

# Supplemental Figure S3

ROP5B<sub>1</sub> DPSFHGLEAGDSFMRDLLKREELIGYCREEALK.EPAAMVEAVTATVWP.QNAETTVDSSLSSQGERK.....  
ROP8 RENLYFQGGPGDVVIEELFNRIPOANVRT..TS.EYMQSAADSLVSTSLWNTGQPPFRVESELGERPRT.....  
VRK3 .....YFQSMTTSLEALPTGTVL  
ILK .....  
STRADa .....  
CASK .....  
p38 .....RSGFYRQEVTK  
PKA .....VKEFLAKAKEDFLKKWETPS

ROP5B<sub>1</sub> .....LKLVEPLRVG...DRSVVFLVRDVERLE.....DFALKVFTM..GAENS.RSELERLHEATFAAARL..  
ROP8 .....LVRGTVLGOE...DPVAYLEATDQETGE.....SEFVHVVPYF..TER.P.PSNAIKQMKEEVLRLRL  
VRK3 TDKSGRQWKLKSFQTRDN..Q..GILYEAAP.TSTLTCDSGPQKQKFSLKLDAK..DG.....RLFNEQNFFQRA  
ILK HSGIDFKQLNFLTTLKLNEN..HSELWKGRW..QGN.....DIVVKVLKVRDWS..T...RKS RDFNEECPLRIF  
STRADa SFLPEGGCYELLTVICKGFEDLMTVNLARYK.PTGE.....YVTVRRINLEACS..N..EMVTFLQGELHVSRLF  
CASK ..VLFEDVYELCEVIGKG..PFSVVVRR CINR.ETGQ.....QFAVKIVDVAKFT..SSPGLSTEDLKREASICHML  
p38 TAWEVRAVYRDLQPVVSG..AYCAVCSAVDG.RTGA.....KVAIKKLYR..PF..Q.SELFAKRAYRELRLKHM  
PKA QNTAQLDQFDRIKTLGTG...SFRVMLVKHK.ESGN.....HYAMKILDKQKVV..KL..KQIEHTLNEKRILQAV

ROP5B<sub>1</sub> ..LGE.....SPEEARDRRRLLPSDAVA..VQSQ..PPFAQLSPGQDD..YAVANYLLLMPAAS  
ROP8 RGIKNQKQA.....KVHLRFIFPFDLVK..DPQK..KK..MIRVRLDERDMWVLSRFFLYPRMQ  
VRK3 .....AKPLQVNWKKLYSTPL.....LAIPTCMGFGV..HQ.....D..K.....YRFLVLPISLG  
ILK .....S.....H.....PNVLPVLGACQSPPA.....P.....HPTLITHWMP  
STRADa .....N.....H.....PNIVPYRATFI..AD.....N.....ELWVVTSEMA  
CASK .....K.....H.....PHIVELLETYS..SD.....G.....MLYMVFEFMD  
p38 .....R.....H.....ENVIGLLDVFT..PDETLDFF..T.....DFYLVMPFMG  
PKA .....N.....F.....PFLVKLEFSFK..DN.....S.....NLYMVMEYVA

ROP5B<sub>1</sub> .VDLELL.....FSTL...DFVYVFRGDEGILALHILTAQLIRLANLQSKG..LV.HGHFTPDNLFIMP...D  
ROP8 .SNLQTF.....GEVL...LSHSSTHKS LVHARLQTLQVIRLLASLHHYG..LV.HTYLRPVDIVLDQ...R  
VRK3 .RSLQSA.....LDVSPKHV.....LSERSVLQVACRLDDALEFLHENE..YV.HGNVTAENIFVDPED..Q  
ILK YGSLYNVLHEGTNFV...V.....DQSQAVKFALDMARGMAFLHTLEPLIPRH..ALNSRSVMIDE...D  
STRADa YGSAKDLICTH...FMDGM.....NELAIAYILQGVKALDYIHHMG..YV.HRSVKASHILISV...D  
CASK GADLCFE.....IVKR...ADAGFV...YSEAVASHYMRQILEALRYCHDNN..II.HRDVVKPHCVLLASKENS  
p38 .TDLGKL.....MKHE...K.....LGEDRIQFLVYQMLKGLRYIHAAG..II.HRDVVKPHCVLLASKENS  
PKA GGEMFSH.....LRRI...G...R...FSEPHARFYAAQIVLTFEYLHSLD..LI.YRDLKLPENLLIDQ...Q

