LABOKLIN
LABORATORY FOR CLINICAL DIAGNOSTICS

Product range PAX® & Artuvetrin®

www.laboklin.com

Why consider allergy?

Today, one out of five visits to a veterinarian is about allergy and skin problems. Prevalence has increased rapidly over the past 10 years and is expected to continue to grow. Allergy is one of the world's most common chronic diseases affecting millions of dogs, cats and horses. It is estimated that up to 10% of the dogs and cats may suffer from allergic disease.

Pruritus is the most common symptom of allergy. Cutaneous lesions such as erythema, excoriations and self-induced alopecia also reflect the severity of the disease. Respiratory symptoms (allergic rhinitis, asthma), gastrointestinal symptoms (vomiting, diarrhea, gastritis) and ocular symptoms (conjunctivitis) may also appear.
The diagnosis requires a systematic approach based on a full clinical examination, detailed patient history and a workup that excludes other potential causes.

The only causal treatment available is allergen-specific immunotherapy, a custom-made vaccine that treats the cause, not only the symptoms. It has proven efficacy (up to 70% in dogs) and safety, and avoids the need of long-term symptomatic medications with possible side effects.

Differential diagnosis

History + Physical **examination**

Rule out / treat:
- Fleas
- Scabies/demodicosis/ other mites
- Dermatophytosis
- Staphylococcus
- Malassezia

If pruritus remains

1. Dietary tests
- Food
- Elimination trial for 6-8 weeks followed by challenge test

Clinical improvement	**Partially improvement**	**No improvement**
Food allergy: Treat by avoiding ingredients	Go to step 2	Go to step 2

2. Environmental tests
- Allergy test for environmental allergens

Positive +	**Negative -**
Atopic Dermatitis: Treat with ASIT® Therapy	Atopic-like Dermatitis: Only symptomatic medication possible

Why serological testing?

Serological tests are a quick and easy way to identify the allergens that can be responsible for the allergic reaction.

Besides representing a quick and easy test, it has also the following advantages:

- Requires minimal patient preparation
- Result easy to interpret and with additional treatment advice
- No adverse reactions
- No need for referral
- Standardized procedure
- Excellent reproducibility
- Not influenced by existing skin pathologies

Following serological tests are available:

PAX® Complete
- Environmental
- Food
- Environmental + Food

Fcε-receptor Test
- Seasonal allergens
- Perennial allergens
- Insects / hymenoptera
- Feathers / hair / epithelia
- Flea saliva
- Mediterranean panel
- Malassezia

You can find more information about each one of them in the following pages.

In case of any question, please contact our dermatolgy team:
Tel: +49 971 7202 0 | Email: derma@laboklin.com

Why PAX® - Pet Allergy Xplorer?

Pet Allergy Xplorer (PAX) is the first commercial serological IgE-specific test that uses allergen extracts and molecular components to identify which allergens are affecting pets.

Molecular allergology is a state-of-the-art approach to the detection of sensitisations, whereby defined single allergen components are used for the determination of specific IgE in place of traditionally-used allergen extracts. The molecular components are purified or recombinant proteins that provide a higher level of standardisation than allergen extracts and enable a more precise identification of IgE sensitisations.

PAX advantages:

1. First quantitative multiplex macroarray specifically designed for companion animals
2. Over 200 allergens included = lower testing cost per allergen
3. Fully automated process = higher level of standardization (same result if tested multiple times)
4. With CCD blocking and 2 blocking efficiency detectors
5. Only 0.5 ml of serum needed
6. Expected increase in serological test sensitivity due to a higher concentration of molecular allergens
7. Identification of "primary" sensitizing allergens
8. Identification of allergen cross-reactivities
9. Selection of relevant allergens for specific immunotherapy

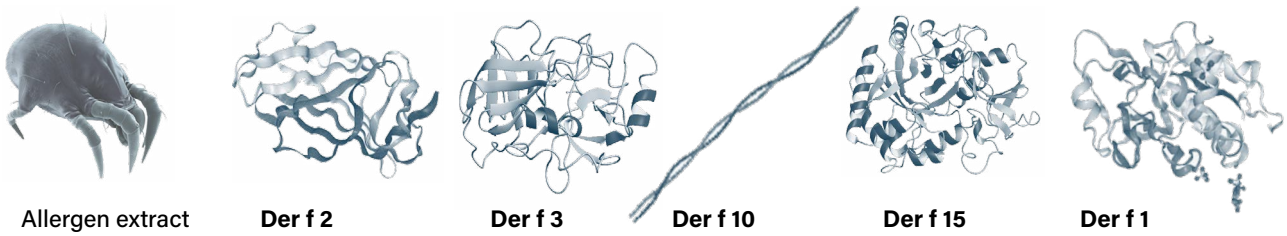
What are CCDs and why is important to block them?

CCDs are cross-reactive carbohydrate determinants – the carbohydrate chains found in glycoproteins. CCDs are part of the structure of many allergy-causing proteins, especially plant-based allergens like pollen. During an allergic reaction, IgE is produced against the carbohydrate chains as well as the allergen proteins.

