

Fig. S1

TgIF2K-C

cattttcatctttttcagctgctcgtttatatgcaggetctttattgttttttattgcatcttgacagcgtcttggt
tccgacgtctatgccagccagcagtcacgcgagagcagccgccagacactccgcgacttggtctgcacgagatgc
acgcagaaaagctgtaaggaacccaccattcttcgtttttcgctccttgctcgtccttcttacaattcaacaacctc
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cagaaagctcagatgcacagagtgcatgctcgacgcgcacagactgagacaagaggcggccgacacattggagtgcc
caaagctgtcacttatgtttttcttttttttggaaagagaagcgactgaacgagcaagagccagctgtccccttct
ttaaagggagagattcgcatggagtcggcattcacgcgaacgcgggtgcccgccgatcgactcaaaaatcgacgaacg
gatttggtcttttcttgccagacgaggtcgtttttggtgccatttcccgcgctgaagtccgttcaccggttcgtctttt
gttctctcttgctgctgactctgcttttccattgggctgtccggcagcagcggccaaccctccacgccccaaactcg
tggttccacgcgcgactgtagggcaggaggttactggctcttccccctgcggttttctctcttcttcttttcttctcgc
gcgctgggttgccgcagttggttcgctccccctctcgcggagacgctccgaccaccgaacactgagggg**ATGGAAGAAA**
AGACAACTCGGGGAGGCCGAGGCAGAGAAGGGAATGCGTGCCTGCTCCGCTCGCTCCTGCTTCTTGAAGCGCGTCCC
GTCAGTCCCCGCGTCTCTTTCTCGATTCTGTCTCTCGGCTTTCTCTCCTCAACCGCACACGGCCTCGTCGAGTCTGT
GCAGACACGAGCGACTTCGCATGCAAGTTCTCCAGCCTCCTCGGTGCGTTCTCGCCCTCGGTTTACGCGCTGCGC
CGCCGTCTCCGTCTCGCCCTCTCAAAGCCTCTCGAGCTCCGCGGCTCCGGGGCTGTGGGGTGTCTCCCTTGCCCTCA
GCGCGGCGTCTCCTCTTGAGGAGCAGAAGAAGGAGACAGCGACTCTGGCGGCGCTCGCGACCTACGGTCTCTGCTC
CTCGGTGAACCAGCAAGCGTCGTGGACGTGGGCAGATCCCTCAGACTTCGACGCCTTTTTGCCTGTGAGCGACGGCG
AGGCCGACGTCGTCTTCGATGCAGACTCCAAAATGACGAGGAAGATGGACTCTTTCAAAGAACCGGAGACACCGAG
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TCCCAAGACACCTACGACGACGCCGTCCGGCTACATGGAGGAAGCAACGATGCTCGCGAAACTCAACCACAAGCATAT
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TgIF2K-C aa 3269

