



**Neuberg**  
DIAGNOSTICS

• India • UAE • South Africa • USA

# *Neu* INSIGHTS



## Allergens

IMMUNOCAP /IMMUNOCHROMATOGRAPHY (EIA)/CRD



# ImmunoCAP™ Allergic test result can help clinicians :



To identify the offending allergen



To confirm a clinical suspicion of allergic sensitization



To rule out allergic sensitization



To determine patients that are appropriate for further testing



To monitor levels of IgE antibodies for prognosis

**PAINLESS**

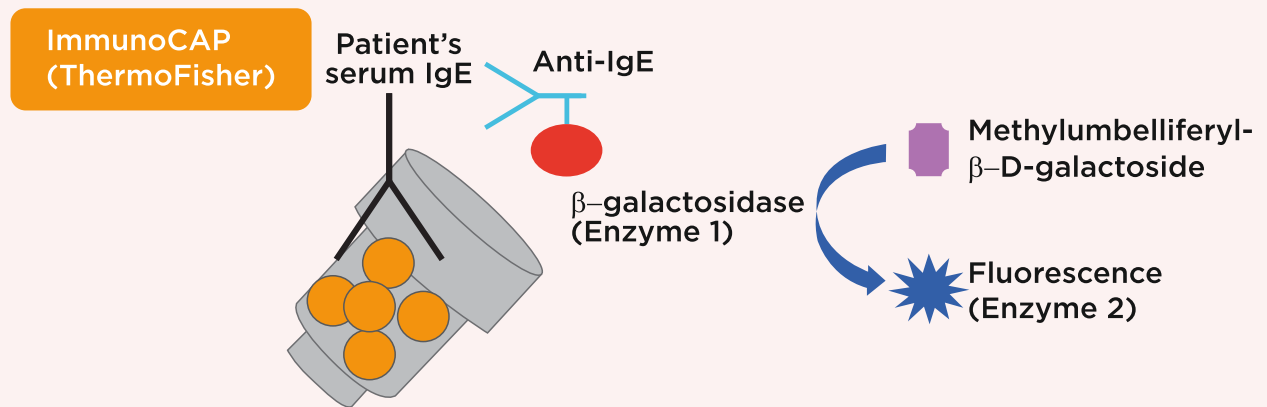


## References:

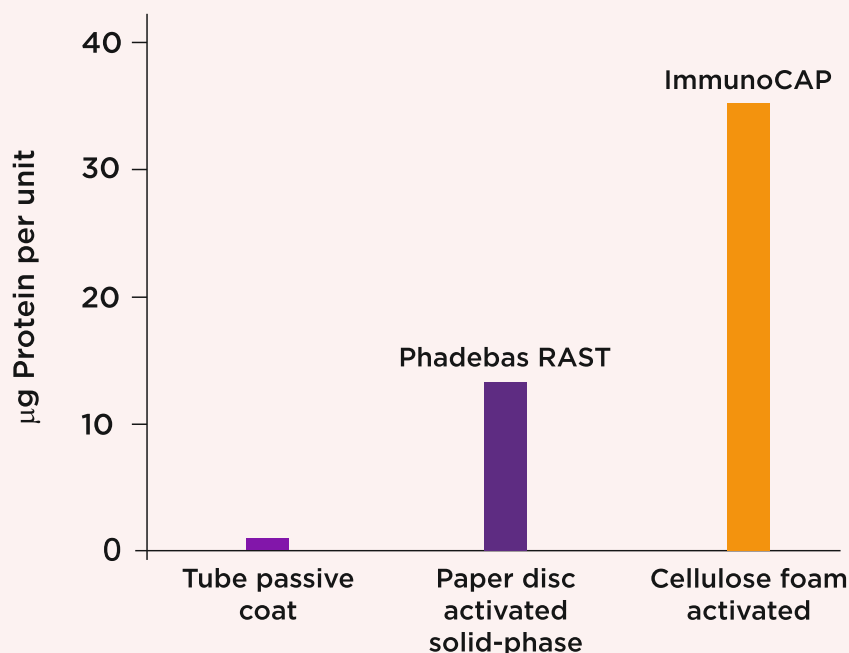
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- ▶ Allen-Ramey F, et al. *J Am Board Fam Pract* 2005; 18(5):434-439
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# Technology that makes a difference

