What is the CLA® Allergy Test?

Hitachi Chemical Diagnostics' patented CLA chemiluminescent assay technology uses a serum sample and a Pette to simultaneously assay up to 36 of the most common allergens in a specific geographic area. The Pette is a disposable device that contains cellulose threads, each bound with a different allergen or mix of allergens. Patient serum antibodies bind to the specific allergens on the threads. An enzyme-labeled anti-immunoglobulin antibody binds to the patient's antibody. CLA's photoreagent system, when combined with the bound conjugate, gives off a chemiluminescent signal that is read by the CLA -1™ Luminometer reporting semi-quantitative results.

What is Hitachi Chemical Diagnostics' In-house Allergen Standardization Program?

In vitro allergy tests are dependent on the quality of the extracts employed. The in-house Allergen Standardization Program allows Hitachi Chemical Diagnostics to develop a scientifically well-characterized product. Allergen containing materials are usually a mixture of various proteins as well as carbohydrates. Patients can be allergic to either major, minor or both allergenic components. Only a small number of the most common extracts are standardized and characterized by major and minor allergens. Most allergenic extracts are not uniformly characterized or standardized and are subject to great variability in product quality. To assure consistency, safety and diagnostic efficacy, detailed knowledge of the quantity and composition of allergens, preferably major, and when possible, minor, are the best guarantee.

Hitachi Chemical Diagnostics uses different techniques and methodologies in allergen standardization to optimize the quality. The purpose of standardizing and characterizing allergens employed in the CLA Allergy Test is to ensure a consistent presence of the allergenic components on the solid phase of the CLA system.

The Program has also aided in the understanding of allergens that have not been studied in detail and for which information on allergenic proteins was not previously available. It is now possible to provide reproducible lots of the most common allergenic extracts that retain all allergenic proteins, and when needed exclude irrelevant materials under conditions that preserve the biological activity.

To ascertain this consistency and reproducibility, each lot is compared to the blueprint of the established in-house allergen reference standard. A file with detailed information for each allergen is completed for each allergen reference standard. This file is then made available to Hitachi Chemical Diagnostics' Manufacturing group as a quick and easy reference for manufacturing standardized allergens. Upon completion of the standardization of each allergen, a multifunctional team assures transfer and implementation to Manufacturing and Quality Assurance.

To date, more than 50 of the most common allergens in the world have completed the standardization program. This brochure contains information regarding those allergens. Results for the field and in-house clinical studies are reported in comparison to Pharmacia® CAP. For more information about the methods used, see Hitachi Chemical Diagnostics' Monograph, "Allergen Standardization Program."

Why is Allergen Standardization so Important?

The allergen can be one of the major sources of discrepancy in the results between different in vitro diagnostic tests and skin testing and is also one of the main sources of reproducibility problems between lots. By standardizing its allergens in-house, Hitachi Chemical Diagnostics gives the clinical laboratory and referring physicians the best opportunity to obtain reliable and reproducible results.
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Common Name: Mite
Latin Names: 1- Dermatophagoides pteronyssinus (D1)
           2- Dermatophagoides farinae (D2)

Description: House dust mites of the genus Dermatophagoides are associated with symptoms of asthma and rhinitis. Three species, D. pteronyssinus, D. farinea and D. microceras are recognized as important allergen sources in house dust.

Allergenic proteins of mites (with molecular weight):

<table>
<thead>
<tr>
<th>Mite Allergens</th>
<th>MW (kDa)</th>
<th>Function</th>
<th>IgE binding frequency (% sera)</th>
</tr>
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<tr>
<td>Der 1</td>
<td>25</td>
<td>cysteine protease</td>
<td>80 - 100</td>
</tr>
<tr>
<td>Der 2</td>
<td>14</td>
<td>probably lysozyme</td>
<td>80 - 100</td>
</tr>
<tr>
<td>Der 3</td>
<td>28 - 30</td>
<td>Trypsin</td>
<td>70 - 100</td>
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<td>60</td>
<td>Amylase</td>
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<td>Der 5</td>
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<td></td>
<td>40</td>
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<td>Der 6</td>
<td>25</td>
<td>Chymotrypsin</td>
<td>40</td>
</tr>
<tr>
<td>Der 7</td>
<td>22, 26, 28</td>
<td></td>
<td>40</td>
</tr>
<tr>
<td>Der 8</td>
<td></td>
<td>Glutathione transferase</td>
<td>N/A</td>
</tr>
<tr>
<td>Der 9</td>
<td></td>
<td>Collagenolytic serine prot.</td>
<td>N/A</td>
</tr>
<tr>
<td>Der 10</td>
<td>36</td>
<td>Tropomyosin</td>
<td>N/A</td>
</tr>
<tr>
<td>Der 14</td>
<td></td>
<td>Apolipophorin like protein</td>
<td>N/A</td>
</tr>
</tbody>
</table>

However, the most commonly and strongly bound allergens are Group I and Group II.

1- Group I of major mite allergens have been isolated, which includes Der p 1, Der f 1 and Der m 1. These allergens have the same MW (24 kDa) and are structurally homologous. The cDNA and sequence analyses suggest that group I allergens are proteases. These proteins are heat labile and pH sensitive and predominantly extracted in mite feces.

2- Group II of major allergens are Der p 2, Der f 2 and Der m 2 with the MW of 14 to 15 kDa. In contrast with Group I allergens, Group II proteins are heat stable and pH resistant and their physiological function is unknown. Studies showed Group I (25 kDa) found 32 times more than Group II in mite feces. The ratio of Group I to the Group II in the air is about 1.5:1 and in dust is 2:1. Group I allergens from dust mites only become airborne during disturbance and fall rapidly; which is in keeping with their being carried on fecal pellets.

(Continued on next page.)
In-House Clinical Evaluation Results:

*Mite pteronyssinus (D1):*

- Sensitivity: 88%
- Specificity: 100%
- Efficiency: 95%
- Number of Samples: 85

In-House Clinical Evaluation Results:

*Mite farinae (D2):*

- Sensitivity: 91%
- Specificity: 100%
- Efficiency: 96%
- Number of samples: 80

Allergenic proteins for mite farinae (with molecular weight):

<table>
<thead>
<tr>
<th>Mite Allergens</th>
<th>MW (kDa)</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Der f 1</td>
<td>25</td>
<td></td>
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<tr>
<td>Der f 2</td>
<td>14</td>
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</tr>
<tr>
<td>Der f 3</td>
<td>30</td>
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<tr>
<td>Der f</td>
<td>10</td>
<td>tropomyosin</td>
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<tr>
<td>Der f 11</td>
<td>98</td>
<td>paramyosin</td>
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<tr>
<td>Der f 14</td>
<td></td>
<td>apolipophorin</td>
</tr>
</tbody>
</table>

**House Dust (H2)**

House dust is a complex mixture of allergens such as mold, dander, mite and cockroach collected from houses. Hitachi Chemical Diagnostics uses extracts from Hollister-Stier Lab as raw material for this allergen. While mite is considered a major component of house dust, it is not a major component in this extract.