MEEKTRGGRGREGNACLLRSLLLLEARPVSPRVFSILSLGFLSSTAHLVESVQTRATSHASSPASSVGSPPSVSRAAPPSPSR
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ISLGVSSSLSLSSVATERRENREASESVPEAISHLEPVEKLLHTSAALEALLVSFLERSGEPDAEESRLNRQRREKDRASLASSRE
RLFRSHLTQFLHFFSDSTSDSSSVRRCSALAGETNRLHRGEVDREKAKSRHRVSFQDAHAEIGRDVTGAETSKTPCSFLPAARAT
DCRPHEPPRVTAAPSNSPSSPSAFLRDPEGDVPGGACNAETPVGGGPGSERGTTLEAQASLFERARCADEEKKREDEAADASIGD
TVAQTKERQLPVLSPTRRPRSAEERKRRSGEGCTTQADSGPSAPMYGGRSCLAQATERTYAVGVEEGPCHSGTQSERGTNNGEASR
VGKDMFASALGERRESGNAKAGGQLWLDSFGSGTPGGEGKSLQNAATVFAVSSRSPLEAPMSGDDTERRGAASGDDAEGRQDKK
NPSPPSKSASSPDPLPSSPFVFSASPDLSCVSVSCLTSAPPGIVGLGAENAAKQARTAVLSRLGGVSACKEGANGALSVIQE
EGEEESTETQGTQSEDRSGARGEKKQTEKDKKEKKEKTDKDKDKDKDKDKKEKEVNGDEVERREVRGVEELVASESSPAHEA
RGAKPSADVGESKYERDSEMGKRSPEVTSRYHTEFIE LQQLGSGGFGSVTKVRQROGGGIFAVKCIPLRPARVRRHGFPCPGQGREF
NLARAGGNSTGRGMRADAGDAQAARLERARMRSFSGNAKRRVGGQVCAALSGPRONSDQAPKDGACKQAARRKRRDSDLSPTDSQ
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RQTLRRRQTANRVSETAACAPEAGRRLCGSSAYVSSSSCCSPSSRAASELRGAGAAETLAPKGGEPFGQAGNEEAREAREVEVEE
DDSEERRTEAERRTAAEMGLRALKWRLTRDLVGGVAYMHSFGVIHRDLKPSNIFLKVVDQDRLCVKIGDFGLTTTVLKGKPGGSQA
AGRRASHSGTSGDTPMGSGASVRPLSGFSCPSQVECEARPNGGKPHPGCPQPLQRLPLVPLSSFPSSHPSDTPSLRLSAGVGTGVY
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DPASRPAADA LLVDDVLLPLELSQALPLGVVDEYEVDLVRESHEAPSRTEKNGRRGESGKHGSGMAGSAGALGASRGELERGG
EAQRQGGQGAAGTGEALEAGVCGPKRGKAAGERETGGEVEGSPSLASVSGEGEDDAAGGEAGAGEAGGERSTRSRRGKELKKEK
RQAAEEEPGSERRWIEGARGGECAGVGDRLRGERLQAHSAHPSLSFSETCVCEVDVTVTQSVGGRREERERRRRGTDRGHRAGGLR
ARETHSPVSPGAGARRGEASDEEESRRTRRKKHEDALCVRPRPALGHPFKRIYDVIASYPFSNEAVQVMATLLNRHEDEAALHHFL
LLKRALASEGILLYRLQQFIRGLVRQHCASCERRGATQISLPALLPLTGR LAGSLSWTRRLRHRSKVILDLEKQEDAQRVVEAA
LKNKGALRTRRASKCLSVAGESEKGAASDGNVSEDPQPSRKARPSRMPPAPTAPAFARSAGASVLCGSASRDVSSARDRPLPE
PHLFAVPLFRPFLLECKPLQPCASVPFACLPIHTAVAPAAAAGVCTPEAATAAAAVTVEDELLSAEQVSSPGRGVALLLDAATPLIL
PFSLFHGAAAEAAGRGHASAHLSVPVQRRWAFAPTYIRADCAAGRGSASPRLGKLRSEEEKHSGEKNVGSRRREKSGGRNGFCMR
CLSLRSGASCPEKGGSEAERSSARRARDRGAQREDDAPACEAAACAPQEIYAALYDLVVDLDAFGNWEEFGGCVSFFGEDDVPRR
LCRDDGRDQLEAKEFGKALIPGAFFDAEVVAAAADVLAALASPPDSGGASHGQGLLVWMTADLLPAILOHLILIPEDRVRFQA
NWLVRVQANGSGLTKERLEAHLRAVLYSEDSLGTAREVFSSENGQVPLASDREARGKAENGRQRGDEEMALLQILQRERDENF
IRQQADLLWALLGIQEDTPEKTI AELISCVLCLDRSREDALLLAEADPSGFVSSSFDLLPISLPPSAERTSVASDGSSHLATSI
SSLSPLLLQQLRLLRQOELLQVECFPPSQRFNLFPLFDTAQYAHGLVFFVLGAPVMSAPPVPGASGGLTLGGAPGPPFFSGYF
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GEEEDGDRGRGGERDERREAGGHHEKRRRTLSVTGVELAVECIGKRLLLLAQNPKSRFLFSDDALKGPHFLSGAVGAANSTFSR
EFGGVDAKAQASGLASDATGGSLFVSKHDMHPHPSLFPFPPSAVAGALGPLGPHDPGHPGGTGEATLRNSRVHVHPQASHAPHVSG
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AVLLC VVQPHSERSGAGKTESGSKQRHEERRHAF LAAAAYELRMLRRSAVTCERWISLAERQRMKRPVRRPAGNATSRPSSGAS
APQALASRDLLQWLVLSSSSSLPSTSVCSPLCASSPPLPGAPASALSLSLAPLAPLATEKGEVSPSASETTVSAEDEQPEEDARQ

