

Supplementary table 1A. Immune reactivity in house dust mite allergic individuals.

The sum of Der p/f-specific IgE concentrations as well as IFN γ /IL5-production following restimulation on day 14 are shown.

Subject ID	Status	Sum of Der p/f-spec. IgE [kU/L]	Total IFNγ	Total IL5	Total SFC
1134	Allergic	1.7	3578	2396	5974
1219	Allergic	4.9	396	1420	1816
1213	Allergic	5.5	307	83	390
1211	Allergic	7.6	6070	11123	17193
1136	Allergic	9.4	1557	13133	14690
1132	Allergic	14	0	7767	7767
1133	Allergic	18	57	4733	4790
1212	Allergic	23	603	19187	19790
1223	Allergic	29	1540	29733	31273
1214	Allergic	29	230	14207	14437
1215	Allergic	33	0	5097	5097
1135	Allergic	53	143	11193	11336
1220	Allergic	55	610	7373	7983
1210	Allergic	60	4267	20803	25070
1222	Allergic	73	2520	17946	20466
1131	Allergic	73	1070	6050	7119
1140	Allergic	83	0	4617	4617
1217	Allergic	85	63	12000	12063
1221	Allergic	85	517	10713	11230
1130	Allergic	108	0	433	433
1216	Allergic	143	0	520	520

Supplementary table 1B. *Ex vivo* immune reactivity in house dust mite allergic compared to non-allergic individuals.

Donor ID	Status	Sum Der p/f-spec. IgE [kU/L]	<i>Ex vivo</i> reactivity (SFC/106 PBMC)	
			IFN γ	IL-5
1580	Allergic	0.01	3.0	0.0
1573	Allergic	0.5	0.0	0.0
1581	Allergic	1.1	3.3	0.0
1535	Allergic	2.7	0.0	0.0
1531	Allergic	2.7	3.3	1.7
1530	Allergic	3.6	15.0	5.0
1533	Allergic	3.8	0.0	0.0
1536	Allergic	4.6	0.0	1.7
1525	Allergic	6.8	0.0	8.3
1529	SIT	7.0	1.7	0.0
1522	Allergic	8.0	0.0	0.0
1520	Allergic	9.1	0.0	0.0
1138	Allergic	9.1	0.0	0.0
1523	Allergic	9.8	15.0	0.0
1528	Allergic	11.3	0.0	31.7
1139	SIT	13.0	0.0	0.0
1519	Allergic	13.9	0.0	78.3
1537	Allergic	14.1	0.0	103.3
1526	SIT	15.4	1.7	45.0
1552	Allergic	18.5	0.0	18.3
1218	SIT	22.0	1.7	1.7
1553	Allergic	27.9	0.0	88.3
1521	Allergic	32.8	0.0	6.7
1538	Allergic	36.8	5.0	301.7
1380	Allergic	43.2	11.7	390.0
1532	SIT	49.5	0.0	31.7
1524	Allergic	49.8	11.7	25.0
1591	Allergic	55.6	5.0	200.0
1518	Allergic	56.9	11.7	40.0
1527	Allergic	67.5	10.0	143.3
1539	Allergic	68.0	0.0	20.0
1517	Allergic	74.0	30.0	40.0
1137	Allergic	99.3	8.3	133.3
1534	Allergic	151.8	1.7	136.7
1562	Non All	n.d.	6.7	3.3
1592	Non All	n.d.	0.0	0.0
1564	Non All	n.d.	0.0	5.0
1565	Non All	n.d.	3.3	1.7
1566	Non All	n.d.	1.7	0.0
1574	Non All	n.d.	0.0	0.0
1575	Non All	n.d.	0.0	0.0
1577	Non All	n.d.	0.0	0.0
1579	Non All	n.d.	0.0	1.7
1396	Non All	n.d.	1.7	8.3

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Supplementary table 2A. A set of 34 immunodominant peptides accounted for 90% of the total allergen-specific responses in this study and was included into a dust mite megapool (DMP).