In-House Clinical Evaluation Results:

*House dust (H2):*

- Sensitivity: 100%
- Specificity: 100%
- Efficiency: 100%
- Number of Samples: 27

Note: House dust 1 (H1) is supplied by Greer. Hitachi Chemical Diagnostics does not use this extract.
**Common Name:** Cat Dander  
**Latin Name:** Felis domesticus  
**NCCLS Code:** E1  
**Description:** Allergy to cat is a common cause of asthma and rhinitis. The major allergen in cat dander is a heterodimeric protein, which is composed of two disulfide chains. The major cat allergen is termed Fel d 1. About 10-15 percent of cat allergic patients are also allergic to cat albumin. Patients who are sensitized to albumin also react to Fel d 1. Allergens are present in cat hair as well as cat salivary and lachrymal glands, skin sebaceous glands, and skin sebaceous gland cells.  

**Allergenic Proteins (with molecular weight):**  
- Fel d 1 at 38 kDa; two disulfide chains at 4 kDa and 14 kDa  

**In-House Clinical Evaluation Results:**  
- Sensitivity: 92%  
- Specificity: 94%  
- Efficiency: 93%  
- Number of Samples: 86

---

**Common Name:** Horse Dander  
**Latin Name:** Equus caballus  
**NCCLS Code:** E3  
**Description:** Exposure to horse dandruff is a well-known cause of allergic asthma and rhinitis. Studies show that patients react mostly to horse dandruff, serum proteins or both. Major horse proteins are found in hair or dander and epitheliums.  

**Allergenic Proteins (with molecular weight):**  
- Equ c 1; lipocalin at molecular weight 25 kDa  
- Equ c 2 (Antigen #6); lipocalin at molecular weight of 19 kDa  

**In-House Clinical Evaluation Results:**  
- Sensitivity: 90%  
- Specificity: 100%  
- Efficiency: 92%  
- Number of Samples: 12

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**Common Name:** Cow Dander  
**Latin Name:** Bos taurus  
**NCCLS Code:** E4  
**Description:** Allergy to cow is becoming rare. Today, cow allergy is often work or environmental related. Cow dander, the hair and skin, is an important source of potent allergens responsible for allergic symptoms. Two major allergens have been identified: Bos d 1 and Bos d 2 plus several additional ones.  

**Allergenic Proteins (with molecular weight):**  
- Bos d 4; alpha-lactalbumin at 14.2 kDa; Bos d 5 beta-lactoglobulin at 18.2 kDa;  
- Bos d 2 (Antigen #3), lipocalin at 20 kDa; 22 ~ 25 kDa (Bos d1, Bos d2);  
- 35 ~ 40 kDa; 41 - 46 kDa; Bos d 6, serum albumin at 67 kDa; Bos d 8, caseins at 20-30 kDa  

**In-House Clinical Evaluation Results:**  
- Sensitivity: 95%  
- Specificity: 83%  
- Efficiency: 93%  
- Number of Samples: 27
Common Name: **Dog (Dander/Hair)**  
**Latin Name:** Canis familiaris  
**NCCLS Code:** E5  
**Description:** Allergy to dogs is common and may cause both asthma and rhinitis symptoms. Several important allergens have been identified.

**Allergenic Proteins (with molecular weight):**  
Can f 1 at 25 kDa; Can f 2 at 27 kDa; dog serum albumin (69 kDa)

**In-House Clinical Evaluation Results:**  
Sensitivity: 93%  
Specificity: 100%  
Efficiency: 95%  
Number of Samples: 19

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Common Name: **Feather Mix (Chicken, Duck, Goose)***  
* Note: This mix is characterized and not standardized due to the heterogeneity of the allergen composition of this mixture. Each component is well characterized and the ratio of the various components in the mix is kept constant for consistency purposes.

**Latin Name:** N/A  
**NCCLS Code:** N/A  
**Description:** The allergen profile of feather is not completely known. Some studies indicate true feather allergy is very rare. Many patients react to feather dust, including keratin particles, bird serum, feces, and bird mites and their waste. Patients allergic to feather may react to protein at molecular weight ranges from 17 to >200 kDa. Some patients react to common epitopes in feather and egg yolk and chicken serum albumin (alpha-livetin). Feather Mix may also be contaminated with dust mite particles and endotoxins.

**Allergenic Proteins (with molecular weight):**  
70, 95 and 200 kDa

**In-House Clinical Evaluation Results:**  
Sensitivity: 90%  
Specificity: 100%  
Efficiency: 94%  
Number of Samples: 15
**Common Name:** Egg White  
**Latin Name:** N/A  
**NCCLS Code:** F1  
**Description:** Allergy to egg is one of the most common causes of food allergy in infants and young children. Egg white is often responsible for allergy symptoms. The most allergenic portion of egg white is ovalbumin (Gal d 2) followed by ovomucoid (Gal d 1), ovotransferrin (Gal d 3) and lyzosyme. Ovalbumin and ovomucoid are heat-stable allergens. Ovotransferrin is found in small amounts when eggs are cooked.

**Allergenic Proteins (with molecular weight):**  
Lysozyme, 14 kDa; Ovomucoid, 28 kDa (Gal d 1); Ovalbumin, 43 kDa (Gal d 2); Ovotransferrin, 78 kDa (Gal d 3)

**In-House Clinical Evaluation Results:**  
Sensitivity: 95%  
Specificity: 100%  
Efficiency: 96%  
Number of Samples: 28

**Common Name:** Milk (Cow)  
**Latin Name:** N/A  
**NCCLS Code:** F2  
**Description:** Cow's milk is a major cause of allergy in infants. Cow's milk allergy may be present as asthma, rhino conjunctivitis, dermatitis and gastrointestinal symptoms. Milk contains about 80 percent casein and about 20 percent whey proteins. Casein exists in milk as a colloidal complex with calcium phosphate. Casein is heat-stable. Boiling is known to reduce the allergenicity of the whey proteins. Therefore, heat may reduce allergic reactions to milk in some patients, i.e. patients only allergic to whey proteins. Pasteurization reduces but does not eliminate the allergenicity of the caseins.

Beta-lactoglobulin is a major whey protein. Beta-lactoglobulin is acid-stable and will be absorbed through mucous membranes after ingestion. The allergenicity of beta-lactoglobulin will resist pasteurization.

Another major milk allergen is alpha-lactalbumin, also found in the whey fraction and which contains a single polypeptide chain.

Bovine serum albumin at 69 kDa is found in whey fraction as well and has a single polypeptide chain with a molecular weight of 67 kDa. Colostrum may contain a higher quantity of bovine immunoglobulins.

**Allergenic Proteins (with molecular weight):**  
Bos d 5 (Beta-lactoglobulin, 18.3 kDa); Bos d 8 (Casein fractions (alpha, beta, gamma and delta)), 20-30 kDa; Bos d 4 (Alpha-lactalbumin, 14.2 kDa); Bos d 6 (Serum albumin, 67 kDa); Bos d 7 (immunoglobulin at 160 kDa)

**In-House Clinical Evaluation Results:**  
Sensitivity: 100%  
Specificity: 82%  
Efficiency: 92%  
Number of Samples: 25
**Common Name: Wheat**  
**Latin Name:** Triticum aestivum  
**NCCLS Code:** F4  
**Description:** Allergic reactions to wheat flour may occur by inhalation or ingestion. It is mostly an environmental allergy observed in bakers. Wheat flour is a complex mixture of peptide and saccharide-containing substances that cause an allergic reaction. Major wheat allergens are amylase inhibitors, which are water-soluble. There is high cross reactivity between wheat allergenic protein and other grains. Wheat allergens may also show unspecific cross-reactivity with grass allergens and cause false positive *in vitro* test results in grass allergic patients.

