



# Raw Materials Reagent for Allergen Testing

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## Company Profile

Bio-Mapper Technology Co., Ltd. was founded in 2018, is a professional supplier of in vitro diagnostic ( IVD ) reagents raw materials. It is committed to providing high-quality antigens, antibodies and other bioactive raw materials and related auxiliary products services for global IVD reagent manufacturers.

Bio-Mapper takes immunodiagnosis as the technical core, mainly involving the fields including major infectious diseases, tropical and Vector-Borne infectious diseases, respiratory diseases, gastrointestinal pathogens diseases, cancer markers, zoonosis detection and Veterinary diagnostic. It has established a comprehensive and leading diagnostic R & D, production and application of platform, and implemented a perfect technology development process. Bio-Mapper covers many application platforms, such as ELISA, LF, IB, IFA, LTIA, WB, CLIA, CMIA, efficiently serves and improves the development of IVD industrial products and product performance level in China. Bio-Mapper will supply the high quality products and complete solution to the industry as well as the shared-values. Bio-Mapper hopes that will be benefit more people and be advanced to cause of human-health by making the developments of diagnostic technologies.

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# Recognize Allergen

- Allergen
- Epidemiology of Allergies
- Types of Allergen Detection

Section

01



# Allergen

Allergy, is an abnormal increase in the body 's sensitivity to certain drugs or external stimuli. Under normal circumstances, the body makes antibodies to protect the body from disease, but the allergic body mistakes normal harmless substances for harmful things and produces antibodies, which become an "allergen" .

There are 2000 - 3000 common antigenic substances that cause allergic reactions, and they collectively produce allergic phenomena by inhalation, ingestion, injection, or contact.



## Mainly divided into four categories:

**Inhalational Allergen:**Allergens inhaled from the air, such as plant pollen, animal hair, indoor dust or mites, etc.;

**Food Allergen:** Allergens inhaled through the gastrointestinal tract, such as fish, meat, eggs, nuts and vegetables, etc.;

**Contact Allergen:** Allergen caused by skin contact, such as metal ornaments, cosmetics and household items, etc.;

**Infusion Allergen:**Directly infused into the body, such as: insect or animal venom, injection drugs, etc.

## Mediated Types

**IgE-mediated (Type I):**Rapid onset (< 1h) of massive allergic disease based on the release of histamine.

**IgG-mediated or IgM-mediated (Type II):** Immune response directed against target cells, e.g., transfusion reaction, immunologic hematologic disease.

**IgG-mediated (Type III):** Formation of immune complexes, which are delayed in onset and lead to many chronic diseases, including skin diseases.

**Cell-mediated (Type IV):**Contact dermatitis, transplant rejection, etc.

# Epidemiology of Allergies

The incidence rate of allergy is very high, and about one-third of people have been reported in the literature to have suffered from allergic diseases in their lifetime. According to statistics in Beijing, the incidence rate of allergy in the general population is about 15%, and allergic diseases in some areas of the Pacific are even as high as 50%. Since entering the 21st century, the disease has become one of the most common global diseases.

## Allergens

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# 01

## Urticaria

Urticaria is an allergic skin manifestation. It is characterized by episodic pruritus and the presence of congestive wheals. It is mostly caused by contact between allergens (mostly sth and additives, inhalants, drugs, microorganisms and parasites, insect toxins, etc.) and the patient's skin and mucous membranes into the body.

Clinically, it is divided into two major categories: one is non-specific immunoglobulin IgE-mediated type I allergic urticaria, and the other is non-allergic urticaria, including physical, cold, febrile, solar and cholinergic urticaria. In addition, physical factors, mental factors, and systemic diseases can also cause urticaria. Other skin manifestations of allergy may also be angioedema, dermatitis, eczema, erythema multiforme, exfoliative dermatitis and so on.

