



Emma is worried about having a systemic reaction, so she avoids all nuts

Walnuts

Hazelnuts

Peanuts

FOOD ALLERGY

 **ImmunoCAP[®]**
Is it allergy?

Systemic reactions and underlying proteins

Discover the connection

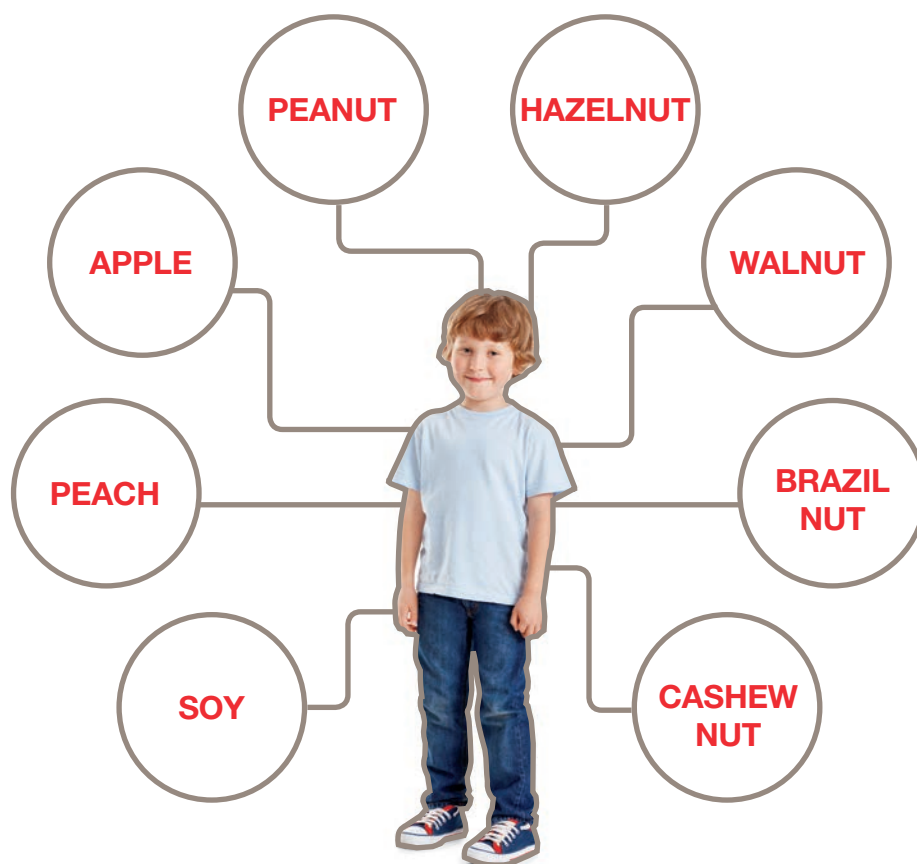
ImmunoCAP[®] Complete Allergens and Allergen Components help you diagnose allergy and prepare a management plan for improved patient well-being