**Allergenic Proteins (with molecular weight):**  
Wheat albumins, 69 kDa; Wheat protein, 38 kDa; Glutenin, 26 kDa; Gliadin, 8-12 kDa

**In-House Clinical Evaluation Results:**  
Sensitivity: 94%  
Specificity: 100%  
Efficiency: 96%  
Number of Samples: 25

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**Common Name: Corn (Maize)**  
**Latin Name:** Zea mays  
**NCCLS Code:** F8  
**Description:** Corn’s major protein is zeins. Zeins are prolamins, a complex group of alcohol-soluble polypeptides. Major corn proteins include Prolamin and Polypeptides initiated at a relatively late stage of seed development. In several mutations of maize, the rate of zein deposition has been altered. Grain cereals from the Poacea family (corn, rice, wheat, Japanese millet and Italian millet) appear to be closely related antigenically.

**Allergenic Proteins (with molecular weight):**  
Zea m 14, lipid transfer protein 9 kDa and Zeins, 19 and 21 kDa

**In-House Clinical Evaluation Results:**  
Sensitivity: 80%  
Specificity: 100%  
Efficiency: 87%  
Number of Samples: 23

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**Common Name: Rice**  
**Latin Name:** Oryza sativa  
**NCCLS Code:** F9  
**Description:** The protein composition of rice grain is 80 percent glutenin, 10 percent globulins, 5 percent albumins and 5 percent prolamins. Rice protein belongs to alpha amylase/trypsin inhibitor family. Most rice, including Japanese rice, contains the allergenic protein. However some Asian strains contain little or none of the major allergenic protein. The major rice allergen is an alpha-amylase inhibitor (Ory s 1).

**Allergenic Proteins (with molecular weight):**  
16 kDa

**In-House Clinical Evaluation Results:**  
Sensitivity: 89%  
Specificity: 100%  
Efficiency: 92%  
Number of Samples: 27
**Common Name:** Peanut  
**Latin Name:** Arachis hypogaea  
**NCCLS Code:** F13  
**Description:** Peanut is one of the most common causes of immediate hypersensitivity reactions to food. The major peanut allergens are Vicilin (Ara h 1), Conglutin ((Ara h 2), and Glycinin (Ara h 3).  
**Allergenic Proteins (with molecular weight):**  
Ara h 5 (profilin, 15 kDa); Ara h 4 (37 kDa); Ara h 2 (17 kDa);  
Ara h 1 (63.5 kDa); Ara h 3 (60 kDa); Ara h 6 (conglutinin homolog, 15 kDa);  
Ara h 7 (conglutinin homolog, 15 kDa)  
**In-House Clinical Evaluation Results:**  
Sensitivity: 100%  
Specificity: 80%  
Efficiency: 96%  
Number of Samples: 24

**Common Name:** Soybean  
**Latin Name:** Glycine max  
**NCCLS Code:** F14  
**Description:** Soybean and peanut are members of the legume family and share several antigenic fractions. Patients allergic to one of those foods might have serum IgE antibodies that are immunologically cross-reactive, however, clinically irrelevant.  
Soybean contains proteins ranging from 14-70 kDa. These proteins are divided into two fractions, globulin and whey fractions. Globulin contains 85 percent protein and whey contains about 10 percent protein. The globulin fraction is a major allergen component and consists of four sub-components: 15S, 11S, 7S and 2S. Vicilin and Conglycinin (Gly m 1) are major allergens. Whey fraction contains different kinds of biological substances, i.e., hemagglutinin, a trypsin inhibitor, and urease.  
**Allergenic Proteins (with molecular weight):**  
Gly m 1.0101 at 7.5 kDa; Gly m 1.0102 at 7 kDa and Gly m 2 at 8 kDa,  
Gly m 3 (profilin) at 14 kDa  
**In-House Clinical Evaluation Results:**  
Sensitivity: 94%  
Specificity: 100%  
Efficiency: 96%  
Number of Samples: 25

**Common Name:** Crab  
**Latin Name:** Cancer magister  
**NCCLS Code:** F23  
**Description:** Crab is a potent food and an inhalant allergen. It is associated with occupational asthma (production plants). Crab shows cross-reactivity with other crustacea (shrimp, lobster, crawfish).  
**Allergenic Proteins (with molecular weight):**  
Tropomyosin: 36 kDa, 14 kDa and 97 kDa  
**In-House Clinical Evaluation Results:**  
Sensitivity: 82%  
Specificity: 100%  
Efficiency: 87%  
Number of Samples: 34
Common Name: **Shrimp**  
Latin Name: *Penaeus sp*  
NCCLS Code: F24  
Description: More than 80 percent of shrimp allergic patients react to Tropomyosin (Pen a 1; Pen i 1; Met e 1), a heat-stable muscle protein of shrimp. A high degree of cross-reactivity is seen amongst all Crustacea.  
Allergenic Proteins (with molecular weight):  
- Major: Pen a1 - tropomyosin 36 kDa; Sall; Additional at: 19, 22, 26, 29 kDa  
In-House Clinical Evaluation Results:  
- Sensitivity: 92%  
- Specificity: 80%  
- Efficiency: 88%  
- Number of Samples: 34

Common Name: **Tomato**  
Latin Name: *Lycopersicon esculentum*  
NCCLS Code: F25  
Description: Tomato belongs to the Nightshade Family. Other vegetables that belong to this family include: bell peppers, cayenne peppers, chili (paprika), eggplants, ground cherry, melon pears, potatoes (white), strawberry tomatoes, tobacco and tree tomatoes. Many studies show that the presence of IgE reactivity to tomato may be caused by cross reactivity to other allergens.  
Allergenic Proteins (with molecular weight):  
- 16 - 18 kDa  
In-House Clinical Evaluation Results:  
- Sensitivity: 88%  
- Specificity: 100%  
- Efficiency: 93%  
- Number of Samples: 28

Common Name: **Pork**  
Latin Name: *Sus scrofa*  
NCCLS Code: F26  
Description: Meat allergies are considered rare. The presence of specific IgE to pork varies between 7-18% in allergic patients. A study of 402 cases of food allergies diagnosed 33 patients with meat allergies. Pork allergies have demonstrated cross sensitization / reactivity to cat epithelia. They share two common proteins at 30 and 67 kDa. In patients with pork/cat reactions, immunoblotting shows a 67 kDa protein, which may be serum albumin. Serum albumin is the major protein associated with meat allergies. Pork serum albumin has also been reported to cross-reactive with beef serum albumin. Other studies have shown IgE-sensitization to actin (40 - 45 kDa) and cross-reactivity between different animal serum albumins.  
Allergenic Proteins (with molecular weight):  
- 30 kDa, 67 kDa, and 40 - 45 kDa  
In-House Clinical Evaluation Results:  
- Sensitivity: 100%  
- Specificity: 87%  
- Efficiency: 93%  
- Number of Samples: 29
Common Name: Beef  
Latin Name: Bos spp  
NCCLS Code: F27  
Description: Clinical sensitivity to beef proteins is not very common. Unique heat-labile allergens may explain why differing responses to rare, medium and well-cooked beef meat are observed. A few milk allergic children may also react to beef because both foods contain bovine serum albumin (BSA) and bovin gammaglobulin (BGG), which are known heat-labile fractions in cow's milk. Allergens present in cow dander and hair are also found in beef meat. Twenty-four protein fractions have been reported in beef. Major beef allergenic proteins are heat labile.