### ✔ Clinical manifestation

Sudden appearance of pink wheals of varying sizes, mostly round, oval, or irregular, on the skin may occur anywhere in the body; They are isolated or dispersed at the beginning, gradually enlarge, and may coalesce into sheets. Urticaria often comes and goes quickly, one after another, and new wheals will occur successively, even superimposed on old wheals. Some patients may involve the gastrointestinal tract, causing mucosal edema at this site, and abdominal pain and diarrhea may occur clinically. Dyspnea may occur if the laryngeal mucosa is involved.

Sever patients may be accompanied by palpitation, irritability, nausea and vomiting, dyspnea, laryngeal edema, and even decreased blood pressure and other manifestations of anaphylactic shock.

# 02

## Allergic Rhinitis

Allergic rhinitis is mostly the result of the interaction between inhalant allergens and the nasal mucosa of patients, and patients are mostly allergic and hereditary. Clinically, it can be broadly divided into two types: seasonal rhinitis and perennial rhinitis. The former is mostly caused by inhalation of pollen, and the latter is mostly caused by inhalation of dust, mites, molds and animal hair, dander and avian feathers.

### ✔ Clinical manifestation

Sudden nasal itching, continuous sneezing (more than 5) and a large number of watery serous nasal secretions, each attack of symptoms last more than an hour, often recurrent.

# 03

## Anaphylactic Shock

Anaphylactic shock is the most serious allergic reaction, and the most common allergen causing the disease is penicillin, and other drugs such as lactam antibiotics, streptomycin, procaine, Isatis indigotica injection, dextran, and iodinated contrast agents, in addition to insect stings. The incidence of anaphylactic shock in the general population is approximately 0.08%. After the onset of the disease, the patient developed extensive capillary permeability increased dramatically, arterioles dilated, resulting in decreased peripheral blood flow, decreased cardiac output and sudden decrease in circulating blood volume, while leading to multiple organ and multiple system tissue edema and smooth muscle spasm. Severe cases can be fatal in a very short period of time.

### ✔ Clinical manifestation

The patient first developed mucocutaneous flushing, generalized skin itching, more significant itching in the palms, numbness in the lips, tongue, and extremities, followed by various rashes, mostly gale clumped large dermal and subcutaneous angioedema. Blood pressure decreased sharply, systolic blood pressure mostly dropped below 80 mmHg, and pulse pressure was within 20 mmHg. In severe cases, circulatory failure may occur, manifested as confusion, cold sweat, pallor, cold limbs, and thin pulse. If the disease is not controlled promptly, cardiac arrest may occur in a small number of cases in a short period of time until death.

# 04

## Anthophobia

This disease, also known as hay fever, is caused by allergy to plant pollen and mainly affects the eyes and upper respiratory tract. The vast majority of the disease is caused by wind as a transmission medium of pollen as an allergen. The main pathogenic pollen in China is Artemisia pollen, as well as sunflower, marijuana, sycamore, castor bean, amaranth plants, Hushi plants, poplar, elm pollen and so on. A small number of patients are also caused by fungi, dust mites, or other inhaled substances or foods with significant seasonality.

### ✔ Clinical manifestation

It has obvious seasonality and regionality, mainly manifested as eye itching, lacrimation, eyelid redness and swelling; nasal itching, sneezing continuous attacks, often as many as a dozen at a time, sneezing after watery secretions increased, in the onset of the disease all day long; pharyngeal itching, dry throat, dry cough and so on. Wheezing could be heard on auscultation in some patients.

# 05

## Allergic Asthma

The disease is the main type of bronchial asthma, is due to allergens or other allergic factors caused by extensive airway hypersensitivity, resulting in reversible airway, spastic stenosis as the characteristics of respiratory obstruction syndrome, lesions mainly involving the bronchi. The main causes of the disease are inhalant allergens (indoor dust, Dermatophagoides pteronyssinus, and Dermatophagoides farinae, as well as fungal spores, various plant pollens, animal dander, feathers, silk, feces, molting, eggs, etc.), foods (such as certain eggs, etc.), and drugs (aspirin, etc.). Other types of bronchial asthma are: infectious asthma caused by infection, exercise-induced asthma induced by physical exercise, psychiatric asthma caused by mental factors; occupational asthma caused by occupational exposure to certain non-specific irritants; and asthma caused by non-sensitizing factors (such as cold air, menstruation, pregnancy, delivery, etc.).