Thermo
SCIENTIFIC

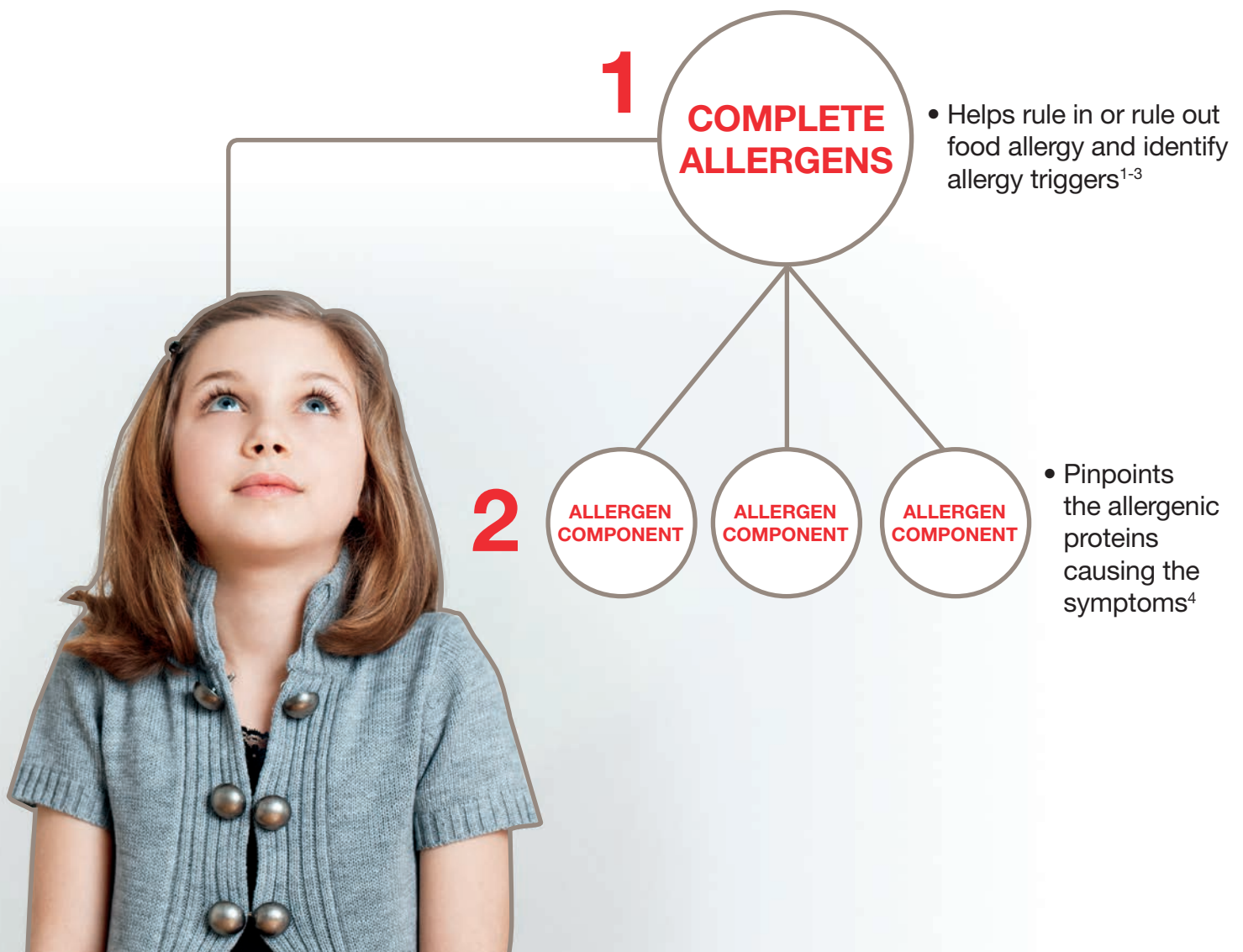
Discover the connection

Between proteins and risk for systemic reactions

Dig deeper into common plant-derived food allergies



ImmunoCAP provides a two-step approach to support a comprehensive allergy diagnosis



Peanut: Assess risk and cross-reactivity

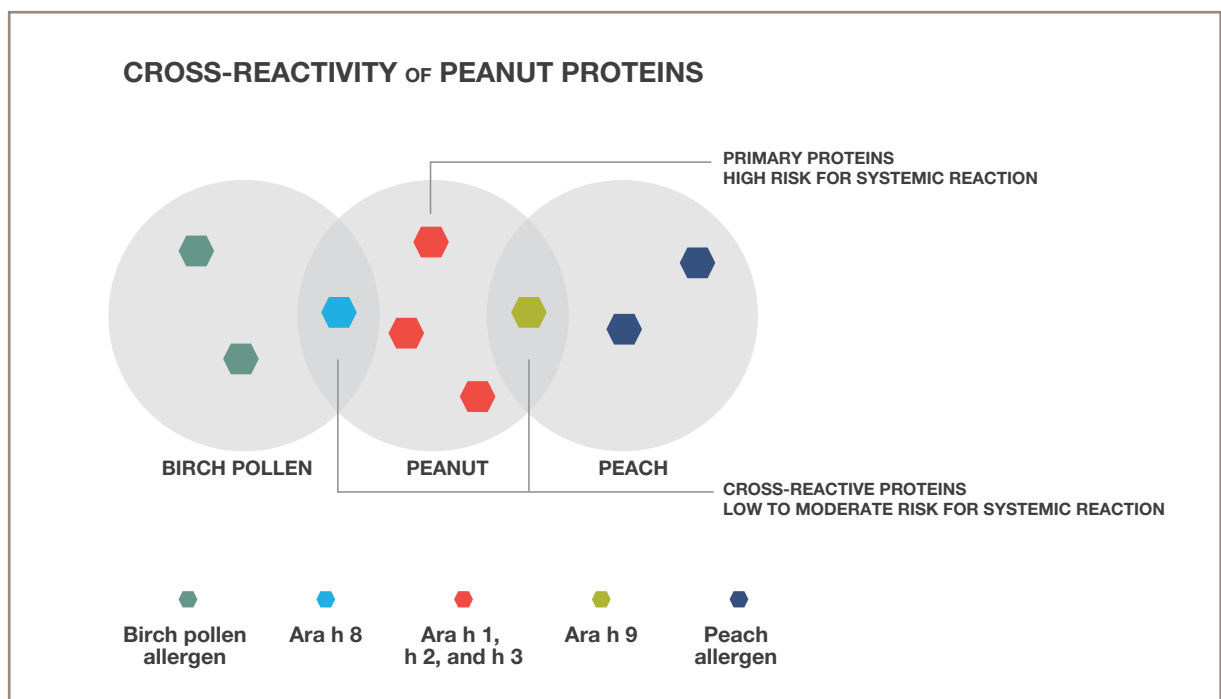
ImmunoCAP Allergen Components help you assess the risk of systemic reactions in patients with allergy to peanut⁴