ImmunoCAP is a sandwich Immuno Assay. The Technology is based on an extremely high binding capacity of the cellulose with the allergens, which ensures the binding of all relevant antibodies, regardless of antibody affinity.



The ImmunoCAP solid phase consists of a cellulose derivative enclosed in a capsule. The hydrophilic, highly branched polymer provides an ideal micro environment for allergens, binding them irreversibly while maintaining their native structure



This solid phase is an excellent carrier of antigens (allergens) & provides favorable reaction conditions, including short diffusion distances.

# Novel method for testing all ALLERGENS IMMUNOCHROMATOGRAPHY

## Immunochromatography Assay

Immunochromatography is one of the most important & effective techniques in the detection of the pathogen. It plays an important role in the diagnosis. These assays are also known as lateral flow test or simply strip test which are the devices intended to detect the target analyte in sample without the need for specialized & costly equipment. They are the logical extension of the technology used in latex agglutination tests, the 1st of which was developed in 1956 by Singer & Plotz.

## This Approach Allows For

- ▶ Adjustable and rapid formation of immune complexes;
- ▶ Removal of non-reacted compounds from the binding zone during the analysis; and
- ▶ The use of special zones to concentrate and to detect target complexes. Immunochromatography combines advantages of homogeneous and heterogeneous analytical methods.
- ▶ It combines the speed of a homogeneous immunoassay with the separation of reacted and unreacted compounds by a variety of heterogeneous methods.

