

Supplemental Figure S3. Amino acid sequence alignment of the leucine zipper region of 89 OsbZIP proteins. The OsbZIP proteins are classified into 29 sub-families (BZ1-BZ29) with similar predicted dimerization properties. OsbZIP No. and protein names of already characterized OsbZIP proteins have been mentioned. The leucine zipper region is divided into heptads (*gabcdef*) to visualize the potential $g \leftrightarrow e'$ pairs. A colour code is used to highlight the amino acids predicted to regulate both the dimerization specificity and stability. Four colours are used to differentiate between different $g \leftrightarrow e'$ pairs. Attractive basic-acidic pairs ($R \leftrightarrow E$ and $K \leftrightarrow E$) are coloured orange, attractive acidic-basic pairs ($E \leftrightarrow R$, $E \leftrightarrow K$, $D \leftrightarrow R$, and $D \leftrightarrow K$) are blue, repulsive basic pairs ($K \leftrightarrow K$, $R \leftrightarrow K$, $R \leftrightarrow Q$, $Q \leftrightarrow K$, and $K \leftrightarrow Q$) are pink and repulsive acidic pairs ($E \leftrightarrow E$, $E \leftrightarrow D$, $E \leftrightarrow Q$, and $Q \leftrightarrow E$) are green. If only one of the two amino acids in the $g \leftrightarrow e'$ pair is charged, the residue is coloured pink for basic and green for acidic. If the *a* or *d* position is polar, it is coloured grey and if either is charged, it is coloured brown. Asparagines at a position are coloured red. The prolines and glycines are bold to indicate a potential break in the α -helix. The predicted C-terminal boundary is denoted by the symbol #, other than the natural terminals which are indicated by *.

Sub-family	OsbZIP No.	Protein	Leucine Zipper Region												
			L0 gabcdef	L1 gabcdef	L2 gabcdef	L3 gabcdef	L4 gabcdef	L5 gabcdef	L6 gabcdef	L7 gabcdef	L8 gabcdef	L9 gabcdef			
BZ1	OsbZIP09		YTNELEN	KVSRLEE	ENVRLKR#KQELDEL	ICAVPVP	EPKYQLR	RTSSADF							
	OsbZIP42		YTNELEN	KVLRLEE	ENERLKK#KQELDEI	LNSAPP	EPKYQLR	RTSSAAF							
