附录 1 甘蓝型油菜 *ZF-HD* 基因名称、ID 和基本信息

Appendix 1 Name, ID and various features of *ZF-HD* genes in *Brassica napus*

Gene symbol	Gene ID	Peptide/aa	Molecular weight /Da	Theoretical PI	Localization predicted	Intron number
BnZF-HD1	BnaA01g14020D	225	24305.1	8.44	nucl	0
BnZF-HD2	BnaA02g14430D	255	27631	8.44	nucl	0
BnZF-HD3	BnaA02g26470D	298	34071.9	8.49	nucl	0
BnZF-HD4	BnaA02g35950D	263	29038.5	8.99	nucl	1
BnZF-HD5	BnaA03g08890D	181	20385.3	9.37	nucl	0
BnZF-HD6	BnaA03g41020D	243	27560.3	9.7	nucl	0
BnZF-HD7	BnaA04g02360D	210	23146.9	7.62	nucl	0
BnZF-HD8	BnaA04g09610D	317	34366	8.83	nucl	0
BnZF-HD9	BnaA06g09270D	311	35112.2	7.01	cyto	0
BnZF-HD10	BnaA06g13000D	88	9832.04	8.59	cyto	0
BnZF-HD11	BnaA06g31200D	344	37301	8.23	nucl	0
BnZF-HD12	BnaA06g31210D	91	9789.9	7.59	chlo	1
BnZF-HD13	BnaA07g02030D	84	9223.58	6.82	cyto	0
BnZF-HD14	BnaA07g21770D	297	32612.1	8.44	nucl	0
BnZF-HD15	BnaA07g22120D	97	10648.8	8.85	chlo	0
BnZF-HD16	BnaA07g28170D	231	25061	8.29	nucl	0
BnZF-HD17	BnaA07g31690D	94	10347.7	8.95	mito	0
BnZF-HD18	BnaA07g31990D	288	31798.5	9.01	nucl	1
BnZF-HD19	BnaA08g14660D	210	23146.9	7.62	nucl	0
BnZF-HD20	BnaA08g22380D	88	9844.98	8.59	mito	0
BnZF-HD21	BnaA09g02420D	98	10568.8	8.57	mito	0
BnZF-HD22	BnaA09g02430D	281	30316.5	7.71	nucl	1
BnZF-HD23	BnaA09g31550D	219	25077	9.64	mito	0
BnZF-HD24	BnaA09g44460D	88	9709.83	8.25	chlo	0
BnZF-HD25	BnaA09g45550D	172	20331	9.3	nucl	0
BnZF-HD26	BnaA09g52500D	241	26792.2	8.56	nucl	0
BnZF-HD27	BnaA09g57080D	314	35388.6	6.97	cyto	0
BnZF-HD28	BnaA10g18900D	263	28452.8	7.24	nucl	0
BnZF-HD29	BnaAnng04880D	272	30410	6.52	nucl	0
BnZF-HD30	BnaAnng31040D	179	20023.7	9.28	nucl	0
BnZF-HD31	BnaAnng34110D	257	29515.8	9.1	nucl	1
BnZF-HD32	BnaC01g16510D	223	24130.9	8.65	nucl	0
BnZF-HD33	BnaC02g19350D	255	27587	8.44	nucl	0
BnZF-HD34	BnaC02g34620D	300	34345.2	8.49	nucl	0
BnZF-HD35	BnaC02g43770D	269	30087.7	6.31	nucl	0
BnZF-HD36	BnaC03g13900D	133	14124.6	6.02	mito	0
BnZF-HD37	BnaC03g49000D	293	32255.6	5.77	nucl	0