Allergenic Proteins (with molecular weight):  
BSA at 66 kDa; BGG at 60 kDa; Meat protein at 17.8 kDa react to raw and well cooked meat.

In-House Clinical Evaluation Results:  
Sensitivity: 92%  Specificity: 100%  
Efficiency: 96%  Number of Samples: 23

Common Name: Carrot  
Latin Name: Daucus carota  
NCCLS Code: F31  
Description: Carrot belongs to the Apiaceae family. Other vegetables and spices in this family are: Anise, Caraway, Celery, Celeriac, Dill, Fennel, Parsley and Parsnip.

IgE mediated reactions after ingestion of fresh fruit and/or vegetables are often associated with pollens, which are called "Birch-Fruit-Vegetable reaction." According to many studies, more than 90 percent of patients who are positive to Birch pollen and Mugwort showed positive reactions to a variety of raw fruits and vegetables including carrot and or celery.

Some studies suggest the cross reactivity of pollen and some fruits and vegetables could be attributed to common epitopes in fruit, vegetable and pollen antigens, i.e. profyllins.

Allergenic Proteins (with molecular weight):  
Dau c 1 - approximately 18 kDa

In-House Clinical Evaluation Results:  
Sensitivity: 83%  Specificity: 100%  
Efficiency: 90%  Number of Samples: 28
Common Name: **Potato**  
Latin Name: Solanum tuberosum  
NCCLS Code: F35  
Description: Potato (white) is from the Nightshade family. Other members of this family are bell peppers, cayenne peppers, chili (paprika), eggplant, ground cherry, melon pear, strawberry tomato, tobacco and tree tomato. The major allergen is patatin (Sola t 1).

Allergenic Proteins (with molecular weight):
- Sola t 1 at 43 kDa

In-House Clinical Evaluation Results:
- Sensitivity: 90%  
- Specificity: 100%  
- Efficiency: 92%  
- Number of Samples: 27

Common Name: **Tuna (Yellow Fin)**  
Latin Name: Thunnus albacares  
NCCLS Code: F40  
Description: Tuna, one of the most frequently consumed fish worldwide, belongs to the Sombridae family of mackerels. Yellow Fin and Albacore are common commercial species.

Allergenic Proteins (with estimated molecular weight):
At the time of standardization, no published clinical food challenge was performed to determine the specific allergenic proteins to tuna. The following is a list of Western Blot positive results to tuna: 230 kDa, 150 kDa, 66 kDa, 46 kDa, 35 kDa, 32 kDa, 31 kDa and 14 kDa.

In-House Clinical Evaluation Results:
- Sensitivity: 100%  
- Specificity: 100%  
- Efficiency: 100%  
- Number of Samples: 13

Common Name: **Salmon (Atlantic)**  
Latin Name: Salmo salar  
NCCLS Code: F41  
Description: Salmon is from the Salmonidea family. Other fish in this group include Grayling, Trout and White. Fish from the salmon family (Salmonids) have serum albumin that is homologous to the serum albumin with a molecular mass similar to human serum albumin. The molecular weights of proteins in salmon range from 14 to 170 kDa and serum albumin (65 - 68 kDa). The major salmon allergen is parvalbumin (Sal s 1).

Allergenic Proteins (with molecular weight):
- Sal s 1 at 12 kDa

In-House Clinical Evaluation Results:
- Sensitivity: 100%  
- Specificity: 100%  
- Efficiency: 100%  
- Number of Samples: 32
Common Name: **Strawberry**  
**Latin Name:** Fragaria ananssa  
**NCCLS Code:** F44  
**Description:** Strawberry is a member of the Rose family. Other members include Blackberry, Boysenberry, Dewberry, Loganberry and Raspberry. Strawberries are known to produce allergic symptoms but allergenic constituents have not been identified. Polypeptide protein has been found in the ripening stage of strawberry.  
**Allergenic Proteins (with molecular weight):**  
- 30 kDa and 40 kDa  
**In-House Clinical Evaluation Results:**  
- Sensitivity: 90%  
- Specificity: 100%  
- Efficiency: 91%  
- Number of Samples: 12

Common Name: **Apple (Golden Delicious)**  
**Latin Name:** Malus pumila  
**NCCLS Code:** F49  
**Description:** The Golden Delicious Apple is one of the most common varieties produced in the United States and Europe. It is commonly used to make cider. Allergy to Apple is common in people with Birch allergy. The major apple allergen is a pathogenesis-related protein (Mal d 1) and profilin (Mal d 2) structurally related to the birch pollen allergens Bet v 1 and Bet v 2. Recently, a third major allergen has been identified, a 9 kDa lipid transfer protein (Mal d 3) recognized by patients allergic to apple without birch pollinosis.  
**Allergenic Proteins (with molecular weight):**  
- 9 kDa; 14 kDa (Mal d 2); 18 kDa (Mal d 1), 30 kDa (thauamatin), 40 kDa, 60 kDa and 67 kDa  
**In-House Clinical Evaluation Results:**  
- Sensitivity: 86%  
- Specificity: 100%  
- Efficiency: 93%  
- Number of Samples: 28
Common Name: **Egg Yolk**  
Latin Name: Gallus gallus  
NCCLS Code: F75  
**Description:** Some cases of egg allergy in adults are a result of inhalant sensitization from inhaling bird antigens. The simultaneous sensitization to avian feathers, sera, or droppings and to chicken egg yolk is termed the "Bird-Egg Syndrome." It is assumed that α-livetin (chicken serum albumin) leads to the cross-sensitization and consequently to "Bird-Egg Syndrome." Egg yolk has been found to contain allergens different from egg white. Three proteins, apovitellenins I & VI and phosvitin have been shown to bind IgE in sera of persons with specific IgE to egg yolk.

**Allergenic Proteins (with molecular weight):**  
- 9 kDa (apovitellin I)  
- 20 kDa (apovitellin II)  
- 33 kDa (ovotransferrin)  
- 42 kDa (B-livetin)  
- 45 kDa (ovalbumin)  
- 70 kDa (α-livetin, chicken serum albumin)  
- 78 kDa (ovomucoid)  
- 150 kDa (γ-livetin)  
- 170 kDa (apovitellin VI)

**In-House Clinical Evaluation Results:**  
- Sensitivity: 89%  
- Specificity: 100%  
- Efficiency: 95%  
- Number of Samples: 22

Common Name: **Casein**  
Latin Name: N/A  
NCCLS Code: F78  
**Description:** Casein is one of the major fractions in milk allergen. Casein fractions are alpha, beta, gamma and delta. Approximately 60 percent of patients with allergies to milk respond to casein fractions.

**Allergenic Proteins (with molecular weight):**  
- 18 to 30 kDa

**In-House Clinical Evaluation Results:**  
- Sensitivity: 100%  
- Specificity: 77%  
- Efficiency: 88%  
- Number of Samples: 25
Common Name: **Cheddar Cheese**  
**Latin Name:** N/A  
**NCCLS Code:** F81  
**Description:** Major cheese antigenic proteins may be caused by casein fractions (alpha, beta, gamma) in milk. Milk proteins are subdivided into two fractions, casein and whey. Casein fractions represent more than 80 percent of mass in milk. Whey proteins are naturally separated from the casein fractions during the cheese making process.  