	OsbZIP62		YTNELEN	KISRLEE	ENQRLRE#HKAVADF	STFPSCV	DFLKAPL	TQKLEPV	MQIVPQP	EPKQQLR	RTTSASF				
	OsbZIP29		YTNELEN	KISRLEE	ENKRLRM#HKVSKPV	FVHHFQE	P								
BZ2	OsbZIP18		YLNDLEV	KVKDLEK	KNSELEE	RFSTLQN	ENQMLRQ	ILKNTTV#SRRGPGS	TASGEGQ						
	OsbZIP48		YMSELEA	RVKDLER	SNSELEE	RLSTLQN	ENQMLRQ	VLKNTTA#NRRGPD	SAGGDS						
	OsbZIP01		YMTELEA	KAKDLEL	RNABLEEQ	RVSTLQN	ENNTLRQ	ILKNTTA#HAGKRGG	GGGGGGK	KHHFTKS					
BZ3	OsbZIP39		YVEELEE	KVKSMHS	VINDLNS	RISFVVA	ENATLRQ#QLSGGSV	NCPPEGV	YPPAPIP	GMHFPWM	PGYAMRP				
	OsbZIP60		YVEELEG	KVKVMQA	TIADLTA	RISCVTA	ENAAALKQ#QLGGAAG	AGAAAAP	PPMPMYP	AVYPLPM	PWIHPAY				
BZ4	OsbZIP50		YVKDLET	KSKYLEA	ECRRLSY	ALQCCAA	ENMALRQ#SLLKDRP	VGAATAM	QESAVLT	ETLPLVS	LLWLVS				
BZ5	OsbZIP05	OSBZ8	ETEELAR	KVELLTA	ENTSLRR	EISRLTE	SSKLLRL	ENSALME#KLTETGP	DEAQEVP	PVKTKAQ	QARGVEN				
	OsbZIP45			ETEDLAT	QVESLTA	ENTSLRS	EISRLSE	SSEKLLR	ENSALMG#KLDPA	STQAEFS	LQKTTTA	SSRPVVE			
BZ6	OsbZIP13	OsbZIP-1a	ECEELSV	RADNLR	ENSSLRA	ELERIKK	EYBALLS	HNASLKE#KLEGN	SIPYMNE	QNDTNGT	HQKQKDS				
	OsbZIP86			ECEBLAQ	RAEVLKQ	ENTSLRD	EVNRIRK	EYDELLS	KNSSLKE#KLEDKQH	KTDEAGV	DNKLQHS	GDDSQK			
BZ7	OsbZIP26		EWEEVAN	RADLLKQ	ENSSLKE	ELKQLQE	KCNLSLTS	ENTTLHE	KLKELEG#EKSNNGN	YKE					
BZ8	OsbZIP34		ECEELSQ	KVTELT	VNSTLMT	ELDKLKK	DCEDMEA	ENSQLMD#EMVQSEG	SSVIATL	SVKIDTS	KDRHGSS				
	OsbZIP59		ECEELAR	KVAELT	ENSALRS	ELDQLK	ACEDMEA	ENTRLMG#DKAQYK	PTVITTL	GMSIDSS	KTQHDD				
BZ9	OsbZIP69		YLQELEQ	EVRRLLR	ENAAALRH	QCHQLKA#AAAAEAE	AAAAAAA	AAKKPTS	SATF						
	OsbZIP77		RVNMLET	EVQQLKQ	ENKMLRV#KYEQGH	GQWLEK	SLARFSQ	MSIFVSP	RSQYVAT	LERVLM					
	OsbZIP10		YTVELEA	ELNYLKQ	ENARLKE	AEKTVLL	TKKQMLV#EKMMEQS	KEKMNAN	RGGSQLR	RSQSCMW					
BZ10	OsbZIP24		YVQELEK	EVRRLVN	ENLKLKR	HCKQLKT	EMAAALIQ#OPTNKQS	SHRRSS	T						
	OsbZIP54		YVEELEK	EVRRLVD	DNLNLKK	CKEKGSG	MREDIVC	R*							
	OsbZIP55		YVEELEK	EVRRLVD	DNLNLKK	CKEKLKQ	EVAALVM#PTKSSLR	RTSSTQF							
	OsbZIP56		YVEELEK	EVRRLVD	DNLNLKK	CKEKLKQ	EVAALVM#PTKSSLR	RTSSTQF							
BZ11	OsbZIP67		QLSELWA	QVEHLRG	ANRRLLD	ELNRALR	GCADVR	ENSLRLD	EKAELAG#KLQLLLP	RQPAPK	NAADDQS				
