



## Supplementary Materials

**Table S1.** The detailed overview of 295 allergen reagents (allergenic extracts and molecular components) according to the frequency of sensitisation in classes 0, 1, 2, 3, 4 in 100 atopic dermatitis patients (= 100 %).

| Allergen reagents | The number of patients (%) according to the level of specific IgE in classes 0-4<br>100 patients include in the study = 100 % |         |         |         |         |
|-------------------|---|---------|---------|---------|---------|
|                   | Class 0   | Class 1 | Class 2 | Class 3 | Class 4 |
| Acam              | 85.0%   | 10.0%   | 4.0%    | 1.0%    | 0.0%    |
| Acas              | 74.0%   | 5.0%    | 7.0%    | 8.0%    | 6.0%    |
| Actd1             | 91.0%   | 4.0%    | 3.0%    | 2.0%    | 0.0%    |
| Actd10            | 96.0%   | 1.0%    | 2.0%    | 0.0%    | 1.0%    |
| Actd2             | 86.0%   | 11.0%   | 1.0%    | 2.0%    | 0.0%    |
| Actd5             | 99.0%   | 1.0%    | 0.0%    | 0.0%    | 0.0%    |
| Achd              | 76.0%   | 6.0%    | 3.0%    | 7.0%    | 8.0%    |
| Aila              | 92.0%   | 5.0%    | 3.0%    | 0.0%    | 0.0%    |
| Allc              | 94.0%   | 4.0%    | 2.0%    | 0.0%    | 0.0%    |
| Alls              | 94.0%   | 4.0%    | 2.0%    | 0.0%    | 0.0%    |
| Alng1             | 57.0%   | 0.0%    | 12.0%   | 14.0%   | 17.0%   |
| Alng4             | 93.0%   | 1.0%    | 4.0%    | 0.0%    | 2.0%    |
| Alta1             | 74.0%   | 0.0%    | 0.0%    | 4.0%    | 22.0%   |
| Alta6             | 88.0%   | 2.0%    | 4.0%    | 4.0%    | 2.0%    |
| Amar              | 83.0%   | 8.0%    | 7.0%    | 2.0%    | 0.0%    |
| Amba              | 75.0%   | 5.0%    | 8.0%    | 8.0%    | 4.0%    |
| Amba1             | 88.0%   | 7.0%    | 3.0%    | 0.0%    | 2.0%    |
| Amba4             | 77.0%   | 7.0%    | 5.0%    | 8.0%    | 3.0%    |
| Anao              | 93.0%   | 5.0%    | 1.0%    | 1.0%    | 0.0%    |
| Anao2             | 97.0%   | 0.0%    | 3.0%    | 0.0%    | 0.0%    |
| Anao3             | 99.0%   | 0.0%    | 0.0%    | 1.0%    | 0.0%    |
| Anis1             | 100.0%  | 0.0%    | 0.0%    | 0.0%    | 0.0%    |
| Anis3             | 96.0%   | 0.0%    | 0.0%    | 1.0%    | 3.0%    |
| Apig1             | 78.0%   | 5.0%    | 3.0%    | 8.0%    | 6.0%    |
| Apig2             | 88.0%   | 10.0%   | 0.0%    | 1.0%    | 1.0%    |
| Apig6             | 93.0%   | 4.0%    | 2.0%    | 0.0%    | 1.0%    |
| Apim              | 84.0%   | 8.0%    | 6.0%    | 2.0%    | 0.0%    |
| Apim1             | 85.0%   | 11.0%   | 3.0%    | 1.0%    | 0.0%    |
| Apim10            | 87.0%   | 6.0%    | 1.0%    | 6.0%    | 0.0%    |
| Arah1             | 91.0%   | 1.0%    | 3.0%    | 1.0%    | 4.0%    |
| Arah15            | 92.0%   | 4.0%    | 4.0%    | 0.0%    | 0.0%    |