Usually the consumption of whole milk decreases in adults, but a comparable high intake of casein-enriched product cheese increases. The quality of cheese may change by the composition of casein, maturity and ripening. There are different strains of lactic acid bacteria that can be isolated from different kinds of cheese including cheddar cheese.

**Allergenic Proteins (with molecular weight):**  
18 - 30 kDa  
**In-House Clinical Evaluation Results:**  
Sensitivity: 88%  
Specificity: 100%  
Efficiency: 95%  
Number of Samples: 18

Common Name: **Chicken**  
**Latin Name:** Gallus domesticus  
**NCCLS Code:** F83  
**Description:** Allergic reactions to chicken occur in children with about two percent frequency. Chicken allergies have been connected with allergy to eggs ("Bird-Egg" and "Egg-Bird Syndrome"). IgE from patients with "Bird-Egg Syndrome" recognize a 66 - 70 kDa protein in egg yolk (chicken serum albumin = alpha livetin) and some major allergens in bird feather extract (70, 95 and 200 kDa). In general, serum albumin is the major protein associated with chicken meat allergies. Other studies have shown sensitization to actin (40 - 45 kDa) and cross-reactivity between different animal serum albumins.

**Allergenic Proteins (with molecular weight):**  
Gal d 1 (ovomucoid 28 kDa); Gal d 2 (ovalbumin 44 kDa);  
Gal d 3 (conalbumin (Ag22) 78 kDa); Gal d 4 (lysozyme 14 kDa);  
Gal d 5 (serum albumin 69 kDa)  
**In-House Clinical Evaluation Results:**  
Sensitivity: 92%  
Specificity: 100%  
Efficiency: 95%  
Number of Samples: 28
Common Name: Celery
Latin Name: Apium graveolens
NCCLS Code: F85
Description: Celery belongs to the Apiaceae family. Many studies indicate that a high percentage of patients with birch pollen showed hypersensitivity after ingesting celery and other vegetables and fruit. The protein that cross reacts with celery is birch major protein Bet v 1. Other important allergens are pathogenesis-related protein Api g 1 (Bet v 1 homologue) and profilin Api g 4.

Allergenic Proteins (with molecular weight):
- Api g 1 (Apium graveolens) at 16 - 18 kDa
- Api g 4 (profilin)
- Api g 5 at 55/58

In-House Clinical Evaluation Results:
- Sensitivity: 80%
- Specificity: 100%
- Efficiency: 89%
- Number of Samples: 28

Common Name: Banana
Latin Name: Musa spp.
NCCLS Code: F92
Description: There are 14 allergens in banana extract. Some studies show cross reactivity between patients with pollens (ragweed) and banana (banana-pollinosis relationship), and melon and banana. Many studies also showed an association between allergy to latex and banana. It has been reported that there is no existence of structural similarity between latex and banana. However, the cross reactivity between banana and latex allergens may be clinically important.

Allergenic Proteins (with molecular weight):
- 30 - 37 kDa

In-House Clinical Evaluation Results:
- Sensitivity: 93%
- Specificity: 100%
- Efficiency: 96%
- Number of Samples: 23

Common Name: Peach
Latin Name: Prunus persica
NCCLS Code: F95
Description: Peach is a member of the Plum family. Other members include almond, apricot, cherry and nectarine. A majority of patients with allergies to peach have symptoms to non-peeled peaches. The most antigenic proteins are shown in ripe peaches. There is high cross reactivity among grass pollen and many fruits including peach. A major allergen of peach is a 9 kDa lipid transfer protein, also found in apple (Mal d 3) and recognized by patients without birch pollinosis. Patients allergic to birch and apple also react to 18-and 14 kDa proteins in peach, corresponding to the Mal d 1 and Mal d 2 allergens.

Allergenic Proteins (with molecular weight):
- Pru p 3 at 10 kDa
- 17 - 18 kDa
- 30 - 37 kDa

In-House Clinical Evaluation Results:
- Sensitivity: 94%
- Specificity: 100%
- Efficiency: 96%
- Number of Samples: 26
Common Name: Squash Mix
Mix Includes: Zucchini (Cucurbita pepo), Acorn Squash (Cucurbita pepo) and Banana Squash (Cucurbita maxima)
NCCLS Code: N/A
Description: Squash is from the Gourd (Melon) family. Other members of this family include cantaloupe, casaba, Chinese watermelon, citrus melon, cucumber, gherkin, honeydew melon, Persian melon, pumpkin, summer squash, watermelon and winter squash.
Allergenic Proteins (with molecular weight):
30 - 43 kDa
In-House Clinical Evaluation Results:
  Sensitivity: 100%  Specificity: 100%
  Efficiency: 100%  Number of Samples: 25

Common Name: Clam
Latin Name: Tapes philippinarum
NCCLS Code: F207
Description: Clam is a member of the Mollusks family. Other members include abalone, cockle, mussel, octopus, oyster, quahog, scallops, snail (escargot) and squid.
Allergenic Proteins (with molecular weight):
30 - 37 kDa
In-House Clinical Evaluation Results:
  Sensitivity: 100%  Specificity: 91%
  Efficiency: 95%  Number of Samples: 21

Common Name: Mushroom
Latin Name: Pleurotus ostreatus
NCCLS Code: F212
Description: Mushroom is a member of the Fungi family. Other members include truffle (edible fungus growing under ground) and yeast. More than 13 varieties of mushrooms exist. The most common include Button, Shiitake, Common, Straw, Oyster and Enokitake. All varieties of edible mushrooms have the same antigenic protein. The amount of proteins in all mushrooms depends on the stage of body ripening.
Allergenic Proteins (with molecular weight):
  Different varieties are approximately 17 - 22 kDa and 44 - 46 kDa
In-House Clinical Evaluation Results:
  Sensitivity: 94%  Specificity: 100%
  Efficiency: 96%  Number of Samples: 20
Common Name: **Sweet Vernal**  
Latin Name: Anthoxa odoratum  
NCCLS Code: G1  
Description: Sweet Vernal grass grows in pasture areas low in fertility and/or pH. It is the plant that gives hay a sweet smell. Introduced to the United States from Europe, it is a grass of the early spring (thus "vernal grass"). Its sweet fragrance is reported to come from cumarin in the tissues, an anticoagulant used in medicine to reduce blood clotting. The major grass allergen is termed Ant a 1.

Allergenic Proteins (with molecular weight):  
GPI - 20 kDa, 29 kDa, 31 kDa, 50 kDa, 60 kDa, and 65 kDa

In-House Clinical Evaluation Results:  
Sensitivity: 97%  Specificity: 100%  
Efficiency: 97%  Number of Samples: 35

Common Name: **Bermuda Grass**  
Latin Name: Cynodon dactylon  
NCCLS Code: G2  
Description: Bermuda grass is a common grass used for lawns, residential and commercial landscapes, sport fields, and golf courses. It is an inhalant and grows best in warm climates. The major Bermuda grass allergen is termed Cyn d 1.