### ✔ Clinical manifestation

Most of them suddenly attack or worsen, showing paroxysmal expiratory dyspnea and wheezing, and the general onset time is a few hours. Before the attack, there are many precursors of mucosal allergy such as sneezing, runny nose, and cough, followed by chest tightness, and in severe cases cyanosis, sweating, and orthopnea until loss of consciousness. It can be graded or relieved spontaneously with anti-asthmatic drugs. Viscous foamy sputum may be expectorated when the symptoms are relieved. The main sign seen on physical examination was widespread wheezing on expiration.

# Types of Allergen Detection

The detection of allergens is mainly divided into two types: in vivo detection and in vitro detection.



## In vitro detection

Anaphylaxis is primarily mediated by IgE, and levels of specific IgE antibodies are markedly elevated at disease onset. Therefore, the detection of allergen-specific IgE antibody levels in vitro and in vivo can identify the relevant allergens.

## Advantages of in vitro detection

- ✔ No risk to patient;
- ✔ To avoid strong skin reactions especially for children under 5 years old;
- ✔ Differentiation from other skin diseases;
- ✔ No additional medication required;
- ✔ Suitable for testing of food allergens for which skin testing is not possible.

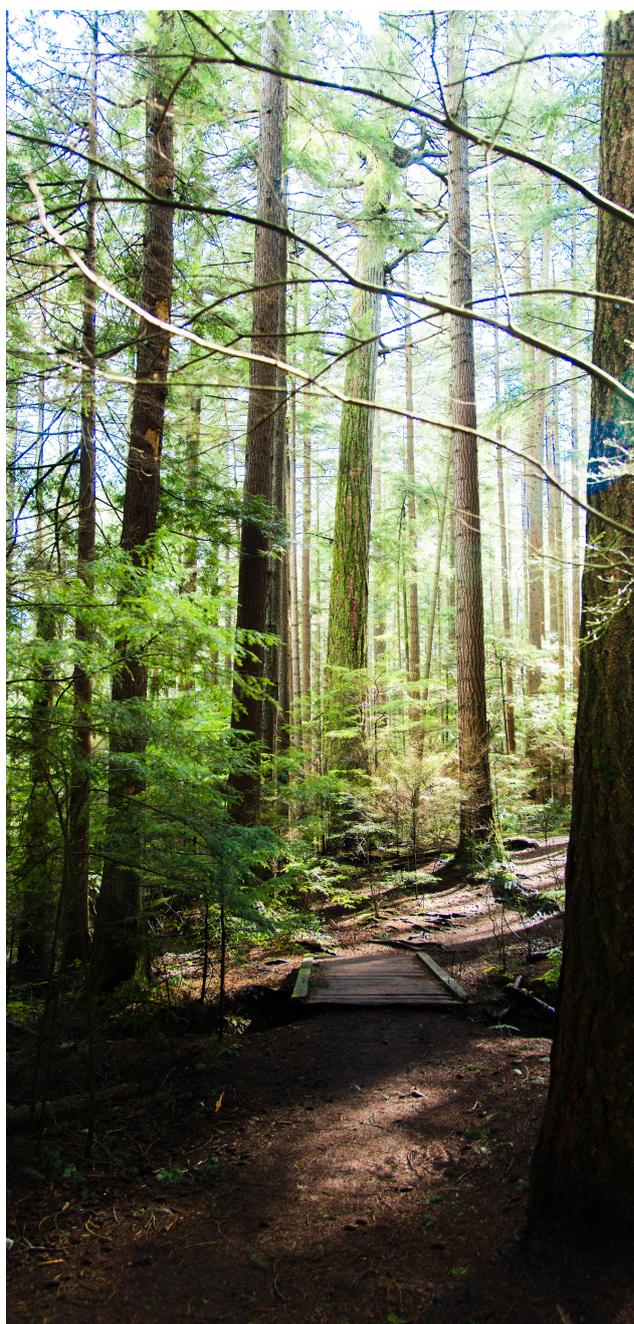
## In vitro allergen IgE detection method

