ImmunoCAP® Cross-Reactivity Map

Tech					Possible Cross-Reactivity																				
ISAC 112	ImmunoCAP	SOURCE	COMPONENT	PROTEIN FAMILY OR FUNCTION	Fruits	Vegetables	Nuts, seeds	Legumes	Cereals	Spices	Grass pollen	Tree pollen	Weed pollen	Latex	Milk	Meat	Fish	Egg	Seafood	Animals	Moulds	Mites	Insects	Venoms	Parasites
		FOOD ALLERGENS																							
n	n	*Egg white*	Gal d 1	Ovomucoid																					
n	n	*Egg white*	Gal d 2	Ovalbumin																					
n	n	*Egg white*	Gal d 3	Conalbumin/Ovotransferrin																					
	n	*Egg*	Gal d 4	Lysozyme																					
n		*Egg yolk/chicken*	Gal d 5	Livetin/Serum Albumin																					
n	n	*Cow's milk*	Bos d 4	Alpha-lactalbumin																					
n	n	*Cow's milk*	Bos d 5	Beta-lactoglobulin																					
n	n	*Cow's milk and meat*	Bos d 6	Serum Albumin																					
n	n	*Cow's milk*	Bos d 8	Casein																					
n		*Cow's milk*	Bos d Lactoferrin	Transferrin																					
	r	*Carp*	Cyp c 1	Parvalbumin																					
r	r	*Cod*	Gad c 1	Parvalbumin																					
	r	*Shrimp*	Pen a 1	Tropomyosin																					
n		*Shrimp*	Pen m 1	Tropomyosin																					
n		*Shrimp*	Pen m 2	Arginine kinase																					
n		*Shrimp*	Pen m 4	*Sarcoplasmic* Calcium binding protein																					
r		*Cashew nut*	Ana o 2	Storage protein, 11S globulin			●																		
	r	*Cashew nut*	Ana o 3	Storage protein, 2S albumin			●																		
r	r	*Brazil nut*	Ber e 1	Storage protein, 2S albumin			●																		
r	r	*Hazelnut*	Cor a 1.0401	PR-10																					
r	r	*Hazelnut*	Cor a 8	LTP																					
n	n	*Hazelnut*	Cor a 9	Storage protein, 11S globulin			●																		
	r	*Hazelnut*	Cor a 14	Storage protein, 2S albumin			●																		
r	r	*Walnut*	Jug r 1	Storage protein, 2S albumin			●																		
n		*Walnut*	Jug r 2	Storage protein, 7S globulin			●																		
n	r	*Walnut*	Jug r 3	LTP																					
n		*Sesame*	Ses i 1	Storage protein, 2S albumin			●																		
r	r	*Peanut*	Ara h 1	Storage protein, 7S globulin				●																	
r	r	*Peanut*	Ara h 2	Storage protein, 2S albumin				●																	
r	r	*Peanut*	Ara h 3	Storage protein, 11S globulin				●																	
n		*Peanut*	Ara h 6	Storage protein, 2S albumin				●																	
r	r	*Peanut*	Ara h 8	PR-10																					
r	r	*Peanut*	Ara h 9	LTP																					
r	r	*Soy bean*	Gly m 4	PR-10																					
n	n	*Soy bean*	Gly m 5	Storage protein, Beta-conglycinin				●																	
n	n	*Soy bean*	Gly m 6	Storage protein, Glycinin				●																	
n		*Buckwheat*	Fag e 2	Storage protein, 2S albumin					●																
r	r	*Wheat*	Tri a 14	LTP																					
r	r	*Wheat*	Tri a 19	Omega-5 gliadin					●																
n		*Wheat*	Tri a aA_TI	Alpha-Amylase / Trypsin Inhibitor																					
n		*Kiwi*	Act d 1	Cysteine protease	●																				
n		*Kiwi*	Act d 2	Thaumatin-like protein																					
n		*Kiwi*	Act d 5	Kiwellin	●																				
r	r	*Kiwi*	Act d 8	PR-10																					
r	r	*Celery*	Api g 1	PR-10																					
r	r	*Apple*	Mal d 1	PR-10																					
	r	*Apple*	Mal d 3	LTP																					
r	r	*Peach*	Pru p 1	PR-10																					
r	r	*Peach*	Pru p 3	LTP																					
	r	*Peach*	Pru p 4	Profilin																					
		AEROALLERGENS																							
n	n	*Bermuda*	Cyn d 1	Grass group 1																					
r	r	*Timothy*	Phl p 1	Grass group 1																					
r	r	*Timothy*	Phl p 2	Grass group 2																					
n	n	*Timothy*	Phl p 4	Berberine bridge enzyme																					
r	r	*Timothy*	Phl p 5	Grass group 5																					
r	r	*Timothy*	Phl p 6	Grass group 6																					
r	r	*Timothy*	Phl p 7	Polcalcin																					
r	r	*Timothy*	Phl p 11	Trypsin inhibitor																					
r	r	*Timothy*	Phl p 12	Profilin																					
r		*Alder*	Aln g 1	PR-10																					
r	r	*Birch*	Bet v 1	PR-10																					
r	r	*Birch*	Bet v 2	Profilin																					
r	r	*Birch*	Bet v 4	Polcalcin																					
	r	*Birch*	Bet v 6	Isoflavone reductases																					