Allergenic Proteins (with molecular weight):  
BG60, 60 kDa; Cyn d 1 32 kDa; Cyn d 7 and Cyn d 12 (profilin at 14 kDa)

In-House Clinical Evaluation Results:  
Sensitivity: 100%  Specificity: 100%  
Efficiency: 100%  Number of Samples: 16

Common Name: **Timothy Grass**  
Latin Name: Phleum pratense  
NCCLS Code: G6  
Description: Timothy grass, an inhalant allergen, produces allergy-provoking pollen. The group 5 and 1 major allergens cross-react extensively with a number of related grass species (e.g., Rye, Meadow Fescue, Orchard grass, Kentucky Blue Grass, Redtop, Sweet Vernal) except from Bermuda grass.

Allergenic Proteins (with molecular weight):  
Phl p 1, 30 kDa (group 1); Phl p 4, 50 - 60 kDa and 46 - 97 kDa (group 4); Phl p 3, 32, 38 kDa (group 5); Phl p 6, 13 kDa (group 6) 10 - 14 kDa (group 2-3)

In-House Clinical Evaluation Results:  
Sensitivity: 97%  Specificity: 83%  
Efficiency: 95%  Number of Samples: 41 patients
Common Name: **Kentucky Blue Grass**  
Latin Name: Poa pratensis  
NCCLS Code: G8  
Description: Kentucky Blue Grass, an inhalant allergen commonly found in residential and commercial lawns, is a cool season grass, which grows well in cool, humid, semi-arid and temperate regions. The major allergens are termed Poa 1,2,3,4,5.

Allergenic Proteins (with molecular weight):
- Gpl 27 kDa; Poa p 1a 35.8 kDa; Poa p 1b 33 kDa; Poa p 1x 55 kDa, 36 kDa, 34 kDa, 32 kDa, 29/28 kDa, 12 kDa

In-House Clinical Evaluation Results:
- Sensitivity: 100%  
- Specificity: 100%  
- Efficiency: 100%  
- Number of Samples: 15

Common Name: **Rye, Cultivated**  
Latin Name: Secale cereale  
NCCLS Code: G12  
Description: The earliest seed of cultivated rye found in mid-Europe came from the Hallstatt period (1000 - 500 B.C.). Rye is considered a Northern European cereal and is produced in Poland, Germany and the former Soviet Union. It is grown for bread flour and usually mixed with wheat. There is cross-reactivity between rye and wheat. Rye-specific IgE and IgG4 have been found in Bakers with clinical symptoms of Baker’s Asthma. Major allergens are termed Lol p 1,2,3,4, and 5.

Allergenic Proteins (with molecular weight):
- 29 kDa, 31 kDa, 46 kDa, 60 kDa, 65 kDa and 100 kDa

In-House Clinical Evaluation Results:
- Sensitivity: 100%  
- Specificity: 100%  
- Efficiency: 100%  
- Number of Samples: 35
Common Name: **German Cockroach**
Latin Name: Blattella germanica
NCCLS Code: I6
Description: In the United States, the principal domiciliary cockroach species are German (B. germanica) and American (P. americana) cockroaches. In the United States patients are often sensitized to German cockroach. In other parts of the world, including Japan, Taiwan and Brazil, American Cockroach is prevalent. The only cross-reactive allergens that have been identified to date are Bla g 1 and Per a 1. Generally the allergens are species specific. Cockroach whole bodies and feces are important sources of allergens in the induction of bronchial asthma.

**Allergenic Proteins (with molecular weight):**
- 36 kDa - Bla g 2 (aspartic protease); Bla g 1 (Bd90k); Bla g 4 (calycin at 21 kDa); Bla g 5 (glutathione transf. At 22 kDa); Bla g 6 (troponin C at 27 kDa).

**In-House Clinical Evaluation Results:**
- Sensitivity: 91%
- Specificity: 100%
- Efficiency: 93%
- Number of Samples: 30

Common Name: **Cockroach Mix (American and German)**
Latin Name: Blattella germanica and Periplaneta americana
NCCLS Code: N/A
Description: Both species of cockroach are insect allergens and are important sources for the induction / exacerbation of bronchial asthma.

**Allergenic Proteins (with molecular weight):**
- 25 kDa - Bla g 5; 50 kDa; 92 kDa; 36 kDa - Bla g 1; 60 kDa; 46 kDa; 67 kDa

**In-House Clinical Evaluation Results:**
- Sensitivity: 91%
- Specificity: 86%
- Efficiency: 90%
- Number of Samples: 30

Common Name: **Ragweed Mix I**
Latin Name: (Ambrosia trifida & Ambrosia elatior)
NCCLS Code: N/A
Description: Ragweed mix is a weed pollen mix and includes giant and short ragweed. The major short ragweed allergen is termed Amb a 1.

**Allergenic Proteins (with molecular weight):**
- Amb a 1 (Antigen E at 38 kDa; Amb a 2 (antigen K at 38 kDa);
- Amb a 3 (Ra3 at 11 kDa); Amb a 5 (Ra5 at 5 kDa); Amb a 6 (Ra6 at 10 kDa);
- Amb a 7 (Ra7 at 12 kDa); Amb t 5 (Ra5G at 4.4 kDa)

**In-House Clinical Evaluation Results:**
- Sensitivity: 100%
- Specificity: 89%
- Efficiency: 97%
- Number of Samples: 31
Common Name: **Penicillium**  
**Latin Name:** Penicillium notatum  
**NCCLS Code:** M1  
**Description:** Penicillium, a soft greenish-blue mold, looks like a paintbrush under a microscope. The Latin word for paintbrush is penicillus. Penicillium notatum produces a substance, penicillin. Molds grow and produce their spore wherever there is enough moisture and nutrients. They exist in the air we breathe, on surfaces we touch, and flourish within our buildings and homes. The most common allergy symptoms associated with IgE-mediated allergy to molds include asthma and rhinitis.  
**Allergenic Proteins (with molecular weight):**  
- Pen n 13 (alkaline serine proteinase at 34 kDa); Pen n 18 (vacuolar serine proteinase at 32 kDa); Pen n 20 (N-acetyl glucosaminidase at 32 kDa)  
**In-House Clinical Evaluation Results:**  
- Sensitivity: 85%  
- Specificity: 100%  
- Efficiency: 88%  
- Number of Samples: 33

Common Name: **Cladosporium**  
**Latin Name:** Cladosporium herbarum  
**NCCLS Code:** M2  
**Description:** The mold Cladosporium herbarum is an important cause of allergic asthma and is widely distributed around the world. Cladosporium found indoors may be different than the species collected outdoors. A wide variety of plants are food sources for this fungus.  
**Allergenic Proteins (with molecular weight):**  
- Cla h 1 at 13 kDa (Ag-32), Cla a h 2 at 23 kDa (Ag-54), Cla h 3 (aldehyde dehydrogenase at 53 kDa); Cla h 4 (acid. Ribosomal prot P2 at 11 kDa); Cla h 5 (YCP4 protein at 22 kDa); Cla h 6 (enolase at 46 kDa); Cla h 12 (acid.ribosomal prot P1 at 11 kDa)  
**In-House Clinical Evaluation Results:**  
- Sensitivity: 82%  
- Specificity: 100%  
- Efficiency: 87%  
- Number of Samples: 23

Common Name: **Aspergillus**  
**Latin Name:** Aspergillus fumigatus  
**NCCLS Code:** M3  
**Description:** Most cases of allergic bronchopulmonary aspergillosis are caused by aspergillus fumigatus. Approximately 18 allergenic proteins have been identified.  
**Allergenic Proteins (with molecular weight):**  
- Lysozyme, 14 kDa; Asp f 1, 18 kDa; Asp f 2, 37 kDa  
**In-House Clinical Evaluation Results:**  
- Sensitivity: 100%  
- Specificity: 83%  
- Efficiency: 100%  
- Number of Samples: 24
Common Name: **Candida**  
Latin Name: Candida albicans  
NCCLS Code: M5  
Description: Candida albicans is found on mucosal surfaces and is apathogenic in most subjects. Patients with atopic dermatitis may develop IgE-antibodies against several allergens present in the mold. It has been suggested that this may cause exacerbation in atopic dermatitis. The allergen has not been demonstrated to be an inhalant allergen.