- RIST
- ELIST
- FEIA
- REAST
- WB

## Prevalence of allergic diseases in Europe

Belgium: 24-32.5%; France: 18-21%; Germany: 16-24.6%  
Italy: 12.9-20.9%; Spain: 18.5-24.4%; Britain: 2.3-31.7%

**Allergic diseases occur in more than 30% of the general population**



# Allergens Content

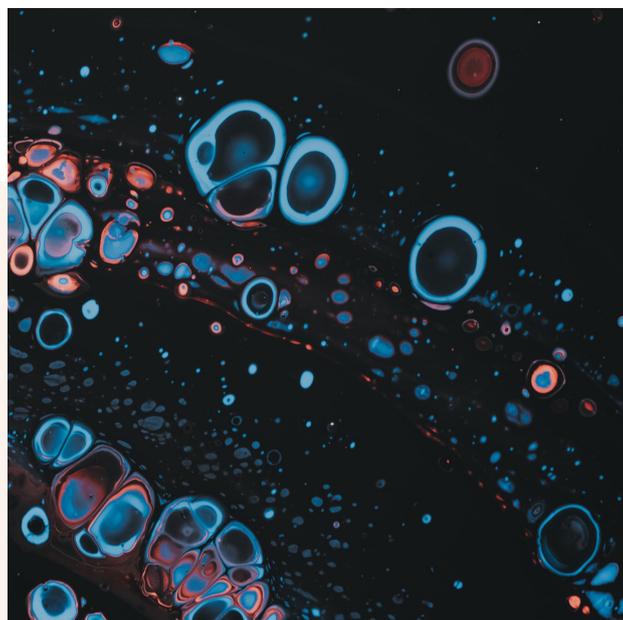
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## Section

# 02



# Microorganisms



Product Name	Catalog	Type	Host/ Source	Applications	International Code	Epitope
Cladosporium	BMGARCP1	Antigen	E.coli	LF, IFA, IB, ELISA, CMIA, WB	M2	/
Alternariasp	BMGARAL1	Antigen	E.coli	LF, IFA, IB, ELISA, CMIA, WB	M6	Alt A1
Aspergillus Fumigatus	BMGARAF1	Antigen	E.coli	LF, IFA, IB, ELISA, CMIA, WB	M3	Aspf1+f2
Penicillium Citrinum	BMGARPC1	Antigen	E.coli	LF, IFA, IB, ELISA, CMIA, WB	M1	/

# Food&Spices



Product Name	Catalog	Type	Host/Source	Applications	International Code	Epitope
Codfish	BMGARF11	Antigen	E.coli	LF, IFA, IB, ELISA, CMIA, WB	F3	Gad C <sub>1</sub>
Codfish	BMGARF12	Antigen	E.coli	LF, IFA, IB, ELISA, CMIA, WB	F3	Gad C <sub>1</sub>
Shrimp	BMGARX11	Antigen	E.coli	LF, IFA, IB, ELISA, CMIA, WB	F24	Met e <sub>1</sub>
Shrimp	BMGARX12	Antigen	E.coli	LF, IFA, IB, ELISA, CMIA, WB	F24	Met e <sub>1</sub>
Beef	BMGARB11	Antigen	E.coli	LF, IFA, IB, ELISA, CMIA, WB	F27	Bosd <sub>2</sub>
Beef	BMGARB21	Antigen	E.coli	LF, IFA, IB, ELISA, CMIA, WB	F27	β-lactoglobulin
Beef	BMGARB31	Antigen	E.coli	LF, IFA, IB, ELISA, CMIA, WB	F27	β-lactoglobulin
Mutton	BMGARY11	Antigen	E.coli	LF, IFA, IB, ELISA, CMIA, WB	F88	β-lactoglobulin
Mutton	BMGARY12	Antigen	E.coli	LF, IFA, IB, ELISA, CMIA, WB	F88	β-lactoglobulin
Cashew nuts	BMGARC11	Antigen	E.coli	LF, IFA, IB, ELISA, CMIA, WB	F202	Ana O <sub>1</sub> +Ana O <sub>2</sub> +Ana O <sub>3</sub>