Studies have confirmed that this is the case for 30% of humans, dogs and cats. Further research shows that specific IgEs against CCD are not clinically relevant. According to the latest studies, removing or blocking CCD specific IgE improves the correlation between in vitro tests and intradermal tests. Blocking CCDs simply means that the specificity of the in vitro test is enhanced.

PAX is the first IgE test to include not only CCD blocking, but also 2 blocking efficiency detectors that will evaluate and guarantee the completeness of the blocking.

EXTRACT | **MOLECULAR COMPONENTS**



Allergen extract

Der f 2
NPC2 family

Der f 3
trypsin

Der f 10
tropomyosin

Der f 15
chitinase

Der f 1
cysteine protease

PAX® – Pet Allergy Xplorer

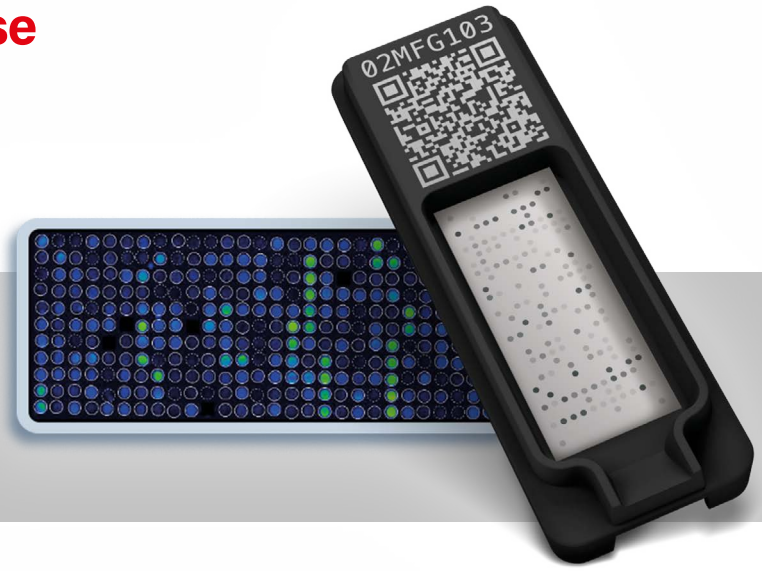
Sample required:

0.5 ml

of serum

Available for:

Dog
Cat
Horse



Tested allergen components and extracts

	Common name	Scientific name	Extracts & Components
Grass Pollen	Bermuda grass	*Cynodon dactylon*	Cyn d *
			Cyn d 1
	Orchard grass	*Dactylis glomerata*	Dac g *
	Meadow fescue	*Festuca pratensis*	Fes p *
	Perennial ryegrass	*Lolium perenne*	Lol p 1
	Timothy	*Phleum pratense*	Phl p 1
			Phl p 2
			Phl p 5.0101
			Phl p 6
			Phl p 7
			Phl p 12
	Kentucky blue grass	*Poa pratensis*	Poa p *
	Ryegrass, cultivated	*Secale cereale*	Sec c_pollen *
Tree Pollen	Alder	*Alnus glutinosa*	Aln g *
			Aln g 1
			Aln g 4
	Silver birch	*Betula verrucosa*	Bet v *
			Bet v 1
			Bet v 2
			Bet v 6
	Hazel	*Corylus avellana*	Cor a_pollen *
			Cor a 1.0103

	Common name	Scientific name	Extracts & Components
Tree Pollen	Cypress	*Cupressus sempervirens*	Cup s *
	Beech	*Fagus sylvatica*	Fag s 1
	Ash	*Fraxinus excelsior*	Fra e *
			Fra e 1
	Privet	*Ligustrum vulgare*	Lig v *
	Olive tree	*Olea Europaea*	Ole e *
			Ole e 1
			Ole e 7
			Ole e 9
	London plane tree	*Platanus acerifolia*	Pla a 1
			Pla a 2
			Pla a 3
	Cottonwood	*Populus nigra*	Pop n *
	Elm	*Ulmus campestris*	Ulm c *
Weed Pollen	Ragweed	*Ambrosia artemisiifolia*	Amb a *
			Amb a 1
			Amb a 4
	Mugwort	*Artemisia vulgaris*	Art v *
			Art v 1.0101
			Art v 3.0201
	Lamb's quarter	*Chenopodium album*	Che a *
			Che a 1

	Common name	Scientific name	Extracts & Components
Weed Pollen	Wall pellitory	*Parietaria judaica*	Par j *
			Par j 2
	Ribwort / Plantain	*Plantago lanceolata*	Pla l *
			Pla l 1
	Dock / Sorrel	*Rumex crispus / acetosella*	Rum c / * Rum a
	Russian thistle	*Salsola kali*	Sal k *
			Sal k 1
	Nettle	*Urtica dioica*	Urt d *
Danders & Epithelia	Cattle	*Bos domesticus*	Bos d 2
	Dog	*Canis familiaris*	Can f 1
			Can f 2
			Can f 3
			Can f 4
			Can f 6
			Can f_maleurine (including Can f 5) *
			Can f Fel d 1 like
	Guinea pig	*Cavia porcellus*	Cav p 1
	Horse	*Equus caballus*	Equ c 1
			Equ c 3
			Equ c 4