| Arah2             | 96.0%   | 1.0%    | 0.0%    | 0.0%    | 3.0%    |
| Arah3             | 96.0%   | 0.0%    | 1.0%    | 2.0%    | 1.0%    |
| Arah6             | 93.0%   | 1.0%    | 1.0%    | 3.0%    | 2.0%    |
| Arah8             | 67.0%   | 8.0%    | 10.0%   | 8.0%    | 7.0%    |
| Arah9             | 91.0%   | 3.0%    | 5.0%    | 1.0%    | 0.0%    |
| Argr1             | 97.0%   | 0.0%    | 3.0%    | 0.0%    | 0.0%    |
| Artv              | 68.0%   | 5.0%    | 7.0%    | 10.0%   | 10.0%   |
| Artv1             | 81.0%   | 2.0%    | 7.0%    | 9.0%    | 1.0%    |
| Artv3             | 92.0%   | 6.0%    | 1.0%    | 0.0%    | 1.0%    |
| Aspf1             | 96.0%   | 2.0%    | 1.0%    | 1.0%    | 0.0%    |

|                |        |       |      |       |       |
|----------------|--------|-------|------|-------|-------|
| Aspf3          | 85.0%  | 8.0%  | 5.0% | 1.0%  | 1.0%  |
| Aspf4          | 97.0%  | 0.0%  | 1.0% | 1.0%  | 1.0%  |
| Aspf6          | 80.0%  | 2.0%  | 4.0% | 9.0%  | 5.0%  |
| Aves           | 93.0%  | 6.0%  | 0.0% | 1.0%  | 0.0%  |
| Bere           | 98.0%  | 0.0%  | 2.0% | 0.0%  | 0.0%  |
| Bere1          | 99.0%  | 0.0%  | 1.0% | 0.0%  | 0.0%  |
| Betv1          | 47.0%  | 2.0%  | 6.0% | 5.0%  | 40.0% |
| Betv2          | 89.0%  | 4.0%  | 4.0% | 0.0%  | 3.0%  |
| Betv6          | 98.0%  | 2.0%  | 0.0% | 0.0%  | 0.0%  |
| Blag1          | 99.0%  | 1.0%  | 0.0% | 0.0%  | 0.0%  |
| Blag2          | 94.0%  | 3.0%  | 1.0% | 2.0%  | 0.0%  |
| Blag4          | 80.0%  | 10.0% | 9.0% | 1.0%  | 0.0%  |
| Blag5          | 99.0%  | 1.0%  | 0.0% | 0.0%  | 0.0%  |
| Blag9          | 79.0%  | 0.0%  | 1.0% | 2.0%  | 18.0% |
| Blot10         | 92.0%  | 4.0%  | 0.0% | 1.0%  | 3.0%  |
| Blot21         | 95.0%  | 2.0%  | 3.0% | 0.0%  | 0.0%  |
| Blot5          | 88.0%  | 3.0%  | 3.0% | 3.0%  | 3.0%  |
| Bosd2          | 93.0%  | 0.0%  | 4.0% | 3.0%  | 0.0%  |
| Bosd4          | 98.0%  | 1.0%  | 1.0% | 0.0%  | 0.0%  |
| Bosd5          | 100.0% | 0.0%  | 0.0% | 0.0%  | 0.0%  |
| Bosd6          | 97.0%  | 2.0%  | 1.0% | 0.0%  | 0.0%  |
| Bosd8          | 94.0%  | 3.0%  | 2.0% | 1.0%  | 0.0%  |
| Bosd_meat      | 99.0%  | 1.0%  | 0.0% | 0.0%  | 0.0%  |
| Bosd_milk      | 96.0%  | 2.0%  | 1.0% | 1.0%  | 0.0%  |
| Bropa          | 99.0%  | 1.0%  | 0.0% | 0.0%  | 0.0%  |
| Camd           | 98.0%  | 1.0%  | 1.0% | 0.0%  | 0.0%  |
| Canf1          | 64.0%  | 1.0%  | 8.0% | 10.0% | 17.0% |
| Canf2          | 83.0%  | 1.0%  | 2.0% | 4.0%  | 10.0% |
| Canf3          | 93.0%  | 4.0%  | 1.0% | 1.0%  | 1.0%  |
| Canf4          | 71.0%  | 1.0%  | 6.0% | 5.0%  | 17.0% |
| Canf6          | 68.0%  | 0.0%  | 6.0% | 5.0%  | 21.0% |
| Canf_Fd1       | 79.0%  | 6.0%  | 9.0% | 6.0%  | 0.0%  |
| Canf_maleurine | 70.0%  | 2.0%  | 8.0% | 7.0%  | 13.0% |