Epitope	Antigen	Length	Start
RPASIKTFEEFKKAF	Der f 1	15	1
EFKNRYLMSAEAFEQ	Der f 1	15	56
DLRSLRTVTPIRMQGGCGSC	Der f 1	20	96
GCGSCWAFSGVAATESAYLA	Der f 1	20	111
TIPRGIEYIQQNGVVEERSY	Der f 1	20	156
EERSYPYVAREQQCR	Der f 1	15	171
HYGISNYCQIYPPDVKQIRE	Der f 1	20	191
KDLRAFQHYDGRTHIQHDNG	Der f 1	20	226
YQPNYHAVNIVGYGSTQGVD	Der f 1	20	246
GYGYFQAGNNLMMIEQYPYV	Der f 1	20	281
VKYVQSNGGAINHLS	Der p 1	15	36
DLNAETNACSINGNAPAEI	Der p 1	19	76
DLRQMRTVTPIRMQGGCGSC	Der p 1	20	95
QELVDCASQHGCHGDTIPRG	Der p 1	20	141
IEYIQHNGVVQESYY	Der p 1	15	160
QESYYRYVAREQSCR	Der p 1	15	170
RFGISNYCQIYPPNA	Der p 1	15	190
NKIREALAQTHSAIA	Der p 1	15	205
VIIGIKDLDAFRHYD	Der p 1	15	220
KDLDAFRHYDGRTHIQRDNG	Der p 1	20	225
HAVNIVGYSSNAQGVD	Der p 1	15	250
NWGDNGYGYFAANID	Der p 1	15	275
DQVDVKDCANHEIKK	Der p 2	15	1
CHGSEPCIIHRGKPFQLEAV	Der p 2	20	21
QLEAVFEANQNTKTA	Der p 2	15	36
NTKTAKIEIKASIDG	Der p 2	15	46
YDIKYTWNVPKIAPKSENVV	Der p 2	20	86
GVLACAIATHAKIRD	Der p 2	15	115
KDCANNEIKKVMVDGCHGSD	Der f 2	20	6
CHGSDPCIIHRGKPFQLEAL	Der f 2	20	21
FDANQNTKTAKIEIKASLDG	Der f 2	20	41
YDAKYTWNVPKIAPKSENVV	Der f 2	20	86
SENVVVTVKLVGDNGVLACA	Der f 2	20	101
PKDPHKFYICSNWEAVHKDC	Der p 23	20	36

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Supplementary table 2B. A set of 41 previously identified *Dermatophagoides sp.*-epitopes selected from the IEDB.

