Allergen Panel, IgE by ImmunoCap ISAC

Patient: [redacted]
DOB: [redacted] Age: 5 Sex: M
Patient Identifiers: [redacted]
Visit Number (FIN): [redacted]

Client: [redacted]
Physician: [redacted]

ARUP Test Code: 2005894

Collection Date: 08/24/2022
Received in lab: 08/26/2022
Completion Date: 09/01/2022

Test Information

Performed at: Phadia Immunology Ref. Laboratory (PiRL), 4169 Commercial Ave., Portage, MI 49002

Patient's Report

Patient's test results from the allergen panel from PiRL continues on following pages.

ARUP LABORATORIES | 800-522-2787 | aruplab.com
500 Chipeta Way, Salt Lake City, UT 84108-1221
Jonathan R. Genzen, MD, PhD, Laboratory Director

Chart continues on following page(s)

Patient: [redacted] | **Date of Birth:** [redacted] | **Sex:** M | **Physician:** [redacted]
Patient Identifiers: [redacted] | **Visit Number (FIN):** [redacted]

Thermo SCIENTIFIC

ImmunoCAP ISAC

SAMPLE INFORMATION		PATIENT INFORMATION			
Sample ID:	[redacted]	Patient ID:	[redacted]		
Sampling date:	8/24/2022	Name:			
Approval status:	Measured	Birth date:	[redacted]	Age:	5
Print date:	9/1/2022	ID/MR#:		Gender:	M
Calibration curve:	CTR03 8/23/2022 EK90330_1				

ORDERING PHYSICIAN INFORMATION	
Ordering physician:	ARUP LABORATORIES
Address:	500 CHIPETA WAY SALT LAKE CITY, UT 84108

1. Summary of positive IgE results

Mainly species-specific food components

Peanut	Ara h 2	Storage protein, 2S albumin	0.7 ISU-E	
	Ara h 6	Storage protein, 2S albumin	0.6 ISU-E	

Mainly species-specific aeroallergen components

Grass pollen

Bermuda grass	Cyn d 1	Grass group 1	10 ISU-E	
Timothy grass	Phl p 1	Grass group 1	24 ISU-E	
	Phl p 2	Grass group 2	0.6 ISU-E	
	Phl p 4	Berberine bridge enzyme	0.7 ISU-E	

Cross-reactive components

CCD

CCD	MUXF3	CCD	1.6 ISU-E	

ISAC Standardized Units (ISU-E)	Level
< 0.3	Undetectable
0.3 - 0.9	Low
1 - 14.9	Moderate / High
≥ 15	Very High

ARUP LABORATORIES | 800-522-2787 | aruplab.com
500 Chipeta Way, Salt Lake City, UT 84108-1221
Jonathan R. Genzen, MD, PhD, Laboratory Director

Chart continues on following page(s)

Patient: [redacted] | **Date of Birth:** [redacted] | **Sex:** M | **Physician:** [redacted]
Patient Identifiers: [redacted] | **Visit Number (FIN):** [redacted]

Thermo SCIENTIFIC

ImmunoCAP ISAC

SAMPLE INFORMATION	
Sample ID:	[redacted]
Sampling date:	8/24/2022
Approval status:	Measured
Print date:	9/1/2022
Calibration curve:	CTR03 8/23/2022 EK90330_1

PATIENT INFORMATION			
Patient ID:	[redacted]		
Name:			
Birth date:	[redacted]	Age:	5
ID/MR#:		Gender:	M

ORDERING PHYSICIAN INFORMATION	
Ordering physician:	**ARUP LABORATORIES**
Address:	500 CHIPETA WAY SALT LAKE CITY, UT 84108

Phadia Xplain

SUMMARY COMMENTS
This patient has IgE to both species-specific and cross-reactive components. In general, the higher the sIgE level the greater the likelihood of allergic symptoms. IgE to peanut Ara h 2 and peanut Ara h 6 is associated with risk of systemic allergic reactions.

FOOD COMPONENTS (mainly species-specific)
IgE to peanut detected.
Nuts, Seeds & Legumes: IgE to the storage protein(s) peanut Ara h 2 and peanut Ara h 6 is associated with risk of systemic allergic reactions. Many storage proteins are heat and digestion stable and associated with allergic reactions both to cooked and uncooked food.