	OsbZIP73		QLSELRG	QVHLRD	ANRRLLD	ELNQAMR	GCSDVHC	ENARLRK	ERABLQT	KLEHLMQ#AQKNNTS	PSSSQPC				
	OsbZIP22		QLSELWA	QVHLRS	TNRQLLD	QLNHVIR	DCDRVTH	ENQQLRD	EQAKLQK#QLEKTPV	ENTESTF	MGPDN				
	OsbZIP16		RLDELSE	QVSELRD	TNRQLLV	ELNHMIS	KHARIVR	ENSQLRE	EASDLQR	KLSEMM	EDAEEVAA#AAAAAAR				
	OsbZIP04		QLDELTA	QVAALRA	RNGALGL	AAREAAR	RCAAVRA	ENELLRA	RSVELAA	RLDSDLT	LAQCCLD#AAAAASF				
BZ12	OsbZIP51		QLDELSS	HVAELRA	ANHRLAV	ELNRAAA	RHAQMAR	ENARLAE	EARALRE#RLPLRGG	GGGGGDG	EAEEEAG				
	OsbZIP31		HLDELRA	RAERLR	CNRELA	RGHAAAG	RAGLVRL	ANAWLRA	AAAALTR	RLAAAR#AIALGLQ	YRPAAAA				
	OsbZIP89		HLDELRA	KASALRA	TSRDLVA	RLRGARA	RAALVAL	TNAQLRD	EAGKLAL	RLAAAR#VIALRQL	YSAAAAA				
	OsbZIP32		RLEELRG	ESARLRA	ENRELA	RLHAVAR	HGLAVR	QNRARLA	EAAALAR	RLALQR#LARGHRM	MITASPP				
BZ13	OsbZIP65		HLDDLTS	QVNQLKM	ENQQLTT	TLNMVTQ	SCAFES	QNSVLRT	QMMELDS	RLSALRE	IFYMN#GNQSPSN				
	OsbZIP71		HLDELTS	QVNQLKN	QVQQLSM	ALSLTQ	NLVAVQA	QNSVLQT	QLELQS	RLCALTD	ILMCMNN#SATPTFP				
	OsbZIP14		HLDDLTA	QVAHLR	ENAHVAT	ALGLTQ	GLLAVDA	ENAVLRT	QAALAA	RLASLND	ILSCINT#NGAAAAA				
BZ14	OsbZIP38	LIP19	RLEELIA	EAARLQA	ENARVEA	QIGAVAG	ELSKVDG	ENAVLRA	RHGLAG	RLQALVS	VLEILQV#AGAPVDI				
	OsbZIP87	OsOBf1	HLDELVQ	EVARLQA	DNARVLA	RASEIAG	QYARVEQ	ENTVLRA	RAAELGD	RLRSQNS	VLRVVE#FSGVAMD				
BZ15	OsbZIP15	RISBZ4	HLADLES	QVDQLRG	ENASLRFK	QLTDANQ	QFTTSVT	DNRILKS	DVEALRV#KVKMAED	MVARGAL	SCGLGHL				
	OsbZIP20	RITA-1	HLADLET	QVDQLRG	ENASLRFK	QLTDANQ	QFTTAVT	DNRILKS	DVEALRV#KVKMAED	MVARGAL	SCGLGHL				
	OsbZIP52	RISBZ5	QLSELAS	QVQLKRG	ENSSLFK	QLTESSQ	QFNATVT	DNRILKS	DVEALRV#KVKMAED	MVARAAM	SCGLGQL				
BZ16	OsbZIP33	REB	HLNELEA	QVSQLEV	ENSSLLR	RLADVNO	KYNDAAV	DNRVLKA	DVETLRA	KVKMAED	SVKRVTG#MNALFPA				
	OsbZIP58	RISBZ1	RLKDLLE	QVSLLEV	ENSSLLR	RLADANQ	KYSAAA	DNRVLMA	DIEALRA	KVRMAE	SVKMVTG	ARQLHQ##			
	OsbZIP88		HLNDLES	QVSQLES	ENASLRFK	RLSDMTQ	KYKQSTT	EYGNLQD	DMNAMRR	KLVIABE	AVRRVTG	IGLQFT#			
BZ17	OsbZIP27		YVDGLAV	EAEQLRR	ENDAMRA	GAGAVLQ	RCLRVEQ	ENRVLAA	HARELCS	AVNLRAS	QLRLLGE#VAGVPLD				
