ImmunoCAP® ISAC

The tool for the future in allergy diagnostics

Available today!

Phadia
Molecular Allergy

ImmunoCAP ISAC®

Immuno Solid-phase Allergen Chip

VBC Genomics and Phadia have combined innovative biochip technology with cutting-edge research in molecular allergology to develop ImmunoCAP ISAC®— the most advanced* in vitro *diagnostic test for measurement of specific IgE antibodies to allergen components.

Component resolved diagnostics

ImmunoCAP ISAC® is the first multiplex *in vitro* diagnostic tool for the allergy specialist that is based exclusively on allergen components.

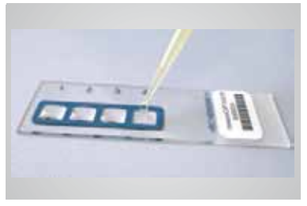
Currently available standard products for *in vivo* allergy testing are based on allergen extracts prepared from biological raw materials. They represent natural mixtures of allergenic and non-allergenic molecules that are generally not fully standardized referring to their content of major or minor allergen components.

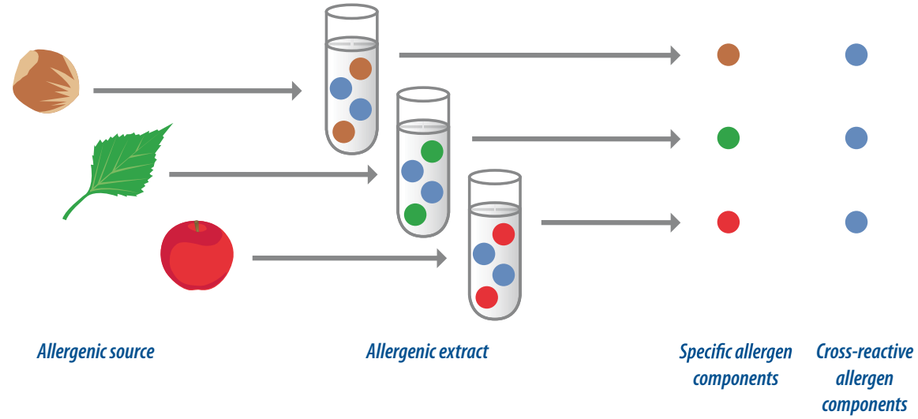
Today, the increasing availability of allergen components, purified from their natural source or biotechnologically produced as recombinant proteins, marks the beginning of a revolution in allergy diagnosis and leads to a gradual transition toward component resolved diagnostics (CRD).

Many biological sources contain highly cross-reactive allergen components, for example profilin, which is present in a broad variety of plant pollen and plant-derived food. A sensitization toward such a panallergen creates positive test results against numerous allergen extracts. Consequently, when using extract-based specific IgE testing it is difficult to identify the correct allergen source when only cross-reactive allergen components are involved.

A decision on whether a patient should undergo specific immunotherapy should not only be based on currently available allergenic extract preparations but should preferably be verified by testing with both specific and cross-reactive marker allergen components.

Availability of specific and cross-reactive marker components creates the platform for more informative diagnostics.





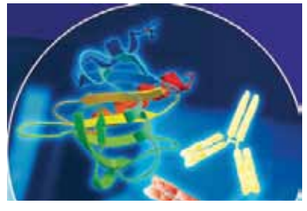
ImmunoCAP ISAC® technology – How it works

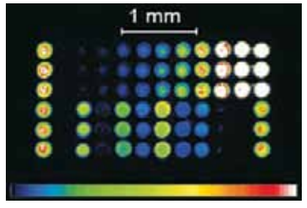
Based on modern biochip technology, ImmunoCAP ISAC® is a miniaturized immunoassay platform that allows for multiplex measurement of specific IgE antibodies to many allergen components using only 20 µl of serum or plasma. Capillary blood sampling can be used, enabling a less invasive procedure for testing young children.

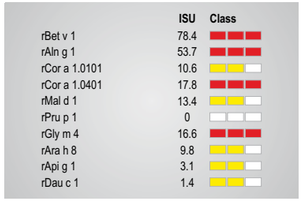
Purified natural or recombinant allergen components are immobilized on a solid support (biochip).

In a two step assay, IgE antibodies from the patient serum bind to the immobilized allergen components. After a short washing step, allergen-bound IgE antibodies are detected by a fluorescence-labeled anti-IgE antibody.

Test results are measured with a biochip scanner and evaluated using proprietary software. ImmunoCAP ISAC® is a semi-quantitative test and results are reported in ISAC Standardized Units (ISU).