*** Extract**

	Common name	Scientific name	Extracts & Components
Danders & Epithelia	Cat	*Felis domesticu*	Fel d 1
			Fel d 2
			Fel d 4
			Fel d 7
	Mouse	*Mus musculus*	Mus m 1
	Rabbit	*Oryctolagus cuniculus*	Ory c 1
			Ory c 2
			Ory c 3
Mites & Cockroaches	Acarus siro	*Acarus siro*	Aca s *
	German cockroach	*Blatella germanica*	Bla g 1
			Bla g 2
			Bla g 4
			Bla g 5
			Bla g 9
	Flea	*Ctenocephalides felis*	Cte f 1
	Dermatophagoides pteronyssinus	*Dermatophagoi-des farinae*	Der f *
			Der f 1
			Der f 2
			Der f 15
			Der f 18
	Dermatophagoides pteronyssinus	*Dermatophagoi-des pteronyssinus*	Der p *
			Der p 1
			Der p 2
			Der p 5
			Der p 7
			Der p 10
			Der p 11
			Der p 20
			Der p 21
			Der p 23
	Glycyphagus domesticus	*Glycyphagus domesticus*	Gly d 2
	Lepidoglyphus destructor	*Lepidoglyphus destructor*	Lep d *
		Lepidoglyphus destructor	Lep d 2
	Tyrophagus putrescentiae	*Tyrophagus putrescentiae*	Tyr p *
		Tyrophagus putrescentiae	Tyr p 2
Moulds & Yeasts	Alternaria alternata	*Alternaria alternata*	Alt a *
			Alt a 1
			Alt a 6
	Aspergillus fumigatus	*Aspergillus fumigatus*	Asp f *
			Asp f 1
			Asp f 3
			Asp f 4
			Asp f 6
	Cladosporium herbarum	*Cladosporium herbarum*	Cla h *
			Cla h 8
	Malassezia pachydermatis	*Malassezia pachydermatis*	Mala p *
	Malassezia sympodialis	*Malassezia sympodialis*	Mala s 1
			Mala s 9
			Mala s 5
			Mala s 6
			Mala s 11

	Common name	Scientific name	Extracts & Components
Insect Venoms	Honey bee venom	*Apis mellifera*	Api m *
			Api m 1
			Api m 2
			Api m 3
			Api m 5
			Api m 10
	Long-headed wasp venom	*Dolichovespula spp.*	Dol spp *
	Paper wasp venom	*Polistes dominulus*	Pol d *
			Pol d 5
	Fire ant venom	*Solenopsis richteri & Solenopsis invicta*	Sol spp *
	Common wasp venom	*Vespula vulgaris*	Ves v *
			Ves v 1
			Ves v 5
Foods	Oat	*Avena sativa*	Ave s *
	Buckwheat	*Fagopyrum esculentum*	Fag e *
			Fag e 2
	Sunflower seed	*Helianthus annuus*	Hel a *
	Barley	*Hordeum vulgare*	Hor v *
	Rice	*Oryza sativa*	Ory s
			Saatroggen
	Millet	*Panicum miliaceum*	Pan m *
	Rye, cultivated	*Secale cereale*	Sec c_flour *
	Wheat	*Triticum aestivum*	Tri a *
			Erdnuss
			Soja
			Linse
	Corn, cereal	*Zea mays*	Zea m *
			Zea m 14
			Zea m_GBSSI
	Apple	*Malus domestica*	Mal d 1
			Mal d 2
			Mal d 3
	Peanut	*Arachis hypogaea*	Ara h 1
			Ara h 2
			Ara h 3
			Ara h 5
			Ara h 6
			Ara h 8
			Ara h 9
			Ara h 15
	Soy	*Glycine max*	Gly m *
			Gly m 4
			Gly m 5
			Gly m 6
			Gly m 8
	Lentil	*Lens culinaris*	Len c *
			Len c 1
			Len c 2
			Len c 3
	Pea	*Pisum sativum*	Pis s *
			Pis s 1
			Pis s 2
			Pis s 3