BZ18	OsbZIP07		HAAFLLE	EVKKLRT	TNQQLLR	RLQGHIS	LEAEVVR	LRALLFD	IRGKIDA#EIGTFPF	QKQCSFG	SVCTDTH				
	OsbZIP44		HAAFLLE	EVKKLRA	ANQQLLK	RLQGHAA	LEAEVIR	LRSLLD	VRGKID#EIGTFPF	QKPCSVG	SVACTDP				
	OsbZIP53		HTASLEE	EVVHLRA	LNQQLMK	KLQNHAT	LEAEVSR	LRCLLVD	IRGRIG#EIGAFPY	QRVKN	DLVSSVD				
BZ19	OsbZIP12		YIAELES	LVTQLEE	ENAKMFK#EQEEQHQ	KRLKELK	EMVVPVI	IRKTSAR	DLRRTNS	MEW					
	OsbZIP40		YIAELEA	QVALEEE	EHAQLLR#EQEENQ	KRLKEIK	EQAVAVV	IRKKTQD	LRRTNSM	EW					
	OsbZIP80	OsbZIP-2a	IRDELAR	KVADLSS	QNETMK#VAIRTIK	KAVAEP	MDTAPPA	QQQAETA	AAVAPPT	TATPPT	APQPSFL				
BZ20	OsbZIP23		YMMELEA	EVAKLKE	LNDELQK	KQDEMLE#QQKNEVL	ERMSRQV	GPTAKRI	CLRRTLT	GPW					
	OsbZIP46		YIMELEA	EVAKLKE	QKABELQK	KQVEMIQ#KQNDVEM	ERITQQQ	GPKAKRF	CLRRTLT	GPC					
	OsbZIP66		YTMELEA	EVQKLKE	QNMELQK	KQEEIME#MQKNFFP	EMQKNQV	LEAVNPP	YGQKRCR	LRRLTLG	PW				
	OsbZIP72	TRAB1	YTLELEA	EVQKLKE	MNKELER	KQADIME#MQKNEVE	EMIKDPF	GRKRKLC	LRRLTLG	PW					
BZ21	OsbZIP06		YISELER	SVTTLQN	EVSLSVP	RVAFLDQ	QRTILTV	GNSHLQK	RIAALAQ	DKIFKDA	HQEALRK	EIERLRQ#			
	OsbZIP19		YISELER	SVTTLQM	EVSLSVP	RVAFLDH	QRSLLTV	GNSHLQK	RIAALAQ	DKIFKDA	HQEALRK	EIERLRQ#			
BZ22	OsbZIP02		YISELER	SVTSLQT	EVSLSVP	RVAFLDH	QRSLLTL	GNSHLQK	RIAALAQ#DKIFKDG	GTEGEDR	EAAANLP				

BZ23	OsbsZIP21 OsbsZIP76		YIADLER TVDSLQN IGADLAV RVASLRFQ LRNALSM ENKQLRR QITSLQQ AKLIKDG QTQMLKK ETERLKK# YKLELES KVLVLRKI IEKELSE RLATAQR TFNELLA QNNELKI KIQTGR ERQMKEA IPKISIGY ESLQVVV#
BZ24	OsbsZIP57		RVEELER AADELFA ERRALAS RLDAIAR RALAVRG ANARHHA EAGVLRRL RLGEAQR NAAVLIG LSRLLRS#
BZ25	OsbsZIP82 OsbsZIP85		YIAELER KVQALQS EGDVSA EMEFLSQ QNIMLDD ENKALKQ RLESQAQ EQLIKRF QQEMFER EIGRLRS# YIAELER RVQALQT EGVVESA EMDFLGQ QNIMLDD ENKALKQ RLESLSQ EHLIKRF QQEMFER EIGRLRS#
BZ26	OsbsZIP25 OsbsZIP78 OsbsZIP68		YIAELEQ KVQILQS EATNLSA QLTMQR DSAGLAT QNNELKF RLHAMEQ QAQLRDA LNEALTT EVQRLKL# YIAELEQ KVQILQT EATTLA QLTLQR DSSGMAT QNNELKF RLQSMEE QAQLRDA LNEALTA EVQRLKL# YIQELEH KVQVLTQ EATTLA QLTMQR DSTGLAT QNNELKI RLQAMEQ QAQLRDA LNEALTA EVQRLKL#