ImmunoCAP ISAC® allergen components

Allergen component	Allergen source COMMON NAME	LATIN NAME	PROTEIN GROUP
Plants			
nCyn d 1	Bermuda grass	*Cynodon dactylon*	Grass group 1
rPhl p 1	Timothy	*Phleum pratense*	Grass group 1
rPhl p 2	Timothy	*Phleum pratense*	Grass group 2
nPhl p 4	Timothy	*Phleum pratense*	
rPhl p 5	Timothy	*Phleum pratense*	Grass group 5
rPhl p 6	Timothy	*Phleum pratense*	
rPhl p 11	Timothy	*Phleum pratense*	
rBet v 1	Birch	*Betula verrucosa*	PR-10 protein
rAln g 1	Alder	*Alnus glutinosa*	PR-10 protein
rCor a 1.0101	Hazel pollen	*Corylus avellana*	PR-10 protein
nCry j 1	Japanese ceder	*Cryptomeria japonica*	
nCup a 1	Cypress	*Cupressus arizonica*	
nOle e 1	Olive	*Olea europaea*	
rPla a 1	Plane tree	*Platanus acerifolia*	
nPla a 2	Plane tree	*Platanus acerifolia*	
nAmb a 1	Ragweed	*Ambrosia artemisiifolia*	
nArt v 1	Mugwort	*Artemisia vulgaris*	
nArt v 3	Mugwort	*Artemisia vulgaris*	Lipid transfer protein (nsLTP)
rPar j 2	Wall pellitory	*Parietaria judaica*	Lipid transfer protein (nsLTP)
nSal k 1	Saltwort	*Salsola kali*	
nAct d 1	Kiwi	*Actinidia deliciosa*	
nAct d 2	Kiwi	*Actinidia deliciosa*	
nAct d 5	Kiwi	*Actinidia deliciosa*	
nAct d 8	Kiwi	*Actinidia deliciosa*	PR-10 protein
rApi g 1	Celery	*Apium graveolens*	PR-10 protein
rDau c 1	Carrot	*Daucus carota*	PR-10 protein
rMal d 1	Apple	*Malus domestica*	PR-10 protein
rPru p 1	Peach	*Prunus persica*	PR-10 protein
nPru p 3	Peach	*Prunus persica*	Lipid transfer protein (nsLTP)
rAna o 2	Cashew nut	*Anacardium occidentale*	
nAra h 1	Peanut	*Arachis hypogaea*	Storage protein, vicilin
nAra h 2	Peanut	*Arachis hypogaea*	Storage protein, Conglutin
nAra h 3	Peanut	*Arachis hypogaea*	Storage protein, 11S globulin
rAra h 8	Peanut	*Arachis hypogaea*	PR-10 protein
rBer e 1	Brazil nut	*Bertholletia excelsa*	Storage protein, 2S albumin
rCor a 1.0401	Hazelnut	*Corylus avellana*	PR-10 protein
rCor a 8	Hazelnut	*Corylus avellana*	Lipid transfer protein (nsLTP)
nCor a 9	Hazelnut	*Corylus avellana*	Storage protein, 11S globulin
rGly m 4	Soybean	*Glycine max*	PR-10 protein
nGly m 5	Soybean	*Glycine max*	Storage protein, ß-conglycinin
nGly m 6	Soybean	*Glycine max*	Storage protein, glycinin
nSes i 1	Sesame seed	*Sesamum indicum*	Storage protein, 2S albumin
nTri a 18	Wheat	*Triticum aestivum*	
nTri a gliadin	Wheat	*Triticum aestivum*	Crude gliadin
rTri a 19.0101	Wheat	*Triticum aestivum*	Omega-5 gliadin
nTri a aA_TI	Wheat	*Triticum aestivum*	
rHev b 1	Latex	*Hevea brasiliensis*	
rHev b 3	Latex	*Hevea brasiliensis*	
rHev b 5	Latex	*Hevea brasiliensis*	
rHev b 6	Latex	*Hevea brasiliensis*	
Cross-reactive markers, plants			
rBet v 4	Birch	*Betula verrucosa*	Calcium binding protein, Polcalcin
rPhl p 7	Timothy	*Phleum pratense*	Calcium binding protein, Polcalcin
rBet v 2	Birch	*Betula verrucosa*	Profilin
rHev b 8	Latex	*Hevea brasiliensis*	Profilin
rMer a 1	Annual mercury	*Mercurialis annua*	Profilin
nOle e 2	Olive	*Olea europaea*	Profilin
rPhl p 12	Timothy	*Phleum pratense*	Profilin
nAna c 2	Bromelain	*Ananas comosus*	CCD marker