	Common name	Scientific name	Extracts & Components
Foods	Cow's milk	*Bos domesticus*	Bos d_milk *
			Bos d 4
			Bos d 5
			Bos d 8
	Egg white	*Gallus domesticus*	Gal d_white *
			Gal d 1
			Gal d 2
			Gal d 3
			Gal d 4
	Egg yolk	*Gallus domesticus*	Gal d_yolk *
			Gal d 5
	Beef	*Bos domesticus*	Bos d_meat *
			Bos d 6
			Bos d 7
			Bos d_ACTA1
			Bos d_LDHA
	Horse	*Equus caballus*	Equ c_meat *
	Rabbit	*Oryctolagus spp.*	Ory_meat *
			Ory c_CKM
			Ory c_GAPDH
			Ory c_PGM1
			Ory c_PKM
			Ory c_TPI1
	Lamb	*Ovis aries*	Ovi a_meat *
			Ovi a_IgG
	Pig	*Sus domesticus*	Sus d_meat *
			Sus d 1
	Chicken	*Gallus domesticus*	Gal d_meat *
			Gal d 7
			Gal d 9
			Gal d_PKM
	Turkey	*Meleagris gallopavo*	Mel g *
	Mealworm	*Tenebrio molitor*	Ten m *
	Herring, Atlantic	*Clupea harengus*	Clu h *
			Clu h 1
	Cod, Atlantic	*Gadus morhua*	Gad m *
			Gad m 1
			Gad m 2+3
			Gad m 4
	Salmon, Atlantic	*Salmo salar*	Sal s *
			Sal s 1
			Sal s 2
			Sal s 3
			Sal s 4
			Sal s 6
			Sal s 7
			Sal s 8
	Mackerel, Atlantic	*Scomber scombrus*	Sco s *
			Sco s 1
	Tuna	*Thunnus albacares*	Thu a *
			Thu a 1
	Carrot	*Daucus carota*	Dau c *
			Dau c 1
	Tomato	*Solanum lycopersicum*	Sola l *
			Sola l 6
	Potato	*Solanum tuberosum*	Sol t *
			Sol t 2
			Sol t_GBSSI

* Extract

PAX® Complete

- Environmental + Food
- Environmental
- Food

PAX Environmental

Summary on detectable sensitisations

GRASS POLLENS

Bermuda grass	21
Kentucky blue grass	22
Meadow fescue	25
Orchard grass	22
Perennial ryegrass	19
Rye, cultivated	25
Timothy grass	25

WEED POLLENS

Dock / Sorrel	22
English Plantain	26
Lamb's quarter	24
Mugwort	23
Nettle	23
Pellitory	72
Ragweed	24
Russian thistle	23

TREE POLLENS

Alder	26
Ash	22
Beech	22
Birch	22
Cypress	22
Elm	24
Hazel	27
Olive tree	23
Poplar / Cottonwood	25
Privet	25
Sycamore	22

MITES & COCKROACHES

Acarus siro	23
D. farinae	30
D. pteronyssinus	27
Glycyphagus domesticus	20
Lepidoglyphus destructor	22
Tyrophagus putrescentiae	29
German cockroach	25
American cockroach	28
Flea	18

MOULDS & YEASTS

Alternaria alternata	25
Aspergillus fumigatus	23
Cladosporium herbarum	24
Malassezia	63

EPITHELIA

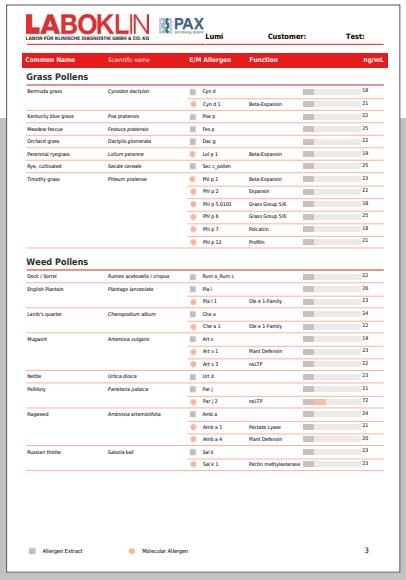
Cat	24
Cattle	19
Guinea pig	21
Horse	22
Mouse	20
Rabbit	22

INSECT VENOMS

Common wasp venom	25
Fire ant venom	21
Honey bee venom	25
Long-headed wasp venom	23
Paper wasp venom	22

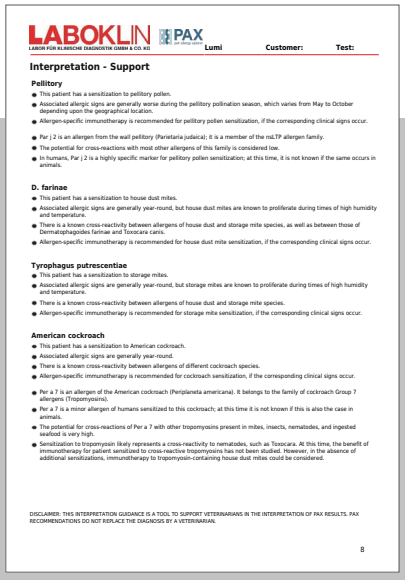
Highest measured IgE concentration per allergen group

< 28.00 ng/mL	28.00-99.99 ng/mL	100.00-399.99 ng/mL	400.00-799.99 ng/mL	≥ 800.00 ng/mL
class 0	class 1	class 2	class 3	class 4



