

Additional file 7. Amino acid sequence alignment of the leucine zipper region of 95 *Arachis* bZIP proteins for prediction of dimerization properties. 95 bZIP proteins are categorized into 28 subfamilies (BZ1-BZ28) with similar predicted dimerization properties. Asparagines at *a* position are colored red. The prolines and glycines are bold to indicated 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 the symbol *. The leucine zipper region is divided into heptads (*g, a, b, c, d, e, f*) from L0 to L9 to visualize the potential $g \leftrightarrow e'$ pairs. Four colors are used to differentiate between different $g \leftrightarrow e'$ pairs. Attractive basic-acidic pairs (R \leftrightarrow E and K \leftrightarrow E) and colored orange, attractive acidic-basic pairs (E \leftrightarrow R, E \leftrightarrow K, D \leftrightarrow K, and D \leftrightarrow R) are blue, repulsive basic pairs (K \leftrightarrow K, K \leftrightarrow Q, Q \leftrightarrow K, R \leftrightarrow K, and R \leftrightarrow Q) are pink and prepulsive acidic pairs (E \leftrightarrow E and E \leftrightarrow Q) are green. If single amino acid at the positions *e* or *g* is charged, the residue is colored pink for basic amino acid and green for acidic amino acid. If the *a* or *d* position is charged, it is colored brown.

Subfamily	bZIP No.	Group	Leucine zipper region									
			L0	L1	L2	L3	L4	L5	L6	L7	L8	L9
BZ1	AdbZIP48	A	YTTELEN	KVSRLEE	ENEKLRK	KELENL#	LSSA PPP	PQPRYQI	RRTSSAS	F	gabcdef	gabcdef
	AibZIP43	A	YTTELEN	KVSRLEE	ENEKLRK	KVRFIF	EVLFYFV#	SIAP PTS	LVP CSYQ	VMM MIVR	LSTM	
BZ2	AdbZIP29	A	YTQELEN	KVSRLEE	ENERLKR	QQEIEKV#	LPSE PPP	EPKRQ LR	RTSSG PL			
	AibZIP23	A	YTQELEN	KVSRLEE	ENERLRR	QQEIEKV#	LPSE PPP	EPKRQ LR	RTSSG PL			
BZ3	AdbZIP42	A	YTFELEA	EVQKLKE	INKE LQK	Q Q EE MM E	MQKNQ NM#	DSS F W PL	G N KRQ CL	RRTV TG P	W	
	AibZIP35	A	YTFELEA	EVQKLKE	INKE LQK	Q Q EE MM E	MQKNQ NM#	DSS F W PL	G N KRQ CL	RRTV TG P	W	
BZ4	AdbZIP33	A	YTVELEA	ELNVLKE	ENENL KQ	ILDEA EL	R R K Q E I S	Q R K H T T #	P Q K R T E K	LREI R R	ISAA W	
	AibZIP28	A	YTVELEA	ELNVLKE	ENENL KQ	ILDEA EL	R R K Q E I S	Q R K H T T K	A Q R K T E K	LREI R T	ISAA W *	
BZ5	AibZIP33	A	YTLELE C	LVLQLEA	EN T RLLE	E Q AQ I K R	Q R Y N H L L#	H T I I P V I	H K R K P R P	M L R R L S N	L P W	
BZ6	AdbZIP39	A	YQVELES	LAVKLEE	ENDK L M	E K AQ C S H	H K W V Y S V	I L I Q S H R	S L H Y C S I	T G Y L L L A	I C C V L N D	F I G L F V *
	AibZIP12	A	YTTDLES	NVQQL E I	ENAR L L S	E E I E K A N#	G G L D S D	V I L A V L D	F S L K I L A	H G F V G V G	I N N T V T Y	
	AibZIP31	A	YQVELES	LAVKLEE	ENDK L M	E K L T Q L I	F M Q L M E K#	V I P V V E K	R R P R P R L	R R V R S L Q	W	
BZ7	AdbZIP2	A	YTHEL Q Q	K V K E L I A	EN N RL R R	Q N Q Q Q I H	D*					
	AibZIP2	A	YTHEL Q Q	K V K E L I A	EN N RL R R	Q N Q Q Q I V	E M G S K D #	P N E K K G K	N K L R R S G	S I		
	AdbZIP13	A	YIEK L E N	D K S R L L K	S N R R L K	L M K T *						