| Cans           | 88.0%  | 3.0%  | 5.0% | 4.0%  | 0.0%  |
| Cans3          | 96.0%  | 0.0%  | 2.0% | 1.0%  | 1.0%  |
| Capa           | 92.0%  | 5.0%  | 3.0% | 0.0%  | 0.0%  |
| Caph_epithelia | 98.0%  | 1.0%  | 0.0% | 0.0%  | 1.0%  |
| Caph_milk      | 97.0%  | 1.0%  | 1.0% | 0.0%  | 1.0%  |
| Carc           | 98.0%  | 2.0%  | 0.0% | 0.0%  | 0.0%  |
| Cari           | 91.0%  | 1.0%  | 5.0% | 2.0%  | 1.0%  |
| Carp           | 96.0%  | 3.0%  | 1.0% | 0.0%  | 0.0%  |
| Cavp1          | 79.0%  | 1.0%  | 4.0% | 7.0%  | 9.0%  |
| Cica           | 95.0%  | 3.0%  | 1.0% | 1.0%  | 0.0%  |
| Cits           | 99.0%  | 1.0%  | 0.0% | 0.0%  | 0.0%  |
| Clah           | 94.0%  | 5.0%  | 1.0% | 0.0%  | 0.0%  |
| Clah8          | 85.0%  | 14.0% | 1.0% | 0.0%  | 0.0%  |
| Cluh           | 97.0%  | 0.0%  | 2.0% | 1.0%  | 0.0%  |
| Cluh1          | 95.0%  | 2.0%  | 0.0% | 0.0%  | 3.0%  |
| Cora1.0103     | 52.0%  | 2.0%  | 7.0% | 7.0%  | 32.0% |

|             |        |       |       |       |       |
|-------------|--------|-------|-------|-------|-------|
| Cora1.0401  | 56.0%  | 0.0%  | 14.0% | 10.0% | 20.0% |
| Cora11      | 94.0%  | 3.0%  | 3.0%  | 0.0%  | 0.0%  |
| Cora14      | 94.0%  | 3.0%  | 2.0%  | 1.0%  | 0.0%  |
| Cora8       | 96.0%  | 1.0%  | 2.0%  | 1.0%  | 0.0%  |
| Cora9       | 97.0%  | 1.0%  | 2.0%  | 0.0%  | 0.0%  |
| Cora_pollen | 53.0%  | 4.0%  | 7.0%  | 19.0% | 17.0% |
| Crac6       | 93.0%  | 0.0%  | 2.0%  | 2.0%  | 3.0%  |
| Cryj1       | 85.0%  | 4.0%  | 9.0%  | 1.0%  | 1.0%  |
| Cucm2       | 89.0%  | 2.0%  | 5.0%  | 1.0%  | 3.0%  |
| Cucp        | 93.0%  | 4.0%  | 3.0%  | 0.0%  | 0.0%  |
| Cupa1       | 84.0%  | 6.0%  | 8.0%  | 2.0%  | 0.0%  |
| Cups        | 100.0% | 0.0%  | 0.0%  | 0.0%  | 0.0%  |
| Cynd        | 56.0%  | 12.0% | 16.0% | 14.0% | 2.0%  |
| Cynd1       | 52.0%  | 8.0%  | 16.0% | 16.0% | 8.0%  |
| Cypc1       | 94.0%  | 2.0%  | 1.0%  | 0.0%  | 3.0%  |
| Dauc        | 81.0%  | 6.0%  | 3.0%  | 7.0%  | 3.0%  |
| Dauc1       | 81.0%  | 5.0%  | 2.0%  | 6.0%  | 6.0%  |
| Derf1       | 69.0%  | 3.0%  | 5.0%  | 12.0% | 11.0% |
| Derf2       | 55.0%  | 1.0%  | 2.0%  | 2.0%  | 40.0% |
| Derp1       | 66.0%  | 2.0%  | 7.0%  | 7.0%  | 18.0% |
| Derp10      | 96.0%  | 0.0%  | 0.0%  | 1.0%  | 3.0%  |
| Derp11      | 97.0%  | 1.0%  | 1.0%  | 0.0%  | 1.0%  |
| Derp2       | 56.0%  | 0.0%  | 2.0%  | 2.0%  | 40.0% |
| Derp20      | 77.0%  | 2.0%  | 2.0%  | 1.0%  | 18.0% |
| Derp21      | 85.0%  | 0.0%  | 1.0%  | 2.0%  | 12.0% |
| Derp23      | 64.0%  | 1.0%  | 7.0%  | 5.0%  | 23.0% |
| Derp5       | 74.0%  | 8.0%  | 3.0%  | 1.0%  | 14.0% |
| Derp7       | 76.0%  | 6.0%  | 12.0% | 3.0%  | 3.0%  |
| Dolspp      | 96.0%  | 1.0%  | 3.0%  | 0.0%  | 0.0%  |
| Equc1       | 71.0%  | 2.0%  | 8.0%  | 1.0%  | 18.0% |
| Equc3       | 96.0%  | 3.0%  | 1.0%  | 0.0%  | 0.0%  |