Common Name	Scientific name	E/M Allergen	Function	ng/mL
Grass Pollens				
Bermuda grass	*Cynodon dactylon*	Cyn d		18
		Cyn d 1	Beta-Expansin	21
Kentucky blue grass	*Poa pratensis*	Poa p		22
Meadow fescue	*Festuca pratensis*	Fes p		25
Orchard grass	*Dactylis glomerata*	Dac g		22
Perennial ryegrass	*Lolium perenne*	Lol p 1	Beta-Expansin	19
Rye, cultivated	*Secale cereale*	Sec c_pollen		25
Timothy grass	*Phleum pratense*	Phl p 1	Beta-Expansin	23
		Phl p 2	Expansin	22
		Phl p 5.0101	Grass Group 5/6	18
		Phl p 6	Grass Group 5/6	25
		Phl p 7	Polcalcin	18
		Phl p 12	Profilin	21
Weed Pollens				
Dock / Sorrel	*Rumex acetosella / crispus*	Rum a_Rum c		22
English Plantain	*Plantago lanceolata*	Pla l		26
		Pla l 1	Ole e 1-Family	23
Lamb's quarter	*Chenopodium album*	Che a		24
		Che a 1	Ole e 1-Family	22
Mugwort	*Artemisia vulgaris*	Art v		19
		Art v 1	Plant Defensin	23
		Art v 3	nsLTP	22
Nettle	*Urtica dioica*	Urt d		23
Pellitory	*Parietaria judaica*	Par j		21
		Par j 2	nsLTP	72
Ragweed	*Ambrosia artemisiifolia*	Amb a		24
		Amb a 1	Pectate Lyase	21
		Amb a 4	Plant Defensin	20
Russian thistle	*Salsola kali*	Sal k		23
		Sal k 1	Pectin methylesterase	23

Allergen Extract Molecular Allergen



Interpretation - Support

Pellitory

- This patient has a sensitization to pellitory pollen.
- Associated allergic signs are generally worse during the pellitory pollination season, which varies from May to October depending upon the geographical location.
- Allergen-specific immunotherapy is recommended for pellitory pollen sensitization, if the corresponding clinical signs occur.
- Par j 2 is an allergen from the wall pellitory (Parietaria judaica); it is a member of the nsLTP allergen family.
- The potential for cross-reactions with most other allergens of this family is considered low.
- In humans, Par j 2 is a highly specific marker for pellitory pollen sensitization; at this time, it is not known if the same occurs in animals.

D. farinae

- This patient has a sensitization to house dust mites.
- Associated allergic signs are generally year-round, but house dust mites are known to proliferate during times of high humidity and temperature.
- There is a known cross-reactivity between allergens of house dust and storage mite species, as well as between those of Dermatophagoides farinae and Toxocara canis.
- Allergen-specific immunotherapy is recommended for house dust mite sensitization, if the corresponding clinical signs occur.

Tyrophagus putrescentiae

- This patient has a sensitization to storage mites.
- Associated allergic signs are generally year-round, but storage mites are known to proliferate during times of high humidity and temperature.
- There is a known cross-reactivity between allergens of house dust and storage mite species.
- Allergen-specific immunotherapy is recommended for storage mite sensitization, if the corresponding clinical signs occur.

American cockroach

- This patient has a sensitization to American cockroach.
- Associated allergic signs are generally year-round.
- There is a known cross-reactivity between allergens of different cockroach species.
- Allergen-specific immunotherapy is recommended for cockroach sensitization, if the corresponding clinical signs occur.
- Per a 7 is an allergen of the American cockroach (Periplaneta americana). It belongs to the family of cockroach Group 7 allergens (Tropomyosins).
- Per a 7 is a minor allergen of humans sensitized to this cockroach; at this time it is not known if this is also the case in animals.
- The potential for cross-reactions of Per a 7 with other tropomyosins present in mites, insects, nematodes, and ingested seafood is very high.
- Sensitization to tropomyosin likely represents a cross-reactivity to nematodes, such as Toxocara. At this time, the benefit of immunotherapy for patient sensitized to cross-reactive tropomyosins has not been studied. However, in the absence of additional sensitizations, immunotherapy to tropomyosin-containing house dust mites could be considered.

DISCLAIMER: THIS INTERPRETATION GUIDANCE IS A TOOL TO SUPPORT VETERINARIANS IN THE INTERPRETATION OF PAX RESULTS. PAX RECOMMENDATIONS DO NOT REPLACE THE DIAGNOSIS BY A VETERINARIAN.