BZ8	AdbZIP45	B	YVEELE E	K V R S M H S	T I A D L S S	I S F V M A	E N A T L R Q	Q L G V G M #	C P P P P V	P G M Y T H A	P P M A H M P	Y T W M P C
	AibZIP40	B	YVEELE E	K V R S M H S	T I A D L S S	I S F V M A	E N A T L R Q#	Q L G V G M	C P P P P V	P G M Y P H A	P P M A H M P	Y T W M P C
BZ9	AdbZIP23	C	H L T E L E T	Q V S Q L G	E N S S L L K	L T D I S H	I Y N D A V	D N R V L K A	D V E T L R A	K V K M A E E	T V K R I T G#	L N P M F P
	AdbZIP37	C	H L N E L E T	Q V S Q L G	E N S T L L K	L T D V S H	I Y N E S A V	D N R V L K A	D V E T L R A	K V K M A E E	T V K R I T G#	L N P V M H
	AibZIP30	C	H L N E L E T	Q V S Q L G	E N S T L L K	L T D V S H	I Y N E S A V	D N R V L K A	D V E T L R A	K V K M A E E	T V K R I T G#	L N P V M H
	AdbZIP30	C	Y L T D L E S	Q V E Q L L	E N A T L Y K	Q L T D A S Q	H F R D A D T	N N R V L S	D V E A L R A	K V K L A E D	M V A R S S F	T N L N N Q L*
	AdbZIP44	C	H L A D L E M	Q V E K L L	E N A T L Y K	Q F N D V Q	Q F H E A D T	N N R V L S	D V E A L R A	K V K L A E D	M V T R G S V	T T L N N Q L*
	AibZIP39	C	H L A D L E M	Q V E K L L	E N A T L Y K	Q F N D V Q	Q F H E A D T	N N R V L S	D V E A L R A	K V K L A E D	M V T R G S V	T T L N N Q L#
	AibZIP24	C	Y L T D L E S	Q V E Q L L	E N A T L Y K	Q L T D A S Q	H F R D A D T	N N R V L S	D V E A L R A	K V K L A E D	M V A R S S F	T N L N N Q L#
BZ10	AdbZIP17	G	E C D E L A Q	R A E A L E	E N A S L R S	E V S R I R S	E Y E Q L A S	E N A A L K E#	R L G E L P G	T D D L R S R	T M N D Q P A	A D D P Q S
	AibZIP15	G	E C D E L A Q	R A E A L E	E N A S L R S	E V S R I R S	E Y E Q L A S	E N A A L K E#	R L G E L P G	N D D L R S R	T M N D Q P A	A D D P Q S
BZ11	AdbZIP6	G	E A E E L A R	K V E N L T A	E N V S L K S	E I N Q L S E	S S E K L V	E N T L R E	K L K N A Q L#	G P A E I V	L N N T D S N	R A T P V S T
	AibZIP6	G	E A E E L A R	K V E N L T A	E N V S L K S	E I N Q L S D	S S E K L V	E N T L R E	K L K N A Q L#	G P A E I V	L N N T D S N	R A T P V S T
	AdbZIP19	G	E C E E L Q K	K V E S L G N	E N R T L R E	E L Q R V S E	E C E K L T A	E N S I K E	E L E R L C G#	P E A V A S L	E	
	AdbZIP4	G	E T E E L A R	K V E S L S A	E N V L L K S	E I N R L A E	S S G K M V	E N A T L G E	K L K I V M	V Q T E G I I	L K G I E S K#	S A T P K S T
	AibZIP4	G	E T E E L A R	K V E S L S A	E N V L L K S	E I N R L T E	S S E K M V	E N A T L G E	K L K N A M	V Q T E G I I	L K G I E S K#	S A T P M S T
BZ12	AdbZIP41	H	Y L I D L E T	R V K D L E K	K S E L K E	R L S T L Q N	E N Q M L R Q	I L K N T T A	S R R G S N S	G T N A E*		
	AdbZIP47	H	Y L I D L E T	R V K D L E K	K S E L K E	R L S T L Q N	E N Q M L R Q	I L K N T T A	S R R G S N S	G T N A E*		
	AdbZIP14	H	Y V N D L E S	R A K D L E D	K S N L E E	I S T L I N	E N T L R K	V T D*				
	AibZIP36	H	Y L I D L E T	R V K D L E K	K S E L K E	R L S T L Q N	E N Q M L R Q	I L K N T T A	S R R G S N S	G T N A E*		
AibZIP42	H	Y L I D L E T	R V K D L E K	K S E L K E	R L S T L Q N	E N Q M L R Q	I L K N T T A	S R R G S N S	G T N A E*			
