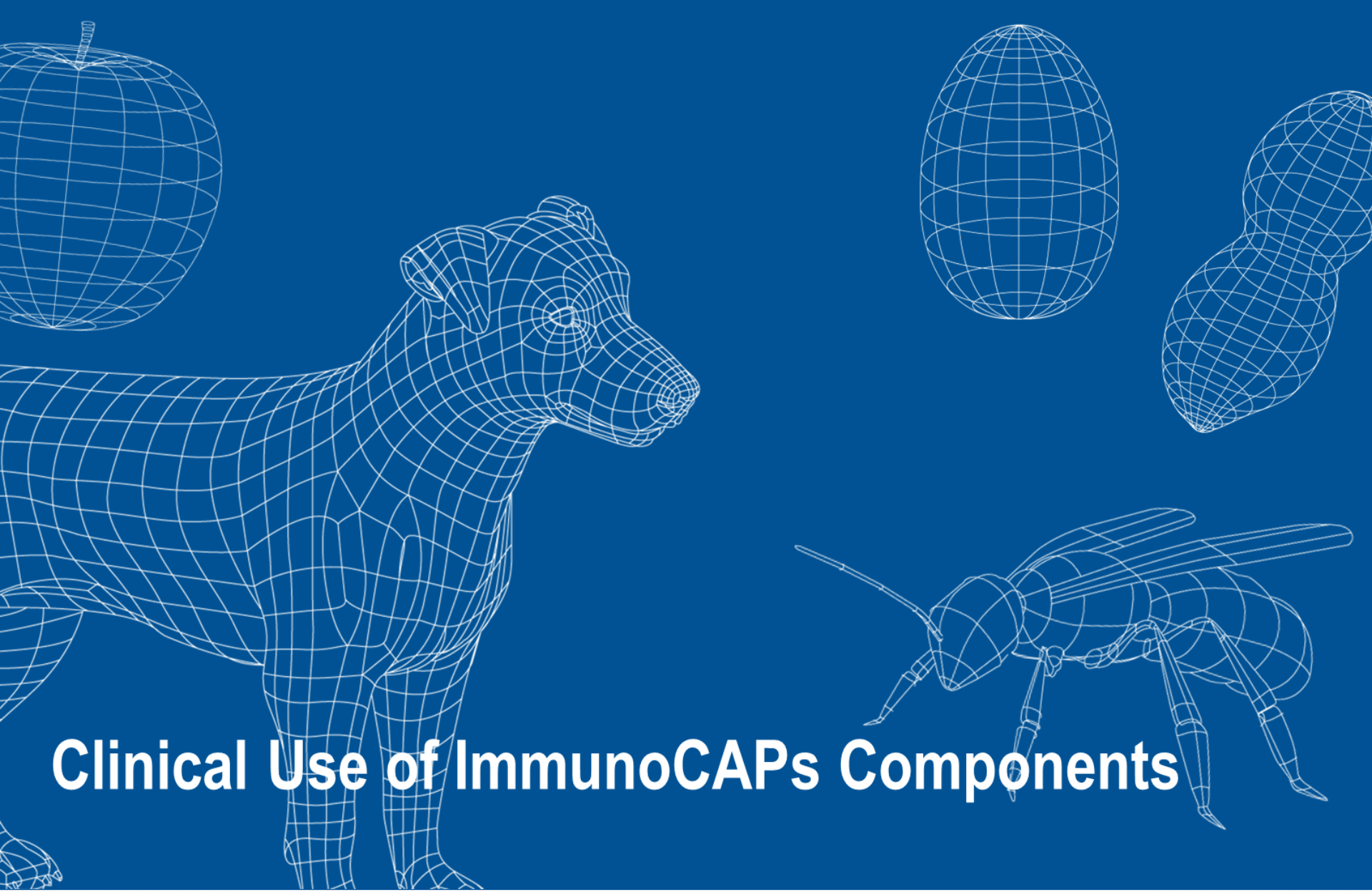
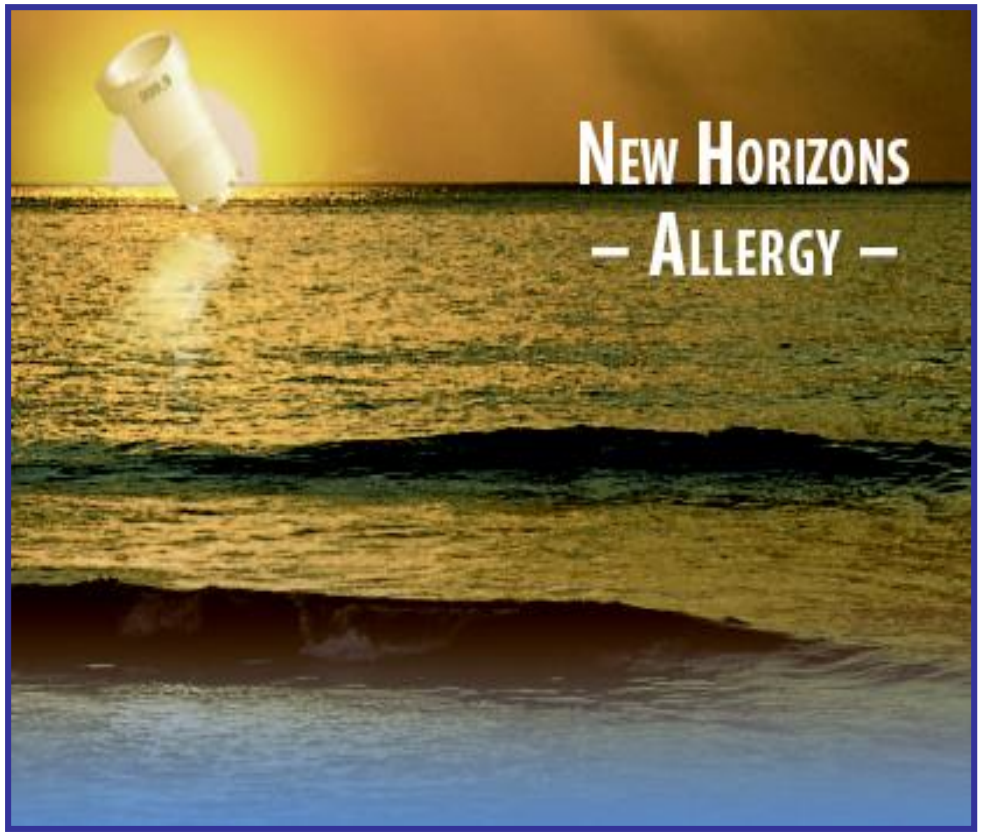