# Food&Spices

Product Name	Catalog	Type	Host/Source	Applications	International Code	Epitope
Cashew nuts	BMGARC21	Antigen	E.coli	LF, IFA, IB, ELISA, CMIA, WB	F202	Ana O <sub>2</sub> +Ana O <sub>3</sub>
Walnut	BMGART11	Antigen	E.coli	LF, IFA, IB, ELISA, CMIA, WB	F256	Jug r <sub>1</sub> +Jug r <sub>2</sub>
Egg	BMGARE11	Antigen	Natrue	LF, IFA, IB, ELISA, CMIA, WB	F75	Jug r <sub>1</sub> +Jug r <sub>2</sub>
Peanut	BMGARH11	Antigen	E.coli	LF, IFA, IB, ELISA, CMIA, WB	F13	Ara h <sub>1</sub>
Peanut	BMGARP12	Antigen	E.coli	LF, IFA, IB, ELISA, CMIA, WB	F13	Ara h <sub>1</sub>
Peanut	BMGARP13	Antigen	E.coli	LF, IFA, IB, ELISA, CMIA, WB	F13	Ara h <sub>2</sub> +Ara h <sub>3</sub>
Peanut	BMGARP14	Antigen	E.coli	LF, IFA, IB, ELISA, CMIA, WB	F13	Ara h <sub>2</sub> +Ara h <sub>3</sub>
Wheat	BMGARW11	Antigen	E.coli	LF, IFA, IB, ELISA, CMIA, WB	F4	Tri a Bd <sub>27</sub> k + Tri a <sub>14</sub> + Tri a <sub>12</sub>
Wheat	BMGARW21	Antigen	E.coli	LF, IFA, IB, ELISA, CMIA, WB	F4	Tri a <sub>19</sub> + Tri a <sub>14</sub> + Tri a <sub>12</sub>
Milk	BMGARM11	Antigen	Natrue	LF, IFA, IB, ELISA, CMIA, WB	F2	/
Scallop	BMGARS11	Antigen	E.coli	LF, IFA, IB, ELISA, CMIA, WB	F338	Tropomyosin
Scallop	BMGARS21	Antigen	E.coli	LF, IFA, IB, ELISA, CMIA, WB	F338	Tropomyosin
Pistachio	BMGARP11	Antigen	E.coli	LF, IFA, IB, ELISA, CMIA, WB	F203	Pis v <sub>1</sub> +v <sub>2</sub>
Peaches	BMGAPC11	Antigen	E.coli	LF, IFA, IB, ELISA, CMIA, WB	F95	Prup <sub>1</sub> +Prup <sub>3</sub>
Peaches	BMGAPC12	Antigen	E.coli	LF, IFA, IB, ELISA, CMIA, WB	F95	Prup <sub>1</sub>
Pineapple	BMGAPI11	Antigen	E.coli	LF, IFA, IB, ELISA, CMIA, WB	F210	Pru ar <sub>1</sub> -like+profilin

# Tree Pollens



Product Name	Catalog	Type	Host/Source	Applications	International Code	Epitope
Platanus pollen	BMGARPT1	Antigen	E.coli	LF, IFA, IB, ELISA, CMIA, WB	T241	Plaa <sub>1</sub>
Platanus pollen	BMGARPT2	Antigen	E.coli	LF, IFA, IB, ELISA, CMIA, WB	T241	Plaa <sub>1</sub>
Platanus pollen	BMGARPT3	Antigen	E.coli	LF, IFA, IB, ELISA, CMIA, WB	T241	Plaa <sub>1</sub>
Pinus Pollen	BMGARPR1	Antigen	E.coli	LF, IFA, IB, ELISA, CMIA, WB	T16	Pollen Allergen
Cypress	BMGARBC1	Antigen	E.coli	LF, IFA, IB, ELISA, CMIA, WB	T23	Cup A <sub>1</sub>
Cypress	BMGARBC2	Antigen	E.coli	LF, IFA, IB, ELISA, CMIA, WB	T23	Cup A <sub>1</sub>
Birch	BMGARBR1	Antigen	E.coli	LF, IFA, IB, ELISA, CMIA, WB	T3	Bet V <sub>1</sub>
Birch	BMGARBR2	Antigen	E.coli	LF, IFA, IB, ELISA, CMIA, WB	T3	Bet V <sub>1</sub>