AEROALLERGEN COMPONENTS (mainly species-specific)
IgE to timothy and bermuda grass detected (listed in descending ISU-E levels).
Pollen: IgE to timothy components may cross-react with similar proteins in other grasses. IgE to bermuda grass Cyn d 1 and timothy grass Phl p 1 may cross-react. Note that part of the IgE response to bermuda grass Cyn d 1 and timothy Phl p 4 may be due to CCD (sugar structures) present on the component. CCD rarely causes allergic reactions.

FOOD-INHALATION CROSS-REACTIVE COMPONENTS
IgE to CCD, as indicated by the CCD marker bromelain MUXF3, rarely causes allergic reactions, but may produce positive in-vitro test results to native CCD-containing allergens from pollen, plant food, insects and venoms.
CCD: The result for some purified native components (e.g. bermuda grass Cyn d 1 and timothy Phl p 4) may be affected by CCD-specific IgE antibodies.

Knowledge base
Phadia Xplain Knowledge Base, version 1.3.1

ARUP LABORATORIES | 800-522-2787 | aruplab.com
500 Chipeta Way, Salt Lake City, UT 84108-1221
Jonathan R. Genzen, MD, PhD, Laboratory Director

Chart continues on following page(s)

Patient: [redacted] | **Date of Birth:** [redacted] | **Sex:** M | **Physician:** [redacted]
Patient Identifiers: [redacted] | **Visit Number (FIN):** [redacted]

Thermo SCIENTIFIC

ImmunoCAP ISAC

SAMPLE INFORMATION		PATIENT INFORMATION			
Sample ID:	[redacted]	Patient ID:	[redacted]		
Sampling date:	8/24/2022	Name:			
Approval status:	Measured	Birth date:	[redacted]	Age:	5
Print date:	9/1/2022	ID/MR#:		Gender:	M
Calibration curve:	CTR03 8/23/2022 EK90330_1				

ORDERING PHYSICIAN INFORMATION	
Ordering physician:	**ARUP LABORATORIES**
Address:	500 CHIPETA WAY SALT LAKE CITY, UT 84108

2. IgE results sorted by protein group

The result comments are intended as an aid in the interpretation of test results and do not constitute medical advice. No liability is accepted in their use.

Mainly species-specific food components				
Egg white	Gal d 1	Ovomucoid	<0.3 ISU-E	
	Gal d 2	Ovalbumin	<0.3 ISU-E	
	Gal d 3	Conalbumin/Ovotransferrin	<0.3 ISU-E	
Egg yolk/chicken meat	Gal d 5	Livetin/Serum albumin	<0.3 ISU-E	
Cow's milk	Bos d 4	Alpha-lactalbumin	<0.3 ISU-E	
	Bos d 5	Beta-lactoglobulin	<0.3 ISU-E	
	Bos d 8	Casein	<0.3 ISU-E	
	Bos d lactoferrin	Transferrin	<0.3 ISU-E	
Alpha-Gal	Alpha-Gal	Gal-alpha-1,3-Gal (Alpha-Gal)	<0.3 ISU-E	
Cod	Gad c 1	Parvalbumin	<0.3 ISU-E	
Shrimp	Pen m 2	Arginine kinase	<0.3 ISU-E	
	Pen m 4	Sarcoplasmic calcium binding protein	<0.3 ISU-E	
Cashew nut	Ana o 2	Storage protein, 11S globulin	<0.3 ISU-E	
	Ana o 3	Storage protein, 2S albumin	<0.3 ISU-E	
Brazil nut	Ber e 1	Storage protein, 2S albumin	<0.3 ISU-E	
Hazelnut	Cor a 9	Storage protein, 11S globulin	<0.3 ISU-E	
	Cor a 14	Storage protein, 2S albumin	<0.3 ISU-E	
Walnut	Jug r 1	Storage protein, 2S albumin	<0.3 ISU-E	
Sesame seed	Ses i 1	Storage protein, 2S albumin	<0.3 ISU-E	
Peanut	Ara h 1	Storage protein, 7S globulin	<0.3 ISU-E	
	Ara h 2	Storage protein, 2S albumin	0.7 ISU-E	
	Ara h 3	Storage protein, 11S globulin	<0.3 ISU-E	
	Ara h 6	Storage protein, 2S albumin	0.6 ISU-E	
Soybean	Gly m 5	Storage protein, Beta-conglycinin	<0.3 ISU-E	
	Gly m 6	Storage protein, Glycinin	<0.3 ISU-E	
Buckwheat	Fag e 2	Storage protein, 2S albumin	<0.3 ISU-E	
Wheat	Tri a 14	Lipid transfer protein (nsLTP)	<0.3 ISU-E	
	Tri a 19.0101	Omega-5 gliadin	<0.3 ISU-E	
	Tri a aA_TI	Alpha-amylase / Trypsin inhibitor	<0.3 ISU-E	