Clinical Use of ImmunoCAPs Components

ImmunoCAP®
ALLERGEN COMPONENTS

The use of components in allergy diagnostics: (CRD) MA





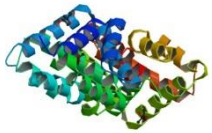
ImmunoCAP Molecular Allergology



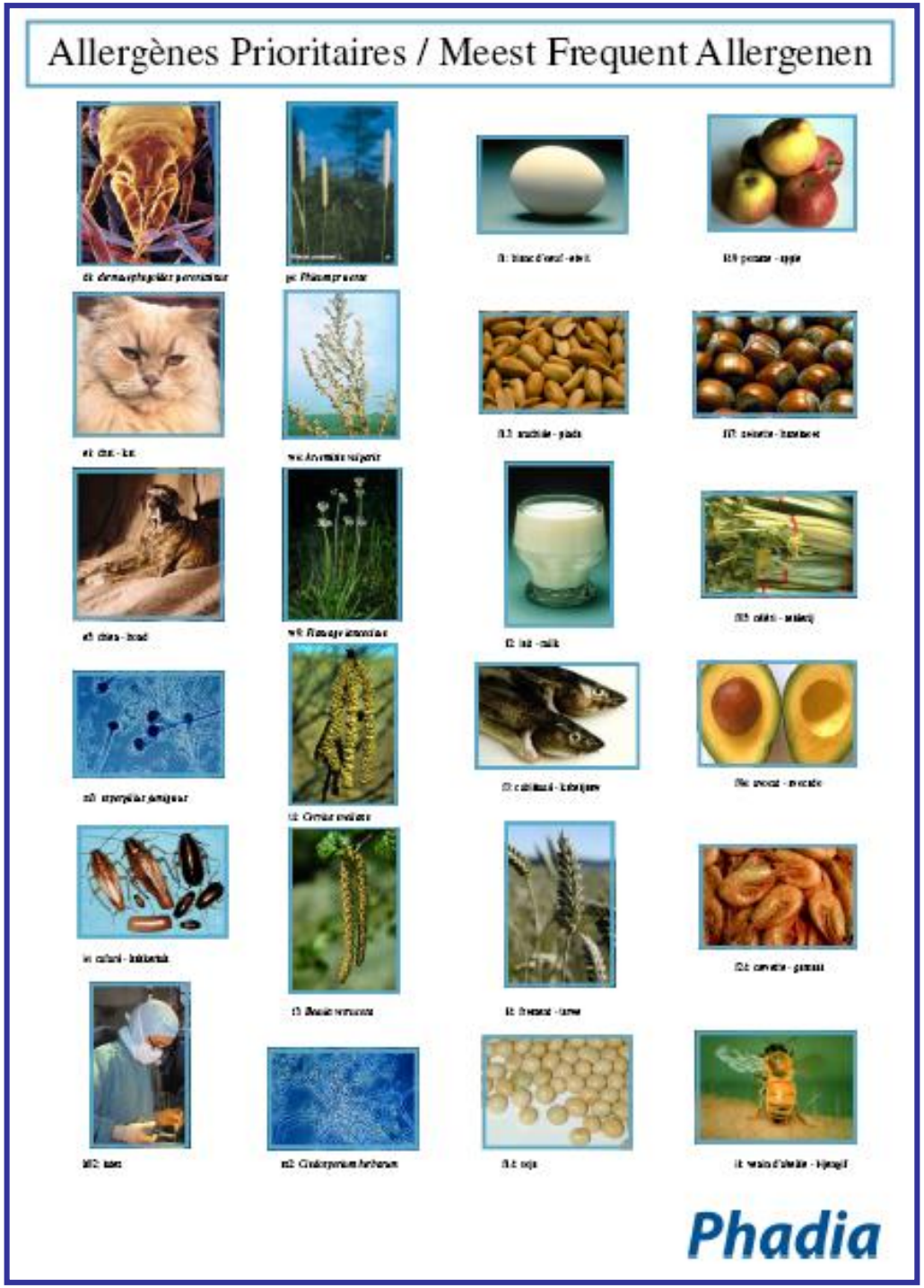
Der p1



Der p2

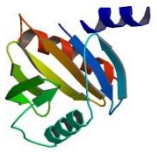


Fel d1





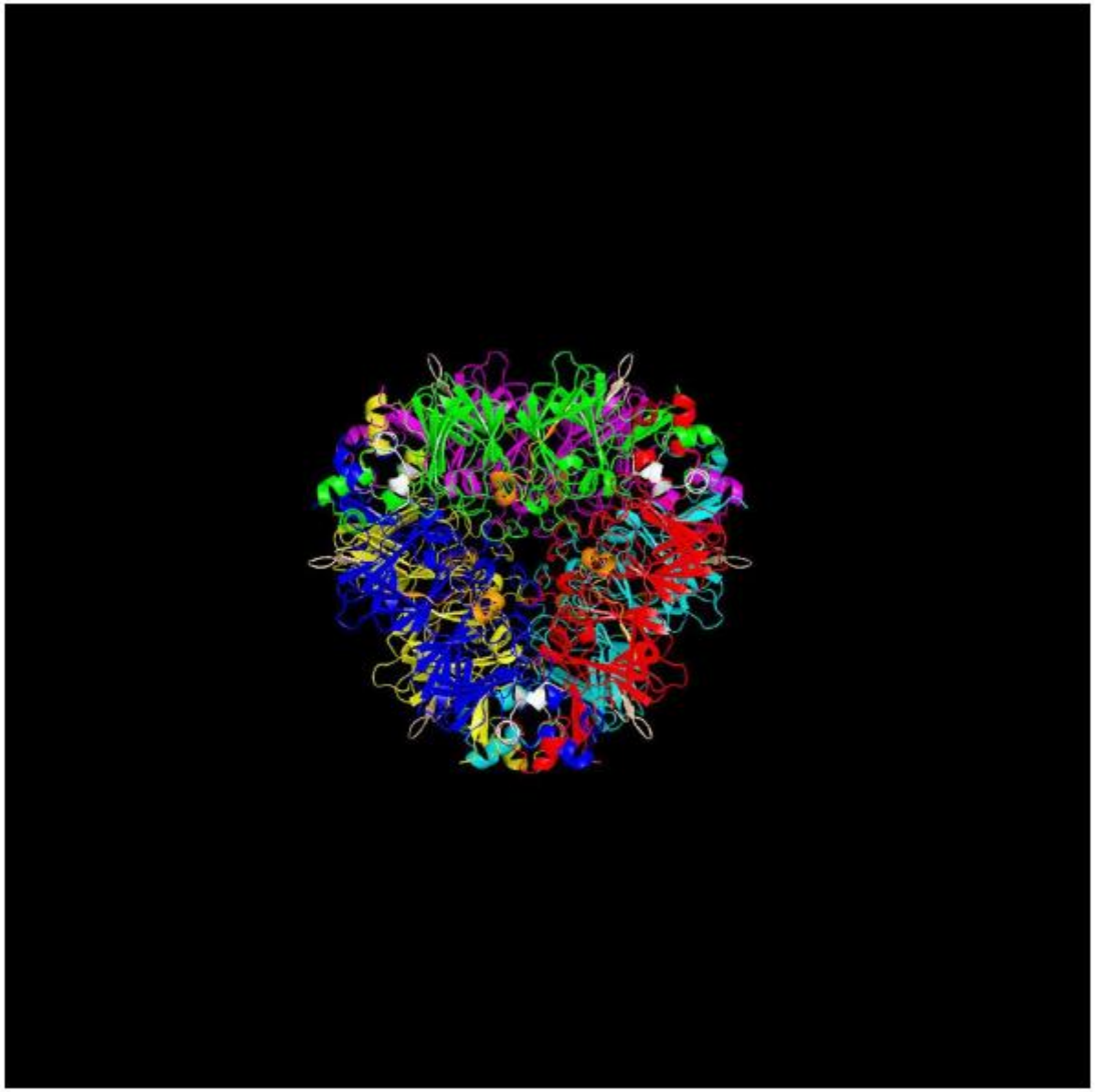
Bet v1

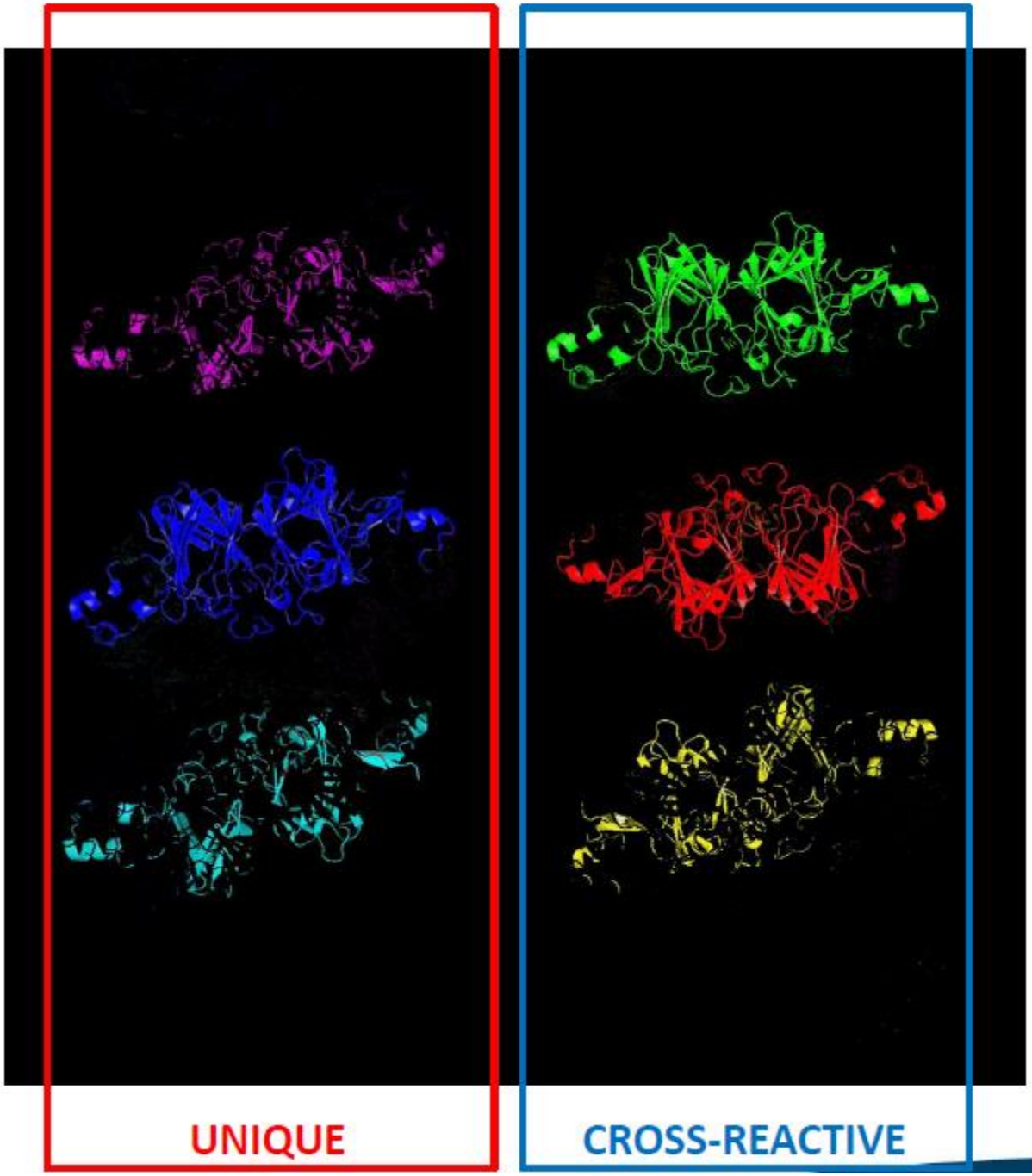


Bet v2

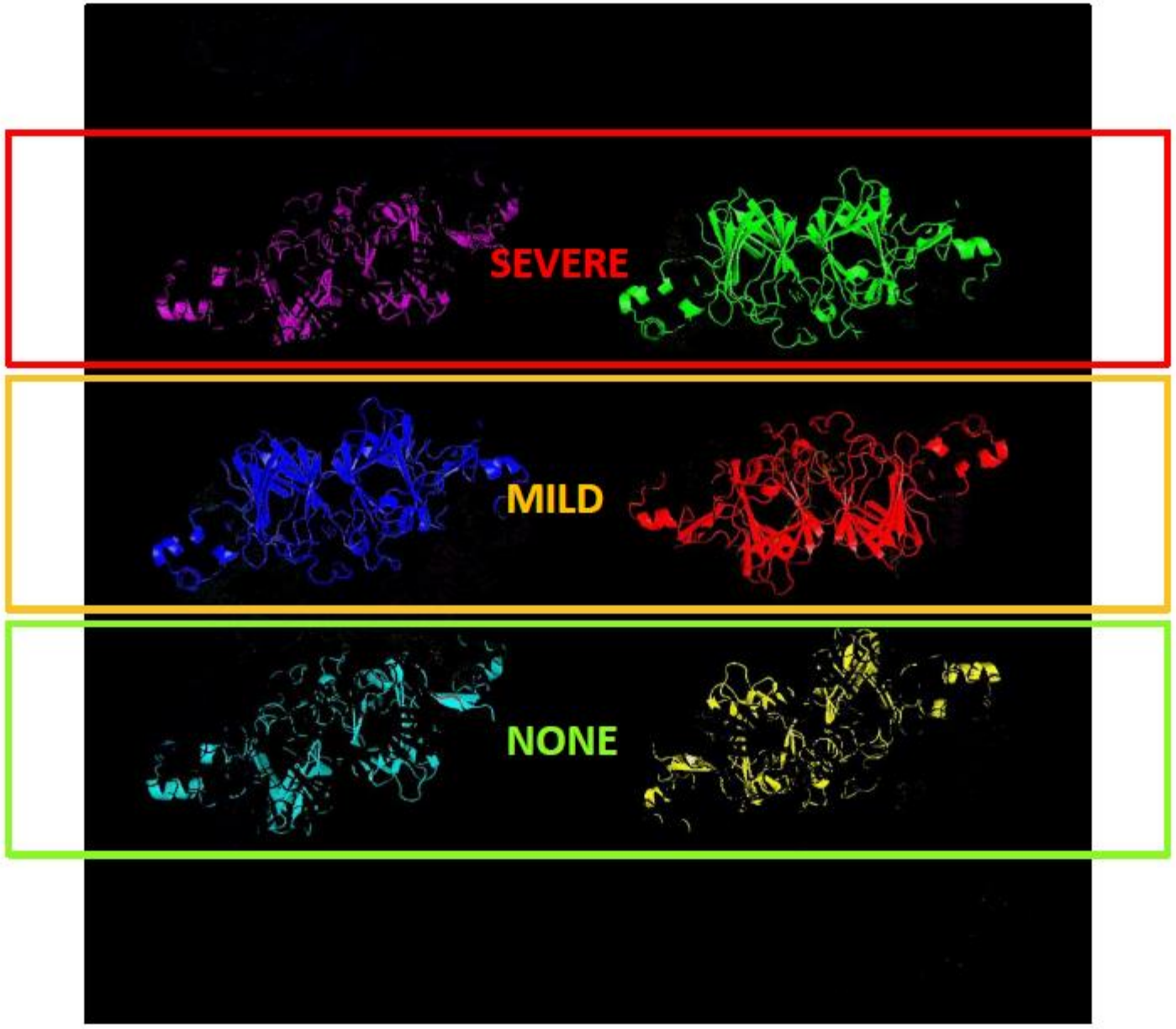


Bet v4




UNIQUE
CROSS-REACTIVE




SEVERE
MILD
NONE

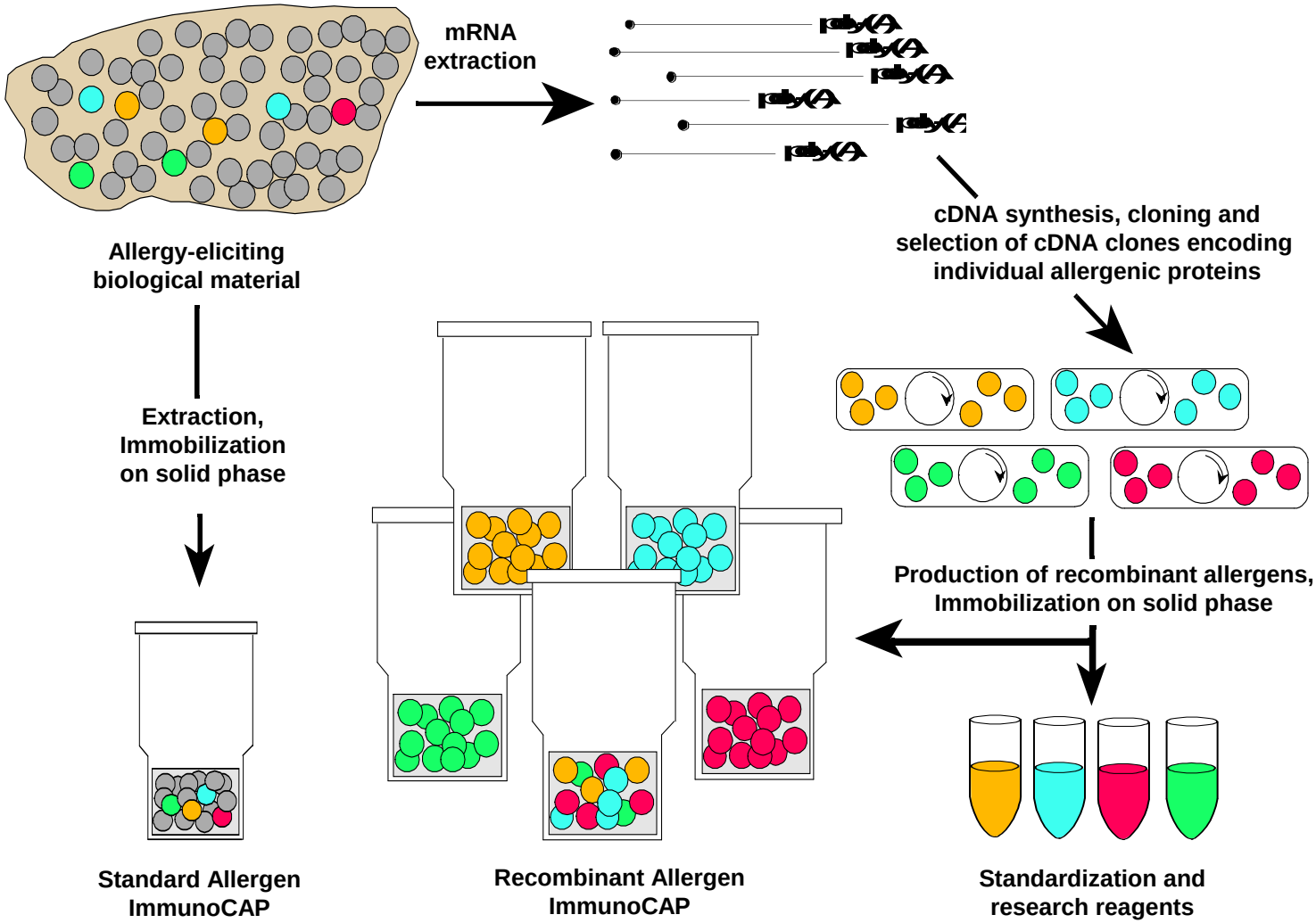
Specific components