BnZF-HD38	BnaC03g65280D	92	9710.93	7.8	mito	0
BnZF-HD39	BnaC04g55850D	277	29748.8	8.25	nucl	1
BnZF-HD40	BnaC05g10680D	306	34421.5	7.79	cyto	0
BnZF-HD41	BnaC05g14490D	88	9832.04	8.59	cyto	0
BnZF-HD42	BnaC05g19960D	238	25894.9	8.41	nucl	1
BnZF-HD43	BnaC06g22480D	294	32429.2	9.06	nucl	0
BnZF-HD44	BnaC06g22850D	97	10648.8	8.85	chlo	0
BnZF-HD45	BnaC06g28000D	256	27655.8	8.04	nucl	0
BnZF-HD46	BnaC06g35530D	94	10417.7	8.84	mito	0
BnZF-HD47	BnaC06g36000D	299	32678.4	8.86	nucl	0
BnZF-HD48	BnaC07g25390D	91	9803.92	7.59	nucl	1
BnZF-HD49	BnaC07g25410D	339	36689.5	8.22	nucl	0
BnZF-HD50	BnaC07g31930D	245	27886.9	9.78	nucl	0
BnZF-HD51	BnaC08g11750D	210	23102.8	7.64	nucl	0
BnZF-HD52	BnaC08g18380D	88	9640.87	8.95	chlo	0
BnZF-HD53	BnaC08g22280D	215	24632.5	9.66	nucl	0
BnZF-HD54	BnaC08g37040D	88	9771.9	8.59	mito	0
BnZF-HD55	BnaC08g39390D	172	20317	9.28	nucl	0
BnZF-HD56	BnaC08g39630D	315	35578.8	6.84	cyto	0
BnZF-HD57	BnaC09g01960D	98	10594.9	8.57	mito	0
BnZF-HD58	BnaC09g01970D	312	33891.5	8.45	nucl	0
BnZF-HD59	BnaC09g06950D	255	28336.8	6.26	nucl	0
BnZF-HD60	BnaCnng08060D	261	28811.2	8.99	nucl	1
BnZF-HD61	BnaCnng66730D	265	30588.2	9.28	nucl	1
BnZF-HD62	BnaCnng71430D	257	29359.2	9.47	nucl	0

Nucl: 细胞核; chlo: 叶绿体; cyto: 溶酶体; mito: 线粒体

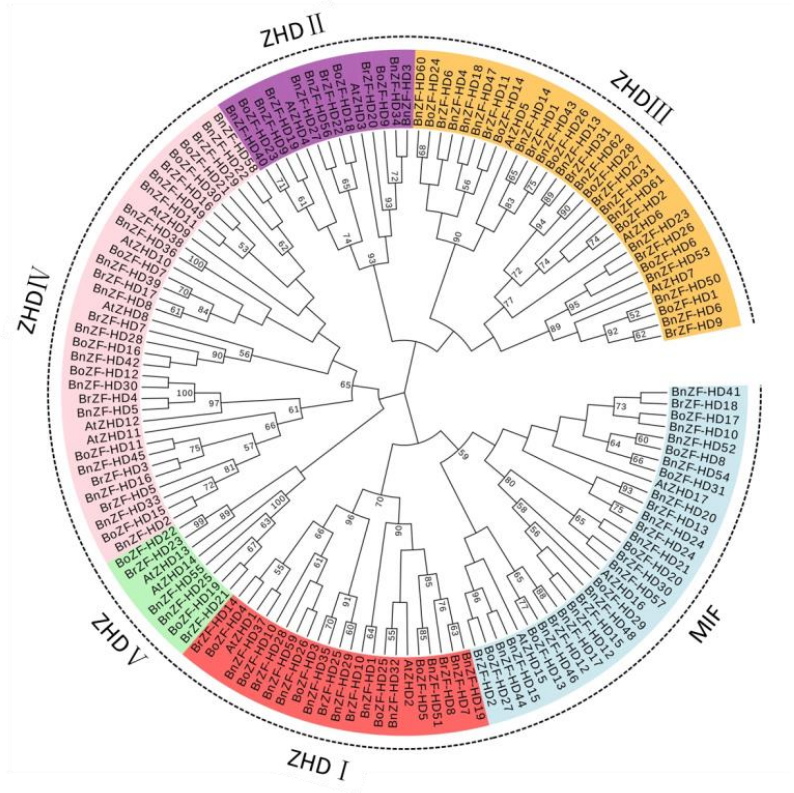
附录 2 白菜、甘蓝和拟南芥 *ZF-HD* 基因

Appendix 2 The members of *ZF-HD* gene family identified in *Brassica rapa*, *B. oleracea* and *Arabidopsis thaliana*