PAX Environmental

Summary on detectable sensitisations

GRASS POLLENS

Bermuda grass	20
Kentucky blue grass	19
Meadow fescue	23
Orchard grass	20
Perennial ryegrass	18
Rye, cultivated	22
Timothy grass	23

WEED POLLENS

Dock / Sorrel	24
English Plantain	25
Lamb's quarter	22
Mugwort	18
Nettle	22
Pellitory	58
Ragweed	24
Russian thistle	21

TREE POLLENS

Alder	26
Ash	20
Beech	22
Birch	21
Cypress	23
Elm	24
Hazel	24
Olive tree	24
Poplar / Cottonwood	23
Privet	20
Sycamore	20

MOULDS & YEASTS

Alternaria alternata	22
Aspergillus fumigatus	21
Cladosporium herbarum	25
Malassezia	21

MITES & COCKROACHES

Acarus siro	21
D. farinae	27
D. pteronyssinus	29
Glycyphagus domesticus	17
Lepidoglyphus destructor	19
Tyrophagus putrescentiae	25
German cockroach	25
American cockroach	25

EPITHELIA

Cat	23
Cattle	18
Dog	20
Guinea pig	19
Mouse	19
Rabbit	20

BITING INSECTS

Culicoides	23
Deer fly	25
Horse Fly	22
Mosquito	28
Stable fly	25

INSECT VENOMS

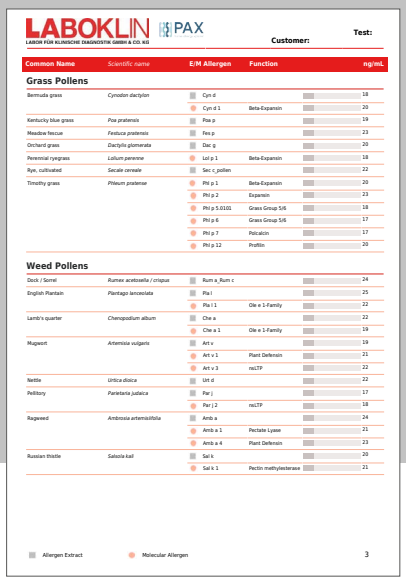
Common wasp venom	24
Fire ant venom	17
Honey bee venom	30
Long-headed wasp venom	20
Paper wasp venom	21

OTHER

Latex	25

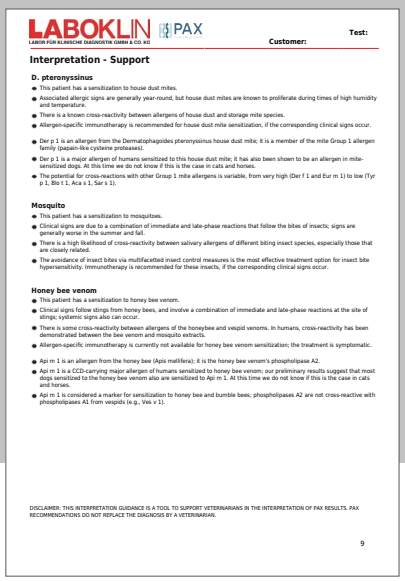
Highest measured IgE concentration per allergen group

< 28.00 ng/mL	28.00-99.99 ng/mL	100.00-399.99 ng/mL	400.00-799.99 ng/mL	≥ 800.00 ng/mL
class 0	class 1	class 2	class 3	class 4



Common Name	Scientific name	E/M Allergen	Function	ng/mL
Grass Pollens				
Bermuda grass	*Cynodon dactylon*	Cyn d		18
		Cyn d 1	Beta-Expansin	20
Kentucky blue grass	*Poa pratensis*	Poa p		19
Meadow fescue	*Festuca pratensis*	Fes p		23
Orchard grass	*Dactylis glomerata*	Dac g		20
Perennial ryegrass	*Lolium perenne*	Lol p 1	Beta-Expansin	18
Rye, cultivated	*Secale cereale*	Sec c_pollen		22
Timothy grass	*Phleum pratense*	Phl p 1	Beta-Expansin	20
		Phl p 2	Expansin	23
		Phl p 5.0101	Grass Group 5/6	18
		Phl p 6	Grass Group 5/6	17
		Phl p 7	Polcalcin	17
		Phl p 12	Profilin	20
Weed Pollens				
Dock / Sorrel	*Rumex acetosella / crispus*	Rum a_Rum c		24
English Plantain	*Plantago lanceolata*	Pla l		25
		Pla l 1	Ole e 1-Family	22
Lamb's quarter	*Chenopodium album*	Che a		22
		Che a 1	Ole e 1-Family	19
Mugwort	*Artemisia vulgaris*	Art v		19
		Art v 1	Plant Defensin	21
		Art v 3	nsLTP	22
Nettle	*Urtica dioica*	Urt d		22
Pellitory	*Parietaria judaica*	Par j		17
		Par j 2	nsLTP	18
Ragweed	*Ambrosia artemisiifolia*	Amb a		24
		Amb a 1	Pectate Lyase	21
		Amb a 4	Plant Defensin	23
Russian thistle	*Salsola kali*	Sal k		20
		Sal k 1	Pectin methylesterase	21

Allergen Extract Molecular Allergen



Interpretation - Support

D. pteronyssinus

- This patient has a sensitization to house dust mites.
- Associated allergic signs are generally year-round, but house dust mites are known to proliferate during times of high humidity and temperature.
- There is a known cross-reactivity between allergens of house dust and storage mite species.
- Allergen-specific immunotherapy is recommended for house dust mite sensitization, if the corresponding clinical signs occur.
- Der p 1 is an allergen from the Dermatophagoides pteronyssinus house dust mite; it is a member of the mite Group 1 allergen family (papain-like cysteine proteases).
- Der p 1 is a major allergen of humans sensitized to this house dust mite; it has also been shown to be an allergen in mite-sensitized dogs. At this time we do not know if this is the case in cats and horses.
- The potential for cross-reactions with other Group 1 mite allergens is variable, from very high (Der f 1 and Eur m 1) to low (Tyr p 1, Blo t 1, Aca s 1, Sar s 1).