- indicate genuine sensitization



Gal d 1 = *Gallus domesticus*, allergen # 1

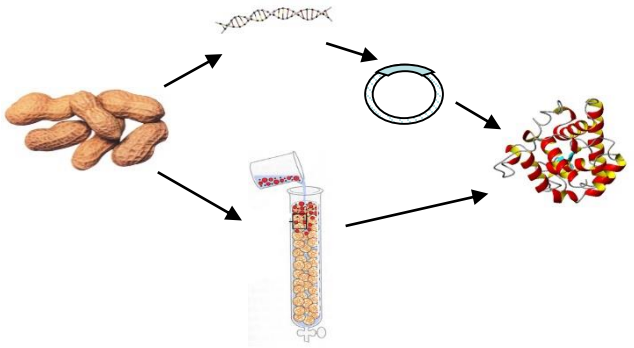
Single, purified/recombinant allergen components

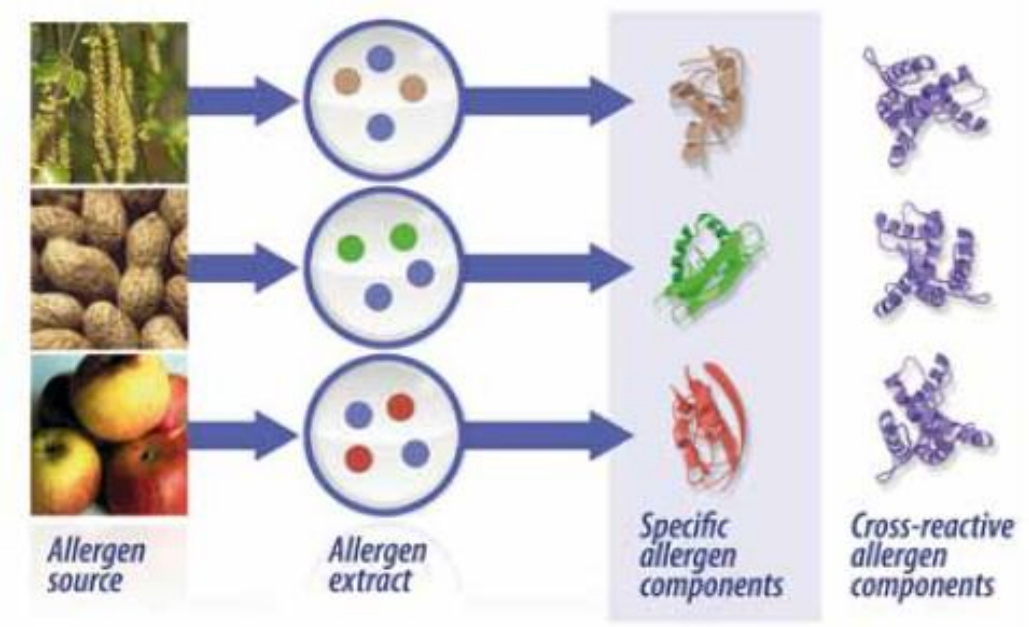


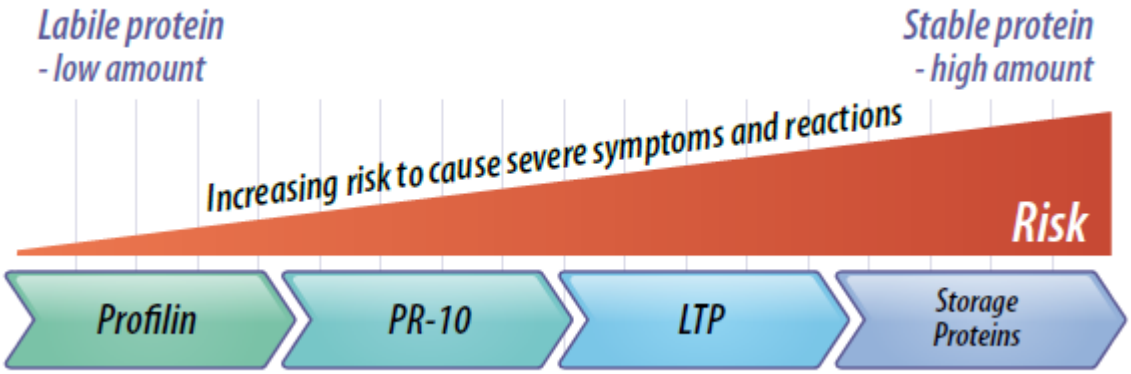
Nomenclature of components

• t3: *Betula verucosa*	Bet v 1, 2, 4, 6, 7
• g6: *Phleum pratense*	Phl p 1,..5,…7…12
• d1: *Dermato. pteronys*.	Der p 1, 2, 3,….10,..
• e1: *Felis domesticus*	Fel d 1, 2, 3…
• f13 : *Arachis hypogaea*	Ara h 1, 2 , 3, …..8,

Preceded by:
r : **recombinant** protein **rBet v 1**
n : **natural purified** protein **nDer p1**