| Equc4       | 95.0%  | 1.0%  | 2.0%  | 2.0%  | 0.0%  |
| Equc_meat   | 97.0%  | 3.0%  | 0.0%  | 0.0%  | 0.0%  |
| Equc_milk   | 97.0%  | 1.0%  | 2.0%  | 0.0%  | 0.0%  |
| Fage        | 93.0%  | 4.0%  | 3.0%  | 0.0%  | 0.0%  |
| Fage2       | 100.0% | 0.0%  | 0.0%  | 0.0%  | 0.0%  |
| Fags1       | 51.0%  | 3.0%  | 6.0%  | 15.0% | 25.0% |
| Feld1       | 56.0%  | 4.0%  | 6.0%  | 2.0%  | 32.0% |
| Feld2       | 94.0%  | 2.0%  | 4.0%  | 0.0%  | 0.0%  |
| Feld4       | 74.0%  | 3.0%  | 8.0%  | 6.0%  | 9.0%  |
| Feld7       | 69.0%  | 5.0%  | 10.0% | 3.0%  | 13.0% |
| Ficb        | 97.0%  | 2.0%  | 0.0%  | 1.0%  | 0.0%  |
| Ficc        | 95.0%  | 1.0%  | 4.0%  | 0.0%  | 0.0%  |
| Fraa1+3     | 55.0%  | 6.0%  | 13.0% | 12.0% | 14.0% |
| Frae        | 84.0%  | 2.0%  | 4.0%  | 2.0%  | 8.0%  |
| Frae1       | 80.0%  | 4.0%  | 5.0%  | 2.0%  | 9.0%  |
| Gadm        | 96.0%  | 1.0%  | 1.0%  | 1.0%  | 1.0%  |
| Gadm1       | 97.0%  | 0.0%  | 1.0%  | 1.0%  | 1.0%  |
| Gadm2+3     | 97.0%  | 2.0%  | 1.0%  | 0.0%  | 0.0%  |

|               |        |       |       |       |       |
|---------------|--------|-------|-------|-------|-------|
| Gald1         | 94.0%  | 2.0%  | 3.0%  | 1.0%  | 0.0%  |
| Gald2         | 93.0%  | 2.0%  | 4.0%  | 1.0%  | 0.0%  |
| Gald3         | 93.0%  | 1.0%  | 4.0%  | 1.0%  | 1.0%  |
| Gald4         | 94.0%  | 3.0%  | 1.0%  | 1.0%  | 1.0%  |
| Gald5         | 95.0%  | 3.0%  | 1.0%  | 1.0%  | 0.0%  |
| Gald_meat     | 97.0%  | 2.0%  | 1.0%  | 0.0%  | 0.0%  |
| Gald_white    | 84.0%  | 9.0%  | 3.0%  | 3.0%  | 1.0%  |
| Gald_yolk     | 94.0%  | 4.0%  | 1.0%  | 1.0%  | 0.0%  |
| Glyd2         | 67.0%  | 9.0%  | 8.0%  | 4.0%  | 12.0% |
| Glym4         | 65.0%  | 7.0%  | 12.0% | 8.0%  | 8.0%  |
| Glym5         | 99.0%  | 1.0%  | 0.0%  | 0.0%  | 0.0%  |
| Glym6         | 97.0%  | 1.0%  | 1.0%  | 1.0%  | 0.0%  |
| Glym8         | 100.0% | 0.0%  | 0.0%  | 0.0%  | 0.0%  |
| Hela          | 85.0%  | 11.0% | 3.0%  | 0.0%  | 1.0%  |
| Hevb1         | 99.0%  | 0.0%  | 1.0%  | 0.0%  | 0.0%  |
| Hevb11        | 99.0%  | 1.0%  | 0.0%  | 0.0%  | 0.0%  |
| Hevb3         | 95.0%  | 3.0%  | 1.0%  | 1.0%  | 0.0%  |
| Hevb5         | 98.0%  | 0.0%  | 2.0%  | 0.0%  | 0.0%  |
| Hevb6_02      | 95.0%  | 2.0%  | 2.0%  | 1.0%  | 0.0%  |
| Hevb8         | 92.0%  | 2.0%  | 3.0%  | 2.0%  | 1.0%  |
| Homg          | 85.0%  | 2.0%  | 7.0%  | 2.0%  | 4.0%  |
| HomsLF        | 94.0%  | 2.0%  | 3.0%  | 1.0%  | 0.0%  |
| Horv          | 88.0%  | 9.0%  | 3.0%  | 0.0%  | 0.0%  |
| Chea          | 94.0%  | 3.0%  | 3.0%  | 0.0%  | 0.0%  |
| Chea1         | 98.0%  | 2.0%  | 0.0%  | 0.0%  | 0.0%  |
| Cheq          | 90.0%  | 6.0%  | 4.0%  | 0.0%  | 0.0%  |
| Chispp_       | 91.0%  | 1.0%  | 2.0%  | 3.0%  | 3.0%  |
| Jugr1         | 96.0%  | 1.0%  | 0.0%  | 1.0%  | 2.0%  |