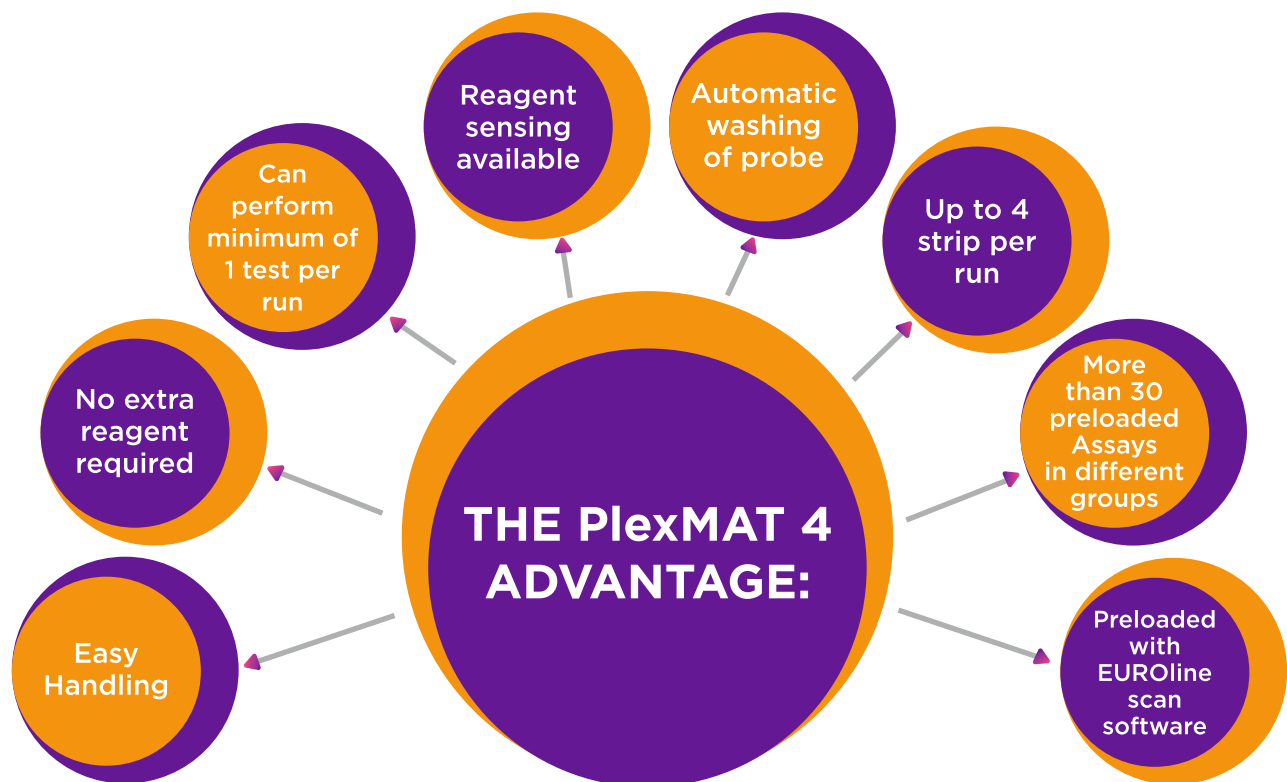
## Advantages

- ▶ Ease of device preparation
- ▶ Low cost
- ▶ Stability over a wide range of environmental conditions & very long shelf life.
- ▶ Easy integration with electronics
- ▶ Wide range of applications
- ▶ No or very little energy consumption
- ▶ Simple and user friendly operation
- ▶ Requirement of small sample volume
- ▶ Most of the time, allows sample application without Pre-treatment
- ▶ Versatility of formats, biorecognition molecules, labels and detection systems.
- ▶ Less time of analysis
- ▶ Comparable or better sensitivity & specificity than other well established methods



# Immunochemical Assays - PRINCIPLE

The principle is based on dye labelled antibody specific for target analyte which is present on the lower end of nitrocellulose strip or in the plastic well along with the strip. The antibody which is specific for target antigen is also bound to the strip in a thin test line and antibody antigen specific for labelled antibody bound to control line. So when the sample and buffer are placed on the strip or in a well, mixed with labeled antibody to draw across the lines of the bound antibody.