Allergenic Proteins (with molecular weight):  
21 kDa, 27 kDa, Cand a 1 at 40 kDa; 46 kDa (enolase)

In-House Clinical Evaluation Results:  
Sensitivity: 100%  Specificity: 86%  
Efficiency: 95%  Number of Samples: 22

Common Name: **Alternaria**  
Latin Name: Alternaria, alternata tenus  
NCCLS Code: M6  
Description: An important inhalant mold allergen that induces IgE mediated allergic disease in about 20 percent of atopic individuals. More than 80 percent of sensitized patients tested will respond to the major allergen termed Alt a 1, which exists as a dimer with a molecular weight of 28 kDa.

Allergenic Proteins (with molecular weight):  
Major proteins include: Alt a 1 28 kDa - 14.5 kDa, 18 kDa; Alt a 2 25 kDa; Alt a 3 85 kDa; Alt a 4 57 kDa; Alt a-5 30 kDa; and several minor proteins.

In-House Clinical Evaluation Results:  
Sensitivity: 94%  Specificity: 100%  
Efficiency: 95%  Number of Samples:
Common Name: **Box Elder**  
Latin Name: Acer negundo  
NCCLS Code: T1  
Description: Box Elder, a tree pollen allergen, is a common aeroallergen during springtime in the United States.  
Allergenic Proteins (with molecular weight):  
N/A  
In-House Clinical Evaluation Results:  
Sensitivity: 92%  
Specificity: 82%  
Efficiency: 89%  
Number of Samples: 36

Common Name: **Black Alder**  
Latin Name: Alnus glutinosa  
NCCLS Code: T2  
Description: Black Alder trees grow mostly in moist areas in Northern Europe and pollinate February through April. It is highly cross-reactive with birch pollen (Bet v 1 and Bet v 2 allergens).  
Allergenic Proteins (with molecular weight):  
19 kDa - major allergen; 14 kDa, 16 kDa, 35 kDa, 46 kDa, 66 kDa  
In-House Clinical Evaluation Results:  
Sensitivity: 92%  
Specificity: 100%  
Efficiency: 93%  
Number of Samples: 29

Common Name: **White Birch**  
Latin Name: Betula verrucosa  
NCCLS Code: T3  
Description: Birch pollen is a major cause of pollinosis and is responsible for oral allergy symptoms to cross-reactive fruits, nuts and vegetables. Several major allergens, Bet v 1, and three minor allergens, Bet v 2, Bet v 3, and Bet v 4 have been cloned and extensively characterized. Bet v 1 is the most important birch pollen allergen causing immediate IgE-mediated allergy in more than 95 percent of birch allergies. This allergen also cross-reacts extensively with other Fagales (alder, hornbeam, hazel, oak) pollens. Another minor birch pollen protein, Bet v 5 was found to be associated with pollen-related oral allergy to specific foods in a minority of patients with birch pollen allergy.  
Allergenic Proteins (with molecular weight):  
Bet v 1 = 17 kDa; Bet v 2 = 12-14 kDa; Bet v 4 = 8-9 kDa; Bet v 5 = 33 kDa  
In-House Clinical Evaluation Results:  
Sensitivity: 98%  
Specificity: 91%  
Efficiency: 95%  
Number of Samples: 117
Common Name: **Hazelnut**  
Latin Name: Corrylus avellana  
NCCLS Code: T4  
Description: Hazelnut pollen (corrylus avellana) extract contains at least 40 distinct antigens. There is cross reactivity between mugwort, and hazelnut and also with birch (Bet.v 1) and hazelnut (cor a 1). Cross reactivity also occurs between hazelnut and some fruits and vegetables.  
Allergenic Proteins (with molecular weight):  
- Cor a 1 at 17 kDa  
In-House Clinical Evaluation Results:  
- Sensitivity: 94%  
- Specificity: 100%  
- Efficiency: 96%  
- Number of Samples: 15

Common Name: **American Beech**  
Latin Name: Fagus Grandifolia  
NCCLS Code: T5  
Description: American Beech, a tree pollen allergen causing inhalant allergy.  
Allergenic Proteins (with molecular weight):  
- 17 kDa (major); 13 kDa, 36 kDa, 70 kDa, 44 kDa, 53 kDa  
In-House Clinical Evaluation Results:  
- Sensitivity: 100%  
- Specificity: 89%  
- Efficiency: 96%  
- Number of Samples: 27

Common Name: **Mountain Cedar**  
Latin Name: Juniperus sabinoides (ashei)  
NCCLS Code: T6  
Description: Mountain Cedar is an evergreen tree with shredding bark found in the central plateaus of Texas and areas of Oklahoma, Arkansas and Northern Mexico. The pollen is responsible for allergic rhinitis in sensitive individuals.  
Allergenic Proteins (with molecular weight):  
- Jun a 1 at 43 kDa, 33 kDa and 28 kDa; Jun a 3 at 30 kDa, 32 kDa, 37 kDa and 39 kDa  
In-House Clinical Evaluation Results:  
- Sensitivity: 86%  
- Specificity: 100%  
- Efficiency: 90%  
- Number of Samples: 20

Common Name: **London Planetree**  
Latin Name: Platanus acerifolia  
NCCLS Code: T11  
Description: London Planetree pollen is also called Oriental Sycamore and Maple leaf Sycamore. The tree is hybrid. Flower heads usually appear in racemes of two. The major antigenic protein is a glycoprotein.  
Allergenic Proteins (with molecular weight):  
- 20 - 22 kDa  
In-House Clinical Evaluation Results:  
- Sensitivity: 95%  
- Specificity: 100%  
- Efficiency: 96%  
- Number of Samples: 27
Common Name: **Short Ragweed**  
**Latin Name:** Ambrosia elatior  
**NCCLS Code:** W1  
**Description:** Short Ragweed, a weed pollen allergen, are homely wildflowers. Among all pollen allergens, including trees and grasses, ragweed pollen affects the most people. Common symptoms include rhinoconjunctivitis, sneezing, red and itchy eyes, and running nose.  
**Allergenic Proteins (with molecular weight):** *  
Amb a 1, Amb a 4, Amb a 5, Amb a 3  
**In-House Clinical Evaluation Results:**  
Sensitivity: 100%  
Specificity: 89%  
Efficiency: 97%  
Number of Samples: 31  
*Look above for a complete list of allergens*