Mosquito

- This patient has a sensitization to mosquitoes.
- Clinical signs are due to a combination of immediate and late-phase reactions that follow the bites of insects; signs are generally worse in the summer and fall.
- There is a high likelihood of cross-reactivity between salivary allergens of different biting insect species, especially those that are closely related.
- The avoidance of insect bites via multifaceted insect control measures is the most effective treatment option for insect bite hypersensitivity. Immunotherapy is recommended for these insects, if the corresponding clinical signs occur.

Honey bee venom

- This patient has a sensitization to honey bee venom.
- Clinical signs follow stings from honey bees, and involve a combination of immediate and late-phase reactions at the site of sting; systemic signs also can occur.
- There is some cross-reactivity between allergens of the honeybee and vespid venoms. In humans, cross-reactivity has been demonstrated between the bee venom and mosquito extracts.
- Allergen-specific immunotherapy is currently not available for honey bee venom sensitization; the treatment is symptomatic.
- Api m 1 is an allergen from the honey bee (Apis mellifera); it is the honey bee venom's phospholipase A2.
- Api m 1 is a CCD-carrying major allergen of humans sensitized to honey bee venom; our preliminary results suggest that most dogs sensitized to the honey bee venom also are sensitized to Api m 1. At this time we do not know if this is the case in cats and horses.
- Api m 1 is considered a marker for sensitization to honey bee and bumble bees; phospholipases A2 are not cross-reactive with phospholipases A1 from vespids (e.g., Ves v 1).

DISCLAIMER: THIS INTERPRETATION GUIDANCE IS A TOOL TO SUPPORT VETERINARIANS IN THE INTERPRETATION OF PAX RESULTS. PAX RECOMMENDATIONS DO NOT REPLACE THE DIAGNOSIS BY A VETERINARIAN.

The PAX® Complete panel specifies the individual result for each tested allergen extract and component.
It includes a detailed recommendation including possible cross-reactivities and a support interpretation for each positive tested allergen.

Artuvetrin® Skin Test

The Artuvetrin® Skin Test allows you to determine to which substances a dog is allergic, by injecting small amounts of different allergens in the skin (intradermal test).

Latin	English	Mixtures
Pollen of grasses		
1. Anthoxanthum odoratum	Vernal grass, sweet	
2. Cynodon dactylon	Bermuda grass	
3. Dactylis glomerata	Orchard grass	**Grass pollen mixture:** ▪ Sweet vernal grass, bermuda grass, ochard grass, velvet grass and timothy grass
4. Festuca pratensis	Fescue, meadow	
5. Holcus lanatus	Velvet grass	
6. Lolium perenne	Rye grass, perennial	
7. Phleum pratense	Timothy grass	
8. Poa pratensis	Blue grass, Kentucky	
Pollen of trees and hedges		
1. Acer negundo	Box elder	
2. Corylus avellana	Hazel	**Tree pollen mixture 1:** ▪ Alder, birch and hazel
3. Cupressus sempervirens	Cypress, Italian	
4. Fagus sylvatica	Beech, European	**Tree pollen mixture 2:** ▪ Beech, oak and elm
5. Olea europaea	Olive	
6. Platanus occidentalis	Sycamore, eastern	
7. Populus alba	Poplar, white	
Pollen of weeds and flowers		
1. Ambrosia elatior	Ragweed, common	**Weed pollen mixture 1:** ▪ Mugwort, English plantain, dandelion and nettle
2. Artemisia vulgaris	Mugwort, common	
3. Chenopodium album	Lamb's quarters	**Weed pollen mixture 2:** ▪ Mugwort and nettle
4. Parietaria officinalis	Pellitory, wall or erect	
5. Plantago lanceolata	Plantain, English	**Weed pollen mixture 3:** ▪ Lamb's quarters, English plantain, red or sheep sorrel, goldenrod and dandelion
6. Rumex acetosella	Sorrel, red or sheep	
7. Salsola kali	Russian Thistle	
8. Solidago virgaurea	Goldenrod	

