SUPPLEMENTARY MATERIALS

Table E1. Clinical characteristics of peanut-allergic patients, including levels of fecal IgE.

Patient no.	Age [years]	Sex	Peanut skin test [mm]	Serum peanut-sIgE[1] [kU$_A$/L]:				Serum tIgE[1] [kU/L]	Fecal tIgE[2] [kU/L]	Symptoms[3]	CED[3] [mg]	Other FA	Other respiratory allergies
				Extract	Ara h 1	Ara h 2	Ara h 6						
1	4	M	9.0	> 100	> 100	>100	75.0	4,516	1432.4	AP (6/10), N	50	ND	Pollen
2	7	M	16.5	16.0	20.6[#]	20.0	5.3	3,125	696.0	AP (5/10), A, V, AE	228	Nuts	Mites, pollen
3	10	F	15.5	> 100	> 100	66.0	39.0	947	82246.2	AP (10/10), AE	20	Legumes	Pollen
4	9	M	20.0	> 100	34.0	> 100	50.0	1,196	260.1	AP (6/10), N	35	Nuts, egg	Mites
5	8	M	17.5	> 100	8.4	83.0	59.0	1,426	23.6	AP (2/10)	100	Nuts, legumes	Mites, pollen, mold
6	6	M	18.0	6.5	7.1[#]	3.7	3.1	102	37.8	V	> 100	ND	ND
7	4	F	9.0	4.0	4.0	6.9[#]	8.2[#]	976	< 0.08	OAS	> 100	Nuts, egg	Mites, pollen
8	4	M	11.0	91.0	18.0	97.0	15.0	356	131.8	AP (6/10)	15	Legumes	Pollen
9	7	M	17.5	35.0	35.8[#]	33.0	33.0	715	83081.7	AP (10/10), V	20	Nuts	Mites
10	11	M	10.5	> 100	> 100	> 100	> 100	2,772	< 0.08	OAS, V	> 50	Nuts, fish	Pollen
11	10	F	20.0	> 100	58.0	> 100	> 100	846	108251.4	AP (8/10), N	50	Nuts, legumes	Dander, pollen, mold
12	5	M	9.5	> 100	69.0	73.0	50.0	365	< 0.08	AP (2/10), V	100	Legumes	Pollen

13	6	M	20.0	0.7	2.1[#]	1.0	0.3	347	< 0.08	OAS	> 1,580	Milk, egg	Dander, pollen
14	3	M	11.0	> 100	59.0	> 100	> 100	1,545	45.6	AD, R, C	50	Nuts, egg, fruit	Pollen
15	4	F	7.5	0.5	0.6[#]	0.7	0.4	15	67.1	U	> 395	ND	ND
16	4	F	24.5	46.0	46.0	18.0	17.0	110	< 0.08	AP (2/10), U, V	100	Nuts	ND
mean:	6.4	-	14.8	62.2	41.4	56.4	41.0	1,209.9	17267.1	-	187.1	-	-
median:	6.0	-	16.0	95.5	34.9	69.5	36.0	2,952.2	56.4	-	75.0	-	-
				100 % positivity (16/16) for serum sIgE to peanut extract, Ara h 1, 2 and 6									

[1]ImmunoCAP ([#]values by MADx macroarray); [2]ELISA; [3]Symptoms oral food challenge (AP, abdominal pain; AD, atopic dermatitis; AE, angioedema; C, cough; N, nausea; OAS, oral allergy syndrome; R, rhinitis; U, urticaria; V, vomiting; >, highest tested/tolerated dose); CED, cumulative eliciting dose; ND, not determined; FA, food allergy.

doi: 10.18176/jiaci.1008

Table E2. Allergens, recognized by PA patients' fecal sIgE**,** and matching bacterial proteins/peptides derived from fecal microbiota.

