CaICl-dyFkd----Pvs-IsCgHnFCRgCVtqlwskedeedqneeed-/112/-ftCPqC rk
 TRIM5: vt CpICl-elLte----Pls-LdCgHsFCGaCLtanhkksmldkge-----ssCPvC ri
 TRIM6: vt CpICl-elLte----Pls-IdCgHsFCGaCItpngresviggege-----rsCPvC qt
 TRIM34: vt CpICl-elLte----Pls-LdCgHsFCRaCItsvnkeavtsmggk-----ssCPvC qi
 TRIM22: vt CpICl-elLte----Pls-LdCgHsFCGaCItakikesviisrge-----ssCPvC qt
 TRIM21: vt CpICl-dpFve----Pvs-IcCgHsFCQeCIsqvgkggg-----svCPvC rq
 TRIM58: ar CpVCl-dfLge----Pvs-VdCgHsFCrClIsefcksdgaqggv-----yaCPqC rg
 TRIM68: va CpICm-tfLre----Pms-IdCgHsFCrCLsglweipgesqngw-----ytCP1C ra
 TRIM38: at CsICl-s-Lmntn----Pvs-InCgHsYChlCLtdffknpsqkqlrget-----fcCPqC ra
 TRIM10: vn CpICq-gtLre----Pvt-IdCgHnFCRaCLtryceipgpdlees-----ptCP1C ke
 TRIM15: pa CtLCA-gpLed----Avt-IpCgHtFCrClLpalsqmgagssgki-----llCP1C ge
 TRIM26: vt CsICl-dyLrd----Pvt-IdCgHsFCrCttdvripisgr-----pvCP1C kk
 TRIM31: vi CpICl-diLqk----Pvt-IdCgHnFCpqcItqigetscgf-----fkCP1C kt
 TRIM40: gv CpICq-esLke----Avs-TnCgHlFCrvCLtqhvekasasgv-----fcCP1C rk
 TRIM60: ss CpICl-eyLkd----Pvt-InCgHnFCRgCLsvswkdlddt-----fpCPvC rf
 TRIM61: as CpICl-dyLkd----Pvt-IsCgHnFClsCIimswkdldhs-----fpCPfc hf
 TRIM75: ak CsICl-dyLsd----Pvt-IcCgHnFCrsCIqgswldlqel-----fpCPvC rh
 TRIM50: lq CpICl-evFke----Plm-LqCgHsYCKgCLvslschldae-----lrCPvC rq
 TRIM73: lq CpICllevFke----Slm-LqCgHsYCKgCLvslsyhldkt-----vrCPmC wq
 TRIM72: ls CpLCl-glFda----Pvt-aecGhsFCRaCLgrvagepaadt-----vlCPcC qa
 TRIM59: lt CpICy-siFed----Prv-LpCsHtFCrnlClenilgasgnfyiwrplrip-----lkCPnc rs
 TRIM13: lt CpICc-slFdd----Prv-LpCsHnFCkCLegilegsvrnlswrpap-----fkCptC rk
 TRIM54: li CpICl-emFsk----PvviLpCgHnLCrkCAndvfqasnlwqrgsttvsaggr-frCPsC rh
 TRIM55: li CpICl-emFtk----PvviLpCgHnLCrkCAsdifqasnpylptrggttmasggr-frCPsC rh
 TRIM63: li CpICl-emFtk----PvviLpCgHnLCrkCAndifqaanpywtsgssvmsaggr-frCptC rh