Latin	English	Mixtures
Pollen of crops		
1. Brassica napus	Rape	**N/A**
2. Secale cereale	Rye, common	
Mites		
1. Acarus siro	Grain mite	**N/A**
2. Dermatophagoides farinae	House dust mite	
3. Dermatophagoides pteronyssinus	House dust mite	
4. Lepidoglyphus destructor	Hay mite	
5. Tyrophagus putrescentiae	Copra mite	
Insects		
1. Aedes communis	Mosquito	**N/A**
2. Culex	Culex	
3. Culicoides	Biting Midges	
4. Musca domestica	House fly	
5. Periplaneta americana	Cockroach	
Epithelia		
1. Canis familiaris	Dog	**Epithelia mixture:** ▪ Duck, goose and chicken
2. Felis domesticus	Cat	
3. Melopsittacus undulatus	Parakeet	
4. Mus musculus	Mouse	
5. Oryctolagus cuniculus	Rabbit	
6. Ovis arie	Sheep	
Fungi		
1. Alternaria alternata		**Fungi mixture:** ▪ Alternaria alternata, Aspergillus fumigatus and Cladosporium herbarum
2. Aspergillus fumigatus		
3. Cladosporium herbarum		
Yeast		
1. Candida albicans		**N/A**
2. Malassezia		

This list is subjective to change. If you have questions about the availabillity, please contact **derma@laboklin.com**

Artuvetrin® allergen-specific immunotherapy (1 – 8 allergens)

Artuvetrin® Therapy is a licensed allergen-specific immunotherapy in Europe. It is a tailor-made treatment produced individually for each animal. Artuvetrin® Therapy has proven efficacy (75%) and safe. Therefore, it can be given for long periods. Each vial lasts for 10 months, and up to 8 allergens can be added to one vial.

Latin	English	Mixtures
Pollen of grasses		
1. Anthoxanthum odoratum	Vernal grass, sweet	**Grass pollen mixture:** ▪ Sweet vernal grass, bermuda grass, ochard grass, velvet grass and timothy grass
2. Cynodon dactylon	Bermuda grass	
3. Dactylis glomerata	Orchard grass	
4. Festuca pratensis	Fescue, meadow	
5. Holcus lanatus	Velvet grass	
6. Lolium perenne	Rye grass, perennial	
7. Phleum pratense	Timothy grass	
8. Poa pratensis	Blue grass, Kentucky	
Pollen of trees and hedges		
1. Acer negundo	Maple, ash leaved	**Tree pollen mixture 1:** ▪ Alder, birch and hazel **Tree pollen mixture 2:** ▪ Beech, oak and elm **Tree pollen mixture 3:** ▪ Ash-leaved maple, ash, white poplar and willow
2. Alnus glutinosa	Alder, black	
3. Betula pendula	Birch	
4. Corylus avellana	Hazel	
5. Cupressus sempervirens	Cypress, Italian	
6. Fagus sylvatica	Beech, European	
7. Fraxinus excelsior	Ash	
8. Ligustrum vulgare	European privet	
9. Olea europaea	Olive	
10. Platanus occidentalis	Sycamore, eastern	
11. Populus alba	Poplar, white	
12. Salix viminalis	Willow	
13. Ulmus americana	Elm, American	
Pollen of weeds and flowers		
1. Ambrosia elatior	Ragweed, common	**Weed pollen mixture 1:** ▪ Mugwort, English plantain, dandelion and nettle **Weed pollen mixture 2:** ▪ Mugwort and nettle **Weed pollen mixture 3:** ▪ Lambs quarter, English plantain, red or sheep sorrel, goldenrod and dandelion
2. Artemisia vulgaris	Mugwort, common	
3. Chenopodium album	Lamb's quarters	
4. Parietaria officinalis	Pellitory, wall or erect	
5. Plantago lanceolata	Plantain, English	
6. Rumex acetosella	Sorrel, red or sheep	
7. Salsola kali	Russian Thistle	
8. Solidago virgaurea	Goldenrod	
9. Taraxacum officinale	Dandelion, common	
10. Urtica dioica	Nettle, stinging	

Latin	English	Mixtures
Pollen of crops		
1. Brassica napus	Rape	**N/A**
2. Secale cereale	Rye, common	
Mites		
1. Acarus siro	Grain mite	**N/A**
2. Dermatophagoides farinae	House dust mite	
3. Dermatophagoides pteronyssinus	House dust mite	
4. Lepidoglyphus destructor	Hay mite	
5. Tyrophagus putrescentiae	Copra mite	
Insects		
1. Aedes communis	Mosquito	**N/A**
2. Culex	Culex	
3. Culicoides	Biting midges	
4. Musca domestica	House fly	
5. Periplaneta americana	Cockroach	
Epithelia		
1. Canis familiaris	Dog	**Epithelia mixture:** ▪ Duck, goose and chicken
2. Cavia porcellus	Guinea pig	
3. Felis domesticus	Cat	
4. Melopsittacus undulatus	Parakeet	
5. Mus musculus	Mouse	
6. Oryctolagus cuniculus	Rabbit	
7. Ovis arie	Sheep	
Fungi		
1. Alternaria alternata		**Fungi mixture:** ▪ Alternaria alternata, Aspergillus fumigatus and Cladosporium herbarum
2. Aspergillus fumigatus		
3. Cladosporium herbarum		
Yeast		
1. Candida albicans		**N/A**
2. Malassezia		

This list is subjective to change. If you have questions about the availabillity, please contact **derma@laboklin.com**

LABOKLIN

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