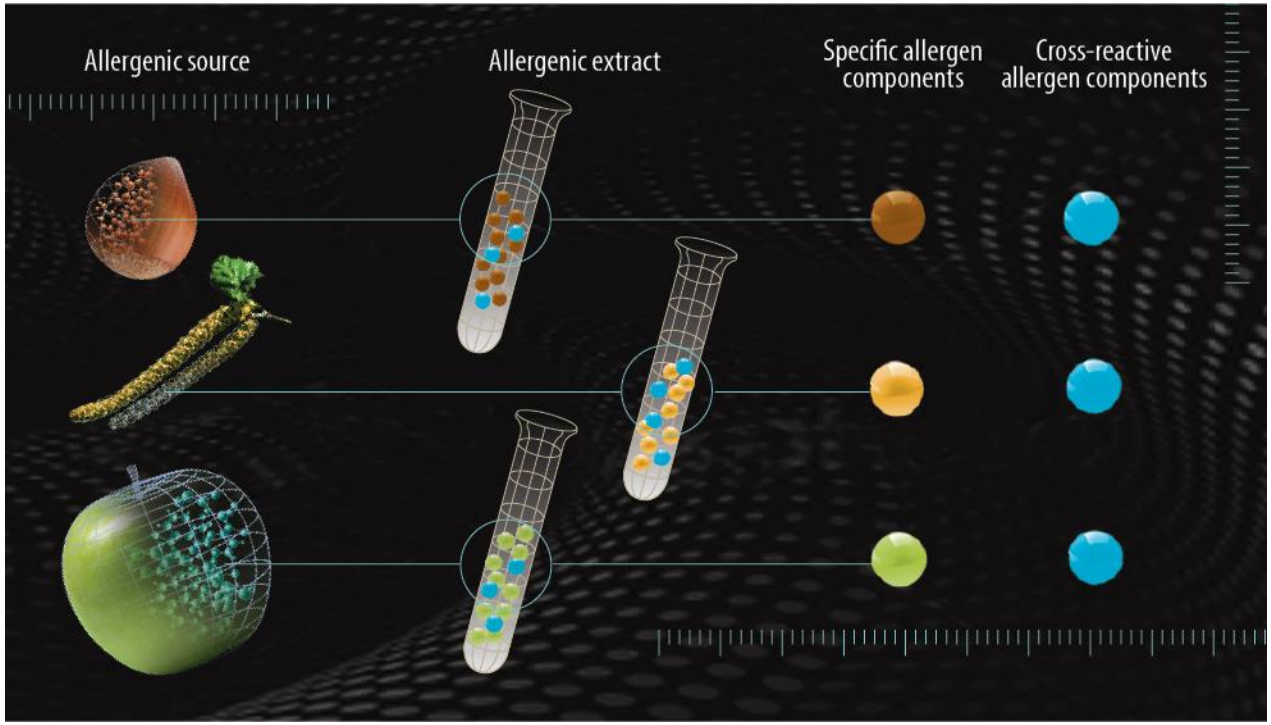



Allergen source
Allergen extract
Specific allergen components
Cross-reactive allergen components


Labile protein
- low amount
Stable protein
- high amount
Increasing risk to cause severe symptoms and reactions
Risk
Profilin
PR-10
LTP
Storage Proteins

Component - Resolved Diagnostics (CRD)

- **Predict cross-reactivity In Vitro & In Vivo**
- **Tailor-made immunotherapy**
- **Predict severity of reactions**



Aanvraagformulier "ImmunoCAP™ Allergietesten"

Phadia

"ImmunoCAP™"

☐ Bepaling van totaal IgE

Uitslag: kU/l

Mengsel uitslag: - ± +

Allergenen uitslag: kU/l

Labo:

Datum ontvangst aanvraag:

Patiënt naam:

adres:

Geboortedatum:

Geslacht:

Afnamedatum: uur:

Grassen

- ☐ gx3 Mengsel van grassen *(g1 -g5 -g6 -g12 -g13)*
- ☐ g1 Reukgras *Anthoxanthum odoratum*
- ☐ g2 Handjesgras *Cynodon dactylon*
- ☐ g3 Kropaar *Dactylis glomerata*
- ☐ g4 Beemdgras *Festuca elatior*
- ☐ g5 Engels raaigras *Lolium perenne*
- ☐ g6 Timotheegras *Phleum pratense*
  - ☐ g205 rPhl p1 *Phleum pratense*
  - ☐ g215 rPhl p 5 *Phleum pratense*
  - ☐ g210 rPhl p 7 Calc Bind Prot *Phleum pratense*
  - ☐ g212 rPhl p 12 Profiline *Phleum pratense*
  - ☐ g213 Mix rPhl p 1, rPhl p 5b *Phleum pratense*
  - ☐ g214 Mix rPhl p 7, rPhl p 12 *Phleum pratense*
- ☐ g8 Veldbeemdgras *Poa pratensis*
- ☐ g12 Rogge *Secale cereale*
- ☐ g13 Witbol *Holcus lanatus*
- ☐ g14 Haver *Avena sativa*
- ☐ g15 Tarwe *Triticum sativum*
- ☐ g201 Gerst *Hordeum vulgare*
- ☐ g202 Maïs *Zea mays*

Kruidachtigen

- ☐ wx5 Mengsel van kruiden *(w1 -w6 -w7 -w8 -w12)*
- ☐ wx6 Mengsel van kruiden *(w9 -w10 -w11 -w18*
- ☐ w1 Alsem ambrosia *Ambrosia elatior (artemisiifolia)*
- ☐ w3 Driedelige ambrosia *Ambrosia trifida*
- ☐ w5 Absintalsem *Artemisia absinthium*
- ☐ w6 Bijvoet *Artemisia vulgaris*
  - ☐ w231 nArt v 1 *Artemisia vulgaris*
  - ☐ w233 nArt v 3 LTP *Artemisia vulgaris*
- ☐ w7 Margriet *Chrysanthemum leucanthemum*
- ☐ w8 Paardebloem *Taraxacum vulgare*
- ☐ w9 Smalle weegbree *Plantago lanceolata*
- ☐ w10 Melganzenvoet *Chenopodium album*
- ☐ w11 Loogkruid *Salsola kali (pestifer)*
- ☐ w12 Guldenroede *Solidago virgaurea*
- ☐ w17 Ganzenvoet *Kochia scoparia*
- ☐ w18 Zuring *Rumex acetosella*
- ☐ w20 Netel *Urtica dioica*
- ☐ w21 Glaskruid *Parietaria judaica*

Bomen

- ☐ tx5 Mengsel van bomen *(t2 -t4 -t8 -t12 -t14)*
- ☐ tx6 Mengsel van bomen *(t1 -t3 -t5 -t7 -t10)*
- ☐ t1 Vederesdoorn *Acer negundo*
- ☐ t2 Grauwe els *Alnus incana*
- ☐ t3 Ruwe berk *Betula verrucosa*
  - ☐ t215 rBet v 1 PR10 *Betula verrucosa*
  - ☐ t216 rBet v 2 Profiline *Betula verrucosa*
  - ☐ t220 rBet v 4 Calc Bind Prot *Betula verrucosa*
- ☐ t4 Hazelaar *Corylus avellana*
- ☐ t5 Beuk *Fagus grandifolia*
- ☐ t6 Jeneverbesstruik *Juniperus sabinoides*
- ☐ t7 Eik *Quercus alba*
- ☐ t8 Iep *Ulmus americana*
- ☐ t9 Olijfboom *Olea europaea*
  - ☐ t224 nOle e1 *Olea europaea*
- ☐ t10 Californische notelaar *Juglans californica*
- ☐ t11 Plataan *Platanus acerifolia*
- ☐ t12 Wilg *Salix caprea*
- ☐ t14 Populier *Populus deltoides*
- ☐ t16 Den *Pinus strobus*
- ☐ t17 Japanse ceder *Cryptomeria japonica*
- ☐ t18 Eucalyptus *Eucalyptus spp.*
- ☐ t19 Mimosastruik *Acacia longifolia*
- ☐ t23 Cipres *Cupressus sempervirens*
- ☐ t25 Es *Fraxinus excelsior*
- ☐ t208 Lindeboom *Tilia cordata*
- ☐ t209 Haagbeuk *Carpinus betulus*
- ☐ t210 Liguster *Ligustrum vulgare*

Schimmels & gisten

- ☐ mx1 Mengsel van schimmels *(m1 -m2 -m3 -m6)*
- ☐ m1 Penicillium notatum
- ☐ m2 Cladosporium herbarum *(Hormodendrum)*
- ☐ m3 Aspergillus fumigatus
  - ☐ m218 rAsp f 1 *Aspergillus fumigatus*
  - ☐ m219 rAsp f 2 *Aspergillus fumigatus*
  - ☐ m220 rAsp f 3 *Aspergillus fumigatus*
  - ☐ m221 rAsp f 4 *Aspergillus fumigatus*
  - ☐ m222 rAsp f 6 MNSOD *Aspergillus fumigatus*
- ☐ m4 Mucor racemosus
- ☐ m5 Candida albicans (yeast)
- ☐ m6 Alternaria alternata (A. tenuis)
  - ☐ m229 rAlt a 1 Alternaria alternata
- ☐ m7 Botrytis cinerea
- ☐ m8 Helminthosporium halodes
- ☐ m9 Fusarium moniliforme
- ☐ m10 Stemphylium botryosum
- ☐ m11 Rhizopus nigricans
- ☐ m12 Aureobasidium pullulans
- ☐ m15 Trichoderma viride
- ☐ m16 Curvularia lunata
- ☐ m70 Pityrosporum orbiculare
- ☐ m207 Aspergillus niger

Mijten

- ☐ d1 Huismijten *Dermatophagoides pteronyssinus*
  - ☐ d202 nDer p1 *Dermatophagoides pteronyssinus*
  - ☐ d203 rDer p2 *Dermatophagoides pteronyssinus*
  - ☐ d205 rDer p10 Tropomyosine *Dermatophagoides pteronyssinus*
- ☐ d2 Huismijten *Dermatophagoides farinae*
- ☐ d3 Huismijten *Dermatophagoides microceras*
- ☐ d74 Huismijten *Euroglyphus maynei*
- ☐ d70 Hooimijten *Acarus siro*
- ☐ d71 Hooimijten *Lepidoglyphus destructor*
- ☐ d72 Hooimijten *Tyrophagus putrescentiae*
- ☐ d73 Hooimijten *Glycyphagus domesticus*

Huisstof

- ☐ h1 Huisstof
- ☐ h2 Huisstof

Vertebra

- ☐ ex1 Mengsel van epithelen *(e1 -e3 -e4 -e5)*
- ☐ e1 Kat, epitheel
  - ☐ e94 rFel d 1
  - ☐ e220 rFel d 2 Serum albumine
- ☐ e5 Hond, haar en huidschilfers
  - ☐ e101 rCan f 1 Lipocalin
  - ☐ e102 rCan f 2 Lipocalin
  - ☐ e221 nCan f 3 Serum albumine
- ☐ e3 Paard, haar en huidschilfers
- ☐ e4 Rund, haar en huidschilfers
- ☐ e80 Geit, epitheel
- ☐ e81 Schaap, epitheel
- ☐ e83 Varken, epitheel
- ☐ e82 Konijn, epitheel
- ☐ e6 Cavia, epitheel
- ☐ e84 Hamster, epitheel
- ☐ e88 Muis
- ☐ e71 Muis, epitheel
- ☐ e72 Muis, urineproteïnen
- ☐ e76 Muis, serumproteïnen
- ☐ e87 Rat
- ☐ e73 Rat, epitheel
- ☐ e74 Rat, urineproteïnen
- ☐ e75 Rat, serumproteïnen

- ☐ e201 Kanarie, pluimen
- ☐ e77 Parkiet, faeces
- ☐ e78 Parkiet, pluimen
- ☐ e79 Parkiet, serumproteïnen
- ☐ e213 Papegaai, pluimen
- ☐ e7 Duif, faeces
- ☐ e70 Ganz, vederen
- ☐ e85 Kip, pluimen
- ☐ e86 Eend, pluimen
- ☐ e89 Kalkoen, pluimen

background

Symptoms:

- Both Adam and Ben have suffered from recurrent, severe rhino-conjunctivitis for the last 6 years in early spring (Feb–May).