 TRIM1: lt CpICl-klFed----Pl1-LpCaHsLCfsCAhrilvsscssgesiepit-----fqCptC ry
 TRIM18: lt CpICl-elFed----Pl1-LpCaHsLCfnCAhrilvshcatnesvesita-----fqCptC rh
 TRIM9: lk CpVCg-sfYre----Pii-LpCsHnLCGaCArniltvgtpesespgshraa-/72/-itCPqC hr
 TRIM67: lk CpVCg-slFre----Pii-LpCsHnVClpCArtiavgtpdggsaagglgg-/66/-itCPqC hr
 TRIM36: li CpACk-elFth----Pli-LpCqHsICHkCVkell1tlddsfndvgsdns-/36/-fpCPgc eh
 TRIM46: ll CpVCq-emYkq----Plv-LpCtHsVCGaCArevlgqqgyighggdpsse-/51/-fpCPaC gg
 TRIM2: li CsICl-erYkn----Pkv-LpClHtFCerCLqnyipahslt-----lsCPvC rq
 TRIM3: lv CsICl-drYqc----Pkv-LpClHtFCerCLqnyipahslt-----lsCPvC rq
 TRIM71: qi CLlCkem-/39/-v-LpClHaFCRpCVleahrlpaaggggaageplk-----lrCPvC dq
 TRIM56: la CkICl-eqLra----Pkt-LPCLHtYCqdCLaqladggr-----vrCPeC re
 TRIM24: dt CaVCh-qniQsra----Pkl-LpClHsFCQrCLpapqrylmlpapmlgsaet-/22/-irCPvC sq
 TRIM33: dt CaVCq-qslQsrreaePkl-LpClHsFCrCLpeperqlsvpipggsngdiqqvgv-irCPvC rq
 TRIM28: eh CgVCl-erLrpere----Pr1-LpClHsaCsaCLgpaapaaanssgdgaagdgtv---vdCPvC kq
 TRIM45: th CpLCl-glFka----Pr1-LpClHtVClLeqlpfsvvdirggsdts-/19/-ilCPvC da
 TRIM19: lr CqgCq-aeakc----Pkl-LpClHtLCsgCLeasg-----mqCPic qa
 TRIM37: fr CfICm-ekLrd----Arl---CpHCsklCCfsCIrrwlteqr-----aqCPhc ra
 TRIM23: le CgVCE-dvFslgqdkvPr1-L1CGHtVChdCLtr1plhgra-----irCPfd rq
 TRIM35: ll CaVCy-dpFrd----Avt-LrCgHnFCRgCVsrcwevqvs-----ptCPvC kd
 TRIM42: ln CpmCs-r-Lrlh----Sfm-LpCnHsLCekCLrqlqkhaevtenffi-----liCPvC dir
 TRIM62: ll CsICl-siYqd----Pvs-LgCeHyFCrrCItehwvrgeaagga-----rdCPeC rr
 TRIM8: li CpICl-hvFve----Pvq-LpCkHnFCRgCIgeawakdsgl-----vrCPeC nq
 TRIM25: ls CsICl-epFke----Pvt-TpCgHnFCGsCLnetwavggsp-----ylCPqC ra
 TRIM47: fs CpICl-epLre----Pvt-LpCgHnFClaCLgalwphrgasgagggpaga-----arCP1C ge
 TRIM32: le CpICm-esIteeqrlr-Pkl-LhCgHtICrQCLeklassing-----vrCPfc sk
 TRIM41: av CaICl-dyFtd----Pvs-IgCgHnFCrvCVtqlwggedeedrdeldre-/115/-rrCftC pq