TTAKREREKLFAMLDEAVAATDGTAFATTRLHEDEATAVQRENKANVHELNIHIEHLYGEETSQVLTSVNDAVAFLAAVGGPKA
S

Fig. S2

	I	II	III			
TgIF2K-C	RYHTEFIELQQLGSGGFGSVTKVRQRQGGG----	IFAVKCIPLRPAR-105-	AVGYMEEATMLAKLNHKKH	1055		
TgIF2K-D	RYQRDFIQLEVLGSRERYRIALVYHIIDKH----	KYIVKQIFIPCGP-25--	VESALRQVTLLCALQHPY	1398		
PfeIK1	RYRDFFEKILGCGGFGYVMKVKNKKFNI----	TYALKIIRLSNSK-15--	NSYIMEEAIMIAKLOHEN	499		
PbeIK1	RYRDFSEESVLGCGGFGYVMKVKNKKFNI----	AYAVKKITLSINK-32--	NSLIMEEVIMIAKLOHEN	501		
TbeIF2K1	RYRSEFIEQCLLGSGGFAPVYVCRKKVDGR----	LYAVKKIATRKNNEAEK----	ALREVQSLAALSHKH	330		
AtGCN2	RYLNDFEELKPLGQGGFGHVVLCKNKLDGR----	QYAVKKIRLKDKEIPV--	NSRIIVREVATLSRLQHQH	483		
DmGCN2	RLRTEFEVLMYLGKGFAGDVLKVRNILDNR----	EYAIKKRIPLPARSRQL--	YKMTREVELLSRINHEN	581		
ScGCN2	RYASDFEETAVLGQGFQVVKARNALDSR----	YYAIKKIRHTEEKLST----	ILSEVMLLASLNHQY	654		
MmGCN2	RYFIEFEELQLLGKGFAGVAVIKVQNKLDGC----	CYAVKRIPINPASRH---	FRRIKGEVTLLSRLHHEN	646		
HsGCN2	RYFIEFEELQLLGKGFAGVAVIKVQNKLDGC----	CYAVKRIPINPASRQ---	FRRIKGEVTLLSRLHHEN	647		
		*				
	IV	V	VIA			
TgIF2K-C	IVRYYDAWLE-24--	LFILMEYCP-GRTLREAI	DSSGLLQLPPASFRQTLRRR-98-	MGLRALKWRLTRDL	1236	
TgIF2K-D	IMRYHQAWTQ-39--	VYVQMEFCER--	SLEDEIEKRTVL-----	HWDSQOIWTLFRQT	1483	
PfeIK1	IVRYYDAWVE-99--	LYILMEYCP-GKTLREAI	DCGFI-----	CRNEKLIWELIKQI	644	
PbeIK1	IVRYYDAWVE-57--	LYILMEYCP-GKTLREAI	DCGFI-----	YKNEKLIWELIKQI	604	
TbeIF2K1	IVRYYDAWIE-100-	LYIQMELCSK-HSLRHLIDQ	CDKEEGSLLTA-----	GNGDKVATKIFRQL	484	
AtGCN2	VVRYQAWE-43--	LYIQMEYCPR--	TLRVFESY-N-----	HFDKDFAWHLIRQI	570	
DmGCN2	VVRYFNSWIE-102-	MYIQMEFCEK-CTLR	TAIDDN-L-----	FNDTDLRWRLFREI	728	
ScGCN2	VVRYAAWLE-119-	LFIQMEYCEN-RTLY	DLIHSENL-----	NQQRDEYWRLFROI	819	
MmGCN2	IVRYNAWIE-139-	LYIQMEYCEKS-TLR	TIDQG-L-----	FRDTSRLWRLFREI	830	
HsGCN2	IVRYNAWIE-146-	LYIQMEYCEKS-TLR	TIDQG-L-----	YRDTVRLWRLFREI	832	
	VIA	VIB	VII			
TgIF2K-C	VGGVAYMHSFGVIHRDLKPSNIFLKVDQDRLC----		VKIGDFGLTTTIVLKGKPGGSQAAGR-58-	PLSS	1354	
TgIF2K-D	LEALVYIHRNRVCHLSLKPSNVFLEPDAYGYN----		VKLGDFGITSLFSIV-----		1530	
PfeIK1	LKGISYIHDMMKIMHRDIKPSNIFLQITDNILI----		AKIGDFGLTTRIG-----		689	
PbeIK1	LKGIYYIHDMMKMMHRDIKPSNIFLQINDDILS----		AKIGDFGLTTKID-----		649	
TbeIF2K1	LTVVSHFHROGIVHRDLKPDNIFEMQSSVSSDDVGTIRVAD	FLGARTLHRSMKHSPSNVELN-----			546	
AtGCN2	VEGLAHIHQGGIIHRDFTPNNIFFDARND-----		IKIGDFGLAKFLK-----		612	
DmGCN2	AEGLAHIHQGGIIHRDLKPVNIFLDSHDQ-----		IKIGDFGLATTSFLA-----		772	
ScGCN2	LEALSYIHSQGGIIHRDLKPMNIFIDESRN-----		VKIGDFGLAKNVHRSLDILKLDSON-----		873	
MmGCN2	LDGLAYIHEKGMIIHRDLKPVNIFLSDDDH-----		VKIGDFGLATDHLAFTAEGKQDDQA-----		884	
HsGCN2	LDGLAYIHEKGMIIHRDLKPVNIFLSDDDH-----		VKIGDFGLATDHLAFSADSKQDDQT-----		886	
	VIII	IX				
TgIF2K-C	FPGSHPSDTPSLRLSAGVGTVYYMAPEQATGSR-----		YDQKADIFSLGVVLFEMWAP--	PFTTA	1412	
TgIF2K-D	-----	HNVHSPISRLYTAPELL-	GAADRKFASLTMRDADKADMYSLGVLFAEMWGRHEMFGRS		1587	
PfeIK1	-----	DTQINPSAGTIHYISPEQLNGEP-----		FNEKADIFSLGVVFFEMFHE--	PFSTS	737
PbeIK1	-----	NTQINPSAGTVNYMSPEQLNGEH-----		FDQKADIFSLGVVFFEMFHE--	PFSTS	697
TbeIF2K1	DVRPLDELEVGPSPTGNLGSVVYCAPEQERGES-----			YDFSVDSEYSLGMIALEMWLAV-AGQGF	606	
AtGCN2	-----	VAGSGVDSITGQAGTYFYTAPEIEQDWPK-----		IDEKADMYSLGVVFFELWH--	PFGTA	677
DmGCN2	-----	ITSAEDGTGTKVGTTLTYVAPELTGNASKSV-----		YNQKVDMYTLGIILFEMCQP--	PFDTG	841
ScGCN2	-----	LPGSSDNLTSAIGTAMYVATEVLDGTGH-----		YNEKIDMYSLGIIFFEMIY--	PFSTG	925
MmGCN2	-GDGVIKSDPSGHLTGMVGTALYVSPEV-QGSTKSA-----			YNQKVDLFSLGIIFFEMSYH--	PMVTA	943
HsGCN2	-GD-LIKSDPSGHLTGMVGTALYVSPEV-QGSTKSA-----			YNQKVDLFSLGIIFFEMSYH--	PMVTA	944