	Adam	Ben
Skin Prick Test results:		
Birch	+3	+3
Grass	+3	+3
ImmunoCAP sIgE results:		
Birch	15 kU_A/l	8.5 kU_A/l
Grass	6.3 kU_A/l	11.3 kU_A/l
Diagnosis:	Grass and birch allergy	Grass and birch allergy
Treatment:	Antihistamines + SIT	Antihistamines + SIT

Comment: SIT is considered. For optimal choice of SIT treatment the IgE profile is investigated at the molecular level.

current visit

ImmunoCAP Allergen Components test results

	Adam, results (kU_A/l)	Ben, results (kU_A/l)
Bet v 1	10.1	<0.1
Bet v 2 (profilin)	<0.1	6.3
Bet v 4 (polcalcin)	5.2	<0.1
Bet v 6	<0.1	<0.1
Phl p 1	<0.1	7.3
Phl p 5	<0.1	<0.1
Phl p 7 (polcalcin)	5.8	<0.1
Phl p 12 (profilin)	<0.1	5.7

Diagnosis:	Birch pollen allergy	Grass pollen allergy
Treatment:	Birch pollen SIT treatment	Grass pollen SIT treatment

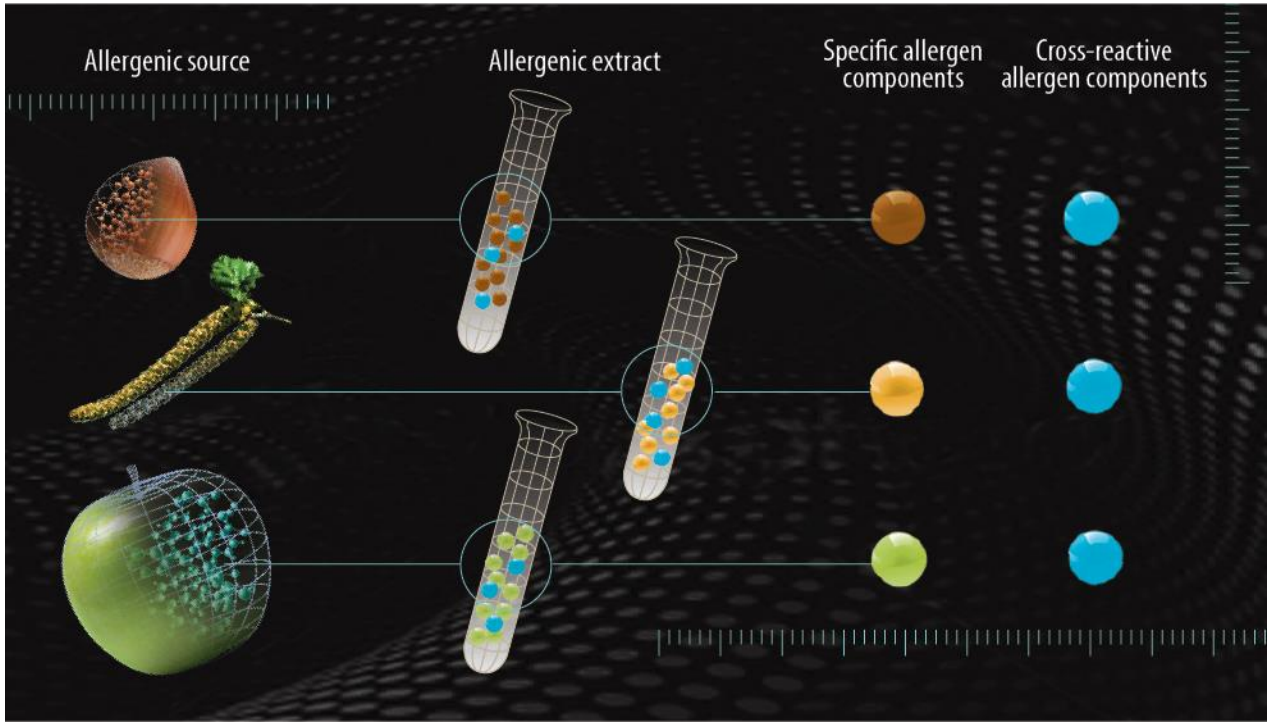
Interpretation of the ImmunoCAP Allergen Components results

ADAM: The result for the specific birch pollen component, Bet v 1, indicates that birch pollen SIT is appropriate. The IgE response to the cross-reacting polcalcins (Bet v 4 and Phl p 7) explains the positive grass extract result.

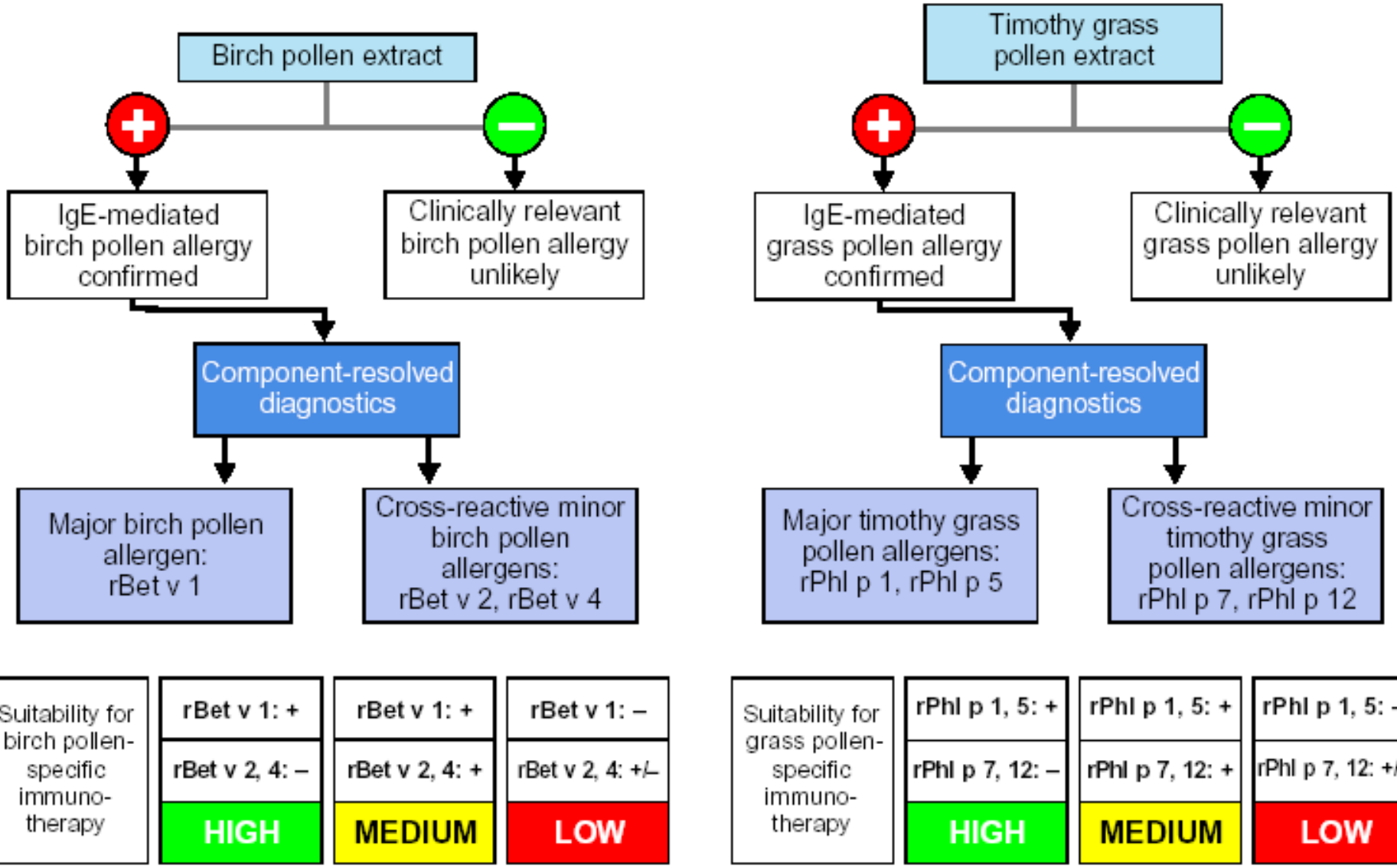
BEN: Absense of IgE antibodies to Bet v 1 indicate that that the pollen sensitization is not originating from birch pollen. For Ben Phl p 1 is the triggering allergen and grass pollen SIT is thus chosen. The IgE response to the cross-reacting profilin (Bet v 2 and Phl p 12) explain the positive birch extract result.