r		*Hazel*	Cor a 1.0101	PR-10																					
n		*Japanese cedar*	Cry j 1	Pectate lyase								●													
n	n	*Cypress*	Cup a 1	Pectate lyase								●													
r	r	*Olive*	Ole e 1	Trypsin inhibitor								●													
n	n	*Olive*	Ole e 7	LTP																					
r	r	*Olive*	Ole e 9	Glucanase								●													
r	r	*Plane*	Pla a 1	Invertase Inhibitor								●													
n		*Plane*	Pla a 2	Polygalacturonases								●													
r		*Plane*	Pla a 3	LTP																					
n	n	*Ragweed*	Amb a 1	Pectate lyase									●												
n	n	*Mugwort*	Art v 1	Defensin									●												
n	n	*Mugwort*	Art v 3	LTP																					
r		*Goosefoot*	Che a 1	Trypsin Inhibitor									●												
r		*Mercury*	Mer a 1	Profilin																					
r	r	*Wall pellitory*	Par j 2	LTP									●												
r	r	*Plantain*	Pla l 1	Trypsin Inhibitor									●												
n	n	*Saltwort*	Sal k 1	Pectin methylesterase									●												
r	r	*Dog*	Can f 1	Lipocalin																●					
r	r	*Dog*	Can f 2	Lipocalin																●					
n	n	*Dog*	Can f 3	Serum Albumin																					
r	r	*Dog*	Can f 5	Arginine esterase/kallikrein																●					
r	r	*Horse*	Equ c 1	Lipocalin																●					
n		*Horse*	Equ c 3	Serum Albumin																					
r	r	*Cat*	Fel d 1	Uteroglobin																●					
r	r	*Cat*	Fel d 2	Serum Albumin																					
r	r	*Cat*	Fel d 4	Lipocalin																●					
n		*Mouse*	Mus m 1	Lipocalin																●					
	n	*Swine*	Sus s PSA	Serum Albumin																					
r	r	*Alternaria*	Alt a 1	Acidic glycoprotein																	●				
r		*Alternaria*	Alt a 6	Enolase																					
r	r	*Aspergillus*	Asp f 1	Mitogillin family																	●				
	r	*Aspergillus fumigatus*	Asp f 2	Fibrinogen Binding Proteins																					
r	r	*Aspergillus*	Asp f 3	Peroxysomal protein																					
	r	*Aspergillus fumigatus*	Asp f 4	Unknown																					
r	r	*Aspergillus*	Asp f 6	Mn superoxide dismutase																					
	n	*Aspergillus oryzae*	Asp o 21	Alpha-amylase																					
r		*Cladosporium*	Cla h 8	Mannitol dehydrogenase																					
r		*Blomia*	Blo t 5	Group 5 mite allergen																		●			
n		*Dermatophagoides*	Der f 1	Cysteine protease																					
r		*Dermatophagoides*	Der f 2	NPC2 family																					
n	r	*Dermatophagoides*	Der p 1	Cysteine protease																					
r	r	*Dermatophagoides*	Der p 2	NPC2 family																					
r	r	*Dermatophagoides*	Der p 10	Tropomyosin																					
r		*Lepidoglyphus*	Lep d 2	NPC2 family																		●			
r		*Cockroach*	Bla g 1	Cockroach group 1																			●		
r		*Cockroach*	Bla g 2	Aspartic protease																			●		
r		*Cockroach*	Bla g 5	Glutathione S-transferase																			●		
n		*Cockroach*	Bla g 7	Tropomyosin																					
		OTHERS																							
r	r	*Honey bee*	Api m 1	Phospholipase A2																				●	
	r	*Honey bee*	Api m 2	Hyaluronidase																					
	r	*Honey bee*	Api m 3	Acid phosphatase																				●	
n		*Honey bee*	Api m 4	Melittin																				●	
		Honey bee	Api m 5	Dipeptidyl peptidase																					
	r	*Honey bee*	Api m 10	Icarapin																				●	
r	r	*Paper wasp*	Pol d 5	Antigen 5																				●	
	r	*Common wasp*	Ves v 1	Phospholipase A1																				●	
r	r	*Common wasp*	Ves v 5	Antigen 5																				●	
r		*Anisakis*	Ani s 1	Serine protease inhibitor																					●
r		*Anisakis*	Ani s 3	Tropomyosin																					
r	r	*Latex*	Hev b 1	Rubber elongation factor										●											
r	r	*Latex*	Hev b 3	Small rubber particle protein										●											
r	r	*Latex*	Hev b 5	Acidic protein										●											
r	r	*Latex*	Hev b 6.01	Prohevein																					
	r	*Latex*	Hev b 6.02	Hevein																					
r	r	*Latex*	Hev b 8	Profilin																					
	r	*Latex*	Hev b 9	Glycolytic Enzyme										●											
	r	*Latex*	Hev b 11	Chitinases																					
n	n	*Bromelain*	MUXF3	CCD-marker																					
	n	*Pineapple*	Ana c 2	Bromelain, enzyme																					
	n	*Bovine Thyroglobulin*	Alpha-Gal	Gal-alpha-1,3-Gal (alpha-Gal)												●									