Gene symbol	protien identifier	Gene symbol	protien identifier	Gene symbol	protien identifier
BoZF-HD1	Bol002298	*BrZF-HD1*	Bra003759	*AtZHD1*	AT5G65410.1
BoZF-HD2	Bol007465	*BrZF-HD2*	Bra003791	*AtZHD2*	AT4G24660.1
BoZF-HD3	Bol008054	*BrZF-HD3*	Bra004399	*AtZHD3*	AT2G02540.1
BoZF-HD4	Bol009230	*BrZF-HD4*	Bra006657	*AtZHD4*	AT1G14440.1
BoZF-HD5	Bol010175	*BrZF-HD5*	Bra007869	*AtZHD5*	AT1G75240.1
BoZF-HD6	Bol010551	*BrZF-HD6*	Bra008185	*AtZHD6*	AT2G18350.1
BoZF-HD7	Bol012141	*BrZF-HD7*	Bra008712	*AtZHD7*	AT3G50890.1
BoZF-HD8	Bol013186	*BrZF-HD8*	Bra010485	*AtZHD8*	AT5G15210.1
BoZF-HD9	Bol015157	*BrZF-HD9*	Bra012882	*AtZHD9*	AT3G28920.1
BoZF-HD10	Bol019045	*BrZF-HD10*	Bra013822	*AtZHD10*	AT5G39760.1
BoZF-HD11	Bol023911	*BrZF-HD11*	Bra015857	*AtZHD11*	AT1G69600.1
BoZF-HD12	Bol025871	*BrZF-HD12*	Bra015898	*AtZHD12*	AT5G60480.1
BoZF-HD13	Bol026157	*BrZF-HD13*	Bra016538	*AtZHD13*	AT5G42780.1
BoZF-HD14	Bol027744	*BrZF-HD14*	Bra024382	*AtZHD14*	AT1G14687.1
BoZF-HD15	Bol028558	*BrZF-HD15*	Bra025362	*AtZHD15*	AT1G74660.1
BoZF-HD16	Bol030439	*BrZF-HD16*	Bra025363	*AtZHD16*	AT3G28917.1
BoZF-HD17	Bol030735	*BrZF-HD17*	Bra025644	*AtZHD17*	AT1G18835.1
BoZF-HD18	Bol031500	*BrZF-HD18*	Bra025688		
BoZF-HD19	Bol031513	*BrZF-HD19*	Bra026219		
BoZF-HD20	Bol032265	*BrZF-HD20*	Bra026589		
BoZF-HD21	Bol032266	*BrZF-HD21*	Bra026812		
BoZF-HD22	Bol035272	*BrZF-HD22*	Bra026830		
BoZF-HD23	Bol038041	*BrZF-HD23*	Bra027455		
BoZF-HD24	Bol039334	*BrZF-HD24*	Bra031051		
BoZF-HD25	Bol039451	*BrZF-HD25*	Bra031859		
BoZF-HD26	Bol039898	*BrZF-HD26*	Bra036852		
BoZF-HD27	Bol039938	*BrZF-HD27*	Bra037224		
BoZF-HD28	Bol041506	*BrZF-HD28*	Bra037816		
BoZF-HD29	Bol042994	*BrZF-HD29*	Bra039038		
BoZF-HD30	Bol042995	*BrZF-HD30*	Bra039039		
BoZF-HD31	Bol045928	*BrZF-HD31*	Bra039615		

附录 3　基于最大似然(ML)法构建的甘蓝型油菜、拟南芥、白菜和甘蓝的 *ZF-HD* 基因系统进化树

Appendix 3　Phylogenetic tree of *Brassica napus*, *Arabidopsis thaliana*, *B. rapa* and *B. oleracea ZF-HD* genes constructed by the maximum likelihood (ML) method



附录 4　甘蓝型油菜 ZF-HD 蛋白 motif 保守氨基酸序列

Appendix 4　Motif sequences identified of ZF-HD proteins in *Brassica napus*

Motif No.	Width	Conserved amino acid sequence
1	50	FRTKFTAEQKEKMLEFAERLGWRIQKQDEEEVRRFCREIGVKRQVLKVWM
2	29	VRYKECLKNHAANIGGHAVDGCGEFMPSG
3	29	EEGTPEALKCAACGCHRNFHRKEVEGEVV
4	29	PPPPGLYRLPSPVSSSPPPSSSSYMLLAL
5	50	HHHHHYGGGGGRRPPPPNMMLNPLMLPPPPNYAPMHHHKYGMSPPGGAGM
6	11	HNNKNTLGKKP
7	29	PEPEPETPTRIQPAKPISFSNGIIKRHHH
8	21	MKKRQVVJKQRKPSYTTTSSS
9	21	VPESSTEDLBMYGQTSSGGGG
10	29	EMIERRHDDNGNNSAGPTHNNNNITTNQN