Allergen (allergen code, uniprot no.)[1]	Bacterial peptides [aa][2]	Sequence identity [%][3]	Sequence similarity [%][3]
Tri a AA (P01085)	MIATIFLYTHCGALFAGAMIISTL	40.0	66.7
	MNKKTPGRAFQLMPGIFLFG	71.4	100
Act d 2 (P83958)	LPPNTLAEYALNQFNNLDFFDISLVDGFNVPMEFSPNSGGCSRGIRCTADINGQCPNQLRALGGCNNPCTVYKTN EYCCNTGPCGPTDLSRFFKQRCPDAYSYPKDDPTSTFTCPGGTNYRVVFCP	86.4	93.5
Act d 5 (P85261 / P84527)	MQKIYVKPKDYWMNDPNGFIYYKGMYHLFYQCFPYGPRWGRMHWGHVVSKDLVNWEEQGIALFPSKTDDRN	36.8	52.6
	MDNNQFYCHNQEWIYDETSNRWCKCIRDCKGRIICYQIMPGPPGPPGPTGPTGPTGSFGGITGPTGPTGPTGIGLIG LTGPTGVTGATGVTGVTGATGATGATGVTGVT	38.9	73.3
	MDNNQFYCHNQEWIYDETSNRWCKCIRDCKGRIICYQIMPGPPGPPGPTGPTGPTGSFGGIT	38.9	73.3
	MAQLALLLLSLFLTLISLAPPGASISSCNGPCRDLNDCDGQLICIKGKCNDDPQVGTHICRGTTPSPQPGGCKPSGT LTCRGKSYPTYDCSPPVTSSTPAKLTNNDFSEGGDDGGPSECDESYHNNNERIVALSTGWYNGGSRCGKMIRITA SNGKSVSAKVVDECDSRHGCDKEHAGQPPCRNNIVDGSNAVWSALGLDKNVGVVDITWSMA	75.0	75
Gly m 5 (P0DO15 /P11827 /P25974 / F7J077)	MMRARFPLLLLGLVFLASVSVSFGIAYWEKENPKHNKCLQSCNSERDSYRNQACHARCNLLKVEKEECEEGEIP RPRPRPQHPEREPQQPGEKEEDEDEQPRPIPFPRPQPRQEEEHEQREEQEWPRKEEKRGEKGSEEEDEDEDEEQDE RQFPFPRPPHQKEERKQEEDEDEEQQRESEESEDSELRRHKNKNPFLFGSNRFETLFKNQYGRIRVLQRFNQRSPQ LQNLRDYRILEFNSKPNTLLLPNHADADYLIVILNGTAILSLVNNDDRDSYRLQSGDALRVPSGTTYYVVNPDNN ENLRLITLAIPVNKPGRFESFFLSSTEAQQSYLQGFSRNILEASYDTKFEEINKVLFSREEGQQQGEQRLQESVIVEIS KEQIRALSKRAKSSSRKTISSEDKPFNLRSRDPIYSNKLGKFFEITPEKNPQLRDLDIFLSIVDMNEGALLLPHFNSK AIVILVINEGDANIELVGLKEQQQEQQQEEQPLEVRKYRAELSEQDIFVIPAGYPVVVNATSNLNFFAIGINAENNQ RNFLAGSQDNVISQIPSQVQELAFPGSAQAVEKLLKNQRESYFVDAQPKKKEEGNKGRKGPLSSILRAFY	50.0	83.3
	LKNKRLLAGPYLFWSNREHI	75.0	87.5
	PLKNGTLFKNQYAMIGMAWKIIHYMLKL	80.0	80.0
	MFHVKHSSILRAFDYRGVNMREDLLNRNLELVI	100	100
	VVNILAKSGNINHKFLKAGDSNKKAVIVITANRGLAGGYNN	46.7	66.7
	MSGGVLFFGMIMHKNPGFVLFHFNNLAF	50.0	75

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	MSKNILEASLEGAEHIVLLGHIHPDGDCIGTTLGLLNYLRE	80.0	90.0
	MSKNILEASLEGAEHIVLLGHIHPDGDCIGTTLGLLNYLRE	80.0	90.0
	MVGKTGNKSVDRALFEITPEIQHFAGLCEKNNA	100	100
	MMRARFPLLLLGVVFLASVSVSFGIAYWEKQNPSHNKCLRSCNSEKDSYRNQACHARCNLLKVEEEEECEEGQI PRPRPQHPERERQQHGEKEEDEGEQPRPFPFPRPRQPHQEEEHEQKEEHEWHRKEEKHGGKGSEEEQDEREHPRP HQPHQKEEEKHEWQHKQEKHQGKESEEEEEDQDEDEEQDKESQESEGSESQREPRRHKNKNPFHFNSKRFQTLF KNQYGHVRVLQRFNKRSQQLQNLRDYRILEFNSKPNTLLLPHHADADYLIVILNGTAILTLVNNDDRDSYNLQSG DALRVPAGTTYYVVNPDNDENLRMITLAIPVNKPGRFESFFLSSTQAQQSYLQGFSKNILEASYDTKFEEINKVLF GREEGQQQGEERLQESVIVEISKKQIRELSKHAKSSSRKTISSEDKPFNLRSRDPIYSNKLGKLFEITPEKNPQLRDL DVFLSVVDMNEGALFLPHFNSKAIVVLVINEGEANIELVGIKEQQQRQQQEEQPLEVRKYRAELSEQDIFVIPAGY PVVVNATSDLNFFAFGINAENNQRNFLAGSKDNVISQIPSQVQELAFPGSAKDIENLIKSQSESYFVDAQPQQKEE GNKGRKGPLSSILRAFY	100	100
	MNGEAKRTRLDQRRAPIHEALENFRRMRVVPFDVPGH	46.2	70.0
	MTSDHHAPYVQGFTHATMAGTTGCDA	71.4	100
	MMRVRFPLLVLLGTVFLASVCVSLKVREDENNPFYLRSSNSFQTLFENQNGRIRLLQRFNKRSPQLENLRDYRIV QFQSKPNTILLPHHADADFLLFVLSGRAILTLVNNDDRDSYNLHPGDAQRIPAGTTYYLVNPHDHQNLKIIKLAIP VNKPGRYDDFFLSSTQAQQSYLQGFSHNILETSFHSEFEEINRVLLGEEEEQRQQEGVIVELSKEQIRQLSRRAKSS SRKTISSEDEPFNLRSRNPIYSNNFGKFFEITPEKNPQLRDLDIFLSSVDINEGALLLPHFNSKAIVILVINEGDANIEL VGIKEQQQKQKQEEEPLEVQRYRAELSEDDVFVIPAAYPFVVNATSNLNFLAFGINAENNQRNFLAGEKDNVVR QIERQVQELAFPGSAQDVERLLKKQRESYFVDAQPQQKEEGSKGRKGPFPSILGALY	71.4	100
	EITPEKAGEYGYSCGMNMMHGQMIVE	100	100
Bla g 2 (P54958)	MPNEQRHYSNELNLESVGINL	50.0	70.0
	MPNERHYSNELNLESVGINL	50.0	70.0
	MNGLAVRKDRSFTSYAGITR	75.0	100
	MIGLKLVTVLFAVATITHAAELQRVPLYKLVHVFINTQYAGITKIGNQNFLTVFDSTSCNVVVASQECVGGACVC PNLQKYEKLKPKYISDGNVQVKFFDTGSAVGRGIEDSLTISNLTTSQQDIVLADELSQEVCILSADVVVGIAAPGC PNALKGKTVLENFVEENLIAPVFSIHHARFQDGEHFGEIIFGGSDWKYVDGEFTYVPLVGDDSWKFRLDGVKIGD TTVAPAGTQAIIDTSKAIIVGPKAYVNPINEAIGCVVEKTTTRRICKLDCSKIPSLPDVTFVINGRNFNISSQYYIQQN GNLCYSGFQPCGHSDHFFIGDFFVDHYYSEFNWENKTMGFGRSVESV	75.0	87.5