ISAC 112 ImmunoCAP SOURCE COMPONENT PROTEIN FAMILY OR FUNCTION Fruits Vegetables Nuts, seeds Legumes Cereals Spices Grass pollen Tree pollen Weed pollen Latex Milk Meat Fish Egg Seafood Animals Moulds Mites Insects Venoms Parasites
Tech Possible Cross-Reactivity

● Primarily species-specific allergen

Important Allergen Families

Storage protein (1)
- Proteins stable to heat and digestion causing reactions also to cooked foods.
- Often associated with systemic and more severe reactions in addition to OAS.
- Proteins in nuts and seeds serving as source material during growth of new plants.

LTP (non-specific Lipid Transfer Protein, nsLTP) (1)
- Proteins stable to heat and digestion causing reactions also to cooked foods.
- Often associated with systemic and more severe reactions in addition to OAS.
- Associated with allergic reactions to fruit and vegetables especially in regions where peach and closely related fruits are cultivated.

PR-10 protein, Bet v 1 homologue (1)
- Most PR-10 proteins are sensitive to heat and digestion and cooked foods are often tolerated.
- Often associated with local symptoms such as oral allergy syndrome (OAS).
- Associated with allergic reactions to pollens, fruits and vegetables.

Polcalcin (Calcium-binding proteins) (2)
- A marker for cross-reactivity between pollen, which is not present in plant foods.

Profilin (1)
- Proteins sensitive to heat and digestion and cooked foods are often tolerated.
- Seldom associated with clinical symptoms but may cause local and even severe reactions in some patients.
- Profilins are present in all pollen and plant foods.

CCD (2)
- A marker for sensitization to cross-reactive carbohydrate determinants.
- Rarely causes allergic reactions, but may produce positive in-vitro test results to CCD-containing allergens from pollen, plant foods, insects and venoms.

Lipocalin (3)
- Stable proteins (and important allergens) in animals.
- Allergen component displaying limited cross-reactivity between species.

Parvalbumin (3)
- Proteins stable to heat and digestion causing reactions also to cooked foods.
- Often associated with systemic and more severe reactions in addition to OAS.
- Major allergen in fish and a marker for cross-reactivity among different species of fish and amphibians.

Tropomyosin (3)
- Proteins stable to heat and digestion causing reactions also to cooked foods.
- As food allergen often associated with systemic and more severe reactions in addition to OAS.
- Actin-binding proteins in muscle fibres and a marker for cross-reactivity between crustaceans, mites and cockroach.

Serum albumin (3, 4)
- Proteins fairly sensitive to heat and digestion.
- Proteins present in different biological fluids and solids in all animals e.g, cow's milk, blood, beef and epithelia.
- Cross-reactions between albumins from different mammalian species are well known, for example between cat and dog and cat and pig (pork).

Important Allergens

Gal d 1, Ovomucoid (egg white) (3)
- IgE abs to ovomucoid are associated with persistent egg allergy and usually neither raw or cooked is tolerated.

Ara h 1, 2, 3, 6, 8 and 9 (peanut) (3)
- IgE abs to Ara h 1, 2, 3, 6 and 9 (LTP) are associated with systemic peanut reaction in addition to OAS.
- IgE abs to Ara h 8 (PR-10) are usually associated with milder, local symptoms such as OAS, and often originating from birch sensitzation.

Gly m 4, 5 and 6 (soy) (3)
- Soy bean allergic patients often have IgE abs to Gly m 5 and Gly m 6. Gly m 5 & Ara h 1 and Gly m 6 & Ara h 3, respectively, show high degree of similarity, also with corresponding proteins in other legumes such as lentils. IgE to these legume storage proteins may cross react and may be associated with clinical reactivity.
- IgE abs to Gly m 4 (PR-10) are usually associated with local symptoms such as OAS, originating from birch sensitzation. However, a few cases of severe allergic reactions to Gly m 4 have been reported to occur, e.g. during birch pollen season and often in combination with exercise and intake of low-processed soy drinks.

Tri a 19, Omega-5 gliadin (wheat) (5, 6, 7)
- IgE abs to omega-5 gliadin (Tri a 19) in adults are associated with a risk of exercise- or NSAIDs-induced reactions in connection with wheat ingestion.
- IgE abs to omega-5 gliadin in children are associated with a risk of immediate reactions to wheat.

Alt a 1 (Alternaria) (3)
- Alt a 1, the major allergen in alternaria is associated with asthma development.

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