

## Supplemental Table I. Bla g peptides tested.

Sequence	Source protein	UniProt ID	Position
DLLGIPHIPVTARKH	Bla g 1	O96522	11
LETSPEFKALYDAIR	Bla g 1	O96522	56
SPEFQSIVGTLEAMP	Bla g 1	O96522	71
LEAMPEYQNLIQKLK	Bla g 1	O96522	81
VDHIIELIHQIFNIV	Bla g 1	O96522	101
ELIHQIFNIVRDTRG	Bla g 1	O96522	106
IFNIVRDTRGLPEDL	Bla g 1	O96522	111
LPEDLQDFLALIPTD	Bla g 1	O96522	121
QDFLALIPTDQVLAI	Bla g 1	O96522	126
LIPTDQVLAI AADYL	Bla g 1	O96522	131
QVLAI AADYLANDAE	Bla g 1	O96522	136
AADYLANDAEVKA AV	Bla g 1	O96522	141
ANDA EVKAAVEYLKS	Bla g 1	O96522	146
DSLPEFKNFLNFLQT	Bla g 1	O96522	171
FKNFLNFLQTNGLNA	Bla g 1	O96522	176
NFLQTNGLNAIEFLN	Bla g 1	O96522	181
NGLNAIEFLNNIHDL	Bla g 1	O96522	186
IEFLNNIHDL LGIPH	Bla g 1	O96522	191
TGLIDDIIAILPVDD	Bla g 1	O96522	221
DI IAILPVDDLYALF	Bla g 1	O96522	226
LPVDDLYALFQEKLE	Bla g 1	O96522	231
LYALFQEKLETSPEF	Bla g 1	O96522	236
KALYDAIRSPEFQSI	Bla g 1	O96522	251
AIRSPEFQSIVETLK	Bla g 1	O96522	256
EFQSIVETLKAMPEY	Bla g 1	O96522	261
VETLKAMPEYQSLIQ	Bla g 1	O96522	266
AMPEYQSLIQKDK	Bla g 1	O96522	271
QSLIQKDKGVDVD	Bla g 1	O96522	276
EDLQDFLALIPIDQI	Bla g 1	O96522	311
FLALIPIDQILAI A	Bla g 1	O96522	316
PIDQILAI AADYLAN	Bla g 1	O96522	321
DYLANDAEVQA AVEY	Bla g 1	O96522	331
AAVEYLKSDEFETIV	Bla g 1	O96522	341
LKSDEFETIVTVDS	Bla g 1	O96522	346
FETIVTVDSLPEFK	Bla g 1	O96522	351
LNAIEFINNIHDL LG	Bla g 1	O96522	376
FINNIHDL LGIPHIP	Bla g 1	O96522	381
HDLLGIPHIPATGRK	Bla g 1	O96522	386