B

B-box1 DOMAIN

1 2 3 4 5 6 7 8
 CxxCx₍₇₋₁₅₎ CxxCxxxxCx₍₃₋₄₎[CH]x₍₃₋₄₎Hx₍₁₋₉₎H
 CxxCx₍₃₋₁₁₎(ASV)xxxCxxCxxx(FLY)Cxx(CH)x₍₃₋₄₎Hx₍₁₋₉₎H

TRIM1: ia CqfCeqdpprd---AvktCitCevsYCDrC-ratHp-nkpfth r1
 TRIM18: vl CqfCdqpdaqd---AvktCvtCevsYCdCklatHp-nkpfth r1
 TRIM9: lk CqlCekapke-----AtvmCeqCDvfyCdpCr1rcHp-prgplakH r1
 TRIM67: ai CqlCdrtppep-----AatlCeqCdvlYCSaCqlkChp-srgpfakH r1
 TRIM36: im CdlCkpppge-----StksCmdCsasYCneCfkiHhp-wgtikaqH ey
 TRIM46: il CqlCkppple-----AtkgCteCratFCneCfklfHp-wgtqkaqH ep
 TRIM56: pa CalCplvggtstggpAtarCldCaddLCqaC-adgHr-ctrqthH rv
 TRIM28: qc CtsCednap-----AtsyCveCsepLCetC-veaHq-rvkytkdH tv
 TRIM24: qv CtsCednae-----AngfCveCvewLCktC-iraHq-rvktfdH tv
 TRIM33: qv CtsCednas-----AvgfCveCgewLCktC-iaHq-rvktfdH li
 TRIM66*:rn CseCkekra-----AhilCtyCnrwLCssC-teeH---r-----H sp
 TRIM45: lv CdlCndre-----VekrCgtCkanLChfC-cqaHr-rqkkttyH tm
 TRIM71: hg CssCdeгна-----AssrCldCqehLCdnCv-raHq-rvrltkdH yi
 TRIM44*:gt CdeCepdeapg---AeevCreCgfcYCrH-aeaH-rqkflshH la
 TRIM19: av CtrCkes-----AdfwCfeCeqLLCakC-feaHq-wfk-l--H ea
 TRIM23: ir CdeDeahl-----AsvyCtvCathLCseCsqvtH--stktlakH rv
 TRIM42: il CqvCrnrri-----AykrCitCrlnCndClkafH--sdvamqdH vf
 TRIM8: lh CvfCrrgpplp---AqkvClrCeapCqgH-vqtHlqpstargH ll
 TRIM16*:vl CdfClddtrrvk---AvksClCmvnYCeeH-lqpH-qvnklqshH ll
 TRIM29*:vl CdsCignkqk----AvksClvCqasFCelH-lkpHl-egaafrdH ql
 TRIM25: va CdhClkea-----AvktClvCmasFCqeH-lqpHfd-spafqdH pl
 TRIM47: vr CdaCpegaalp---AalsClsClasFCpaH-lqpHe-rspalrgH lv

C

B-box2 DOMAIN

1 2 3 4 5 6 7 8
 Cx₍₂₋₄₎ Hx₍₆₋₉₎ Cxx[CEHD]x₍₄₋₈₎ CxxCx₍₃₋₆₎ Hx₍₂₋₄₎ [HC]
 Cx₍₂₋₄₎Hx₍₃₋₆₎(FILMV)x₍₀₋₁₎(FY)x₍₀₋₁₎Cx₍₂₎[CDHE]x₍₃₋₇₎(ILMTV)Cx₍₂₎Cx₍₃₋₆₎Hx₍₂₋₄₎[HC]x₍₄₎(ILVMA)