BZ13	AdbZIP27	I	Y I S E L H	K V Q T L Q A	E T T S L S T	Q F T K L M	D N S E L S K	L N N E Y L	K L Q A L E Q	Q S Q L K D A	L N E L T D A	E V R R L R R*
	AibZIP19	I	Y I S E L H	K V Q T L Q A	E T T S L S T	Q F T K L M	D N S E L S K	L N N E Y L	K L Q A L E Q	Q S Q L K D A	L N E L T D A	E V R R L R R*
BZ14	AdbZIP43	I	Y V V E L R	K I Q V L T	E A T T L S A	Q L N L F Q R	D T T G L T T	E N T E L R L	R L Q A M E Q	Q A K L C D A	L N E A L K	E V D R L K I*
	AdbZIP1	I	Y I Q E L R	K V Q T L T	E A T T L S A	Q L T L Y Q R	D T T G L S S	E N T E L K L	R L Q A M E Q	Q A Q L R D A	L N D A L M K	E V E R L K I*
	AdbZIP32	I	Y I Q E L R	K V Q T L T	E A T T L S A	Q L T L Y Q R	D T N G L S T	E N T E L K L	R L Q A M E Q	Q A Q L R D A	L N E A L K	E V E R L K V*
	AibZIP3	I	Y I Q E L R	K V Q T L T	E A T T L S A	Q L T L Y Q R	D T T G L S S	E N T E L K L	R L Q A M E Q	Q A Q L R D A	L N D A L M K	E V E R L K I*
	AibZIP37	I	Y V V E L R	K I Q V L T	E A T T L S A	Q L N L F Q R	D T T G L T T	E N T E L R L	R L Q A M E Q	Q A K L C D A	L N E A L K	E V D R L K I*
BZ15	AdbZIP11	I	Y I S E L H	K V Q T L T	E A T T L S A	Q L T L L Q R	D S V G L T N	Q N S E L F	R L Q S M E Q	Q A K L R D A	L N E A L T A	E V Q R L K L*
	AibZIP11	I	Y I S E L H	K V Q T L T	E A T T L S A	Q L T L L Q R	D S V G L T N	Q N S E L F	R L Q S M E Q	Q A K L R D A	L N E A L T A	E V Q R L K L*
BZ16	AibZIP26	I	Y I Q E L R	K V Q T L O I	E A T T L S A	Q L T L Y Q V	R A V H L K L	LA*				
	AdbZIP22	I	Y I Q E L R	K V Q T F T	E A T T L S V	Q L T L H Q V#	R A V H L K P	LA				
	AibZIP32	I	Y I Q E L R	K V Q T L T	E A T T L S A	Q L T L Y Q V#	R A V H L K P	LA				
BZ17	AdbZIP49	G	E C E E L R G	N M D N L D	E N S S L T H	M L I R L S E	E C M D L S N	E N D S T Q L#	A F Y V L N P	A L I A D N L	A S T I T Y N	S M V K L W F
	AibZIP45	G	E C E E L R G	N M D N L D	E N S S L T H	M L I R L S E	E C M D L S N	E N D S T Q L#	A F Y V L N P	A L I A D N L	A S T I T Y N	S M V R M W F
BZ18	AdbZIP50	G	E C E E L Q R	K V E S L G N	E S Q T L R E	E L Q I V L E	E C K K L T A	E N S S T K I	M S S N T F	A V N S Q Q E	E L E R L C G#	P E A I A S L
	AdbZIP7	G	E C E E L Q R	K V E S L G N	E S Q T L R E	E L Q I V L E	E C K K L T A	E N S S T K I	M S S N T F	A V N S Q Q E	E L E R L C G#	P E A I A S L
	AdbZIP15	G	E C E E L Q R	K V E S L G N	E S Q T L R E	E L Q I V L E	E C K K L T A	E N S S T K I	M S S N T F	A V N S Q Q E	E L E R L C G#	P E A V A S L
BZ19	AibZIP38	G	E C E D L Q K	K V E L G N E	S Q T L R E E	L Q R V L E E	C E K L T A E	N S S I K I M	S S N T F A	V N S Q Q E K#	L E R L C G P	E A V A N L
	AibZIP21	G	E C E D L Q K	K V E L G N E	S Q T L R E E	L Q R V S E E	C E K L T A E	N S S I K I M	S S N T F A	V N S Q Q E K#	L E R L C G P	E A V A S L
BZ20	AibZIP22	U	L C E D L T R	K A S N L V L	E N E N L K K	E K E M A L K	E Y Q S L E T	T N K H L A	Q I A K T I N#	S E V D K A P	V E Q E S S</	