Mg1

Activation Segment

Mg2

ROP5B<sub>1</sub> GRMLMGDVSALWKVG.....TR...GPAS.....S...VPVTYAPREFLNA.....ST...ATFTHALNAW  
ROP8 GGVFLLTGFPHLVRDG.....AR...VVS.....S...VSRGFEPPELEARRATISYHRDRR...TLMTFSFDLW  
VRK3 SQVTLAGYGFAFRYC...PSGKHVAYVEGSRSPH...E...GDLEFISMDLHK.G.....C...GPSR.RSDLQ  
ILK MTARISMADV.....KFSFQSPGRMYAPAWVAPEALQ.K.....KPEDTNR.R.SADMW  
STRADa GKVYLSGLRSLNLSMISHGQRQR..VV...HDFP...KYSVKVLPWLSPEVLQ.Q.....N.LQGYDA.KSDIY  
CASK APVKLGGFGVAIQLG...ESG..LV...AGGR...V...GTPHFMAPEVVK.R.....E...PYGK.PVDVW  
p38 CELKILDFGLARQAD.....SE...MTGY...V...VTRWYRAPEVILNW.....M...RYTQ.TVDIW  
PKA GYIQVTFDFGFAKRVK.....GR...TWTLC.....GTPEYLAPEIIL.S.....K...GYNK.AVDWW

ROP5B<sub>1</sub> QLGLSIYRVWCLFLPFGLVTPGIKGSWKRPVSLRVPGT.....D..SLAFGS...  
ROP8 ALGLVIYWIWCADLPITKDAAL.....GGSEWIFRS...  
VRK3 SLGYCMLKWLYGFELPW.TNC...L.PNTEDIMKQK.Q.KFVD.....KPG...PFVGPC  
ILK SFAVLLWELVTVREVPF.ADLNME.IG.MKVALEGL..RP.....TIPPG.  
STRADa SVGITACELANGHVPFKD.....M.PA.TQMLLEKLN GTVP.....CLDTS  
CASK GCGVILFILLSGCLPF.Y...G.TK.ERLFEIGI.KG.KY.....KMNPRQ  
p38 SVGCIMAEMITGKTLF.K.....G.SDHL DQLEI..M.KVTGTPPAEFVQRLQSD EAKNYMKGLPELEKDFASI...  
PKA ALGVLIIYEMAAGYPPF.F.....ADQP.IQIYEKIVSG.KV.....RF...

ROP5B<sub>1</sub> ..CTP.....LPDFVKTLLIGRFLNFDRRRRL...PLEAMETPE  
ROP8 ..CKN.....IPQPVRALLEGFLRYPKEDRLL...PLQAMETPE  
VRK3 GHWIR.....PSETLQKYLKVMA.LTYEEKP...PYAMLRNNL  
ILK .....ISPHVSKLMKICMNE DPAKRPK...FDMIVPI.L  
STRADa TIPAAEELTMSPSRSVANSGLSDSLTSTPRPSNGDSPSHPYHRTFSPHFHHFVEQCLQRNP DARPS...ASTLLNHSF  
CASK ..WSH.....ISESAKDLVRRMLMLDPAERIT...VYEALNHPY  
p38 ..LTN.....ASPLAVNLLKMLVLD AEQRVT...AGEALAHPY  
PKA ..PSH.....FSSDLKDLLRNLLOVDLTKRFGNLKNGVNDIKNHKW

ROP5B<sub>1</sub> FLQLQNEISSSLSTGQPTAAPVA.....  
ROP8 YEQLRTELSAALPLY.....  
VRK3 EALLQDLRVSPYDPIGLPMVP.....  
ILK EKMQDK.....  
STRADa FKQIKRRASEALPELLRPVTPITNFEGSQSDHSGIFGLVTNLEEEVDDWEF.....  
CASK LKERDRYAYKIHLPETVEQLRKFNARRKLGAVLAAVSSHKFNFSFYGDPPEELPDFSEDPTS  
p38 FESLHDTDEFPQVQKYDDSFDDVDRITLDEWKRVTYKEVLSFKPPRQLGARVSKETPL.....  
PKA FATTDWIAIYQRKV EAPFIPKFKGPGDTSNFDDYEEEEIRV SINEKCGKEFTEF.....