- Many patients allergic to peanuts may not be at risk for a systemic reaction⁵⁻⁷
- Allergen components are proteins associated with different levels of risk^{8,9}

Increasing risk for systemic reactions			
PROFILIN	PR-10	LTP	STORAGE PROTEINS
Phl p 12* or Bet v 2* or Pru p 4*	Ara h 8	Ara h 9	Ara h 1 Ara h 2 Ara h 3
<ul style="list-style-type: none"> • Labile to heat and digestion • Low risk for reactions • Highly cross-reactive with pollen and plant foods 	<ul style="list-style-type: none"> • Labile to heat and digestion • Mainly local reactions • Associated with birch pollen allergy (cross-reactivity) 	<ul style="list-style-type: none"> • Stable to heat and digestion • Associated with local and systemic reactions • Associated with allergy to stone fruits (cross-reactivity) 	<ul style="list-style-type: none"> • Stable to heat and digestion • Associated with systemic reactions • Indicates primary sensitization

* Surrogate marker for profilin.

Allergen Components help you distinguish between cross-reactive and specific sensitizations⁴



“Molecular-based allergy diagnostics have emerged into routine care due to its ability to improve risk assessment, particularly for food allergies.”

WAO – ARIA – GA²LEN Consensus Paper on Molecular-based Allergy Diagnostics⁴

ImmunoCAP Allergen Components help you decrease the need for provocation testing and improve recommendations for allergen avoidance⁴

Is Emma at risk for a systemic reaction to peanuts?

Emma, 16 years old – case history:

- Has had rhinitis and conjunctivitis during every spring since school age
- Loves chocolate bars, but sometimes experiences oral itching when eating them
- Doctor suspects birch and peanut allergy
- ImmunoCAP tests are ordered to help rule in or rule out allergy

ImmunoCAP Complete Allergen results:

Birch: 21 kU_A/l

Peanut: 18 kU_A/l

The test results confirm the doctor's suspicions and Emma is diagnosed as birch and peanut allergic. In order to evaluate Emma's risk for a systemic reaction, the doctor ordered ImmunoCAP Allergen Component tests.



ImmunoCAP Allergen Component results (kU_A/l):

Increasing risk for systemic reactions			
PROFILIN	PR-10	LTP	STORAGE PROTEINS
Pru p 4*: <0.1	Ara h 8: 12.2	Ara h 9: <0.1	Ara h 1: 0.6 Ara h 2: 4.3 Ara h 3: 1.2

* Surrogate markers for profilin: Phl p 12, Bet v 2, or Pru p 4.

Interpretation and management:

- The Allergen Component test results show that Emma is sensitized to the storage proteins in peanut (Ara h 1, 2 and 3), indicating that she is at risk for systemic reactions
- Her sensitization to Ara h 8 is explained by cross-reactivity from her birch pollen allergy and may cause local reactions, such as oral symptoms

Doctor's recommendations:

- Doctor advises her to strictly avoid peanut—even trace amounts—and to carry an auto-injector

Emma is at risk of systemic reactions if she eats peanuts

Is Sophie at risk for a systemic reaction to hazelnut?

Sophie, 8 years old – case history:

- Diagnosed with birch pollen allergy two years ago, has shown no earlier reactions to food
- After eating yogurt with muesli for breakfast, Sophie suddenly experiences angioedema and needs transportation to the emergency department
- She recovers after administration of anti-histamines and oral steroids
- Doctor suspects hazelnut allergy and orders ImmunoCAP testing to get a more detailed understanding of the cause of her reaction

ImmunoCAP Complete Allergen results:

Birch: 10.8 kU_A/l

Hazelnut: 4.6 kU_A/l

The test results confirm that Sophie is allergic to birch and hazelnut.



