附表 1 RT-qPCR 验证引物表

Schedule.1 RT-qPCR validation primer table

	基因 **Gene**	引物 **Primer**	引物序列**(5′ -3′) Primer sequence**
黄瓜 **Cucumis**	CsaV3_5G015450	F	CTCAAGAGGTTGGATCTGTTCAT
		R	TCTCCCACAACTTCAATTTCATCT
	CsaV3_6G016030	F	AATTAGTGGACAGGCTTGACAAT
		R	AGAGATGGTGAGTTTGGAAGTTG
	CsaV3_6G000970	F	CCTACCTGCTTTGCCGAATG
		R	TCCATCAACTTATCCACCATCTCT
	CsaV3_3G016810	F	AAGTTGCTGAGAATGATGTGTTGA
		R	GTGTCTGAATTGTAGCCATTGAGT
	CsaV3_4G026440	F	CAATTAGCCTCAGTCCCATCAG
		R	GGAGCAGAAGAGAAGGTACAGTA
	CsaV3_5G026850	F	CGCCTTGACCGAAATTAAATGG
		R	AGAGGTGGGTTGAACAGAAATG
	Actin	F	CCAGAATCCAGCACGATACCAG
		R	GAGGCTCCACTCAACCCAAAG
南瓜 **Cucurbita**	CmoCh03G003500	F	GCTGAAGGAGATGCCAAGTT
		R	ACCGTGTTGTGATTGTTACTGAT
	CmoCh04G027890	F	CTCAACTGTCTCGCAATTCCAT
		R	ACTCCAACCATGTGTAGATACTCA
	CmoCh13G004250	F	GGCGTTGATGAGTATCCTTCTTAG
		R	ATCGTCTCGTCCCAATTCCT
	CmoCh04G029280	F	TTCATTCTCACTGCTGTCGTTAC
		R	ATCACTCACCAACCTCTTCTCT
	CmoCh13G005360	F	CACACTGATTGAGATGCTGATGA
		R	CACAGGCTTCACAACTTCCA
	CmoCh15G014900	F	GTGACGACGAGATGGGAGATA
		R	CAACTGAACTTGGGCTGAACA
	Actin	F	AGCCATCTCTCATCGGTA
		R	CATGGTTGAACCACCACTG

附表 2 BAG 基因家族鉴定结果

Schedule.2 Identification results of the BAGs gene family

黄瓜 **Cucumis**		南瓜 **Cucurbita**	
HMM 模型鉴定结果 The HMM model identification results	本地 Blast 鉴定结果 Local Blast identification results	HMM 模型鉴定结果 The HMM model identification results	本地 Blast 鉴定结果 Local Blast identification results
CsaV3_1G017210	CsaV3_1G017210	CmoCh02G007380	CmoCh02G007380
CsaV3_1G036950	CsaV3_1G036950	CmoCh02G010600	CmoCh02G010600
CsaV3_3G016810	CsaV3_3G016810	CmoCh03G003500	CmoCh03G003500
CsaV3_4G002950	CsaV3_4G002950	CmoCh04G000380	CmoCh04G000380
CsaV3_4G026440	CsaV3_4G026440	CmoCh04G029280	CmoCh04G027890
CsaV3_5G005880	CsaV3_5G005880	CmoCh08G008520	CmoCh04G029280
CsaV3_5G015450	CsaV3_5G015450	CmoCh11G014940	CmoCh08G008520
CsaV3_5G038440	CsaV3_5G026850	CmoCh13G004250	CmoCh11G014940
CsaV3_6G000970	CsaV3_5G038440	CmoCh13G005360	CmoCh13G004250
CsaV3_6G016030	CsaV3_6G000970	CmoCh14G014830	CmoCh13G005360
CsaV3_7G006320	CsaV3_6G016030	CmoCh14G014860	CmoCh14G014830
	CsaV3_7G006320	CmoCh15G002540	CmoCh14G014860
		CmoCh15G014900	CmoCh15G002540
		CmoCh16G001550	CmoCh15G003860
		CmoCh18G012430	CmoCh15G014900
		CmoCh19G002940	CmoCh16G001550
			CmoCh18G012430
			CmoCh19G002940

附表 3 黄瓜和南瓜 BAG 基因家族成员的理化特征

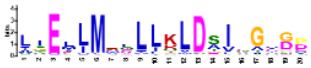
Schedule. 3 Physicochemical characteristics of the BAGs gene family in *Cucumis sativus* L. and *Cucurbit a moschata* Duch.