ARUP LABORATORIES | 800-522-2787 | aruplab.com
500 Chipeta Way, Salt Lake City, UT 84108-1221
Jonathan R. Genzen, MD, PhD, Laboratory Director

Chart continues on following page(s)

Patient: [redacted] | **Date of Birth:** [redacted] | **Sex:** M | **Physician:** [redacted]
Patient Identifiers: [redacted] | **Visit Number (FIN):** [redacted]

Mainly species-specific food components

Kiwi	Act d 1	Cysteine protease	<0.3 ISU-E	
	Act d 5	Kiwellin	<0.3 ISU-E	

Parvalbumins are major allergens in fish and markers for cross-reactivity among different species of fish.

Mainly species-specific aeroallergen components

Grass pollen				
Bermuda grass	Cyn d 1	Grass group 1	10 ISU-E	
Timothy grass	Phl p 1	Grass group 1	24 ISU-E	
	Phl p 2	Grass group 2	0.6 ISU-E	
	Phl p 4	Berberine bridge enzyme	0.7 ISU-E	
	Phl p 5	Grass group 5	<0.3 ISU-E	
	Phl p 6	Grass group 6	<0.3 ISU-E	
	Phl p 11	Ole e 1-related protein	<0.3 ISU-E	
Tree pollen				
Birch	Bet v 1	PR-10 protein	<0.3 ISU-E	
Japanese cedar	Cry j 1	Pectate lyase	<0.3 ISU-E	
Cypress	Cup a 1	Pectate lyase	<0.3 ISU-E	
Olive pollen	Ole e 1	Common olive group 1	<0.3 ISU-E	
	Ole e 9	Beta-1,3-glucanase	<0.3 ISU-E	
Plane tree	Pla a 1	Putative invertase inhibitor	<0.3 ISU-E	

Ole e 1 is also a marker for ash sensitization.

Weed pollen				
Ragweed	Amb a 1	Pectate lyase	<0.3 ISU-E	
Mugwort	Art v 1	Defensin	<0.3 ISU-E	
Goosefoot	Che a 1	Ole e 1-related protein	<0.3 ISU-E	
Wall pelitory	Par j 2	Lipid transfer protein (nsLTP)	<0.3 ISU-E	
Plantain	Pla l 1	Ole e 1-related protein	<0.3 ISU-E	
Saltwort	Sal k 1	Pectin methylesterase	<0.3 ISU-E	
Animal				
Dog	Can f 1	Lipocalin	<0.3 ISU-E	
	Can f 2	Lipocalin	<0.3 ISU-E	
	Can f 4	Lipocalin	<0.3 ISU-E	
	Can f 5	Arginine Esterase	<0.3 ISU-E	
	Can f 6	Lipocalin	<0.3 ISU-E	
Horse	Equ c 1	Lipocalin	<0.3 ISU-E	
Cat	Fel d 1	Uteroglobin	<0.3 ISU-E	
	Fel d 4	Lipocalin	<0.3 ISU-E	
Mouse	Mus m 1	Lipocalin	<0.3 ISU-E	
Mold				
Alternaria	Alt a 1	Acidic glycoprotein	<0.3 ISU-E	
	Alt a 6	Enolase	<0.3 ISU-E	
Aspergillus	Asp f 1	Mitogillin family	<0.3 ISU-E	
	Asp f 3	Peroxisomal protein	<0.3 ISU-E	
	Asp f 6	Mn superoxide dismutase	<0.3 ISU-E	
Cladosporium	Cla h 8	Mannitol dehydrogenase	<0.3 ISU-E	
Mite				
B. tropicalis (HDM)	Blo t 5	Mite group 5	<0.3 ISU-E	