VGINGLIDDVAILP	Bla g 1	O96522	406
LIDDVAILPVDELY	Bla g 1	O96522	411
IAILPVDELYALFQE	Bla g 1	O96522	416
VDELYALFQEKLESS	Bla g 1	O96522	421
ALFQEKLESSPEFKA	Bla g 1	O96522	426
RSPEFQSIVQTLKAM	Bla g 1	O96522	446
QSIVQTLKAMPEYQD	Bla g 1	O96522	451
PEYQDLIQRLKDKGV	Bla g 1	O96522	461
LIQRLKDKGVDVDHF	Bla g 1	O96522	466
DHFIELIKKLFGLSH	Bla g 1	O96522	478
VDVDKIIELIRALFG	Bla g 1.0101	Q9UAM5	11
IELIRALFGLTLNA	Bla g 1.0101	Q9UAM5	16
RALFGLTLNAKASRN	Bla g 1.0101	Q9UAM5	21
LTLNAKASRNQDDL	Bla g 1.0101	Q9UAM5	26
LQDDLQDFLALIPVD	Bla g 1.0101	Q9UAM5	36
QDFLALIPVDQIIAI	Bla g 1.0101	Q9UAM5	41
DEFETIVVALDALPE	Bla g 1.0101	Q9UAM5	76
IVVALDALPELQNFL	Bla g 1.0101	Q9UAM5	81
IDFLNGIHDLLGIPH	Bla g 1.0101	Q9UAM5	106
GIHDLLGIPHIPVSG	Bla g 1.0101	Q9UAM5	111
RKYHIRRGVVGITGLI	Bla g 1.0101	Q9UAM5	126
DDVLAILPIEDLKAL	Bla g 1.0101	Q9UAM5	141
ILPIEDLKALFNEKL	Bla g 1.0101	Q9UAM5	146
ETSPDFLALYNAIRS	Bla g 1.0101	Q9UAM5	161
FLALYNAIRSPEFQS	Bla g 1.0101	Q9UAM5	166
PEFQSIVQTLNAMPE	Bla g 1.0101	Q9UAM5	176
IVQTLNAMPEYQNLL	Bla g 1.0101	Q9UAM5	181
NAMPEYQNLLQKLRE	Bla g 1.0101	Q9UAM5	186
YQNLLQKLREKGVVDV	Bla g 1.0101	Q9UAM5	191
LIRALFGLTLNGKAS	Bla g 1.0101	Q9UAM5	211
FGLTLNGKASRNQD	Bla g 1.0101	Q9UAM5	216
VDQIIAIATDYLAND	Bla g 1.0101	Q9UAM5	241
AIATDYLANDAEVQA	Bla g 1.0101	Q9UAM5	246
AEVQAAVAYLQSDEF	Bla g 1.0101	Q9UAM5	256
AVAYLQSDEFETIVV	Bla g 1.0101	Q9UAM5	261
QSDEFETIVVTLDAL	Bla g 1.0101	Q9UAM5	266
ETIVVTLDALPELQN	Bla g 1.0101	Q9UAM5	271
PELQNFLNFLEANGL	Bla g 1.0101	Q9UAM5	281
FLNFLEANGLNAIDF	Bla g 1.0101	Q9UAM5	286
LNGIHDLLGIPHIPV	Bla g 1.0101	Q9UAM5	301
DLLGIPHIPVSGRKY	Bla g 1.0101	Q9UAM5	306
VGITGLIDDVLAILP	Bla g 1.0101	Q9UAM5	326

LIDDLVAILPLDDLK	Bla g 1.0101	Q9UAM5	331
LAILPLDDLKALFNE	Bla g 1.0101	Q9UAM5	336
LDDLKALFNEKLETS	Bla g 1.0101	Q9UAM5	341
PDFLALYNAIKSPEF	Bla g 1.0101	Q9UAM5	356
LYNAIKSPEFQSIVQ	Bla g 1.0101	Q9UAM5	361
MIGLKLVTVLFVAVAT	Bla g 2	P54958	1
LVTVLFVAVATITHAA	Bla g 2	P54958	6
FAVATITHAAELQRV	Bla g 2	P54958	11
ITHAAELQRVPLYKL	Bla g 2	P54958	16
ELQRVPLYKLVHVF	Bla g 2	P54958	21
PLYKLVHVFINTQYA	Bla g 2	P54958	26
VHVFINTQYAGITKI	Bla g 2	P54958	31
NTQYAGITKIGNQNF	Bla g 2	P54958	36
GITKIGNQNFLTVFD	Bla g 2	P54958	41
GNQNFLTVFDSTSCN	Bla g 2	P54958	46
PNLQKYEKLKPKYIS	Bla g 2	P54958	76
YEKLKPKYISDGNVQ	Bla g 2	P54958	81
PKYISDGNVQVKFFD	Bla g 2	P54958	86
DGNVQVKFFDGTSAV	Bla g 2	P54958	91
VKFFDGTSAVGRGIE	Bla g 2	P54958	96
GRGIEDSLTISNLTT	Bla g 2	P54958	106
LSQEVCILSADVVG	Bla g 2	P54958	131
CILSADVVGIAAPG	Bla g 2	P54958	136
KGKTVLENFVEENLI	Bla g 2	P54958	156
LENFVEENLIAPVFS	Bla g 2	P54958	161
EENLIAPVFSIHHAR	Bla g 2	P54958	166
APVFSIHHARFQDGE	Bla g 2	P54958	171
IFGGSDWKYVDGEFT	Bla g 2	P54958	191
DWKYVDGEFTYVPLV	Bla g 2	P54958	196
DGEFTYVPLVGDSSW	Bla g 2	P54958	201
YVPLVGDSSWKFRDL	Bla g 2	P54958	206
GDSSWKFRDLGVKIG	Bla g 2	P54958	211
PAGTQAIIDTSKAI	Bla g 2	P54958	231
AIIDTSKAIIVGPKA	Bla g 2	P54958	236
SKAIIVGPKAYVNPI	Bla g 2	P54958	241
VGPKAYVNPINEAIG	Bla g 2	P54958	246
SLPDVTFVINGRNFN	Bla g 2	P54958	281
TFVINGRNFNISSQY	Bla g 2	P54958	286
GRNFNISSQYIQQN	Bla g 2	P54958	291
ISSQYIQQNGNLCY	Bla g 2	P54958	296
HFFIGDFFVDHYYSE	Bla g 2	P54958	321
DFFVDHYYSEFNWEN	Bla g 2	P54958	326