| Jugr2         | 92.0%  | 3.0%  | 4.0%  | 1.0%  | 0.0%  |
| Jugr3         | 96.0%  | 1.0%  | 3.0%  | 0.0%  | 0.0%  |
| Jugr4         | 98.0%  | 0.0%  | 2.0%  | 0.0%  | 0.0%  |
| Jugr6         | 94.0%  | 3.0%  | 3.0%  | 0.0%  | 0.0%  |
| Jugr_pollen   | 80.0%  | 8.0%  | 10.0% | 1.0%  | 1.0%  |
| Juna          | 99.0%  | 1.0%  | 0.0%  | 0.0%  | 0.0%  |
| Lenc          | 96.0%  | 2.0%  | 1.0%  | 1.0%  | 0.0%  |
| Lepd2         | 59.0%  | 4.0%  | 9.0%  | 18.0% | 10.0% |
| Lits          | 94.0%  | 1.0%  | 2.0%  | 1.0%  | 2.0%  |
| Locm          | 76.0%  | 8.0%  | 6.0%  | 4.0%  | 6.0%  |
| Lolp1         | 47.0%  | 7.0%  | 6.0%  | 10.0% | 30.0% |
| Lolspp_       | 88.0%  | 4.0%  | 3.0%  | 3.0%  | 2.0%  |
| Lupa          | 94.0%  | 2.0%  | 4.0%  | 0.0%  | 0.0%  |
| Maci2SAlbumin | 99.0%  | 0.0%  | 1.0%  | 0.0%  | 0.0%  |
| Macinte       | 96.0%  | 3.0%  | 0.0%  | 1.0%  | 0.0%  |
| Mald1         | 59.0%  | 1.0%  | 17.0% | 10.0% | 13.0% |
| Mald2         | 99.0%  | 0.0%  | 1.0%  | 0.0%  | 0.0%  |
| Mald3         | 92.0%  | 0.0%  | 7.0%  | 1.0%  | 0.0%  |
| Malas11       | 76.0%  | 0.0%  | 7.0%  | 1.0%  | 16.0% |
| Malas5        | 90.0%  | 1.0%  | 3.0%  | 1.0%  | 5.0%  |
| Malas6        | 86.0%  | 5.0%  | 6.0%  | 3.0%  | 0.0%  |

|                |        |       |       |       |       |
|----------------|--------|-------|-------|-------|-------|
| Mani           | 96.0%  | 3.0%  | 1.0%  | 0.0%  | 0.0%  |
| Melg           | 98.0%  | 2.0%  | 0.0%  | 0.0%  | 0.0%  |
| Mera1          | 94.0%  | 2.0%  | 1.0%  | 2.0%  | 1.0%  |
| Morr           | 100.0% | 0.0%  | 0.0%  | 0.0%  | 0.0%  |
| Musa           | 93.0%  | 6.0%  | 1.0%  | 0.0%  | 0.0%  |
| Musm1          | 78.0%  | 1.0%  | 6.0%  | 7.0%  | 8.0%  |
| Myte           | 96.0%  | 3.0%  | 0.0%  | 1.0%  | 0.0%  |
| Olee1          | 90.0%  | 0.0%  | 3.0%  | 2.0%  | 5.0%  |
| Olee9          | 98.0%  | 1.0%  | 0.0%  | 1.0%  | 0.0%  |
| Oriv           | 100.0% | 0.0%  | 0.0%  | 0.0%  | 0.0%  |
| Oryc1          | 92.0%  | 0.0%  | 3.0%  | 4.0%  | 1.0%  |
| Oryc2          | 94.0%  | 1.0%  | 2.0%  | 2.0%  | 1.0%  |
| Oryc3          | 73.0%  | 1.0%  | 2.0%  | 10.0% | 14.0% |
| Orys           | 95.0%  | 5.0%  | 0.0%  | 0.0%  | 0.0%  |
| Ory_meat       | 97.0%  | 2.0%  | 1.0%  | 0.0%  | 0.0%  |
| Oste           | 96.0%  | 1.0%  | 1.0%  | 1.0%  | 1.0%  |
| Ovia_epithelia | 100.0% | 0.0%  | 0.0%  | 0.0%  | 0.0%  |
| Ovia_meat      | 100.0% | 0.0%  | 0.0%  | 0.0%  | 0.0%  |
| Ovia_milk      | 94.0%  | 3.0%  | 1.0%  | 1.0%  | 1.0%  |
| Panb           | 88.0%  | 0.0%  | 5.0%  | 5.0%  | 2.0%  |
| Panm           | 92.0%  | 5.0%  | 3.0%  | 0.0%  | 0.0%  |
| Paps           | 94.0%  | 1.0%  | 3.0%  | 1.0%  | 1.0%  |
| Paps2SAlbumin  | 98.0%  | 0.0%  | 0.0%  | 1.0%  | 1.0%  |
| Parj           | 98.0%  | 1.0%  | 1.0%  | 0.0%  | 0.0%  |
| Parj2          | 82.0%  | 7.0%  | 8.0%  | 2.0%  | 1.0%  |