ARUP LABORATORIES | 800-522-2787 | aruplab.com
500 Chipeta Way, Salt Lake City, UT 84108-1221
Jonathan R. Genzen, MD, PhD, Laboratory Director

Chart continues on following page(s)

Mainly species-specific aeroallergen components

Mite			
D. farinae (HDM)	Der f 1	Cysteine protease	<0.3 ISU-E
	Der f 2	NPC2 family	<0.3 ISU-E
D. pteronyssinus (HDM)	Der p 1	Cysteine protease	<0.3 ISU-E
	Der p 2	NPC2 family	<0.3 ISU-E
	Der p 23	Peritrophin-like protein domain (PF01607)	<0.3 ISU-E
L. destructor (storage mite)	Lep d 2	NPC2 family	<0.3 ISU-E
Cockroach			
Cockroach	Bla g 1	Cockroach group 1	<0.3 ISU-E
	Bla g 2	Aspartic protease	<0.3 ISU-E
	Bla g 5	Glutathione S-transferase	<0.3 ISU-E

Other mainly species-specific components

Venom

When ImmunoCAP ISAC reveals IgE abs to venoms further testing for venom allergy is recommended. The venom components on ImmunoCAP ISAC are CCD free.

Parasite			
Anisakis	Ani s 1	Serine protease inhibitor	<0.3 ISU-E
Latex			
Latex	Hev b 1	Rubber elongation factor	<0.3 ISU-E
	Hev b 3	Small rubber particle protein	<0.3 ISU-E
	Hev b 5	Acidic protein	<0.3 ISU-E
	Hev b 6	Hevein	<0.3 ISU-E

Cross-reactive components

Serum albumin			
Cow's milk/meat	Bos d 6	Serum albumin	<0.3 ISU-E
Dog	Can f 3	Serum albumin	<0.3 ISU-E
Horse	Equ c 3	Serum albumin	<0.3 ISU-E
Cat	Fel d 2	Serum albumin	<0.3 ISU-E

A protein present in different animal fluids and tissues, e.g blood, milk, meat (e.g. beef) and egg. Cross-reactions between albumins from different animal species are well known, for example between cat and dog or cat and pork.

Tropomyosin			
Anisakis	Ani s 3	Tropomyosin	<0.3 ISU-E
Cockroach	Bla g 7	Tropomyosin	<0.3 ISU-E
D. pteronyssinus (HDM)	Der p 10	Tropomyosin	<0.3 ISU-E
Shrimp	Pen m 1	Tropomyosin	<0.3 ISU-E

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

Lipid transfer protein (nsLTP)			
Peanut	Ara h 9	Lipid transfer protein (nsLTP)	<0.3 ISU-E
Hazelnut	Cor a 8	Lipid transfer protein (nsLTP)	<0.3 ISU-E
Walnut	Jug r 3	Lipid transfer protein (nsLTP)	<0.3 ISU-E
Peach	Pru p 3	Lipid transfer protein (nsLTP)	<0.3 ISU-E
Mugwort	Art v 3	Lipid transfer protein (nsLTP)	<0.3 ISU-E
Olive pollen	Ole e 7	Lipid transfer protein (nsLTP)	<0.3 ISU-E
Plane tree	Pla a 3	Lipid transfer protein (nsLTP)	<0.3 ISU-E

ARUP LABORATORIES | 800-522-2787 | aruplab.com
500 Chipeta Way, Salt Lake City, UT 84108-1221
Jonathan R. Genzen, MD, PhD, Laboratory Director

Chart continues on following page(s)

Cross-reactive components

Lipid transfer protein (nsLTP)

Sensitization to LTPs is often associated with allergic reactions to fruit and vegetables in regions where peaches and closely related fruits are cultivated and is associated with systemic reactions in addition to OAS. LTP proteins are stable to heat and digestion causing reactions also to cooked foods.