TRIM64: ni Cvl--Heetke-L---F-CeaDkr----LlCgpCsespe-Hma--H shspI
 TRIM48*:qm Cgi--Hretkk-M---F-CevDrs----LlCl1Csssge-Hry--H rhcpA
 TRIM49: qm Cgt--Hretkk-I---F-CevDrs----LlCl1Csssge-Hry--H rhrpI
 TRIM43: qi Cgt--Hrgtkk-M---F-CdmDks----LlCl1Csnsgge-Hga--H khhpI
 TRIM4: gl Cgr--Hwep---L-r1F-CedDqr---pVClvCresge-Hgt--H amapI
 TRIM39: sl Cpq--Hhea---L-slF-CyeDge---avCliCaisht-Hrp--H tvvpL
 TRIM11: gv Cpa--Hrep---L-aaF-CgdElr---LlCaaCersge-Hwa--H rvrpL
 TRIM52*:qm Cfk--Hgea---L-klF-CevDke---aICvvCresrs-Hkq--H svlpL
 TRIM41: gi Cpk--Hgea---L-klF-CevDee---aICvvCresrs-Hkq--H svvpL
 TRIM17: dl Cqe--Hhep---L-klF-CqkDqs---pICvvCresre-Hrl--H rvlpA
 TRIM27: gv Cek--Hrep---L-klY-CeeDqm---pICvvCdrsre-Hrg--H svlpL
 TRIM7: ar Cgg--Hgep---F-klY-CgdDgr---aICvvCdrare-Hre--H avlpL
 TRIM38: ms Cee--Hgeq---F-hlF-CedEgq---lCwrCeraqp-Hkg--H ttalV
 TRIM68: dl Cer--Hgek---L-kmF-CkeDvl---imCeaCsqspe-Hea--H svvpM
 TRIM58: rr Car--Hged---Lsr-F-CeeDea---aLCvwCdagpe-Hrt--H rtapL
 TRIM21: er Cav--Hger---L-hlF-CekDgk---aLCvwCqsrk-Hrd--H amvpL
 TRIM22: dv Ceh--Hgkk---L-qiF-CkeDgk---vICvwCelsge-Hqg--H qtfri
 TRIM34: dl Cdh--Hgek---L-llF-CkeDrk---vICwlCersge-Hrg--H htvlT
 TRIM6: vl Cad--Hgek---L-qlF-CqeDgk---vICwlCersge-Hrg--H htflV
 TRIM5: dh Car--Hgek---L-llF-CqeDgk---vICwlCersge-Hrg--H htflT
 TRIM31: at Cpr--Hgem---Fhy-F-CedDgk---fLCfvCreskd-Hks--H nvslI
 TRIM26: kl Cer--Hrek---Lhy-Y-CedDgk---LlCvmCresre-Hrp--H tavlM
 TRIM15: ty Cee--Hgek---I-yfF-CenDae---fLCvfCregpt-Hqa--H tvglL
 TRIM10: dv Cqe--Hgsrk---I-yfF-CedDem---gLCvvCreage-Hat--H tmrfl
 TRIM40: yi Cpn--Hqkr---V-crF-Ce-Esrl---LlCveClvspe-Hms--H heltL
 TRIM50: kv Cvh--Hrnp---L-slF-CekDge---lICglCglgs-Hqh--H pvtpV
 TRIM72: gh Cee--Hldp---L-siY-CeqDra---lVCgvCaslgs-Hrg--H rllpA
 TRIM61: hv Ckk--Hnqv---L-tfF-CqkDle---LlCprCslstd-Hqh--H cwpvI
 TRIM60: am Cek--Hnqf---L-tlF-CvkDle---lLCtgCsfstk-Hqk--H yicpI
 TRIM75: tl Cek--Hnqp---L-svF-CkeDlm---vLCplCtqppd-Hqg--H hvrpI
 TRIM20*:pq Ckr--HlkqvqL--lF-CedHde---pICl1Cs1sge-Hqg--H rvrpI
 TRIM54: lm Cee--Heeek---I-niY-ClsCev---pTCslCkvfga-Hkd--C evapL
 TRIM55: pm Cee--Heeer---I-niY-ClnCev---pTCslCkvfga-Hkd--C qvapL
 TRIM63: pm Cke--Hedek---I-niY-CltCev---pTCsmCkvfgi-Hka--C evapL
 TRIM13: pv Ckg--Hlgqp---L-niF-CltDmq---lICgiCatrg-Htk--H vfcsI
 TRIM59: vt Cpe--Hyrqp---L-nvY-CldDkk---lVCghCltigq-Hhg--H piddL
 TRIM1: it Cld--Henek---V-nmY-CvsDdq---lICalCklvgr-Hrd--H qvasL
 TRIM18: lm Cle--Hedek---V-nmY-CvtDdq---lICalCklvgr-Hrd--H qvaal
 TRIM9: st Ctd--HelenhsM---Y-CvqCkm---pVCyqCleegk-Hss--H evkaL
 TRIM67: pt Cpe--HemenysM---Y-CvsCrt---pVCylCleegr-Hak--H evkpL
 TRIM36: lm Cpe--Heter---I-nmY-CelCrr---pVchlCklggn-Han--H rvttM
 TRIM46: lm Cpd--Hkee---Vth-Y-CktCgr---lVCqlCrvrra-Hsg--H kitpV