Component - Resolved Diagnostics (CRD)

- **Predict cross-reactivity In Vitro & In Vivo**
- **Tailor-made immunotherapy**
- **Predict severity of reactions**

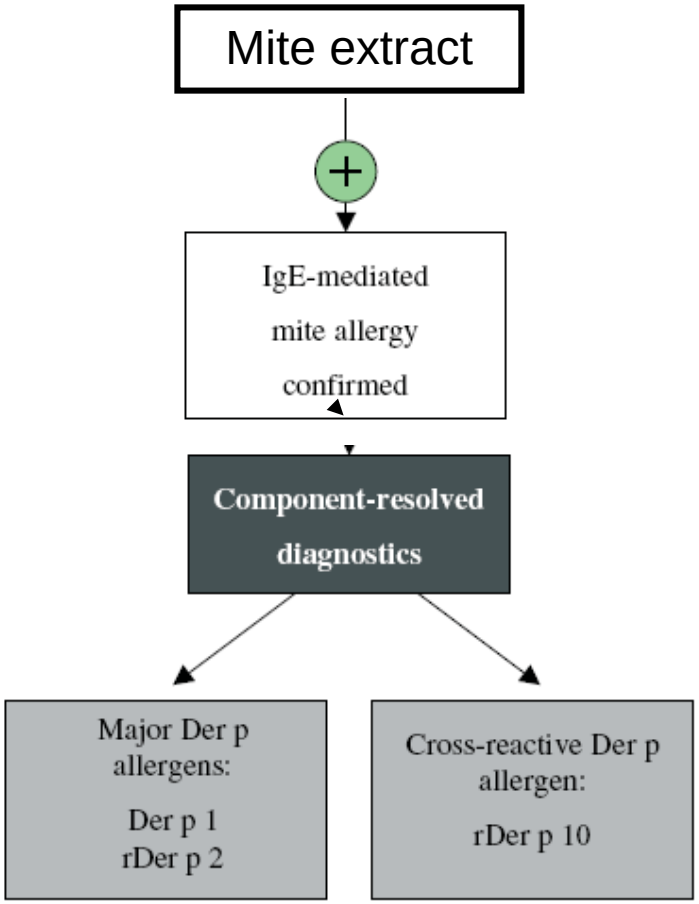


Immunotherapy?



Suitability for birch pollen-specific immuno-therapy	rBet v 1: + rBet v 2, 4: – HIGH	rBet v 1: + rBet v 2, 4: + MEDIUM	rBet v 1: – rBet v 2, 4: +/– LOW

Suitability for grass pollen-specific immuno-therapy	rPhl p 1, 5: + rPhl p 7, 12: – HIGH	rPhl p 1, 5: + rPhl p 7, 12: + MEDIUM	rPhl p 1, 5: – rPhl p 7, 12: +/– LOW





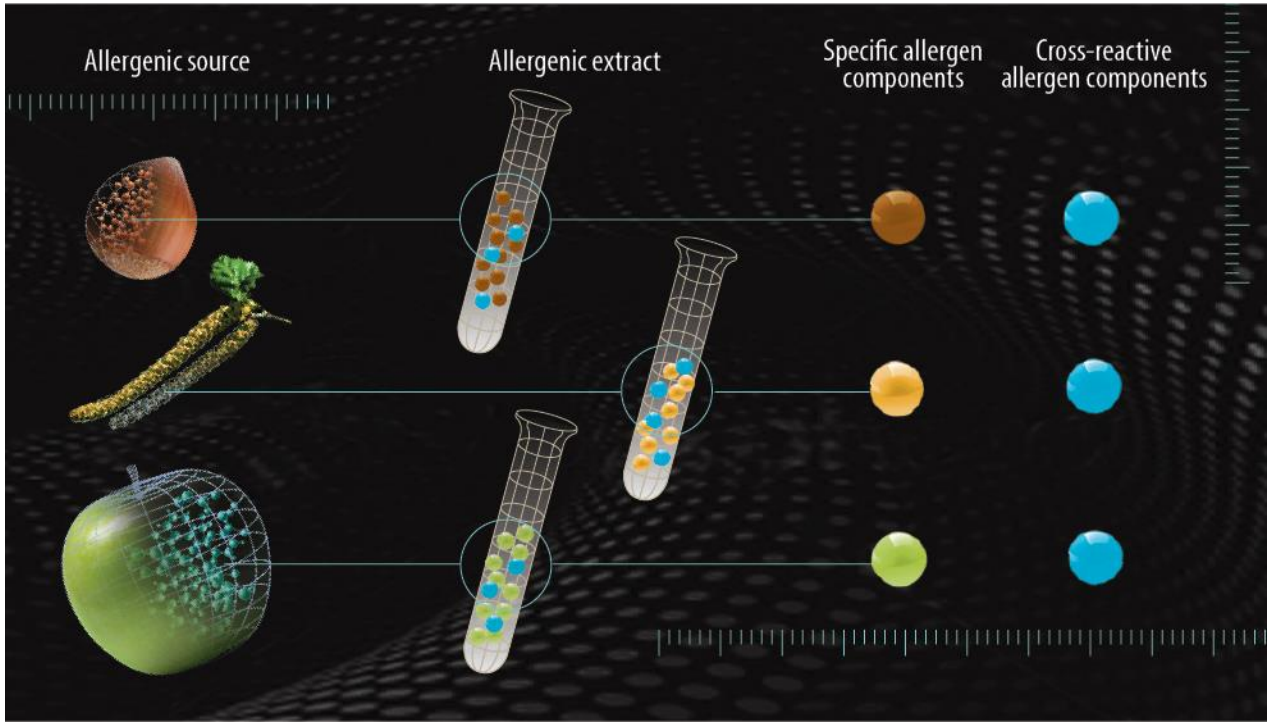
A possible decision tree for Der p-immunotherapy. Serological testing with mite allergen extracts (Der p, Der f,) confirms IgE-mediated allergy. Componentresolved diagnosis (CRD) with major (Der p 1, Der p2) and cross-reactive (Der p 10) allergens may be performed to further determine suitability for Der p-specific immunotherapy.

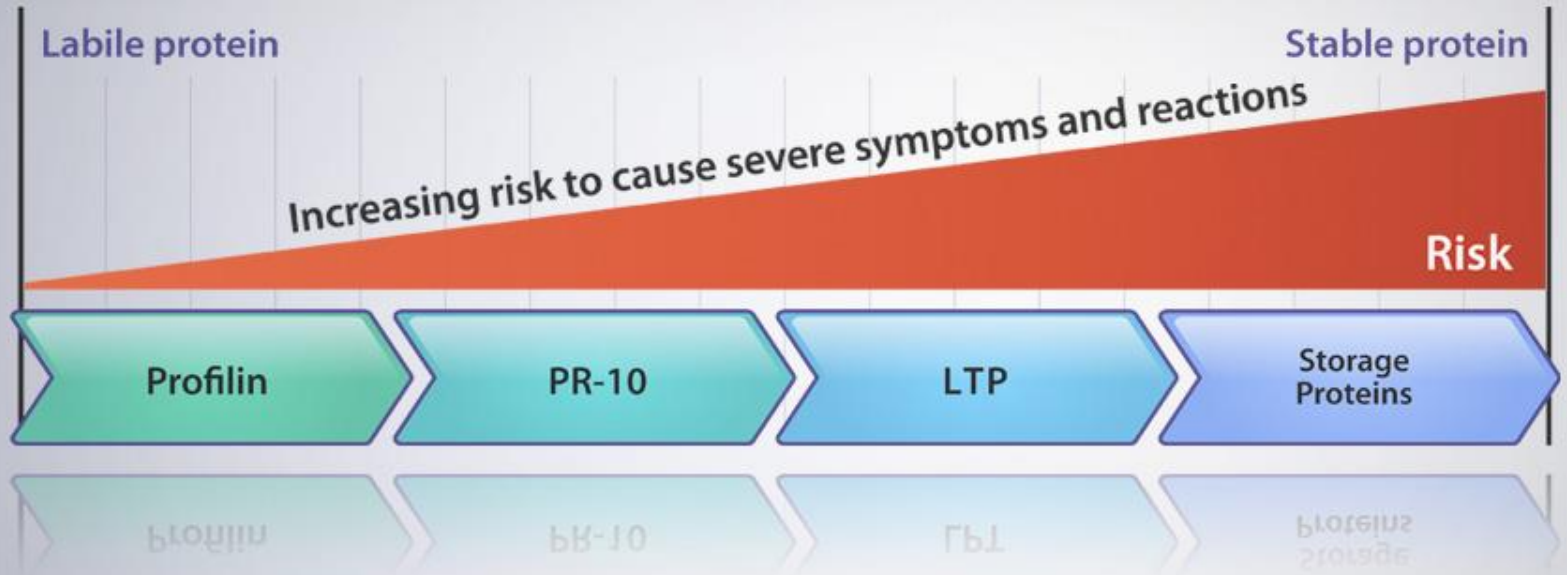
Adapted from: G. Pittner et al.,
Clinical and Experimental Allergy, 2004; 34:597–603

Suitability for Der p-specific immuno-therapy	Der p 1, 2: + Der p 10: – **HIGH**	Der p 1, 2: + Der p 10: + **MEDIUM**	Der p 1, 2: – Der p 10: +/– **LOW**

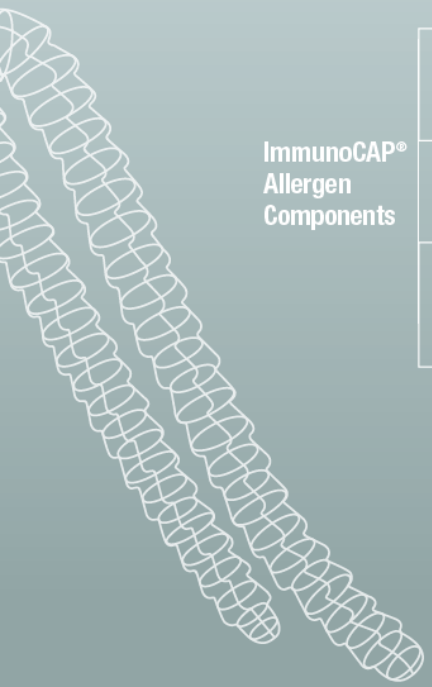
Component - Resolved Diagnostics (CRD)

- **Predict cross-reactivity In Vitro & In Vivo**
- **Tailor-made immunotherapy**
- **Predict severity of reactions**




Labile protein
Stable protein
Increasing risk to cause severe symptoms and reactions
Risk
Profilin
PR-10
LTP
Storage Proteins

Birch pollen components for a complete patient management



ImmunoCAP® Complete Allergens

Betula verrucosa	t3, Birch.

ImmunoCAP® Allergen Components

Bet v 1	t 215, PR-10 protein (Pathogenesis-Related group 10). Specific for birch. Patients sensitized to Bet v 1 may also react to other PR-10 proteins, see table below. Up to 95 % of birch pollen allergic patients have IgE antibodies to Bet v 1.
Bet v 2	t 216, Profilin. A cross-reactive component present in pollen, plant foods and latex. High degree of similarity across species. 15–30 % of pollen-allergic patients are sensitized to Bet v 2.
Bet v 4	t 220, Polcalcin. A cross-reactive component present in grass, tree and weed pollen. High degree of similarity across species. About 10 % of pollen sensitized individuals have IgE antibodies to Bet v 4.
Bet v 6	t 225, Isoflavone reductase. A cross-reactive component present in commonly known birch related foods. Minor birch pollen allergen.