PR-10 protein

Birch	Bet v 1	PR-10 protein	<0.3 ISU-E
Alder	Aln g 1	PR-10 protein	<0.3 ISU-E
Hazel pollen	Cor a 1.0101	PR-10 protein	<0.3 ISU-E
Hazelnut	Cor a 1.0401	PR-10 protein	<0.3 ISU-E
Apple	Mal d 1	PR-10 protein	<0.3 ISU-E
Peach	Pru p 1	PR-10 protein	<0.3 ISU-E
Soybean	Gly m 4	PR-10 protein	<0.3 ISU-E
Peanut	Ara h 8	PR-10 protein	<0.3 ISU-E
Kiwi	Act d 8	PR-10 protein	<0.3 ISU-E
Celery	Api g 1	PR-10 protein	<0.3 ISU-E

Birch or related Fagales tree pollens are often the primary sensitizer to PR-10 proteins in areas with high exposure to these pollens. The presence of PR-10 proteins in many plant foods can cause allergic reactions to fruits, nuts and vegetables due to cross-reactivity, and is often associated with local symptoms such as oral allergy syndrom (OAS). Many of these proteins are heat labile and cooked foods are often tolerated.

Thaumatine-like protein

Kiwi	Act d 2	Thaumatin-like protein	<0.3 ISU-E

Act d 2 may cross-react with other thaumatin-like proteins.

Profilin

Birch	Bet v 2	Profilin	<0.3 ISU-E
Latex	Hev b 8	Profilin	<0.3 ISU-E
Annual mercury	Mer a 1	Profilin	<0.3 ISU-E
Timothy grass	Phl p 12	Profilin	<0.3 ISU-E

Profilins show great homology and cross-reactivity even between distantly related plant species. Seldom associated with clinical symptoms but may cause demonstrable or even severe reactions in a minority of patients allergic to e.g. citrus fruits, melon, banana, litchi and tomato.

CCD

CCD	MUXF3	CCD	1.6 ISU-E

Cross-reactive Carbohydrate Determinants (CCD) are rarely associated with allergic reactions, but may produce positive in-vitro test results to CCD-containing allergens from pollen, plant food, insects and venoms.

Polcalcin (Calcium binding 2-EF-hand protein)

Birch	Bet v 4	Polcalcin	<0.3 ISU-E
Timothy grass	Phl p 7	Polcalcin	<0.3 ISU-E

Markers for cross-reactivity between pollen.

ISAC Standardized Units (ISU-E)	Level
< 0.3	Undetectable
0.3 - 0.9	Low
1 - 14.9	Moderate / High

ARUP LABORATORIES | 800-522-2787 | aruplab.com
500 Chipeta Way, Salt Lake City, UT 84108-1221
Jonathan R. Genzen, MD, PhD, Laboratory Director

Chart continues on following page(s)

≥ 15	Very High	[redacted]

ARUP LABORATORIES | 800-522-2787 | aruplab.com
500 Chipeta Way, Salt Lake City, UT 84108-1221
Jonathan R. Genzen, MD, PhD, Laboratory Director

Chart continues on following page(s)

Patient: [redacted] | **Date of Birth:** [redacted] | **Sex:** M | **Physician:** [redacted]
Patient Identifiers: [redacted] | **Visit Number (FIN):** [redacted]

Thermo SCIENTIFIC

ImmunoCAP® ISAC

SAMPLE INFORMATION		PATIENT INFORMATION			
Sample ID:	[redacted]	Patient ID:	[redacted]		
Sampling date:	8/24/2022	Name:			
Approval status:	Measured	Birth date:	[redacted]	Age:	5
Print date:	9/1/2022	ID/MR#:		Gender:	M
Calibration curve:	CTR03 8/23/2022 EK90330_1				

ORDERING PHYSICIAN INFORMATION	
Ordering physician:	**ARUP LABORATORIES**
Address:	500 CHIPETA WAY SALT LAKE CITY, UT 84108

Non-approved QC

ARUP LABORATORIES | 800-522-2787 | aruplab.com
500 Chipeta Way, Salt Lake City, UT 84108-1221
Jonathan R. Genzen, MD, PhD, Laboratory Director

END OF CHART