# Weed Pollens

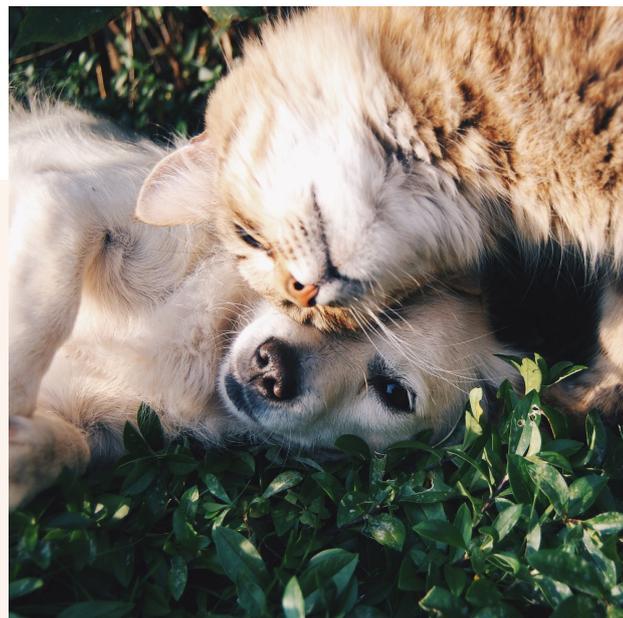
Product Name	Catalog	Type	Host/Source	Applications	International Code	Epitope
Humulus	BMGARHU1	Antigen	E.coli	LF, IFA, IB, ELISA, CMIA, WB	W22	Hums <sub>3</sub> +Hums <sub>1.01</sub>
Humulus	BMGARHU2	Antigen	E.coli	LF, IFA, IB, ELISA, CMIA, WB	W22	Hums <sub>3</sub> +Hums <sub>1.01</sub>
Mugwort	BMGARMU1	Antigen	E.coli	LF, IFA, IB, ELISA, CMIA, WB	W6	Art v <sub>1</sub>
Mugwort	BMGARMU2	Antigen	E.coli	LF, IFA, IB, ELISA, CMIA, WB	W6	Art v <sub>3</sub>
Mugwort-Multimer	BMGARMU3	Antigen	E.coli	LF, IFA, IB, ELISA, CMIA, WB	W6	Art v <sub>3</sub>
Dwarf Ambrosia	BMGARDF1	Antigen	E.coli	LF, IFA, IB, ELISA, CMIA, WB	W1	AgE
Dwarf Ambrosia	BMGARDF2	Antigen	E.coli	LF, IFA, IB, ELISA, CMIA, WB	W1	AgE
Dwarf Ambrosia	BMGARDF3	Antigen	E.coli	LF, IFA, IB, ELISA, CMIA, WB	W1	AgE
Artemisia+Dwarf Ambrosia	BMGARAD1	Antigen	E.coli	LF, IFA, IB, ELISA, CMIA, WB	W5-W1	Art v <sub>1</sub> +AgE
Artemisia+Dwarf Ambrosia	BMGARAD2	Antigen	E.coli	LF, IFA, IB, ELISA, CMIA, WB	W5-W1	Art v <sub>1</sub> +AgE
Artemisia	BMGARAR1	Antigen	E.coli	LF, IFA, IB, ELISA, CMIA, WB	W5	Art v <sub>1</sub>
Artemisia	BMGARAR2	Antigen	E.coli	LF, IFA, IB, ELISA, CMIA, WB	W5	Art v <sub>1</sub>
Artemisia	BMGARAR3	Antigen	E.coli	LF, IFA, IB, ELISA, CMIA, WB	W5	Art v <sub>3</sub>
Artemisia	BMGARAR4	Antigen	E.coli	LF, IFA, IB, ELISA, CMIA, WB	W5	Art v <sub>3</sub>