LDYERFRGSWIIAAG	Bla g 4	P54962	26
FRGSWIIAAGTSEAL	Bla g 4	P54962	31
IIAAGTSEALTQYKC	Bla g 4	P54962	36
WIDRFSYDDALVSKY	Bla g 4	P54962	51
YNDKGKAFSAPYSVL	Bla g 4	P54962	91
KAFSAPYSVLATDYE	Bla g 4	P54962	96
PYSVLATDYENYAIV	Bla g 4	P54962	101
ATDYENYAIVEGCPA	Bla g 4	P54962	106
AANGHVIVVQIRFSV	Bla g 4	P54962	121
VIYVQIRFSVRRFHP	Bla g 4	P54962	126
IRFSVRRFHPKLGDK	Bla g 4	P54962	131
EMIQHYTLDQVNQHK	Bla g 4	P54962	146
KAIEEDLKHFNLYE	Bla g 4	P54962	161
KHFNLKYEDLHSTCH	Bla g 4	P54962	168
KLTYCPVKALGEPPIR	Bla g 5	O18598	6
GEPPIRFLLSYGEKDF	Bla g 5	O18598	16
FLLSYGEKDFEDYRF	Bla g 5	O18598	21
SMPFGKTPVLEIDGK	Bla g 5	O18598	46
QTHQSVAISRYLGKQ	Bla g 5	O18598	61
VAISRYLGKQFGLSG	Bla g 5	O18598	66
NLEIDMIVDTISDFR	Bla g 5	O18598	86
MIVDTISDFRAAIAN	Bla g 5	O18598	91
ISDFRAAIANYHYDA	Bla g 5	O18598	96
TKKFDEVVKANGGYL	Bla g 5	O18598	131
EVVKANGGYLAAGKL	Bla g 5	O18598	136
NGGYLAAGKLTWADF	Bla g 5	O18598	141
TWADFYFVAILDYLN	Bla g 5	O18598	151
YFVAILDYLNHMAKE	Bla g 5	O18598	156
LDYLNHMAKEDLVAN	Bla g 5	O18598	161
HMAKEDLVANQP NLK	Bla g 5	O18598	166
DLVANQP NLKALREK	Bla g 5	O18598	171
QP NLKALREKVLGLP	Bla g 5	O18598	176
ALREKVLGLPAIKAW	Bla g 5	O18598	181
VLGLPAIKAWVAKRP	Bla g 5	O18598	186
EQISVLRKAFDAFDR	Bla g 6	Q1A7B1	11
LRKAFDAFDREKSGS	Bla g 6	Q1A7B1	16
VEEILRLMGQPFNRR	Bla g 6	Q1A7B1	36
ADKSGRLEFDEFVTL	Bla g 6	Q1A7B1	61
RLEFDEFVTLAAKFI	Bla g 6	Q1A7B1	66
EFVTLAAKFIIEEDS	Bla g 6	Q1A7B1	71
EAMEKELREAFRLYD	Bla g 6	Q1A7B1	86
CLREILRELDEQLTS	Bla g 6	Q1A7B1	111