BZ27	OsbsZIP36 OsbsZIP75 OsbsZIP81 OsbsZIP84 OsbsZIP30 OsbsZIP61	RF2a RF2b	YIAELER KVQTLQT EATTLA QLTMQR DTTGLTS ENSDLKI RVQTMEE QVRLQDA LNDRLPD BIQQLVK# YIAELER KVQTLQT EATTLA QLALLQR DTSGLTT ENSDLKI RLQTMEE QVHLQDA LNDTLKS EVQRLKV# YTGELER KVQTLQT EATTLA QLTLQR DTSGLTA ENRELKL RLQSMEE QAKLRDA LNDALRE EVQRLKI# YTSELER KVQTLQT EATTLA QLTLQR DTSGLTA ENRELKL RLQSMEE QAKLRDA LNEALRE EVQRLKI# YITELER KVQTLQT EATTLA QLTLFQR DTTGLSA ENAELKI RLQAMEQ QAQLRDA LNDALPK EVBLRLKI# YITELER KVQTLQT EATTLA QLTLFQR DTTGLSA ENAELKI RLQAMEQ QAQLRDA LNDALPK EVERLKI#
BZ28	OsbsZIP35		HVGLQR KLQVLQS ETTTLGA QVTVMQR NNNELVS QNNELKT RLQAMDQ LAQLGDA LTRSLAA EAQHLRA#
BZ29	OsbsZIP03 OsbsZIP08 OsbsZIP28 OsbsZIP63 OsbsZIP47 OsbsZIP43 OsbsZIP11 OsbsZIP41 OsbsZIP79 OsbsZIP83 OsbsZIP37 OsbsZIP17 OsbsZIP49 OsbsZIP70 OsbsZIP74 OsbsZIP64		YVQLEN SRLKLTQ LEQELQR#ARQQGIF ISSSVDQ THMSGN GALAFDM EYARWLE EHNKQIN ELRSAVN YIQNLES SRLKLTQ IEQELQR#ARQQGIF ISTSSDQ SHSASGN GALAFDM EYARWLE EHNKHIN ELRAAVN YVQLES SKLKLAS LEQELQR#ARQQGIF ISSSGDQ THMSGN GALTFDL EYARWLE EQNKQIN ELRTAVN YVQLES SKLKLQA LEQELQR#ARQQGIF ISSSGDQ THMSGN GALTFDL EYTRWLE EQNKQIN ELRTAVN YIQLES SRKLMH LEQELQR#ARQQGIF IATGSSG DHGHSIG NGTFLAF DLEYARW LDEHQRH INDLRVA YVQLED SRMKLTQ LEQELQR#ARQQGIF ISTSGDQ QRSTSEN EALAFNM EYMRWLE EHNKQIN ELRSAVH YVQLET SRVRLQQ IEQELQR#ARQQGIF LGGCRAA GDMSSGA AMFDMY ARWLDDD SKRLTDL RGGJQAH YVQLET SRVRLQQ IEQELQR#ARQQGIF PGGCSAP GDMSSGA VMFDMY TRWIDDD SKCMAL EQALQAO YIQLES SKLKLQA MEQDIHR#ARQQGIF LGAPGN TSSGAM FDVDYAR WLEEDG RMAELHG GLHAHLP YIQLES SKLKLQA MEQDLR#ARQQGIF LGGSPGG NTSAGAA MFDAEYG RWLEDG RMAELH GGLHAHL YIQLET SRLKLQA LEQELQR#ARQQAVY ANGSLRE PNLGFTG PIDPGAL GFEIKYS HWVDEQN RNTGELR YIQLET SRIRLSQ LEQELQR#ARQQGAF ILGGGAF SAGIGGQ SPEAAWF DGEYARW VESHERM MAHMRAA YIQLET GRIRLAH LEQELQR#ARQQGAF CGAGILS PDAALFN LEYERWQ EAHHQVI SRLRAAV EBHRPDG YIQLES SRIRLSQ LEQQVHV#ARVQGM LGAGDQH QGLFSPG SAASLFD LEYGRWV EBHSLKI FQLRAAL YIQLES SRIRLAH LEQELHT#ARQQGVF FPGSGGL IEGGSG KGVLLGG IDGVGGG GGGGLSS EAAMFDV YIQLET SRMKLAH LEQEITR#ARQQSAY INRSSNP ATLPAPI DSGVTF EVEYAQW VEEQGRQ TAEHLRAS