X

XI

TgIF2K-C	MERASVLGQLTLDHEQMRRLPRQ-94-QYVPSEVAPLILAMIQODPASRPAADALLVDDVLLPLELSQ	1572
TgIF2K-D	CSRIEFLTSLVKERNLQ-----QLNVPSAAVKIILKHLSPNPGDRPSSMTLLQSSLLPPAVEED	1646
PfeIK1	MERSITLSNLLKGIYPEYM-----KADNKKFQFLSSLLAINPQERCCAYNLLHESVLFTFEKDF	796
PbeIK1	MERSIVLSNLLKCIYPESI-----RSDNKIFQFLSLLLEIDPQNRLSAYSLLHENFFFSYEKNF	756
TbeIF2K1	RERFNIMTDISRGKPIPQWF-----YAWNPRMAEVIIASLLERDPGKRRTSEEILNKADLPADVPADV	667
AtGCN2	MERHVILTNLKLKLGELPLK-----WVNEFPEQASLLRRI MSPSPSDRPSATELLKHAFPPRMESEL	738
DmGCN2	MERAQTIMALRNV SINIPD-----AMLKDPKYEKTVMKLQWLLNHDPAQRPTAEELLI SDLVPPAQLEA	905
ScGCN2	MERNVILKRLRS-VSIEFPP-----DFDDNKMKVEKKIIRLLIDHDPNKRPGARTLLNSGWL PVKHQDE	988
MmGCN2	SERIFVLNQLRDPTSPKFP-----DDFDDGEHTKQKSVI SWLLNHDPAKRPTAMELLKSELLPPPQ MEE	1007
HsGCN2	SERIFVLNQLRDPTSPKFPE-----DFDDGEHAKQKSVI SWLLNHDPAKRPTATELLKSELLPPPQ MEE	1008

Fig. S3