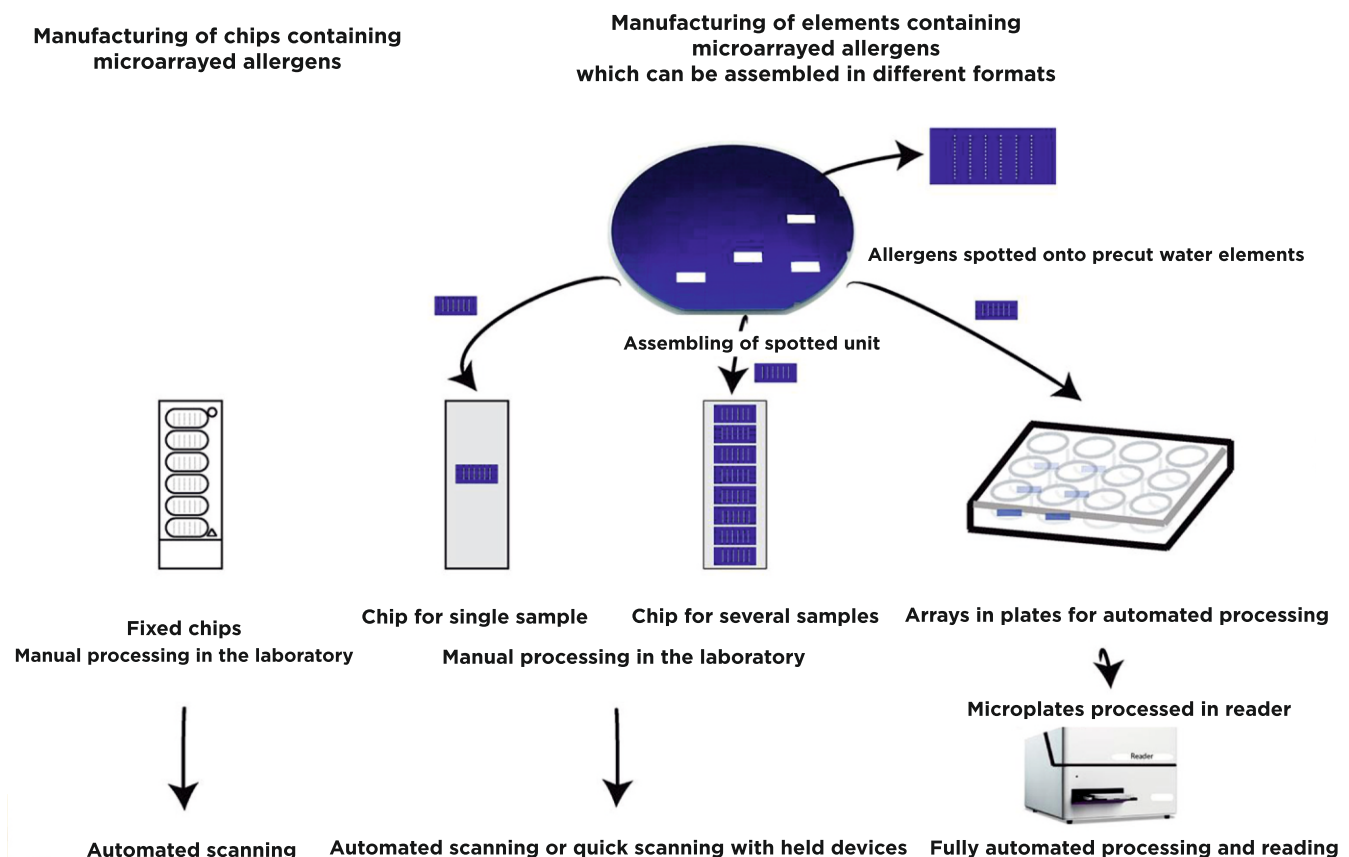


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# Allergy testing by ALEX - Microarray technology - Component Resolved Diagnostics (CRD)