附录 5 *ZF-HD* 基因在白菜、甘蓝、甘蓝型油菜和拟南芥共线性区的同源基因

Appendix 5 Homologous *ZF-HD* genes in collinear regions of *Brassica rapa*, *B. oleracea*, *B. napus* and *A. thaliana* genomes

AtZHDs	*Bra*			*Bol*		
	LF	MF1	MF2	LF	MF1	MF2
AtZHD1	*BrZF-HD14*	*BrZF-HD25*	*BrZF-HD28*	*BoZF-HD4*	*BoZF-HD3*	*BoZF-HD10*
AtZHD2	*BrZF-HD10*	-	*BrZF-HD8*	*BoZF-HD25*	-	*BoZF-HD5*
AtZHD3	-	*BrZF-HD20*	-	-	*BoZF-HD9*	-
AtZHD4	*BrZF-HD19*	-	*BrZF-HD22*	*BoZF-HD23*	-	*BoZF-HD18*
AtZHD5	*BrZF-HD11*	*BrZF-HD6*	*BrZF-HD1*	*BoZF-HD14*	*BoZF-HD24*	*BoZF-HD26*
AtZHD6	*BrZF-HD31*	*BrZF-HD27*	-	*BoZF-HD28*	*BoZF-HD2*	-
AtZHD7	*BrZF-HD26*	-	*BrZF-HD9*	*BoZF-HD6*	-	*BoZF-HD1*
AtZHD8	*BrZF-HD7*	-	-	*BoZF-HD16*	-	-
AtZHD9	*BrZF-HD16*	-	*BrZF-HD29*	*BoZF-HD30*	-	*BoZF-HD21*
AtZHD10	*BrZF-HD17*	-	-	*BoZF-HD7*	-	-
AtZHD11	*BrZF-HD3*	*BrZF-HD5*	-	*BoZF-HD11*	*BoZF-HD15*	-
AtZHD12	-	*BrZF-HD4*	-	-	*BoZF-HD12*	-
AtZHD13	*BrZF-HD23*	-	-	*BoZF-HD22*	-	-
AtZHD14	-	-	*BrZF-HD21*	-	-	*BoZF-HD19*
AtZHD15	*BrZF-HD12*	-	*BrZF-HD2*	*BoZF-HD13*	-	*BoZF-HD27*
AtZHD16	*BrZF-HD15*	-	*BrZF-HD30*	*BoZF-HD29*	-	*BoZF-HD20*
AtZHD17	*BrZF-HD18*	*BrZF-HD13*	*BrZF-HD24*	*BoZF-HD17*	*BoZF-HD8*	*BoZF-HD31*

AtZHDs	*BnaA*			*BnaC*		
	LF	MF1	MF2	LF	MF1	MF2
AtZHD1	-	-	-	*BnZF-HD37*	*BnZF-HD35*	*BnZF-HD59*
AtZHD2	*BnZF-HD1*	-	*BnZF-HD19*	*BnZF-HD32*	-	*BnZF-HD51*
AtZHD3	-	*BnZF-HD3*	-	-	*BnZF-HD34*	-
AtZHD4	*BnZF-HD9*	-	-	*BnZF-HD40*	-	*BnZF-HD56*
AtZHD5	*BnZF-HD18*	-	*BnZF-HD14*	*BnZF-HD47*	-	*BnZF-HD43*
AtZHD6	*BnZF-HD13*	-	-	-	-	-
AtZHD7	*BnZF-HD23*	-	*BnZF-HD6*	*BnZF-HD53*	-	*BnZF-HD50*
AtZHD8	*BnZF-HD28*	-	-	-	-	-
AtZHD9	*BnZF-HD11*	-	*BnZF-HD22*	*BnZF-HD49*	-	*BnZF-HD58*
AtZHD10	*BnZF-HD8*	-	-	-	-	-
AtZHD11	*BnZF-HD16*	*BnZF-HD2*	-	*BnZF-HD45*	*BnZF-HD33*	-
AtZHD12	-	*BnZF-HD5*	-	-	-	-
AtZHD13	-	-	-	-	-	-
AtZHD14	-	-	*BnZF-HD25*	-	-	*BnZF-HD55*
AtZHD15	*BnZF-HD17*	-	*BnZF-HD15*	*BnZF-HD46*	-	*BnZF-HD44*
AtZHD16	*BnZF-HD12*	-	*BnZF-HD21*	*BnZF-HD48*	-	*BnZF-HD57*
AtZHD17	*BnZF-HD10*	*BnZF-HD20*	*BnZF-HD24*	*BnZF-HD41*	*BnZF-HD52*	*BnZF-HD54*