Bla g 4 (P54962)	MNFDRLSHQGQLVLFYKEMCYTMWYFDKGKAF	66.7	76.9
Bla g 5 (O18598)	MAPSYKLTYCPVKALGEPIRFLLSYGEKDFEDYRFQEGDWPNLKPSMPFGKTPVLEIDGKQTHQSVAISRYLGKQ FGLSGKDDWENLEIDMIVDTISDFRAAIANYHYDADENSKQKKWDPLKKETIPYYTKKFDEVVKANGGYLAAG KLTWADFYFVAILDYLNHMAKEDLVANQPNLKALREKVLGLPAIKAWVAKRPPTDL	70.0	72.7
	MNKKQRKWRNRILVALALFAVIFA	71.4	85.7
Hev b 6.02 (P02877)	IVMVLYKPRTWCAFCPMGTMTQGICKLKNKE	50.0	66.7
	MVLYKPRTWCAFCPMGTMTQSICKLKNKD	56.3	66.7
	MNIFIVVLLCLTGVAIAEQCGRQAGGKLCPNNLCCSQWGWCGSTDEYCSPDHNCQSNCKDSGEGVGGGSASNV LATYHLYNSQDHGWDLNAASAYCSTWDANKPYSWRSKYGWTAFCGPVGAHGQSSCGKCLSVTNTGTGAKTT VRIVDQCSNGGLDLDVNVFRQLDTDGKGYERGHITVNYQFVDCGDSFNPLFSVMKSSVIN	56.3	66.7
Pol d 5 (P81656)	HGGLTGRAAQQFIDYIVGTEEEKKK	50.0	62.5
Ves v 5 (Q05110/P81656)	MMKKRDYRPKIHFSPEEGWMNDPNGMV	60.0	70.0
	MMKKRDYRPKIHFSPEEGWMNDPNGMV	60.0	70.0
	MEISGLVYLIIIVTIIDLPYGKANNYCKIKCLKGGVHTACKYGSLKPNCGNKVVVSYGLTKQEKQDILKEHNDFRQ KIARGLETRGNPGPQPPAKNMKNLVWNDELAYVAQVWANQCQYGHDTCRDVAKYQVGQNVALTGSTAAKY DDPVKLVKMWEDEVKDYNPKKKFSGNDFLKTGHYTQMVWANTKEVGCGSIKYIQEKWHKHYLVCNYGPSGN FMNEELYQTK	60.0	70.0

[1]Ten out of 12 allergens detected by fecal IgE (shown in Figure 2, A.); [2]amino acid (aa) translates of metagenomics data from fecal microbiome samples, bacterial "hits" matching to one of the 12 allergens; [3]retrieved from sequence comparisons (program CLC workbench 11, using a BLOSUM62 matrix with gap opening penalty of 10 and a gap extension penalty 136 of 0.5, allowing 5 hits per metagenomics sequence).

doi: 10.18176/jiaci.1008