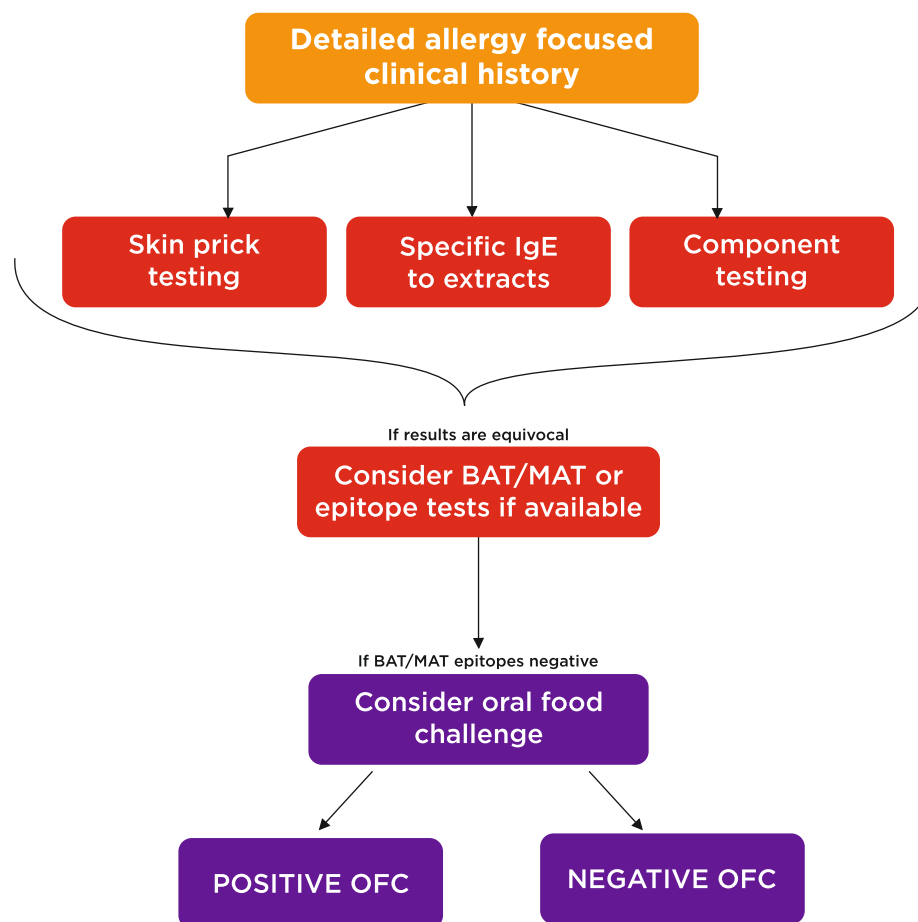
- ▶ Allergy Explorer is an in-vitro multiplex allergy test that allows simultaneous measurement of total IgE (tIgE) and specific IgE (sIgE) antibodies against nearly 300 different allergens, from a single run of a patient sample.
- ▶ Conventional singleplex allergy test systems can be laborious in obtaining a comprehensive IgE sensitization profile of patients. Often, several testing cycles are required to reach a clear diagnosis, and total IgE is tested separately. To streamline this fragmented approach, ALEX gives you a near complete picture of patient's allergic situation, including total IgE levels.
- ▶ ALEX has been developed based on a proprietary nanobead technology, ensuring optimization of every individual allergen immobilized on the solid phase.
- ▶ This harmonious integration of Macro Level Diagnostics (total IgE Level), Micro Level Diagnostics (specific IgE against purified protein extracts) and Core Level (specific IgE against molecular components) allows ALEX to create a detailed understanding of an individual's allergy status.



# What is Component-resolved diagnostics (CRD)?

- ▶ Component-resolved diagnostics (CRD) in food allergies is an approach utilized to characterize the molecular components of each allergen involved in a specific IgE (sIgE)-mediated response. In the clinical practice, CRD can improve diagnostic accuracy and assist the physician in many aspects of the allergy work-up.
- ▶ CRD allows for discriminatory co-sensitization versus cross-sensitization phenomena and can be useful to stratify the clinical risk associated with a specific sensitization pattern, in addition to the oral food challenge (OFC)
- ▶ The advent of CRD represents a milestone in the field of food allergy diagnosis, allowing for a better identification and characterization of the specific molecules that trigger allergic reactions. In light of this, CRD has become an important tool in the diagnostic work-up of food allergies, has given the identification of sIgE against the major allergens allows for discriminating against primary food allergies versus secondary sensitization. Moreover, CRD helps predict the evolution of the allergic process and the clinical risk of each patients and in stratifying the outcome of the OFC.

## Approach to Allergy:





# Component Resolved Diagnosis

Allergenic Food Source  
Skin prick tests



Allergenic Extract  
Specific IgE

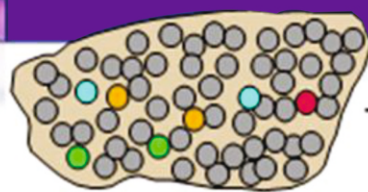


Unique allergen molecules  
Cross-reactive allergen molecules

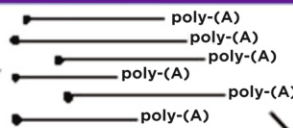


Component Resolved Diagnostics

# Components Production



mRNA extraction



cdNA synthesis, doing and selection of a DNA clones encoding individual allergenic proteins