LF: Less Fractioned subgenome MFs (MF1 and MF2): More Fractioned subgenomes

附录 6 甘蓝型油菜与拟南芥 *ZF-HD* 共线性基因的 K_a/K_s 比值

Appendix 6 The K_a/K_s ratios for orthologous *ZF-HD* genes between *Brassica napus* and *Arabidopsis thaliana*

Seq_1	Seq_2	K_a	K_s	K_a/K_s
AtZHD1	BnZF-HD37	0.045376	0.470156	0.096513
AtZHD1	BnZF-HD35	0.059033	0.41773	0.141318
AtZHD1	BnZF-HD59	0.081086	0.467158	0.173573
AtZHD2	BnZF-HD1	0.052957	0.62544	0.084672
AtZHD2	BnZF-HD19	0.065026	0.424277	0.153264
AtZHD2	BnZF-HD32	0.043726	0.507283	0.086197
AtZHD2	BnZF-HD51	0.060618	0.462594	0.131038
AtZHD3	BnZF-HD3	0.16882	0.504353	0.334725
AtZHD3	BnZF-HD34	0.171798	0.469624	0.365819
AtZHD4	BnZF-HD9	0.051843	0.334715	0.154886
AtZHD4	BnZF-HD40	0.061831	0.349125	0.177102
AtZHD4	BnZF-HD56	0.044043	0.440573	0.099967
AtZHD5	BnZF-HD18	0.068895	0.503553	0.136818
AtZHD5	BnZF-HD14	0.07241	0.421187	0.171918
AtZHD5	BnZF-HD47	0.072027	0.443931	0.162249
AtZHD5	BnZF-HD43	0.090464	0.458738	0.197202
AtZHD6	BnZF-HD13	0.187309	0.87335	0.214472
AtZHD7	BnZF-HD23	0.150033	0.706421	0.212385
AtZHD7	BnZF-HD6	0.115808	0.503829	0.229856
AtZHD7	BnZF-HD53	0.162231	0.596995	0.271746
AtZHD7	BnZF-HD50	0.098889	0.484341	0.204173
AtZHD8	BnZF-HD28	0.128825	0.517975	0.248708
AtZHD9	BnZF-HD11	0.104417	0.865139	0.120694
AtZHD9	BnZF-HD22	0.163565	1.031778	0.158527
AtZHD9	BnZF-HD49	0.103626	0.871261	0.118938
AtZHD9	BnZF-HD58	0.126352	0.850637	0.148538
AtZHD10	BnZF-HD8	0.091005	0.63015	0.144418
AtZHD11	BnZF-HD16	0.06247	0.576764	0.108311
AtZHD11	BnZF-HD2	0.079717	0.500051	0.159417
AtZHD11	BnZF-HD45	0.07064	0.517673	0.136458
AtZHD11	BnZF-HD33	0.084842	0.504708	0.1681
AtZHD12	BnZF-HD5	0.160843	0.352608	0.456153
AtZHD14	BnZF-HD25	0.077329	0.363828	0.212544
AtZHD14	BnZF-HD55	0.081961	0.327511	0.250253
AtZHD15	BnZF-HD17	0.072873	0.388187	0.187726
AtZHD15	BnZF-HD15	0.051422	0.385515	0.133385
AtZHD15	BnZF-HD46	0.042818	0.364963	0.117321
AtZHD15	BnZF-HD44	0.051422	0.409908	0.125448
AtZHD16	BnZF-HD12	0.02713	0.449146	0.060403
AtZHD16	BnZF-HD21	0.046193	0.473767	0.0975

AtZHD16	BnZF-HD48	0.031302	0.42815	0.073109
AtZHD16	BnZF-HD57	0.060775	0.451705	0.134545
AtZHD17	BnZF-HD10	0.025943	0.311026	0.083411
AtZHD17	BnZF-HD20	0.031146	0.42725	0.0729
AtZHD17	BnZF-HD24	0.031146	0.458182	0.067978
AtZHD17	BnZF-HD41	0.025943	0.364263	0.07122
AtZHD17	BnZF-HD52	0.041804	0.398293	0.104959
AtZHD17	BnZF-HD54	0.025909	0.454602	0.056993
	Means	0.079701	0.502925	0.158705