Examples of allergens containing Bet v 1-like (PR-10) proteins

Trees	Fruits	Nuts & Legumes	Vegetablaes
Birch	Apple	Hazelnut	Carrot
Alder	Pear	Walnut	Celery
Beech	Peach	Almond	Parsley
Chestnut	Cherry	Peanut	Asparagus
Hazel	Kiwi	Soy bean	Potato
Hornbeam	Apricot	Kidney bean	
Oak	Strawberry	Pea	

Most PR-10 proteins are digestive and heat labile proteins, primarily localized to the pulp of the fruit.

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background

Previous symptoms (5 years ago):

- Rhino-conjunctivitis during spring and early summer

Previous visit	Nina	Peter
Skin Prick Test results:		
Birch	+4	+3
ImmunoCAP sIgE results:		
Birch	16 kU/l	12 kU/l

Negative test results for grass, mugwort, cat, dog, mite

Diagnosis:	Birch pollen allergy	Birch pollen allergy

Comment: Both Nina and Peter are diagnosed as birch pollen allergic, and they are both prescribed anti-histamines and local steroids to use during birch pollen season.

current visit

Current symptoms (today):

- Rhino-conjunctivitis during spring and early summer has become worse for Nina but remains stable for Peter.
- They are now both experiencing oral symptoms when eating apples; Nina gets intense oral itching while Peter gets oral swelling and throat discomfort.

ImmunoCAP Allergen component test results

	Nina, results (kU_A/l)	Peter, results (kU_A/l)
Birch	22.4	15.8
Apple	16.2	12.7
Bet v 1	21.1	14.6
Bet v 2	<0.1	<0.1
Bet v 4	0.2	<0.1
Mal d 1	15.3	8.2
Mal d 3	<0.1	6.4
Phl p 12	<0.1	<0.1

Diagnosis:	Birch pollen allergy Birch pollen-related apple allergy	Birch pollen allergy LTP-dependent apple allergy
Management:	Avoid raw apples if unpleasant Cooked apples may be tolerated	Avoid apples Consider emergency medication Be cautious with other fruits and nuts

Nina´s symptoms from eating of apple are a consequence of her birch pollen allergy. She may in future experience symptoms also to other PR-10 containing plant foods, such as hazelnuts, pears, carrots or celery.

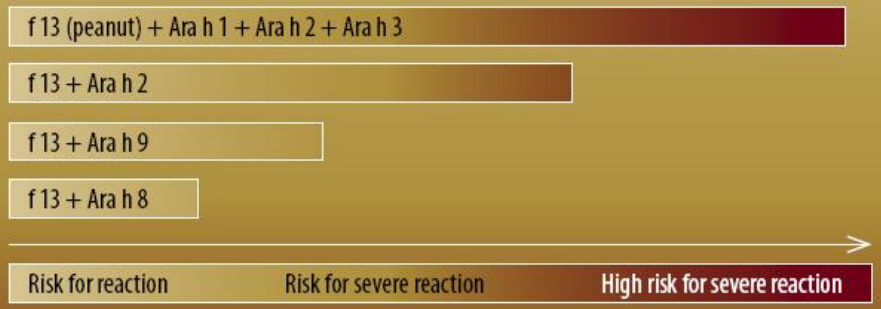
Peter has IgE antibodies to Mal d 3 and therefore his apple allergy could develop into systemic reactions.



PEANUT

All available peanut components are needed for a complete risk assessment

Risk assessment with ImmunoCAP® Molecular Allergology



FACTORS TO CONSIDER:

- Sensitization to several allergen components
- Local exposure
- Level of exposure
- Level of Specific IgE

PROTEIN GROUPS:

Storage proteins:
- Ara h 1
- Ara h 2
- Ara h 3
  - Associated with severe reactions
  - Stable to heat and digestion

PR-10 protein:
- Ara h 8
  - Associated with local reactions (e.g. OAS)
  - Labile to heat and digestion
  - Associated with allergy to birch and birch related tree pollens

LTP:
- Ara h 9
  - Associated with both severe and local reactions
  - Stable to heat and digestion
  - Associated with allergy to peach and peach related fruits

Phadia
Setting the Standard
www.phadia.com
ImmunoCAP® Molecular Allergology



Previous symptoms:

- Eczema during infancy, outgrown at school age
- Rhinitis and conjunctivitis during pollen season, since school age

Ongoing symptoms:

- Nasal obstruction in combination with irritated, itchy eyes and sometimes local reaction in the mouth

Family history:

- None

Previous visit	Caroline	Emma
(at 5 years)		
SPT test results	Egg +1 Peanut +4	Egg +1 Peanut +4
Diagnosis:	Peanut and egg allergy	Peanut and egg allergy
Treatment:	Dietary restriction to peanut and egg	Dietary restriction to peanut and egg

SIMILAR CLINICAL HISTORY! CAN COMPONENT TESTING TELL TWO DIFFERENT STORIES?

Caroline and Emma, both 16 years old

Peanut challenge outcome

(at 16 years)	Caroline	Emma
Specific IgE test results:	Peanut: 26 kUA/l	Peanut: 28 kUA/l
Peanut challenge	No symptoms	Urticaria, rhinitis, cough, tired
Diagnosis:	No peanut allergy	Peanut allergy was confirmed
Treatment:	No dietary restriction to peanut	Dietary restriction to peanut remains

ImmunoCAP® Allergen component test results

(at 16 years)	Caroline, results (kUA/l)	Emma, results (kUA/l)
f13, peanut	26	28
Ara h 1	<0.1	2.1
Ara h 2	<0.1	12.3
Ara h 3	<0.1	3.3
Ara h 8	33	10.3
Diagnosis:	No peanut allergy	Peanut allergy was confirmed
Treatment:	No dietary restriction to peanut	Dietary restriction to peanut remains

Interpretation of the Allergen component test results

Ara h 1, Ara h 2 and Ara h 3 – Storage proteins

- The test results indicate an increased risk of severe reaction if eating peanuts, even small amounts = Emma´s situation

Ara h 8 – PR-10 protein

- The test results indicate a pollen-related food allergy that might result in local reactions in the mouth when eating peanuts = Caroline´s situation


Your child has a severe, life threatening nut allergy.
Oh no! What can I do?
Avoid nuts.
Does that include Grandpa?

Suspicion of hazelnut allergy

Is it allergy? Risk for severe reactions?

Test with ImmunoCAP® Allergen
Hazelnut (f17) + Cor a 8 (f425)

Hazelnut: neg Cor a 8: neg	Hazelnut: pos Cor a 8: neg	Hazelnut: pos Cor a 8: pos
Very low risk for severe reactions to hazelnut	Risk for severe reactions to hazelnut	High risk for severe reactions to hazelnut
	Recommendations for further testing: Risk grading: Cor a 1 (f428) ●● CCD (Ro214) ●	



Cor a 9
Cor a 14

Cor a 1



Allergologie
Immunologie
Reumatologie

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Cor a 8 en Cor a 9



Allergologie
Immunologie
Reumatologie

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WHICH WENT BAD FIRST, THE CHICKEN SALAD OR THE EGG SALAD?
GLENN

Recommended test profile

ImmunoCAP®
COMPLETE EXTRACTS

Egg white (f1)

Egg yolk
(f75)

Further investigation:
chicken meat f83 (Suggestive of egg-bird syndrome)

ImmunoCAP®
COMPONENTS

Gal d 1 + Gal d 2 + Gal d 3 + Gal d 4
(f233) (f232) (f323) (k208)

Gal d 1, Ovomucoid
- Heat-stable and highly allergenic
- Risk for reaction to all forms of egg
- High levels indicate persistent allergy

Gal d 2, Ovalbumin
- Heat-labile
- Most abundant egg white protein
- Risk for clinical reaction to raw or slightly heated egg and certain vaccines

Gal d 3, Conalbumin
- Heat-labile
- Adds information on the complete egg sensitization profile
- Risk for clinical reaction to raw or slightly heated egg

Gal d 4, Lysozyme
- Risk for clinical reaction to raw or slightly heated egg
- Lysozyme is used as an additive in certain pharmaceutical products and foods

background

Previous symptoms:

- Severe eczema since 6-7 months of age
- Gastrointestinal symptoms

Clinical history:

- Urticaria and wheezing when accidentally eating egg

Family history:

- None

Previous visit	Andrea	Sylvia
(at 1 year)		
Skin Prick Test results:	Egg white +5 Milk negative	Egg white +4 Milk negative
ImmunoCAP sIgE results:	Egg white 20 kUA/l	Egg white 22 kUA/l
Diagnosis:	Egg allergy	Egg allergy
Treatment:	Dietary restriction to egg	Dietary restriction to egg

current visit

ImmunoCAP® Allergen component test results

(at 3 years)	Andrea, results (kUA/l)	Sylvia, results (kUA/l)
Egg white	16	19
Gal d 1 (Ovomucoid)	0.4	16
Gal d 2 (Ovalbumin)	11.1	6.9
Gal d 3 (Conalbumin)	0.4	0.2
Gal d 4 (Lysozyme)	4.5	0.3

Diagnosis:	Likely tolerant to extensively heated egg	Egg allergy
Treatment:	Oral food challenge to confirm tolerance to cooked egg	Dietary restriction to all forms of egg remains

Interpretation of the Allergen component test results

- Significant levels of IgE to Gal d 1 indicates a risk for reaction to all forms of egg = Sylvia's situation
- Low level of sensitization to Gal d 1 indicates tolerance to cooked egg. An open challenge in the clinic with extensively heated egg may be performed to confirm the diagnosis = Andrea's situation


IT'S NOT GOOD NEWS... YOU'RE ALLERGIC TO DAIRY PRODUCTS.
DOCTOR

MILK

Recommended test profile

ImmunoCAP® COMPLETE EXTRACT → Milk (f2)

ImmunoCAP® COMPONENTS

Bos d 4 (f76)	Bos d 5 (f77)	Bos d 6 (e204)	Bos d 8 (f78)	Bos d lactoferrin (f334)

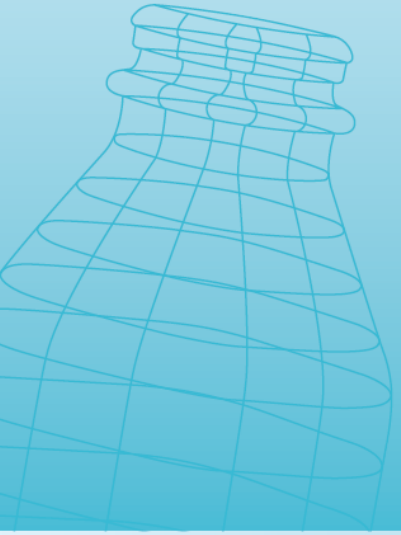
Bos d 4, α-lactalbumin
- Risk for reactions to fresh milk
- IgE levels fall as tolerance develops
- Heat labile protein

