Clinical Utility
ImmunoCAP® Allergen component rDer p 10, Tropomyosin, is an important diagnostic tool for evaluating cross-reactivity between house dust mites, crustaceans, insects and mollusks.

Immunological relationships between house dust mites, crustaceans and cockroaches have been established and suggest tropomyosin as an important cross sensitizing pan allergen (1).

Der p 10 together with Der p 1 and Der p 2 are complementing the extract based ImmunoCAP® Allergen d1 in providing a more detailed sensitization profile of mite allergic patients.

Allergen Description
House dust mites represent one of the most important allergen sources worldwide (2, 3). The most important House dust mites are Dermatophagoides pteronyssinus and, in drier areas Dermatophagoides farinae. In subtropical and tropical regions the storage mite Blomia tropicalis is also a major source of allergens, co-existing with D. pteronyssinus.

Tropomyosins are a family of closely related proteins with multiple isoforms, present in both muscle and nonmuscle cells. They are involved in muscle contraction in invertebrates and are present in low concentrations in mite extracts.

Der p 10 is a 32 kDa allergen, belonging to the group 10 tropomyosin allergens, with significant homology with tropomyosins from different species (1, 4). Tropomyosins of very similar structure are found in invertebrates such as crustaceans (shrimp, lobster, crawfish, crab), arachnids (house dust mites), insects (cockroaches) and mollusks.

Cross-Reactivity
The mite tropomyosins, Der p 10 and Der f 10, are widely cross-reactive among invertebrates (5, 6, 7). Tropomyosin cross-reactivity may extend to other unexpected allergen sources. For example, a third of the children allergic to house dust mite also had clinical reactions after digestion of snails without any earlier exposure (8). This observation suggests that house dust mite was the sensitizing agent and that the cross-reaction could be clinically relevant (8). Cross-reactivity has also been reported between IgE-binding proteins from Anisakis simplex, a fish parasite, and D. pteronyssinus (9).

Clinical Experience
The frequency of sensitization to the tropomyosin allergen Der p 10 has varied in different reports from extremely high in Japan and Zimbabwe, to low, in Europe (10). However, house dust mites are usually the primary source of sensitizing allergens (11). A US study reported that IgE antibody reactivity to a major food allergen, shrimp, can occur in an unexposed population of individuals due to tropomyosins (12).
References


For further reading, see: www.immunocapinvitrosight.com