附录 7 甘蓝型油菜与白菜 *ZF-HD* 共线性基因的 K_a/K_s 比值

Appendix 7 The K_a/K_s ratios for orthologous *ZF-HD* genes between *Brassica napus* and *B. rapa*

Seq_1	Seq_2	K_a	K_s	K_a/K_s
BrZF-HD10	BnZF-HD1	0.005785	0.019684	0.293894
BrZF-HD10	BnZF-HD19	0.060467	0.494733	0.122222
BrZF-HD19	BnZF-HD9	0.010857	0.021604	0.502575
BrZF-HD11	BnZF-HD18	0.002956	0	-
BrZF-HD11	BnZF-HD14	0.083041	0.46362	0.179115
BrZF-HD31	BnZF-HD13	0	0	-
BrZF-HD26	BnZF-HD23	0	0	-
BrZF-HD26	BnZF-HD6	0.109061	0.334815	0.325736
BrZF-HD7	BnZF-HD28	0.003338	0.038103	0.087591
BrZF-HD16	BnZF-HD11	0.001263	0	-
BrZF-HD16	BnZF-HD22	0.097364	0.385454	0.252597
BrZF-HD17	BnZF-HD8	0	0	-
BrZF-HD3	BnZF-HD16	0.003777	0.018731	0.201648
BrZF-HD3	BnZF-HD2	0.049929	0.285626	0.174804
BrZF-HD12	BnZF-HD17	0	0	-
BrZF-HD12	BnZF-HD15	0.07305	0.312606	0.233682
BrZF-HD15	BnZF-HD12	0	0.015307	0
BrZF-HD15	BnZF-HD21	0.02777	0.425441	0.065274
BrZF-HD18	BnZF-HD10	0	0	-
BrZF-HD18	BnZF-HD20	0.030218	0.2487	0.121504
BrZF-HD18	BnZF-HD24	0.035375	0.2487	0.14224
BrZF-HD20	BnZF-HD3	0.01414	0.034081	0.414889
BrZF-HD6	BnZF-HD18	0.042302	0.488381	0.086617
BrZF-HD6	BnZF-HD14	0.086937	0.449453	0.193429
BrZF-HD27	BnZF-HD13	0.12998	0.589983	0.220311
BrZF-HD5	BnZF-HD16	0.045905	0.285269	0.160919
BrZF-HD5	BnZF-HD2	0.003801	0.006179	0.615139
BrZF-HD4	BnZF-HD5	0.009562	0.008242	1.160163
BrZF-HD13	BnZF-HD10	0.030218	0.2487	0.121504
BrZF-HD13	BnZF-HD20	0	0	-
BrZF-HD13	BnZF-HD24	0.03013	0.298979	0.100775
BrZF-HD8	BnZF-HD1	0.064796	0.484643	0.133699
BrZF-HD8	BnZF-HD19	0.002028	0	-
BrZF-HD22	BnZF-HD9	0.04949	0.322705	0.153358
BrZF-HD1	BnZF-HD18	0.080108	0.490009	0.163483
BrZF-HD1	BnZF-HD14	0.007286	0.048296	0.150863
BrZF-HD9	BnZF-HD23	0.190587	0.47498	0.401252
BrZF-HD9	BnZF-HD6	0.070276	0.094271	0.745466
BrZF-HD29	BnZF-HD11	0.086776	0.364166	0.238286
BrZF-HD29	BnZF-HD22	0.00778	0.020584	0.377962
BrZF-HD21	BnZF-HD25	0	0.053634	0

BrZF-HD2	BnZF-HD17	0.07305	0.335773	0.217559
BrZF-HD2	BnZF-HD15	0	0.014635	0
BrZF-HD30	BnZF-HD12	0.020093	0.420431	0.047792
BrZF-HD30	BnZF-HD21	0	0.013699	0
BrZF-HD24	BnZF-HD10	0.035375	0.2487	0.14224
BrZF-HD24	BnZF-HD20	0.03013	0.298979	0.100775
BrZF-HD24	BnZF-HD24	0	0	-
	Means	0.035521	0.195998	0.227615

附录 8 甘蓝型油菜与甘蓝 *ZF-HD* 共线性基因的 K_a/K_s 比值

Appendix 8 The K_a/K_s ratios for orthologous *ZF-HD* genes between *Brassica napus* and *B. oleracea*