ImmunoCAP Allergen Component results (kU_A/l):

Increasing risk for systemic reactions			
PROFILIN	PR-10	LTP	STORAGE PROTEINS
Pru p 4*: <0.1	Cor a 1: 2.2	Cor a 8: <0.1	Cor a 9: 1.3 Cor a 14: 2.0

* Surrogate marker for profilin.

Interpretation:

- ImmunoCAP Allergen Component test results show that Sophie has a primary hazelnut allergy as she is sensitized to the storage proteins (Cor a 9 and Cor a 14), explaining her serious reaction
- Sophie's birch pollen allergy gives rise to positive test results to Cor a 1 – the birch pollen-related component in hazelnut

Doctor's recommendations:

- Sophie should strictly avoid hazelnuts and carry emergency medication

Sophie is at risk for systemic reaction when eating hazelnuts

Is Maria at risk for a systemic reaction to peach?

Maria, 5 years old – case history:

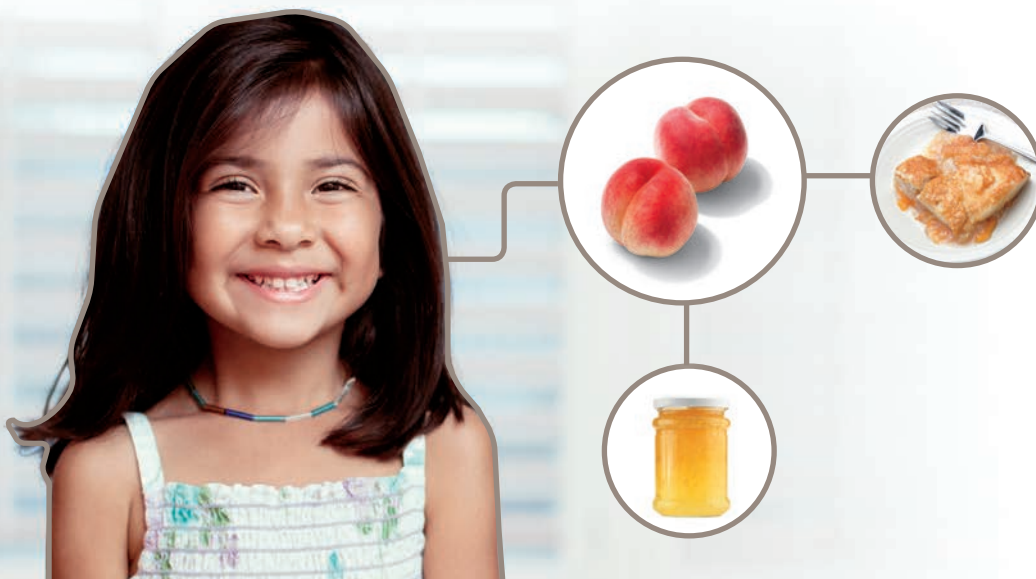
- Diagnosed with grass pollen allergy at the age of three
- Two years later, she eats a peach and after half an hour develops urticaria and her breathing is also affected
- Her mother gave her anti-histamines and the symptoms resolved on the way to the hospital
- Doctor ordered ImmunoCAP tests to confirm the suspicion of peach allergy

ImmunoCAP Complete Allergen results:

Timothy: 15.3 kU_A/l

Peach: 17.9 kU_A/l

The ImmunoCAP test results show that Maria has high levels of sIgE to peach, even higher than to grass pollen.



ImmunoCAP Allergen Component results (kU_A/l):

Increasing risk for systemic reactions			
PROFILIN	PR-10	LTP	STORAGE PROTEINS
Pru p 4*: 4.2	Pru p 1: <0.1	Pru p 3: 15.2	

* Surrogate marker for profilin.

Interpretation:

- Component test results show that Maria has a primary peach allergy as she is sensitized to Pru p 3 (LTP), which explains her systemic reaction
- She also has IgE antibodies to Pru p 4 (profilin), which most likely is due to cross-reactivity with her grass pollen sensitization

Doctor's recommendations:

- Maria should avoid peaches, even in cooked form, and consider carrying emergency medication
- She should also be cautious with other stone fruits (e.g. apples, apricots) and nuts as cross-reactivity may cause reactions
- She should continue using anti-histamines during pollen season

Maria is at risk for systemic reaction when eating peaches

Plant-derived foods: Assess risk and cross-reactivity

ImmunoCAP Allergen Components help you assess the risk of systemic reactions in patients with allergy to plant-derived foods⁴