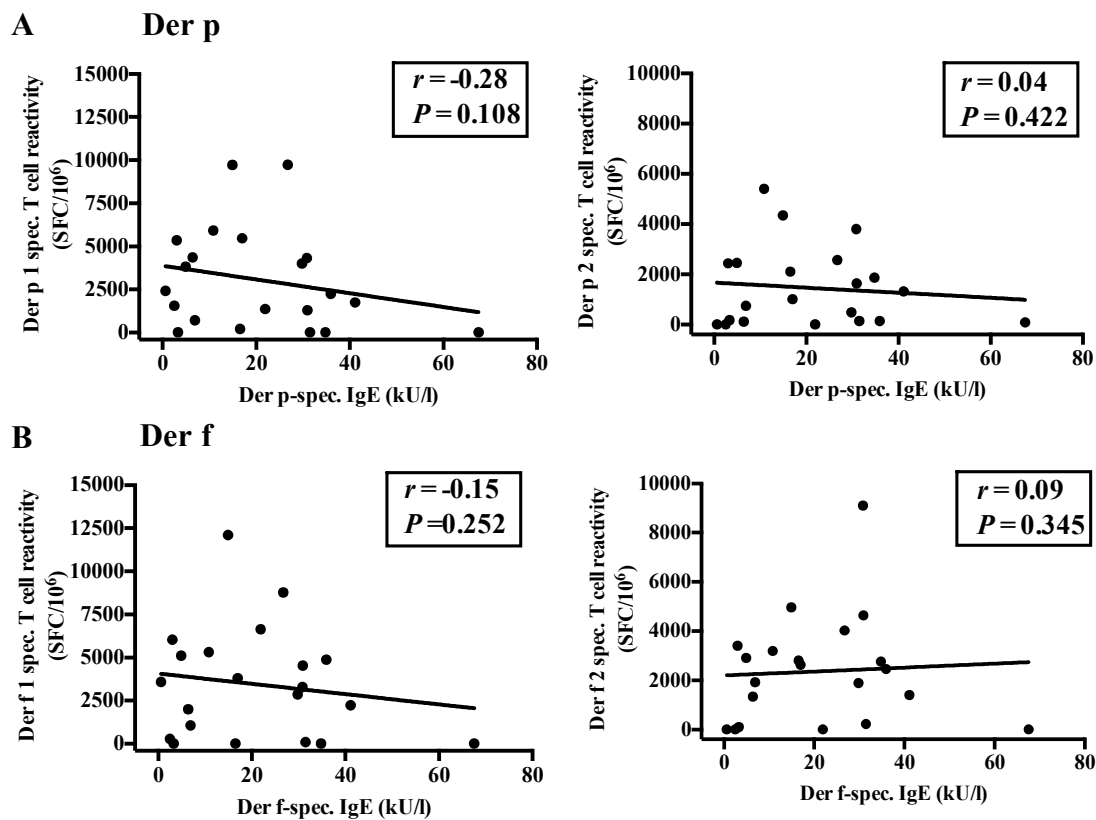
Epitope	Antigen	Length	Start	Reference
NFLESLKYVEANKGAIN	Der f 1	17	49	E James*
QGGCGSCWAFSGVAATE	Der f 1	17	127	E James*
QIYPPDVKQIREALTQT	Der f 1	17	217	E James*
TAIAVIIGIKDLRAFQH	Der f 1	17	235	E James*
IGIKDLRAFQHYDGRTI	Der f 1	17	241	E James*
RAFQHYDGRTIIQHDNG	Der f 1	17	247	E James*
DGRTIIQHDNGYQPNYH	Der f 1	17	253	E James*
QPNYHAVNIVGYGSTQG	Der f 1	17	265	E James*
VNIVGYGSTQGVVDYWIV	Der f 1	17	271	E James*
SLLALSAVYARPSSIKTFEE	Der p 1	20	9	E James*
YARPSSIKTFEEYKKA FNKS	Der p 1	20	17	E James*
DEFKNRFLMSAEAFEHLKTQ	Der p 1	20	55	E James*
SAYLAHRNQLDLAEQELVD	Der p 1	20	63	H Yssel (JI, 1992)
LAHRNQLDLAEQELVDCAS	Der p 1	20	66	H Yssel (JI, 1992)
LRQMRTVTPIRMQGG	Der p 1	15	96	M Bonvalet (CEA, 2011)
SCWAFSGVAATESAY	Der p 1	15	113	C Oseroff*
SGVAATESAYLAYRN	Der p 1	15	118	C Oseroff*
RGIEYIQHNGVVQES	Der p 1	15	158	C Oseroff*
REALAQTHSAIAVII	Der p 1	15	208	C Oseroff*
RFGISNYCQIYPPNV	Der p 1	15	208	E Wambre (CEA, 2011)
SWDTNWGDNGYGYFAANIDL	Der p 1	20	271	E James*
DPCIHRGKPF TLEALF	Der f 2	17	71	E James*
CHFMKCPLVKGQQYDIK	Der f 2	17	119	E James*
PLVKGQQYDIKYTWNVP	Der f 2	17	125	E James*
TWNVPKIAPKSENVVVT	Der f 2	17	137	E James*
GCHGSEPCIHRGK	Der p 2	14	20	RJ van Neerven (Immunol, 1994)
EPCIHRGKPFQLEAVF	Der p 2	17	25	E James*
RGKPFQLEAVFEANQNT	Der p 2	17	47	E James*
LEAVFEANQNTKTAKIE	Der p 2	17	53	E James*
IDGLEVDVPGIDPNAC	Der p 2	16	58	M Okano (Allergy)
CHYMKCPLVKGQQYDIK	Der p 2	17	73	E James*
QQYDIKYTWNVPKIAPKSEN	Der p 2	20	84	LR Crack (Clin Exp Dermatol, 2012)
DDGVLACAIATHAKIRD	Der p 2	17	129	E James*
NKAGVRIYVDIVLNH	Der p 4	15	86	C Oseroff*
IEFRFYKEITNVFRG	Der p 4	15	251	C Oseroff*
FEGRLKKAATAFMLA	Der p 4	15	311	C Oseroff*
AFMLAWNYGVPRVMS	Der p 4	15	321	C Oseroff*
EHRWREIYNMVKFRM	Der p 4	15	381	C Oseroff*

EIYNMVKFRMIAGQE	Der p 4	15	386	C Oseroff*
YQIAFSRGNRAFAI	Der p 4	15	411	C Oseroff*
EFDAFVAYHIGARIV	Der p 4	15	481	C Oseroff*

*direct submission to the IEDB

Supplementary table 3. Summary of *ex vivo* detected IL-5 reactivity in house dust mite allergic and non-allergic individuals. Due to limited cell numbers, *ex vivo* IL-5 reactivity was determined in 63 of the 65 patients included in this study.

	IgE-titer	Frequency of donors with <i>ex vivo</i> IL5-reactivity
Non-allergic (n=10)		
	no IgE	0/10 (0%)
Allergic (n=53)		
	IgE < 10 kU/l	29/35 (82.8%)
	IgE > 10 kU/l	1/18 (5.5%)



Supplementary Figure 1. Correlation between Der p-/Der f-specific IgE and (A) Der p- and (B) Der f-specific T cell reactivity. (Spearman r and P -values are shown and best-fit line is plotted.)