| Pasn           | 58.0%  | 9.0%  | 19.0% | 12.0% | 2.0%  |
| Pecspp_        | 89.0%  | 7.0%  | 4.0%  | 0.0%  | 0.0%  |
| Pench          | 97.0%  | 3.0%  | 0.0%  | 0.0%  | 0.0%  |
| Penm1          | 95.0%  | 0.0%  | 1.0%  | 1.0%  | 3.0%  |
| Penm2          | 82.0%  | 0.0%  | 6.0%  | 5.0%  | 7.0%  |
| Penm3          | 99.0%  | 0.0%  | 0.0%  | 1.0%  | 0.0%  |
| Penm4          | 98.0%  | 0.0%  | 2.0%  | 0.0%  | 0.0%  |
| Pera           | 84.0%  | 5.0%  | 7.0%  | 4.0%  | 0.0%  |
| Pera7          | 92.0%  | 1.0%  | 2.0%  | 2.0%  | 3.0%  |
| Persa          | 90.0%  | 5.0%  | 5.0%  | 0.0%  | 0.0%  |
| Petc           | 98.0%  | 2.0%  | 0.0%  | 0.0%  | 0.0%  |
| Phav           | 87.0%  | 7.0%  | 5.0%  | 1.0%  | 0.0%  |
| Phlp1          | 43.0%  | 5.0%  | 9.0%  | 4.0%  | 39.0% |
| Phlp12         | 90.0%  | 3.0%  | 4.0%  | 2.0%  | 1.0%  |
| Phlp2          | 55.0%  | 4.0%  | 9.0%  | 7.0%  | 25.0% |
| Phlp5_0101     | 58.0%  | 0.0%  | 5.0%  | 5.0%  | 32.0% |
| Phlp6          | 58.0%  | 7.0%  | 6.0%  | 8.0%  | 21.0% |
| Phlp7          | 88.0%  | 7.0%  | 2.0%  | 1.0%  | 2.0%  |
| Phod2          | 92.0%  | 2.0%  | 2.0%  | 4.0%  | 0.0%  |
| Phods1         | 88.0%  | 3.0%  | 2.0%  | 2.0%  | 5.0%  |
| Phrc           | 73.0%  | 16.0% | 9.0%  | 2.0%  | 0.0%  |
| Pima           | 93.0%  | 6.0%  | 1.0%  | 0.0%  | 0.0%  |
| Piss           | 97.0%  | 1.0%  | 1.0%  | 1.0%  | 0.0%  |
| Pisv1          | 96.0%  | 1.0%  | 3.0%  | 0.0%  | 0.0%  |

|                 |        |       |       |       |       |
|-----------------|--------|-------|-------|-------|-------|
| Pisv2           | 99.0%  | 0.0%  | 1.0%  | 0.0%  | 0.0%  |
| Pisv3           | 98.0%  | 2.0%  | 0.0%  | 0.0%  | 0.0%  |
| Plaa1           | 96.0%  | 2.0%  | 2.0%  | 0.0%  | 0.0%  |
| Plaa2           | 90.0%  | 4.0%  | 5.0%  | 1.0%  | 0.0%  |
| Plaa3           | 91.0%  | 5.0%  | 4.0%  | 0.0%  | 0.0%  |
| Plal            | 72.0%  | 14.0% | 2.0%  | 2.0%  | 10.0% |
| Plal1           | 85.0%  | 3.0%  | 0.0%  | 2.0%  | 10.0% |
| Pold            | 90.0%  | 8.0%  | 1.0%  | 1.0%  | 0.0%  |
| Pold5           | 93.0%  | 3.0%  | 2.0%  | 1.0%  | 1.0%  |
| Popn            | 91.0%  | 7.0%  | 2.0%  | 0.0%  | 0.0%  |
| Pruav           | 98.0%  | 1.0%  | 1.0%  | 0.0%  | 0.0%  |
| Prudu           | 96.0%  | 4.0%  | 0.0%  | 0.0%  | 0.0%  |
| Prup3           | 94.0%  | 1.0%  | 2.0%  | 1.0%  | 2.0%  |
| Pyc             | 90.0%  | 6.0%  | 4.0%  | 0.0%  | 0.0%  |
| Rajc            | 100.0% | 0.0%  | 0.0%  | 0.0%  | 0.0%  |
| RajcParvalbumin | 99.0%  | 0.0%  | 0.0%  | 0.0%  | 1.0%  |
| Ratn            | 83.0%  | 3.0%  | 6.0%  | 6.0%  | 2.0%  |
| Rudspp_         | 92.0%  | 5.0%  | 1.0%  | 1.0%  | 1.0%  |
| Sacc            | 86.0%  | 7.0%  | 7.0%  | 0.0%  | 0.0%  |
| Salk            | 85.0%  | 7.0%  | 7.0%  | 1.0%  | 0.0%  |