Production of recombinant allergens, Immobilization on solid phase



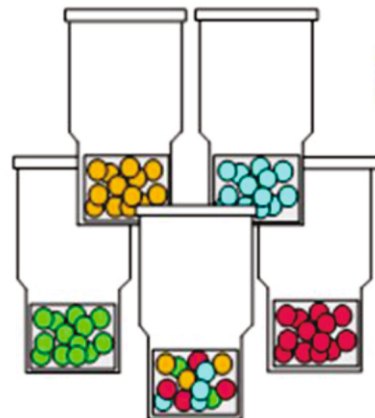
Standardization and research reagents

Allergy- eliciting biological material

Extraction, Immobilization on solid phase



Standard Allergen ImmunoCAP



Recombinant Allergen ImmunoCAP

## Allergy by Microarray technique - report format

<b>Patient ID:</b>	20300126167		<b>Referring Physician:</b>
<b>Patient Name:</b>	Master SHLOK SHAH		
<b>Date of Birth:</b>			
<b>Sample ID:</b>	20300126167		<b>Additional Information:</b>
<b>Barcode:</b>	02AHA783		
<b>Sampled on:</b>	16/03/2022		
<b>Tested on:</b>	17/03/2022		
<b>Approved on:</b>	17/03/2022		
<b>Note: The internal QC (Plausibility check for GD) was within acceptance range.</b>			

### Lab report : Summary on detectable sensitisations

			<b>Cross-reactive Allergen Families</b>
Grass Pollen	Grass Pollen	0	
	Tree Pollen	2	Polcalcin 0
	Weed Pollen	0	Profilin 0
Mites	House Dust Mites & Storage Mites	0	PR-10 0
Microorganisms	Fungal Spores & Yeast	4	Ole e 1 Family 0
Plant-Based Food	Legumes	1	LTPs 1
	Grain	1	Storage Proteins 0
	Spices	0	Lipocalins 0
	Fruits	1	NPC2 0
	Vegetables	0	Serum albumin 0
	Nuts & seeds	1	Parvalbumin 0
Animal-Derived Food	Milk	0	Tropomyosin 0
	Egg	0	CCD 0
	Fish & Seafood	0	Ulteroglobulin 0
	Meat	2	Arginine Kinase 0
Insects & Venoms	Ant, Bee, Wasp	0	
	Cocokroach	0	<b>Total IgE (KU/L) 190</b>
Epithelial Tissues of Animals	Pets	0	
	Animals	0	
Others	Latex	0	
	Ficus & Hops	0	
	CCD	0	
	Parasite	0	

### Highest measured IgE concentration per allergen group

<0.3 kUA/L	0.3 - 1 kUA/L	1 - 5 kUA/L	5 - 15 kUA/L	> 15 kUA/L
0	1	2	3	4
Negative or uncertain	Low IgE level	Moderate IgE level	High IgE level	Very High IgE level

# Types Of Allergies



## Allergy Panels by Immunocap (Phadia)

Panel
Allergy-Phadia Dander Panel
Allergy-Phadia Eczema Panel
Allergy-Phadia Fruits Panel
Allergy-Phadia Fungus Panel-Basic
Allergy-Phadia Fungus Panel-Extensive
Allergy-Phadia Generalised Comprehensive Panel
Allergy-Phadia Inhalent Panel
Allergy-Phadia NonVeg-Extensive
Allergy-Phadia NonVeg Mini
Allergy-Phadia Non-Veg Seafood
Allergy-Phadia Nuts Panel
Allergy-Phadia Rhinitis Panel
Allergy-Phadia Veg-Extensive

Panel
Allergy-Phadia Veg panel Mini
Hypersensitivity Pneumonitis Panel
Allergic Bronchopulmonary Aspergillosis Panel -ABPA
Allergy-House Dust Mite

## Allergy Panels by Immunochromatography (EIA)

Panel
Allergy Comprehensive (Food+Inhalant+Drug)
Allergy Food
Allergy Inhalants
Allergy Drug
Allergy Food & Inhalent



# PARTNERS IN HEALTH



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