- Many patients allergic to plant-derived foods may not be at risk for a systemic reaction^{5-7,10-12}
- Allergen components are proteins associated with different levels of risk^{8,9}



Increasing risk for systemic reactions

ImmunoCAP COMPLETE ALLERGENS	PROFILIN*	PR-10	LTP	STORAGE PROTEINS
Peanut	Profilin*	Ara h 8	Ara h 9	Ara h 1, Ara h 2, Ara h 3
Hazelnut	Profilin*	Cor a 1	Cor a 8	Cor a 9, Cor a 14
Walnut†	Profilin*		Jug r 3	Jug r 1
Brazil Nut	Profilin*			Ber e 1
Cashew Nut‡	Profilin*			Ana o 3
Soy	Profilin*	Gly m 4		Gly m 5, Gly m 6
Peach	Profilin*	Pru p 1	Pru p 3	
Apple	Profilin*	Mal d 1	Mal d 3	



Characteristics:

- | | | | |
|---|---|--|---|
| <ul style="list-style-type: none"> • Labile to heat and digestion • Highly cross-reactive with pollen and plant foods | <ul style="list-style-type: none"> • Labile to heat and digestion • Associated with birch pollen allergy (cross-reactivity) | <ul style="list-style-type: none"> • Stable to heat and digestion • Associated with allergy to stone fruits (cross-reactivity) | <ul style="list-style-type: none"> • Stable to heat and digestion • Indicates primary sensitization |
|---|---|--|---|

Clinical Relevance:

- | | | | |
|--|--|---|---|
| <ul style="list-style-type: none"> • Low risk for reaction • Likely to tolerate foods in cooked form | <ul style="list-style-type: none"> • Associated with local reactions • Likely to tolerate foods in cooked form | <ul style="list-style-type: none"> • Associated with local and systemic reactions • Likely to react to any form of food—cooked or raw | <ul style="list-style-type: none"> • Associated with systemic reactions • Likely to react to any form of food—cooked or raw |
|--|--|---|---|

* Surrogate markers for profilin: Phl p 12, Bet v 2, or Pru p 4.

† **Walnut/Pecan:** Patients sensitized to pecan nuts are very likely to also be IgE-reactive to walnut and vice versa. Jug r 1 and Jug r 3 may therefore be used as risk markers for both pecan and walnut allergy.^{13,14}

‡ **Cashew/Pistachio:** Patients sensitized to pistachio are very likely to also be IgE-reactive to cashew nuts and vice versa. Ana o 3 may therefore be used as a risk marker for both pistachio and cashew nut allergy.^{13,15}

Is it IgE-mediated wheat food allergy?

Are the symptoms signs of immediate wheat allergy?

Is it wheat-dependent exercise-induced anaphylaxis (WDEIA)?

ImmunoCAP Allergen Components can help you find out

- ImmunoCAP Allergen Components help you assess if it really is wheat allergy and if there is a risk for systematic reactions^{16,17}



Recommended test profile

ImmunoCAP Complete Allergens	Wheat		
ImmunoCAP Allergen Components	Tri a 14 (LTP)	Tri a 19 (ω-5-gliadin)	Gliadin (α, β, γ, ω)
	<ul style="list-style-type: none"> • Risk for clinical reaction 	<ul style="list-style-type: none"> • Risk marker for systematic reaction • Marker for wheat allergy persistence¹⁸ 	<ul style="list-style-type: none"> • Risk marker for systematic reaction • Marker for wheat allergy persistence¹⁹

Immediate wheat allergy

- Sensitization to wheat-specific components supports a diagnosis of IgE-mediated wheat allergy and helps rule out clinically irrelevant sensitizations due to grass pollen cross-reactivity^{20,21}
- IgE antibodies to Tri a 19 and Gliadin are associated with severe reactions in wheat food allergies¹⁶

WDEIA

- Elicited by exercise or other co-factors, such as NSAID drugs, alcohol, or stress after wheat intake
- 30%-50% of patients are negative on extract based test, but the majority are sensitized to Tri a 19 and/or Gliadin^{22,23}

You've discovered the connection Now see the benefits of ImmunoCAP allergy blood testing

ImmunoCAP Allergen Components help pinpoint proteins causing the symptoms

- Can help assess risk for systemic reactions and explain symptoms due to cross-reactivity⁴
- Assess tolerance to baked foods²⁴⁻²⁷
- Can help you decrease the need for provocation testing and improve recommendations for allergen avoidance⁴

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