| Salk1           | 88.0%  | 9.0%  | 3.0%  | 0.0%  | 0.0%  |
| Sals            | 98.0%  | 0.0%  | 1.0%  | 1.0%  | 0.0%  |
| Sals1           | 93.0%  | 2.0%  | 1.0%  | 1.0%  | 3.0%  |
| Scos            | 94.0%  | 5.0%  | 1.0%  | 0.0%  | 0.0%  |
| Scos1           | 94.0%  | 1.0%  | 2.0%  | 0.0%  | 3.0%  |
| Secc_flour      | 89.0%  | 7.0%  | 3.0%  | 1.0%  | 0.0%  |
| Secc_pollen     | 47.0%  | 5.0%  | 17.0% | 17.0% | 14.0% |
| Sesi            | 94.0%  | 2.0%  | 1.0%  | 2.0%  | 1.0%  |
| Sesi1           | 89.0%  | 4.0%  | 3.0%  | 1.0%  | 3.0%  |
| Sin             | 100.0% | 0.0%  | 0.0%  | 0.0%  | 0.0%  |
| Sina1           | 96.0%  | 2.0%  | 2.0%  | 0.0%  | 0.0%  |
| Solspp_         | 96.0%  | 2.0%  | 2.0%  | 0.0%  | 0.0%  |
| Solt            | 86.0%  | 7.0%  | 3.0%  | 1.0%  | 3.0%  |
| Solal           | 90.0%  | 6.0%  | 3.0%  | 1.0%  | 0.0%  |
| Solal6          | 95.0%  | 1.0%  | 3.0%  | 1.0%  | 0.0%  |
| Susd1           | 95.0%  | 1.0%  | 2.0%  | 1.0%  | 1.0%  |
| Susd_epithelia  | 96.0%  | 2.0%  | 1.0%  | 1.0%  | 0.0%  |
| Susd_meat       | 96.0%  | 1.0%  | 1.0%  | 2.0%  | 0.0%  |
| Tenm            | 77.0%  | 7.0%  | 6.0%  | 6.0%  | 4.0%  |
| Thua            | 95.0%  | 5.0%  | 0.0%  | 0.0%  | 0.0%  |
| Thua1           | 93.0%  | 2.0%  | 2.0%  | 0.0%  | 3.0%  |
| Tria14          | 99.0%  | 0.0%  | 1.0%  | 0.0%  | 0.0%  |
| Tria19          | 100.0% | 0.0%  | 0.0%  | 0.0%  | 0.0%  |
| TriaaA_TI       | 97.0%  | 1.0%  | 2.0%  | 0.0%  | 0.0%  |
| Trifo           | 94.0%  | 3.0%  | 2.0%  | 1.0%  | 0.0%  |
| Tris            | 100.0% | 0.0%  | 0.0%  | 0.0%  | 0.0%  |
| Typr            | 75.0%  | 5.0%  | 7.0%  | 8.0%  | 5.0%  |
| Typr2           | 89.0%  | 4.0%  | 6.0%  | 1.0%  | 0.0%  |
| Ulmc            | 90.0%  | 5.0%  | 5.0%  | 0.0%  | 0.0%  |

|        |       |       |      |      |       |
|--------|-------|-------|------|------|-------|
| Urtcd  | 88.0% | 7.0%  | 3.0% | 2.0% | 0.0%  |
| Vacm   | 95.0% | 4.0%  | 1.0% | 0.0% | 0.0%  |
| Vesv   | 89.0% | 8.0%  | 1.0% | 2.0% | 0.0%  |
| Vesv1  | 89.0% | 4.0%  | 5.0% | 2.0% | 0.0%  |
| Vesv5  | 82.0% | 14.0% | 3.0% | 0.0% | 1.0%  |
| Vitv1  | 97.0% | 0.0%  | 3.0% | 0.0% | 0.0%  |
| Xipg1  | 94.0% | 1.0%  | 0.0% | 2.0% | 3.0%  |
| Zeam   | 90.0% | 5.0%  | 4.0% | 1.0% | 0.0%  |
| Zeam14 | 89.0% | 3.0%  | 5.0% | 3.0% | 0.0%  |
| tIgE   | 18.0% | 0.0%  | 0.0% | 0.0% | 82.0% |

Explanation: Class 0 - negative (< 0.3 kUA/L); Class 1 – low positivity (0.3-1 kUA/L); Class 2 – moderate positivity (1-5 kUA/L); Class 3 – high positivity (5-15 kUA/L); Class 4 – very high positivity (> 15 kUA/L).

**Table S2.** The detailed analysis of statistic method. **a.** Best reach and frequency by group size-18 allergen reagents, molecular components. **b.** Best reach and frequency by group size-5 allergen reagents, molecular components.