# Mites&Dust



Product Name	Catalog	Type	Host/Source	Applications	International Code	Epitope
Dermatophagoides Farinae	BMGARD11	Antigen	E.coli	LF, IFA, IB, ELISA, CMIA, WB	D2	Derf <sub>2</sub> +Derf <sub>1</sub>
Dermatophagoides Farinae	BMGARD12	Antigen	E.coli	LF, IFA, IB, ELISA, CMIA, WB	D2	Derf <sub>2</sub> +Derf <sub>1</sub>
Dermatophagoides Pteronyssinus	BMGARD21	Antigen	E.coli	LF, IFA, IB, ELISA, CMIA, WB	D1	DerP <sub>1</sub> +Der P <sub>2</sub>
Dermatophagoides Pteronyssinus	BMGARD23	Antigen	E.coli	LF, IFA, IB, ELISA, CMIA, WB	D1	DerP <sub>1</sub> +Der P <sub>2</sub>
Dermatophagoides Pteronyssinus	BMGARD22	Antigen	E.coli	LF, IFA, IB, ELISA, CMIA, WB	D1	Der P <sub>2</sub>

# Epithelium & Animal Proteins

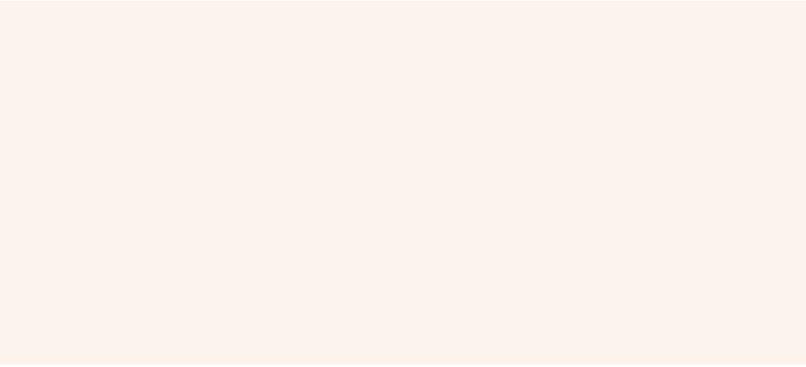


Product Name	Catalog	Type	Host/Source	Applications	International Code	Epitope
Dog Dander	BMGARDD1	Antigen	E.coli	LF, IFA, IB, ELISA, CMIA, WB	E5	Canf <sub>1</sub> +Canf <sub>2</sub> +Canf <sub>4</sub> +Canf <sub>6</sub>
Dog Dander	BMGARDD2	Antigen	E.coli	LF, IFA, IB, ELISA, CMIA, WB	E5	Canf <sub>1</sub> +Canf <sub>2</sub> +Canf <sub>4</sub> +Canf <sub>6</sub>
Cat Dander	BMGARCD1	Antigen	E.coli	LF, IFA, IB, ELISA, CMIA, WB	E1	Feld <sub>1</sub>
Cat Dander	BMGARCD2	Antigen	E.coli	LF, IFA, IB, ELISA, CMIA, WB	E1	Feld <sub>1</sub>

# Venoms & Insects



Product Name	Catalog	Type	Host/Source	Applications	International Code	Epitope
Blattella Germanica	BMGARBG1	Antigen	E.coli	LF, IFA, IB, ELISA, CMIA, WB	I6	Blag <sub>7</sub>
American Cockroach (Fusion with Blattella Germanica)	BMGARAC1	Antigen	E.coli	LF, IFA, IB, ELISA, CMIA, WB	I206+I6	Blag <sub>5</sub> +Pera <sub>1</sub>
American Cockroach (Fusion with Blattella Germanica)	BMGARAC2	Antigen	E.coli	LF, IFA, IB, ELISA, CMIA, WB	I206+I6	Blag <sub>5</sub> +Pera <sub>1</sub>



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