基因 ID Gene ID	染色体位置 Chromosomal location	CDS 大小 CDS size/bp	氨基酸数目 Number of amino acids/aa	分子量 Molecular weight/Da	等电点 pI	亲水性平均值 Grand average of hydropathicity	不稳定系数 Instability index	脂肪系数 Aliphatic index	亚细胞定位预测 Prediction of subcellular location
CsaV3_1G017210	1	729	242	27 554.21	6.50	-0.448	47.83	77.81	细胞核 Nucleus
CsaV3_1G036950	1	834	277	30 844.17	7.80	-0.509	45.06	82.31	细胞质 Cytoplasm
CsaV3_3G016810	3	1 017	338	38 335.21	9.41	-0.646	42.29	78.67	细胞核 Nucleus
CsaV3_4G002950	4	1 122	373	42 011.43	5.11	-0.700	55.50	77.08	细胞核 Nucleus
CsaV3_4G026440	4	846	281	31 005.88	5.32	-0.556	28.86	82.17	细胞质 Cytoplasm
CsaV3_5G005880	5	894	297	33 812.99	9.42	-0.570	44.04	87.88	细胞质 Cytoplasm
CsaV3_5G015450	5	810	269	30 953.79	9.38	-0.577	47.07	93.01	细胞质 Cytoplasm
CsaV3_5G026850	5	504	167	18 813.86	9.35	-0.314	45.77	84.61	线粒体 Mitochondrion
CsaV3_5G038440	5	1 344	447	51 022.39	6.95	-0.796	58.33	72.84	叶绿体 Chloroplast
CsaV3_6G000970	6	3 462	1 153	129 422.21	5.04	-0.959	49.61	62.97	细胞核 Nucleus
CsaV3_6G016030	6	819	272	30 692.01	8.39	-0.663	39.45	80.99	细胞核 Nucleus
CsaV3_7G006320	7	1 251	416	47 662.19	9.32	-0.615	45.56	80.55	叶绿体 Chloroplast
CmoCh02G007380	2	738	245	27 658.78	7.77	-0.428	42.04	91.47	细胞质 Cytoplasm
CmoCh02G010600	2	945	314	34 710.65	9.42	-0.568	39.44	84.08	叶绿体 Chloroplast
CmoCh03G003500	3	969	322	35 644.15	5.48	-0.502	39.26	78.94	细胞质 Cytoplasm
CmoCh04G000380	4	825	274	30 988.41	9.18	-0.688	40.87	81.39	细胞核 Nucleus
CmoCh04G027890	4	486	161	18 019.69	7.82	-0.396	44.35	83.48	线粒体 Mitochondrion

CmoCh04G029280	4	3 282	1 093	125 104.35	8.42	-0.476	51.75	83.20	液泡 Vacuoles
CmoCh08G008520	8	3 375	1 124	126 602.43	4.90	-1.021	51.83	61.38	细胞核 Nucleus
CmoCh11G014940	11	1 227	408	46 857.32	8.99	-0.608	49.38	82.40	液泡 Vacuoles
CmoCh13G004250	13	1 062	353	38 913.94	6.67	-0.414	56.62	77.17	叶绿体 Chloroplast
CmoCh13G005360	13	816	271	30 092.43	8.78	-0.405	43.79	82.40	线粒体 Mitochondrion
CmoCh14G014830	14	2 901	966	107 838.50	4.99	-0.470	44.89	79.50	细胞核 Nucleus
CmoCh14G014860	14	1 374	457	51 526.57	4.79	-0.822	56.37	67.40	叶绿体 Chloroplast
CmoCh15G002540	15	1 389	462	52 525.19	7.71	-0.659	59.95	78.07	叶绿体 Chloroplast
CmoCh15G003860	15	615	204	23 386.13	9.57	-0.440	41.39	85.49	细胞质 Cytoplasm
CmoCh15G014900	15	918	305	34 185.30	9.28	-0.603	40.32	79.87	叶绿体 Chloroplast
CmoCh16G001550	16	930	309	34 734.82	9.34	-0.613	32.31	75.05	细胞质 Cytoplasm
CmoCh18G012430	18	1 014	337	37 690.88	9.08	-0.663	42.76	75.16	细胞核 Nucleus
CmoCh19G002940	19	1 242	413	47 504.27	9.33	-0.581	40.98	86.59	细胞质 Cytoplasm