| Variables  | Size | Reach | Frequency | Responses |
|--|------|-------|-----------|-----------|
| <b>a</b>   |      |       |           |           |
| ADDED: Betv1   | 1    | 45    | 45        | 6.1       |
| ADDED: Phlp1<br>KEPT: Betv1  | 2    | 58    | 88        | 11.9      |
| ADDED: Derp2, Phlp5_0101<br>KEPT: Betv1<br>DROPPED: Phlp1  | 3    | 67    | 124       | 16.8      |
| ADDED: Feld1<br>KEPT: Betv1, Derp2, Phlp5_0101   | 4    | 71    | 158       | 21.4      |
| ADDED: Alta1<br>KEPT: Betv1, Derp2, Feld1,<br>Phlp5_0101   | 5    | 74    | 184       | 25.0      |
| ADDED: Canf1, Derf2<br>KEPT: Alta1, Betv1, Feld1,<br>Phlp5_0101<br>DROPPED: Derp2                          | 6    | 75    | 211       | 28.6      |
| ADDED: Phlp1<br>KEPT: Alta1, Betv1, Canf1, Derf2,<br>Feld1, Phlp5_0101                                     | 7    | 75    | 254       | 34.5      |
| ADDED: Derp2<br>KEPT: Alta1, Betv1, Canf1, Derf2,<br>Feld1, Phlp1, Phlp5_0101                              | 8    | 75    | 296       | 40.2      |
| ADDED: Fags1<br>KEPT: Alta1, Betv1, Canf1, Derf2,<br>Derp2, Feld1, Phlp1, Phlp5_0101                       | 9    | 75    | 336       | 45.6      |
| ADDED: Lolp1<br>KEPT: Alta1, Betv1, Canf1, Derf2,<br>Derp2, Fags1, Feld1, Phlp1,<br>Phlp5_0101             | 10   | 75    | 376       | 51.0      |
| ADDED: Cora1.0103<br>KEPT: Alta1, Betv1, Canf1, Derf2,<br>Derp2, Fags1, Feld1, Lolp1, Phlp1,<br>Phlp5_0101 | 11   | 75    | 415       | 56.3      |

|   |    |    |     |      |
|---|----|----|-----|------|
| ADDED: Cora_pollen<br>KEPT: Alta1, Betv1, Canf1,<br>Cora1.0103, Derf2, Derp2, Fags1,<br>Feld1, Lolp1, Phlp1, Phlp5_0101   | 12 | 75 | 451 | 61.2 |
| ADDED: Phlp2<br>KEPT: Alta1, Betv1, Canf1,<br>Cora1.0103, Cora_pollen, Derf2,<br>Derp2, Fags1, Feld1, Lolp1, Phlp1,<br>Phlp5_0101   | 13 | 75 | 483 | 65.5 |
| ADDED: Alng1<br>KEPT: Alta1, Betv1, Canf1,<br>Cora1.0103, Cora_pollen, Derf2,<br>Derp2, Fags1, Feld1, Lolp1, Phlp1,<br>Phlp2, Phlp5_0101  | 14 | 75 | 514 | 69.7 |
| ADDED: Secc_pollen<br>KEPT: Alng1, Alta1, Betv1, Canf1,<br>Cora1.0103, Cora_pollen, Derf2,<br>Derp2, Fags1, Feld1, Lolp1, Phlp1,<br>Phlp2, Phlp5_0101                               | 15 | 75 | 545 | 73.9 |
| ADDED: Cora1.0401<br>KEPT: Alng1, Alta1, Betv1, Canf1,<br>Cora1.0103, Cora_pollen, Derf2,<br>Derp2, Fags1, Feld1, Lolp1, Phlp1,<br>Phlp2, Phlp5_0101, Secc_pollen                   | 16 | 75 | 575 | 78.0 |
| ADDED: Phlp6<br>KEPT: Alng1, Alta1, Betv1, Canf1,<br>Cora1.0103, Cora1.0401,<br>Cora_pollen, Derf2, Derp2, Fags1,<br>Feld1, Lolp1, Phlp1, Phlp2,<br>Phlp5_0101, Secc_pollen         | 17 | 75 | 604 | 82.0 |
| ADDED: Derp23<br>KEPT: Alng1, Alta1, Betv1, Canf1,<br>Cora1.0103, Cora1.0401,<br>Cora_pollen, Derf2, Derp2, Fags1,<br>Feld1, Lolp1, Phlp1, Phlp2,<br>Phlp5_0101, Phlp6, Secc_pollen | 18 | 75 | 632 | 85.8 |
| <b>b</b>  |    |    |     |      |
| ADDED: Canf4  | 1  | 22 | 22  | 4.2  |
| ADDED: Artv, Blag9<br>DROPPED: Canf4  | 2  | 36 | 40  | 7.7  |
| ADDED: Feld7<br>KEPT: Artv, Blag9   | 3  | 43 | 56  | 10.7 |
| ADDED: Cynd<br>KEPT: Artv, Blag9, Feld7   | 4  | 49 | 72  | 13.8 |
| ADDED: Canf4<br>KEPT: Artv, Blag9, Cynd, Feld7  | 5  | 52 | 94  | 18.0 |