Bos d 5, β-lactoglobulin
- Risk for reactions to fresh milk
- IgE levels fall as tolerance develops
- Heat labile protein

Bos d 6, BSA
- Risk for reactions to fresh milk
- The main allergen in beef
- Heat labile protein

Bos d 8, Casein
- Risk for reactions to all forms of milk
- High levels are connected with persistent milk allergy
- IgE levels fall as tolerance develops
- Stable to heat and digestion

Bos d lactoferrin
- Risk for reactions to fresh milk
- Heat labile protein



background

Previous symptoms:

- Severe eczema since 2–3 months of age
- Stomach ache and loose stools

Family history:

- None

Previous visit	Antonio	Isabel
(at 6 months of age)		
Skin Prick Test		
Milk	+4	+5
Egg white	neg	neg
ImmunoCAP® sIgE result:		
Milk (f2) kU_A/l	18	25
Diagnosis:	Milk allergy	Milk allergy
Doctor's recommendations:	Dietary restrictions: Eliminate cow's milk from the diet and substitute milk for milk-free formula	Dietary restrictions: Eliminate cow's milk from the diet and substitute milk for milk-free formula

current visit

ImmunoCAP Allergen component test results

(at 18 months of age))	Antonio, results (kU_A/l)	Isabel, results (kU_A/l)
Milk	10.2	20.6
Bos d 4 (α-lactalbumin)	3.8	2.2
Bos d 5 (β-lactoglobulin)	0.7	1.0
Bos d 6 (bovine serum albumin)	3.6	0.3
Bos d 8 (casein)	1.4	21.5
Bos d lactoferrin (transferrin)	0.4	<0.1

Diagnosis:	Likely tolerant to baked milk	Milk allergy
Doctor's recommendations:	Oral food challenge to confirm tolerance to milk	No challenge needed Dietary restriction to all forms of milk remains

At 2 years of age Antonio can eat and drink milk in all forms, while Isabel is still on a milk free diet.

Interpretation of the Allergen component test results

- Significant levels of IgE to Bos d 8 indicates a risk for reaction to all forms of milk = Isabel's situation.
- Low level of sensitization to Bos d 8 indicates tolerance to boiled milk. An open challenge in the clinic with baked milk may be performed to confirm the diagnosis = Antonio's situation.



rHev b1, rHev b3, rHev b5, rHev b6.01, rHev b6.02, rHev b8, (rHev b9, rHev b11)

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Latex allergen	Molecular mass (Kda)	Protein name	Significance allergen	Significance Cross-reaction	IgE Binding Prevalence
Hev b 1	14,6	Rubber elongation factor	High (SB)	Not observed	HCW:52% SB:81%
Hev b 2	34-36	Beta-1,3-glucanase	Medium	Medium	HCW:65% SB:54%
Hev b 3	24-27	Small rubber particle protein	High (SB)	Not observed	HCW:13-20% SB:76-78%
Hev b 4	50-57	Beta-glucosidase	Not known	Not observed	Not Clear
Hev b 5	16-24	Acidic structural protein	High in all risk groups	Not observed (Homology Kiwi)	HCW:68-92% SB:33-56%
Hev b 6.01	20	Prohevein	High in all risk groups	High (Banana-kiwi-avocado)	LAP:75-83%
Hev b 6.02	4,7	Hevein	High in all risk groups	High (Banana-kiwi-avocado)	LAP:56% HCW:75% SB:27%
Hev b 6.03	14	C-domaine of prohevein	High	High (Homlogy plant stress proteins)	LAP:15-21%
Hev b 7.01	42	Patatin-like protein	Low-Medium	Unclear (Homology potato-tomato)	LAP:11-49%
Hev b 7.02	44	Patatin-like protein	Medium only in SB	Unclear (Homology potato-tomato)	SB:39.5%
Hev b 8	14	Profilin	Low	Medium panallergen	LAP:11% HCW:20-24% SB:6-12%
Hev b 9	51	Enolase	Low	Medium (Molds)	LAP:15%
Hev b 10	26	Manganese superoxyde dismutase	Low	Medium (Molds)	LAP:27% HCW:0% SB:10%
Hev b 11	32	Class I chitinase	Low	High (Fruits)	LAP:19-29%
Hev b 12	9	Lipid transfer protein	Low	Medium (fruits) panallergen	LAP:24%
Hev b 13	42	Esterase	High	Not determined	HCW:63%

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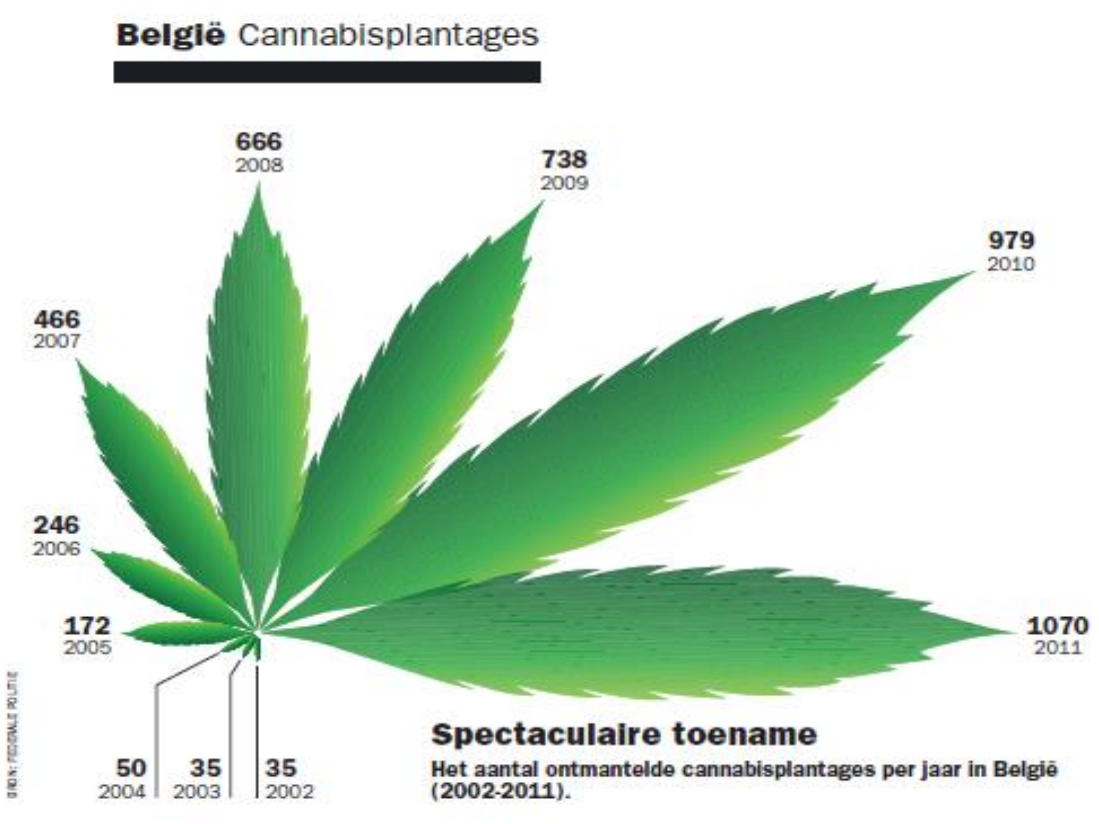
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New Food Allergies in a European Non-Mediterranean Region: Is *Cannabis sativa* to Blame?

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Cit r 3



Pru av 3



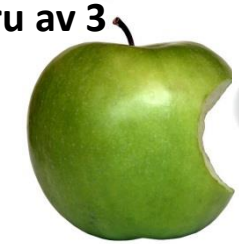
Cit s 3



Pru p 3



Tri a 14



Mal d 3



Lyc e 3

The “Can s 3 connection”





Hev b 12



Cor a 8, Jug r 3, …



Ara h 9

Mus a 3

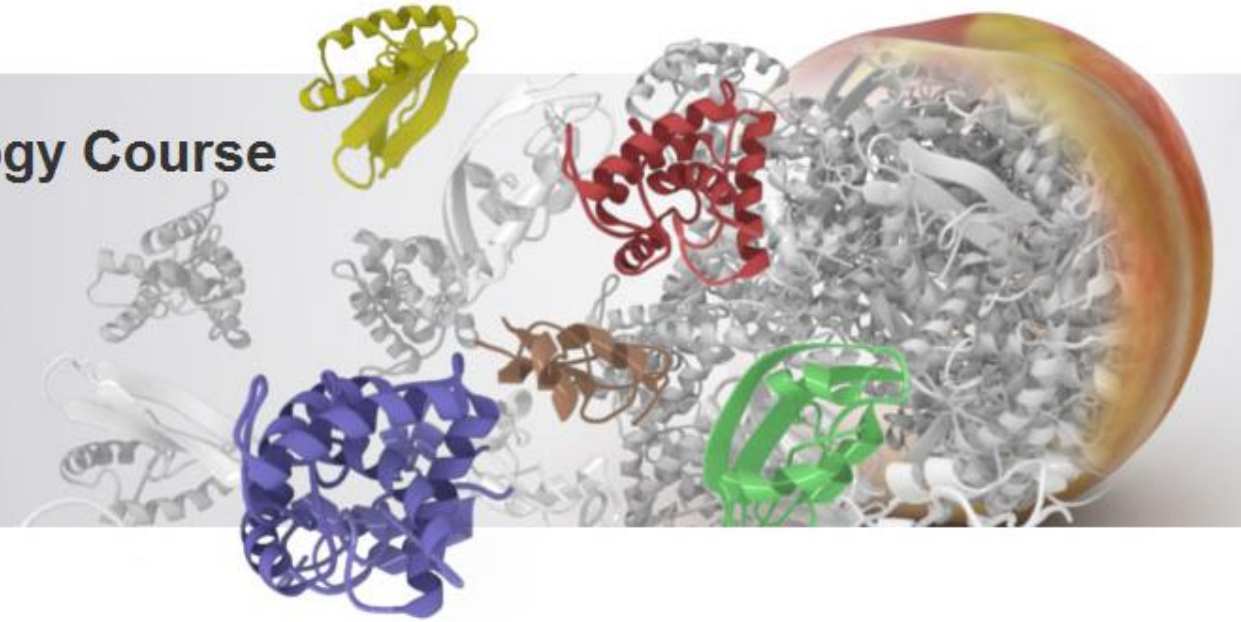




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Introduction to Molecular Allergology



Specificity and cross-reactivity



Is there risk for systemic reactions?



How to better choose treatment



Patient cases