Common Name: **Giant Ragweed**  
**Latin Name:** Ambrosia trifida  
**NCCLS Code:** W3  
**Description:** Giant Ragweed, a weed pollen allergen, blooms in mid-August and lasts until October. Symptoms include sneezing, red and itchy eyes, sore throat and running nose.  
**Allergenic Proteins (with molecular weight):**  
Amb t 5 (Ra5G at 4.4 kDa).  
**In-House Clinical Evaluation Results:**  
Sensitivity: 100%  
Specificity: 100%  
Efficiency: 100%  
Number of Samples: 31

Common Name: **Mugwort**  
**Latin Name:** Artemisia vulgaris  
**NCCLS Code:** W6  
**Description:** Mugwort, a tall plant or weed, is found in damp environments in many parts of the world. It was commonly used to flavor beer before the introduction of hops.  
**Allergenic Proteins (with molecular weight):**  
12 kDa, 17 kDa, 20 kDa (Art 7 (Does not bind IgE after transfer)), 22 kDa, Art v 1 27-29 kDa, Art v 2 at 35 kDa, 39 kDa, 42, kDa  
**In-House Clinical Evaluation Results:**  
Sensitivity: 100%  
Specificity: 100%  
Efficiency: 100%  
Number of Samples: 28
Common Name: **English Plantain**  
**Latin Name:** Plantago lanceolata  
**NCCLS Code:** W9  
**Description:** English Plantain is a perennial weed pollen with one to several rosettes. The relative importance of Plantago lanceolata in provoking allergic reactions has been debated since the early 20th century. Pollen from this plant has been widely reported to cause hay fever and asthma. It is found in urban as well as rural areas and has a pollen season lasting from May to October.  
**Allergenic Proteins (with molecular weight):**  
Pla 1 1 at 18 kDa, 20 kDa, 40 kDa, 46 kDa, 70 kDa  
**In-House Clinical Evaluation Results:**  
Sensitivity: 100%  
Specificity: 86%  
Efficiency: 96%  
Number of Samples: 28

Common Name: **Lamb's Quarters**  
**Latin Name:** Chenopodium album  
**NCCLS Code:** W10  
**Description:** Inhalation of pollens from various species of Chenopodiales is an important cause of pollinosis.  
**Allergenic Proteins (with molecular weight):**  
14 kDa, 35 kDa, 40 kDa, 70 kDa  
**In-House Clinical Evaluation Results:**  
Sensitivity: 95%  
Specificity: 100%  
Efficiency: 96%  
Number of Samples: 24

Common Name: **Burning Bush**  
**Latin Name:** Kochia scoparia  
**NCCLS Code:** W17  
**Description:** Pollen from Burning Bush, or Firebrush, is a cause of pollenosis in Central and Southern Europe and the Western United States.  
**Allergenic Proteins (with molecular weight):**  
14 kDa, 25 kDa, 28 kDa, 30 kDa, 35 kDa, 38 kDa, 50 kDa, 62 kDa  
**In-House Clinical Evaluation Results:**  
Sensitivity: 97%  
Specificity: 100%  
Efficiency: 97%  
Number of Samples: 38
Common Name: **Pellitory, Wall**  
Latin Name: Parietaria judaica  
NCCLS Code: W21  
Description: One of the most common causes of allergy in Southern and Western Europe is the pollen of Pellitory (Parietaria). Several species are widely distributed around the Mediterranean region. The most antigenic species are Parietaria officinalis and Parietaria judaica. P. judaica has a higher allergenic potency than P. officinalis. Studies show both species are antigenically and allergically cross-reactive. Additionally, P. judaica showed a group of allergenic proteins not detected in P. officinalis. The major allergens are Par o 1 and Par j 1, glycoproteins of 10-12 and 14.5 kDa, respectively. Par o 1 and Par j 1 are highly cross-reactive.  

**In-House Allergenic Proteins (with molecular weight):**  
Par j at 10 kDa  

**Clinical Evaluation Results:**  
- Sensitivity: 92%  
- Specificity: 100%  
- Efficiency: 95%  
- Number of Samples: 21
<table>
<thead>
<tr>
<th>Allergen</th>
<th>Page</th>
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<tbody>
<tr>
<td>Apple (Golden Delicious) (F49)</td>
<td>11</td>
</tr>
<tr>
<td>Alternaria (M6)</td>
<td>20</td>
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<tr>
<td>American Beech (T5)</td>
<td>22</td>
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<tr>
<td>Aspergillus (M3)</td>
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<tr>
<td>Banana (F92)</td>
<td>14</td>
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<td>Beef (F27)</td>
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<td>Bermuda Grass (G2)</td>
<td>16</td>
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<tr>
<td>Black Alder (T2)</td>
<td>21</td>
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<tr>
<td>Box Elder (T1)</td>
<td>21</td>
</tr>
<tr>
<td>Burning Bush (W17)</td>
<td>24</td>
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<tr>
<td>Candida (M5)</td>
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<tr>
<td>Carrot (F31)</td>
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<td>Casein (F78)</td>
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<tr>
<td>Cat Dander (E1)</td>
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<tr>
<td>Celery (F85)</td>
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<td>Cheddar Cheese (F81)</td>
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<td>Chicken (F83)</td>
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<td>Cladosporium (M2)</td>
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<tr>
<td>Clam (F207)</td>
<td>15</td>
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<tr>
<td>Cockroach Mix (N/A)</td>
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<td></td>
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<tr>
<td>(American and German)</td>
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<tr>
<td>Corn (Maize) (F8)</td>
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<tr>
<td>Cow Dander (E4)</td>
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<td>Crab (F23)</td>
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<td>Dog (E5)</td>
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<td>Egg White (F1)</td>
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<td>Egg Yolk (F75)</td>
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<td>English Plantain (W9)</td>
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<td>Feather Mix (N/A)</td>
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<td>German Cockroach (I6)</td>
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<td>Giant Ragweed (W3)</td>
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<td>Hazel Nut (T4)</td>
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<td>Horse Dander (E3)</td>
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<td>House Dust (H2)</td>
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<td>Kentucky Blue Grass (G8)</td>
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<td>Lamb’s Quarters (W10)</td>
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<td>London Planetree (T11)</td>
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<td>Milk (Cow) (F2)</td>
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<td>Mite (D1, D2)</td>
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<td>Mountain Cedar (T6)</td>
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<td>Mugwort (W6)</td>
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<td>Mushroom (F212)</td>
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<td>Peach (F95)</td>
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<td>Pellitory, Wall (W21)</td>
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<td>Penicillium (M1)</td>
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<td>Peanut (F13)</td>
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<td>Pork (G26)</td>
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<td>Ragweed Mix I (N/A)</td>
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<td>Rice (F9)</td>
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<td>Rye, Cultivated (G12)</td>
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<td>Salmon (Atlantic) (F41)</td>
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<td>Short Ragweed (W1)</td>
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<td>Shrimp (F24)</td>
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<td>Soybean (F14)</td>
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<td>Squash Mix (N/A)</td>
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<td>Strawberry (F44)</td>
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<td>Sweet Vernal (G1)</td>
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<td>Timothy Grass (G6)</td>
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<td>Tomato (F25)</td>
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<td>Tuna (Yellow Fin) (F40)</td>
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<td>Wheat (F4)</td>
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<tr>
<td>White Birch (T3)</td>
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</table>