 TRIM2: ls Cpn--Hdgnv---M-efY-CqsCet---aMCreCtege--Hae--H ptvpL
 TRIM3: fs Cpn--Hegkt---M-efY-CeaCet---aMCgeCrage--Hre--H gtvll
 TRIM56: aq Cpq--Hpgea---L-r-F1CqpCsq---LlCreCrldp--Hld--H pclpL
 TRIM24: vf Cpf--Hkkeq---L-klY-CetCdk---lTCrdCqlle--Hke--H ryqfI
 TRIM33: vf Cpv--Hkqeq---L-klF-CetCdr---lTCrdCqlle--Hke--H ryqfL
 TRIM66*:ly Cpl--Htgev---L-klF-CetCdm---lTchsClvve--Hke--H rcrhV
 TRIM28: vy Cnv--Hkhep---L-vlF-CesCdt---lTCrdCqlna--Hkd--H qyqfL
 TRIM45: il Cpv--Hpae--L-r1F-CefCdr---pVCqdCvvge--Hre--H podft
 TRIM71: gf Cqh--Hddev---L-hlY-CdtCsv---pICreCtmgr--Hgg--H sfiiY
 TRIM14*:wr Cpe--Hgdr---VaelF-CrrCrr---cVcalCpvlga-Hrg--H pvglA
 TRIM44*:rk Cpd--Hgld---Lst-Y-CqeDrq---lICvlCpviga-Hqg--H qlstL
 TRIM19: if CsnpnHrtpt---LtsiY-CrgCsk---pLCcsCalldssHselkC disae
 TRIM37: dk Cen--Hhek---Lsv-F-CwtCkk---cICHqCalwggmHgg--H tfkpL
 TRIM23: tm Csq--Hqvha---Ie--FvCleEgqctsp1MCcvCkeygk-Hqg--H khsvL
 TRIM35: rv Crl--Hrgq---Lsl-F-CleDke---LlCcsCgadpr-Hqg--H rvqpV
 TRIM42: ki Cih--Hpssr---Iie-Y-CrnDnk---lLCtfCkfsf--Hng--H dtisL
 TRIM62: rp Cqa--Hdk---Vkl-F-CltDra---LlCfcCdepal-Heq--H qvtgI
 TRIM8: ws Cpq--Hnayr---L---YhCeaEqv---avCgyCcyysgaHqg--H svcdV
 TRIM16*:ry Cpa--Hhsp---Lsa-F-CcpDgq---cICqdCqce--Hsg--H tivsL
 TRIM29*:rk Cpv--Hgkt---Mel-F-CgtDgt---cICylCmfqe--Hkn--H stvtV
 TRIM25: rk Csq--Hnrlre-F---F-CpeHse---cIchiClve---Hkt--C spasl
 TRIM47: sl Cpr--Hlrp---Ler-Y-CraErv---cLCeaCaaqe--Hrg--H elvpL
 TRIM65: ar Cpr--Hgrp---Lel-F-CrtEgr---cVCsvCtvre--erl--H erall
 TRIM32: lm Crs--Cgrr---LprqF-CrsCgl---vLCepCread--HqppgH ctlpV

Additional file 1. **A)** Alignment of the RING domains of 61 out of the 68 TRIM proteins. TRIM14, 16, 20, 29, 44, 66 are not included because they lack this domain. TRIM74 is not shown because its RING domain is identical to that of TRIM73; Two consensi are shown: at the top is the general consensus for the TRIM RING finger, the conserved cysteine (C) and histidine (H) are in bold and numbered, x can be any amino acids, when these residues are more than two, the numbers are subscript and indicated in parentheses; at the bottom is the detailed consensus showing in capital letters the residues preferentially found in that position (>95%). The region from -2 with respect to the first C and +2 with respect to the last C has been used to produce the alignment. The conserved C and H are shaded and the other multiple-choice conserved residues are in capital letters, exceptions to these conserved residues are in bold small letters. **B)** Alignment of the B-box1 domain of 22 TRIM proteins. The legend is as in A). **C)** Alignment of the B-box2 domain of 66 TRIM proteins. TRIM73 and 74 are not shown because their B-box2 domain is identical to that of TRIM50. The legend is as in A).