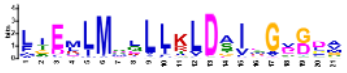
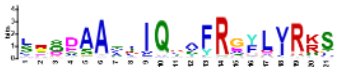
附表 4 黄瓜 BAG 蛋白的基序信息

Schedule.4 Motif information of cucumber BAG protein

基序 **Motif**	序列 **Sequence**	氨基酸数目 **Number of amino acid**	**Pfam** 注释 **Pfam annotation**
motif1	 YHEISISSQATFGELKKILVAPTGLEPEEQKLJFKGKERDSKEYLDVAGV	50	ubiquitin-like domain
motif2	EWEMRPGGMLVQKR	14	
motif3	 LIELLMRLLLKLDSIEGVGP	20	BAG
motif4	 VKLQRKSQVRRVQKLVETLDALKAKN	26	BAG
motif5	KNRSKILLMEDPASKERRYVEMKKNA	26	
motif6	ASKAIADISLEVDKLADQVAALEVAVCGGGKVAEK	35	
motif7	VVVTTKWETFD	11	
motif8	 AAVKIQSAFRGYLVRKS	17	IQ motif
motif9	CHQWCQPHFHMHCYPFYPCC	20	
motif10	PHPSFRNHW	9	
motif11	PYYSCC	6	
motif12	PEPYYFRYHPPTHMNVEQPFYYF	23	
motif13	APMIRVKVKYGS	12	
motif14	TTCFQYQYP	9	
motif15	CAQWEGFRCFF	11	
motif16	FDWEFF	6	
motif17	HNHRYF	6	
motif18	KSFQNHYHCCGPPN	14	
motif19	FVPGCCN	7	
motif20	PPPPLH	6	

附表 5 南瓜 BAG 蛋白的基序信息

Schedule.5 Motif information of pumpkin BAG protein

基序 **Motif**	序列 **Sequence**	氨基酸数目 **Number of amino acid**	**Pfam** 注释 **Pfam annotation**
motif1	 YHEJSISSQATFGELKKMLVGPTGLHPQEQKLLFKGKERDSKEYLDMCGV	50	ubiquitin-like domain
motif2	 LIEMLMSLLLKLDAIEGVGDA	14	BAG
motif3	PMDWELRPGGMLVQKRT	20	
motif4	DPISQERRYLEMRKNAKMZKASKSISZISLEVDKLAGQVSALESVICKGG	26	
motif5	LQRKMQVRRVQKYVETLDVLKIKNSSAT	26	
motif6	SETVVTTKWEIFD	35	
motif7	 LRSDAATIIQKAFRGYLVRKS	11	IQ motif
motif8	PFFRNHWNYHPQRPRYVPSMMEIPVHRRAVPVVPKVVSIPV	17	
motif9	TSDPTIRVRVKYGS	20	
motif10	KMMVDNKRMMEMMAQLFEKNEMQSRLLSSLSHRVEQLEKALVLEMLRKKK	9	
motif11	PKFNWEFFD	6	
motif12	GGVLQNYKWSAEIKGKNERDPIRKYTVEVSTGNG	23	
motif13	DDVDPRPNKDEIAFRPRYTDKPGAIIEEETAAGVESNVELEDPDEDDDNP	12	
motif14	DIMHREVEAAEEYAEMSEAESQTDSCNNPPNFDNGVEEYGAVDQREGSGN	9	
motif15	DFDFAFDLLSHRRVGPPAFDVFDSFADLVRIDEAPLFSSYRRIRRV	11	
motif16	IRNFRKAVIKKAIALQEKVDSIAAVEEATDIVHETLZAATAKCDSEAVDR	6	
motif17	GMDISGAREIGVEETPDLKDRIPELEDESCTAKMANSEPVDGCDDDRTEI	6	
motif18	MSKFSRFELIERYYSHCPSLLLTEAETSIVLPKPLAFP	14	
motif19	MMKLRSKRFCRASTFRFGSFVSRCNKKIKVADDHD	7	
motif20	ARFSGYGDRKYSWTKEIKGVEKNSVDRKYKLVAEIKDGKKKKEGKN	6	