ImmunoCAP ISAC® allergen components

Allergen component	Allergen source COMMON NAME	LATIN NAME	PROTEIN GROUP
Non-Plants			
nBos d 4	Cow's milk	*Bos domesticus*	α-lactalbumin
nBos d 5	Cow's milk	*Bos domesticus*	β-lactoglobulin
nBos d 6	BSA	*Bos domesticus*	Serum albumin
nBos d 8	Cow's milk	*Bos domesticus*	Caseins
nBos d lactoferrin	Cow's milk	*Bos domesticus*	Lactoferrin
nGal d 1	Egg	*Gallus domesticus*	Ovomucoid
nGal d 2	Egg	*Gallus domesticus*	Ovalbumin
nGal d 3	Egg	*Gallus domesticus*	Conalbumin
nGal d 5	CSA (Livetin)	*Gallus domesticus*	Serum albumin
rCyp c 1	Carp	*Cyprinus carpio*	Parvalbumin
rGad c 1	Cod	*Gadus callarias*	Parvalbumin
rDer f 1	House dust mite	*Dermatophagoides farinae*	
rDer f 2	House dust mite	*Dermatophagoides farinae*	
nDer p 1	House dust mite	*Dermatophagoides pteronyssinus*	
nDer p 2	House dust mite	*Dermatophagoides pteronyssinus*	
rEur m 2	Storage mite	*Euroglyphus maynei*	
rCan f 1	Dog	*Canis familiaris*	Lipocalin
rCan f 2	Dog	*Canis familiaris*	Lipocalin
nCan f 3	Dog	*Canis familiaris*	Serum albumin
nEqu c 3	Horse	*Equus caballus*	Serum albumin
rFel d 1	Cat	*Felis domesticus*	Uteroglobin
nFel d 2	Cat	*Felis domesticus*	Serum albumin
rFel d 4	Cat	*Felis domesticus*	Lipocalin
nMus m 1	Mouse	*Mus musculus*	Lipocalin
rAlt a 1	Alternaria	*Alternaria alternata*	
rAlt a 6	Alternaria	*Alternaria alternata*	
rAsp f 1	Aspergillus	*Aspergillus fumigatus*	
rAsp f 2	Aspergillus	*Aspergillus fumigatus*	
rAsp f 3	Aspergillus	*Aspergillus fumigatus*	
rAsp f 4	Aspergillus	*Aspergillus fumigatus*	
rAsp f 6	Aspergillus	*Aspergillus fumigatus*	
rCla h 8	Cladosporium	*Cladosporium herbarum*	
nApi m 1	Honey bee venom	*Apis mellifera*	Phospholipase A2
nApi m 4	Honey bee venom	*Apis mellifera*	Melittin
rBla g 1	Cockroach	*Blattella germanica*	
rBla g 2	Cockroach	*Blattella germanica*	
rBla g 4	Cockroach	*Blattella germanica*	
rBla g 5	Cockroach	*Blattella germanica*	
rAni s 1	Anisakis	*Anisakis simplex*	
Cross-reactive markers, non-plants			
rAni s 3	Anisakis	*Anisakis simplex*	Tropomyosin
nBla g 7	Cockroach	*Blattella germanica*	Tropomyosin
rDer p 10	House dust mite	*Dermatophagoides pteronyssinus*	Tropomyosin
rPen a 1	Shrimp	*Penaeus aztecus*	Tropomyosin
nPen i 1	Shrimp	*Penaeus indicus*	Tropomyosin
nPen m 1	Shrimp	*Penaeus monodon*	Tropomyosin

The above tests are laboratory-developed tests. Interpretation of the results is the responsibility of the healthcare provider.

ImmunoCAP ISAC® allergen components

PR-10 protein, Bet v 1 homologue

- A heat-labile protein, cooked foods are often tolerated
- Often associated with local symptoms such as oral allergy syndrome (OAS)
- Often associated with allergic reactions to fruit and vegetables in northern Europe

LTP (non-specific Lipid Transfer Protein, nsLTP)

- A protein stable to heat and digestion causing reactions also to cooked foods
- Often associated with systemic and more severe reactions in addition to OAS
- Often associated with allergic reactions to fruit and vegetables in southern Europe

Profilin

- Seldom associated with clinical symptoms but may cause demonstrable or even severe reactions in a small minority of patients

Storage protein

- Protein found in seeds serving as source material during the growth of a new plant
- Often stable and heat-resistant proteins causing reactions also to cooked foods

CCD

- A marker for sensitization to cross-reactive carbohydrate determinants
- Seldom associated with clinical symptoms but may cause demonstrable or even severe reactions in a small minority of patients

Lipocalin

- Very stable proteins
- Allergen components displaying limited cross-reactivity between species

Parvalbumin

- A major allergen in fish
- A marker for cross-reactivity among different species of fish and amphibians
- A protein stable to heat and digestion causing reactions also to cooked foods

Serum albumin

- A common protein present in different biological fluids and solids *e.g.*, cow's milk and beef, egg and chicken
- Cross-reactions between albumins from different animal species are well known, for example between cat and dog and cat and pork

Tropomyosin

- An actin-binding protein in muscle fibers
- A marker for cross-reactivity between crustaceans, mites, and cockroach

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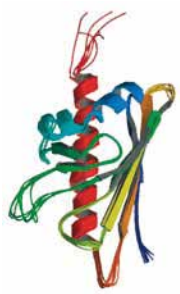
Advantages of ImmunoCAP ISAC® technology

- Multiplex specific IgE measurement to allergen components from over 40 common allergen sources in a single test
- Component resolved diagnostics (CRD) using only purified natural or recombinant allergen components
- Marker allergen components – specific and indicating cross-reactivity
- Semi-quantitative results based on fluorescence measurements
- High reliability by intrinsic replicate testing and quality controls

The tool for the future in allergy diagnostics – available today!



Multiplex specific IgE measurement provides new opportunities– ImmunoCAP ISAC®

Phadia
Molecular Allergy

Specialized testing for specialists

www.phadia.us

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Phadia US Inc
4169 Commercial Avenue
Portage, MI 49002
800.346.4364