Seq_1	Seq_2	K_a	K_s	K_a/K_s
BoZF-HD4	BnZF-HD37	0.002962	0.004957	0.597555
BoZF-HD4	BnZF-HD35	0.043327	0.285684	0.151662
BoZF-HD4	BnZF-HD59	0.066553	0.242486	0.27446
BoZF-HD25	BnZF-HD32	0.009744	0.026699	0.364939
BoZF-HD25	BnZF-HD51	0.050519	0.363849	0.138845
BoZF-HD23	BnZF-HD40	0.00274	0	-
BoZF-HD23	BnZF-HD56	0.063519	0.342428	0.185495
BoZF-HD14	BnZF-HD47	0.005742	0.026135	0.219692
BoZF-HD14	BnZF-HD43	0.085009	0.38869	0.218706
BoZF-HD6	BnZF-HD53	0.014842	0.011222	1.322578
BoZF-HD6	BnZF-HD50	0.112235	0.325518	0.34479
BoZF-HD30	BnZF-HD49	0.005152	0.012712	0.405316
BoZF-HD30	BnZF-HD58	0.092591	0.389515	0.237709
BoZF-HD11	BnZF-HD45	0	0.006179	0
BoZF-HD11	BnZF-HD33	0.04997	0.241055	0.207295
BoZF-HD13	BnZF-HD46	0.009281	0.015504	0.598594
BoZF-HD13	BnZF-HD44	0.075705	0.299897	0.252436
BoZF-HD29	BnZF-HD48	0.024582	0.030813	0.797788
BoZF-HD29	BnZF-HD57	0.061549	0.356568	0.172614
BoZF-HD17	BnZF-HD41	0	0	-
BoZF-HD17	BnZF-HD52	0.04055	0.272179	0.148984
BoZF-HD17	BnZF-HD54	0.03032	0.268226	0.113039
BoZF-HD3	BnZF-HD37	0.041585	0.294243	0.141328
BoZF-HD3	BnZF-HD35	0.001622	0	-
BoZF-HD3	BnZF-HD59	0.076179	0.187262	0.406805
BoZF-HD9	BnZF-HD34	0.00563	0.00555	1.014309
BoZF-HD24	BnZF-HD47	0.050944	0.415818	0.122516
BoZF-HD24	BnZF-HD43	0.094362	0.355964	0.26509
BoZF-HD15	BnZF-HD45	0.04997	0.24959	0.200206
BoZF-HD15	BnZF-HD33	0	0	-
BoZF-HD8	BnZF-HD41	0.030243	0.270848	0.111662
BoZF-HD8	BnZF-HD52	0.009913	0	-
BoZF-HD8	BnZF-HD54	0.030256	0.247505	0.122245
BoZF-HD10	BnZF-HD37	0.062869	0.250089	0.251385
BoZF-HD10	BnZF-HD35	0.072356	0.172089	0.420459
BoZF-HD10	BnZF-HD59	0.008563	0.005647	1.51635
BoZF-HD5	BnZF-HD32	0.063654	0.401093	0.1587
BoZF-HD5	BnZF-HD51	0.004065	0.007353	0.552842
BoZF-HD18	BnZF-HD40	0.071739	0.322009	0.222786
BoZF-HD18	BnZF-HD56	0.007351	0.018342	0.400804
BoZF-HD26	BnZF-HD47	0.084416	0.391229	0.215772

BoZF-HD26	BnZF-HD43	0.004444	0.005202	0.854338
BoZF-HD1	BnZF-HD53	0.107562	0.349022	0.30818
BoZF-HD1	BnZF-HD50	0.008652	0.019771	0.437615
BoZF-HD21	BnZF-HD49	0.08425	0.42007	0.200562
BoZF-HD21	BnZF-HD58	0.00996	0.009167	1.086438
BoZF-HD19	BnZF-HD55	0.005009	0.053875	0.092982
BoZF-HD27	BnZF-HD46	0.062712	0.271172	0.231264
BoZF-HD27	BnZF-HD44	0	0	-
BoZF-HD20	BnZF-HD48	0.025181	0.395383	0.063687
BoZF-HD20	BnZF-HD57	0.01372	0.013762	0.996951
BoZF-HD31	BnZF-HD41	0.03032	0.268226	0.113039
BoZF-HD31	BnZF-HD52	0.040568	0.2487	0.163119
BoZF-HD31	BnZF-HD54	0	0	-
	Means	0.037129	0.177024	0.370722