DELDMMIEEIDADGS	Bla g 6	Q1A7B1	126
SGTVDFDEFMEMMTG	Bla g 6	Q1A7B1	140
AEQVLLKKAFDAFD	Bla g 6.0101	Q1A7B2	6
MVGTILEMLGTRLDQ	Bla g 6.0101	Q1A7B2	31
GELEFEEFCTLASRF	Bla g 6.0101	Q1A7B2	61
EEFCTLASRFLVEED	Bla g 6.0101	Q1A7B2	66
HELREAFRLYDKEGN	Bla g 6.0101	Q1A7B2	86
DKEGNGYITTAVLRE	Bla g 6.0101	Q1A7B2	96
GYITTAVLREILKEL	Bla g 6.0101	Q1A7B2	101
AVLREILKELDDKIT	Bla g 6.0101	Q1A7B2	106
PEQIQLLKKAFDAFD	Bla g 6.0201	Q1A7B3	6
MVGTILEMLGHRLDD	Bla g 6.0201	Q1A7B3	31
DMLQEIIAEVDADGS	Bla g 6.0201	Q1A7B3	46
GELEFEEFVSLASRF	Bla g 6.0201	Q1A7B3	61
EEFVSLASRFLVEED	Bla g 6.0201	Q1A7B3	66
GYITTNVLREILKEL	Bla g 6.0201	Q1A7B3	101
MDAIKKKMQAMKLEK	Bla g 7	Q9NG56	1
KKMQAMKLEKDNAMD	Bla g 7	Q9NG56	6
LQKKIQQIENDLDQT	Bla g 7	Q9NG56	46
MEQLMQVNAKLDEKD	Bla g 7	Q9NG56	61
KALQNAESEVAALNR	Bla g 7	Q9NG56	76
AESEVAALNRRIQLL	Bla g 7	Q9NG56	81
AALNRRIQLLEEDLE	Bla g 7	Q9NG56	86
RSEERLATATAKLAE	Bla g 7	Q9NG56	101
LATATAKLAEASQAA	Bla g 7	Q9NG56	106
GESKIVELEEEELRVV	Bla g 7	Q9NG56	186
VELEEELRVVGNLKL	Bla g 7	Q9NG56	191
ELRVVGNLKLKSLEVS	Bla g 7	Q9NG56	196
LREEEYKQIQIKTLNT	Bla g 7	Q9NG56	216
YKQIQIKTLNTRLKEA	Bla g 7	Q9NG56	221
ICDDLDMTFTELIGN	Bla g 7	Q9NG56	270

**Supplemental Table II. Complete list of peptide reactivities detected.**

Antigen	Position	Region ID	Sequence	Donor	IFN $\gamma$ (SFC)	IL-5 (SFC)	Total (SFC)
Bla g 1	351	1	FETIVVTVDSLPEFK	XT0005	167	0	167
	40	3	PEFQSIVQTLNAMPE	XT0031	87	0	87
	181		IVQTLNAMPEYQNLL	XT0003	153	87	240
	281	4	PELQNFLNFLEANGL	XT0034	323	0	323
	331	2	LIDDVLAAILPLDDLK	XT0003	160	997	1157
Bla g 2	11	5	FAVATITHAAELQRV	U00023	855	0	855
	26	6	PLYKLVHVFINTQYA	XT0031	240	0	240
	46	7	GNQNFLT VFDSTSCN	U00023	55	0	55
	296	8	ISSQYYIQQGNLCY	XT0038	153	0	153
	321	9	HFFIGDFFVDHYyse	XT0031	250	0	250
Bla g 5	16	10	GEPIRFLLSYGEKDF	XT0041	205	0	205
	21		FLLSYGEKDFEDYRF	XT0011	0	1537	1537
				XT0021	77	0	77
				XT0023	0	203	203
				XT0030	127	193	320
	46	11	SMPFGKTPVLEIDGK	XT0021	57	0	57
				XT0041	250	567	817
	66	12	VAISRYLGKQFGLSG	XT0023	287	1573	1860
				XT0030	153	430	583
	96	13	ISDFRAAIANYHYDA	XT0024	263	1760	2023
				XT0025	0	80	80
	136	14	EVVKANGGYLAAGKL	XT0023	80	467	547
				XT0034	380	0	380
	156	15	YFVAILDYLNHMAKE	XT0024	0	213	213
				XT0041	1043	473	1517
	166	16	HMAKEDLVANQP NLK	XT0029	610	273	883
	171		DLVANQP NLKALREK	XT0013	177	0	177
				XT0021	80	0	80
	181	17	ALREKVLGLPAIKAW	XT0013	843	0	843
				XT0021	100	0	100
			XT0023	0	267	267	
			XT0025	183	380	563	
			XT0029	147	0	147	
			XT0034	1690	1087	2777	
	186		VLGLPAIKAWVAKRP	XT0012	50	0	50
				XT0041	73	133	207
Bla g 6	11	18	EQISVLRKAFDAFDR	XT0024	0	340	340
	16		LRKAFDAFDREKSGS	XT0022	90	327	417