附表 6 黄瓜、南瓜、拟南芥、水稻和番茄 BAG 共线性关系

Schedule.6 Collinear relationship of the BAGs gene family in cucumber, pumpkin, *Arabido psis*, rice and tomato

黄瓜 **Cucumis**	南瓜 **Cucurbita**
AT3G51780.1-CsaV3_4G026440.1	AT2G46240.1-CmoCh08G008520.1
AT5G07220.1-CsaV3_3G016810.1	AT3G51780.1-CmoCh03G003500.1
AT5G52060.1-CsaV3_3G016810.1	AT5G07220.1-CmoCh16G001550.1
AT5G62100.1-CsaV3_3G016810.1	AT5G52060.1-CmoCh02G010600.1
AT5G14360.1-CsaV3_5G026850.1	AT5G52060.1-CmoCh16G001550.1
AT5G40630.1-CsaV3_5G026850.1	AT5G52060.1-CmoCh18G012430.1
AT3G29310.1-CsaV3_5G038440.1	AT5G62100.1-CmoCh16G001550.1
Os02t0597700-00-CsaV3_5G026850.1	AT5G62100.1-CmoCh18G012430.1
Os08t0546100-00-CsaV3_3G016810.1	AT5G14360.1-CmoCh04G027890.1
Os09t0524800-02-CsaV3_3G016810.1	AT5G40630.1-CmoCh04G027890.1
Solyc03g026220.3.1-CsaV3_5G005880.1	AT3G01040.3-CmoCh04G029280.1
Solyc02g093610.3.1-CsaV3_5G026850.1	AT5G15470.1-CmoCh04G029280.1
Solyc02g088660.3.1-CsaV3_5G038440.1	AT3G29310.1-CmoCh15G002540.1
Solyc01g095320.3.1-CsaV3_6G000970.1	AT5G40630.1-CmoCh15G003860.1
Solyc10g085290.2.1-CsaV3_4G026440.1	AT5G14360.1-CmoCh15G003860.1
Solyc06g007240.3.1-CsaV3_4G026440.1	Os02t0597700-CmoCh04G027890.1
Solyc03g026220.3.1-CsaV3_3G016810.1	Os08t0546100-CmoCh16G001550.1
Solyc06g035720.3.1-CsaV3_3G016810.1	Solyc01g095320.3.1-CmoCh08G008520.1
Solyc08g080320.3.1-CsaV3_3G016810.1	Solyc03g026220.3.1-CmoCh02G010600.1
CmoCh11G014940.1-CsaV3_7G006320.1	Solyc03g026220.3.1-CmoCh16G001550.1
CmoCh19G002940.1-CsaV3_7G006320.1	Solyc03g026220.3.1-CmoCh18G012430.1
CmoCh02G010600.1-CsaV3_5G005880.1	Solyc06g007240.3.1-CmoCh02G007380.1
CmoCh15G014900.1-CsaV3_5G005880.1	Solyc06g007240.3.1-CmoCh03G003500.1
CmoCh13G005360.1-CsaV3_1G036950.1	Solyc06g035720.3.1-CmoCh02G010600.1
CmoCh04G027890.1-CsaV3_5G026850.1	Solyc06g035720.3.1-CmoCh16G001550.1
CmoCh15G003860.1-CsaV3_5G026850.1	Solyc06g035720.3.1-CmoCh18G012430.1
CmoCh15G002540.1-CsaV3_5G038440.1	Solyc08g080320.3.1-CmoCh16G001550.1
CmoCh08G008520.1-CsaV3_6G000970.1	Solyc10g085290.2.1-CmoCh03G003500.1
CmoCh14G014860.1-CsaV3_4G002950.1	Solyc02g093610.3.1-CmoCh04G027890.1
CmoCh04G000380.1-CsaV3_5G015450.1	Solyc02g088630.3.1-CmoCh04G029280.1
CmoCh03G003500.1-CsaV3_4G026440.1	Solyc11g012130.2.1-CmoCh13G004250.1
CmoCh02G007380.1-CsaV3_6G016030.1	Solyc02g088660.3.1-CmoCh15G002540.1
CmoCh16G001550.1-CsaV3_3G016810.1	Solyc02g093610.3.1-CmoCh15G003860.1
CmoCh18G012430.1-CsaV3_3G016810.1	
CmoCh04G029280.1-CsaV3_5G038430.1	
CmoCh14G014830.1-CsaV3_4G002920.1	