71	19	EFVTLAAKFIIIEEDS	XT0024	0	443	443
86	21	EAMEKELREAFRLYD	XT0024	0	53	53
140	22	SGTVDFDEFMEMMTG	XT0024	0	57	57
31	24	MVGTILEMLGTRLDQ	XT0024	0	267	267
66	20	EEFCTLASRFLVEED	XT0024	0	1213	1213
6	23	PEQIQLLKKAFDAFD	U00023	0	1172	1172
			XT0024	0	73	73
31	24	MVGTILEMLGHRLDD	XT0008	0	50	50
66	20	EEFVSLASRFLVEED	XT0015	220	0	220
101	25	GYITTNVLRILKEL	XT0008	0	50	50

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**Supplemental Table III. Average fraction of the sequences, and the corresponding fraction of unique 15-mers, covered by the bioinformatic predictions**

Antigen	Protein	Acc. no.	Len	Peptides <sup>1</sup>	Peptides synthesized	Percent		
						peptide coverage	AA coverage	Percent AA coverage
Bla g 1		O96522	492	97	48	49.5	363	73.8
Bla g 1.0101		Q9UAM5	412	81	37	45.7	280	68.0
Bla g 2	Aspartic protease	P54958	352	69	37	53.6	270	76.7
Bla g 4	Calycin	P54962	182	35	14	40.0	132	72.5
Bla g 5	Glutathione S-transferase	O18598	204	39	20	51.3	160	78.4
Bla g 6	Troponin C	Q1A7B1	154	29	10	34.5	119	77.3
Bla g 6.0101	Troponin C	Q1A7B2	151	29	8	27.6	85	56.3
Bla g 6.0201	Troponin C	Q1A7B3	151	29	6	20.7	80	53.0
Bla g 7	Tropomyosin	Q9NG56	284	55	15	27.3	155	54.6
Total			2382	463	195	42.1	1644	69.0

1. Refers to the number of unique 15-mers, considering a 10 residue overlap, spanning the entire sequence.



**Supplemental Table IV. IgE and T cell responsiveness of individual donors to each cockroach allergen.**

Donor	Blag 1		Blag 2		Blag 4		Blag 5		Per a 7	
	RAST	T cell	RAST	T cell	RAST	T cell	RAST	T cell	RAST	T cell
U00023	-	-	-	-	-	-	-	-	-	+
U00029	-	-	-	-	-	-	-	-	-	-
U00038	-	-	-	-	-	-	-	-	-	-
U00107	-	-	-	-	-	-	-	-	-	-
XT0001	-	-	-	-	-	-	1.89	-	-	-
XT0002	-	-	-	-	-	-	-	-	-	-
XT0003	-	+	1.39	-	-	-	0.51	-	-	-
XT0004	-	-	-	-	-	-	-	-	-	-
XT0005	-	+	-	-	-	-	-	-	-	-
XT0007	-	-	-	-	-	-	-	-	-	-
XT0008	-	-	1.13	-	-	-	0.76	-	-	+
XT0009	-	-	12.5	-	-	-	36.7	-	125	-
XT0010	0.35	-	-	-	-	-	-	-	-	-
XT0011	-	-	-	-	-	-	0.63	+	-	-
XT0012	-	-	-	-	-	-	-	+	-	-
XT0013	-	-	1.6	-	-	-	8.91	+	-	-
XT0015	-	-	-	-	-	-	-	-	-	+
XT0018	-	-	-	-	-	-	-	-	-	-
XT0019	-	-	-	-	-	-	-	-	-	-
XT0020	-	-	-	-	1.63	-	2.31	-	-	-
XT0021	-	-	-	-	-	-	-	+	-	-
XT0022	-	-	-	-	-	-	-	-	-	+
XT0023	-	-	1.55	+	12.1	-	16.4	+	-	-
XT0024	-	-	-	-	-	-	-	+	-	+
XT0025	-	-	-	-	-	-	-	+	-	-
XT0027	-	-	-	-	-	-	-	-	-	-
XT0029	29.6	-	9.03	-	23	-	94.5	+	69.6	-
XT0030	-	-	2.92	-	-	-	3.01	+	2.32	-
XT0031	0.85	+	-	+	-	-	-	-	-	-
XT0032	-	-	-	-	-	-	11.6	-	-	-
XT0034	-	+	-	-	-	-	10.1	+	-	-
XT0037	0.44	-	-	-	1.08	-	1.21	-	-	-
XT0038	-	-	-	+	-	-	2.88	-	3.47	-
XT0041	-	-	2.26	-	-	-	3.67	+	-	-