MITES

Mites associated with human dwelling can be classified as house dust mites (pyroglyphid mites) and storage mites (non-pyroglyphid mites). The family Pyroglyphidae contains approximately 18 genera and 46 species of mites (Arlian & Morgan, 2003). House dust mites inhabit a wide geographical range in the world. *Dermatophagoides farinae* is generally the most dominant species in the United States of America, while *D. pteronyssinus* is abundant in the United Kingdom (Bonnefoy *et al.*, 2008). *Blomia tropicalis* which was formerly categorized as storage dust mite is now recognized as house dust mites or domestic mites as they are found extensively in houses (Mariana *et al.*, 2000). *B. tropicalis* is found in dust from homes of tropical and subtropical countries, including Spain, India, Taiwan, Brazil, Colombia, Philippines, Malaysia and Indonesia. House dust mites are mainly found in areas with skin scales such as carpets, sofas and mattresses. These three species were isolated from upholsteries of homes in Klang Valley, Malaysia.

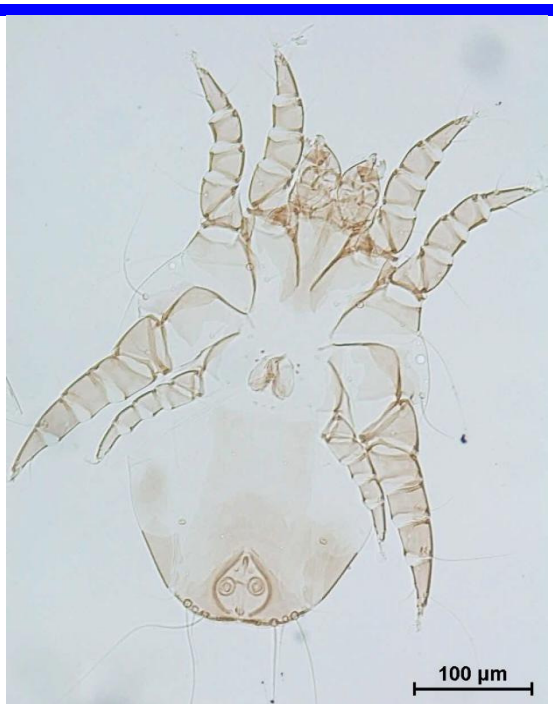
HOUSE DUST MITES

Dermatophagoides farinae

(a) 200x, male

(b) 200x, female

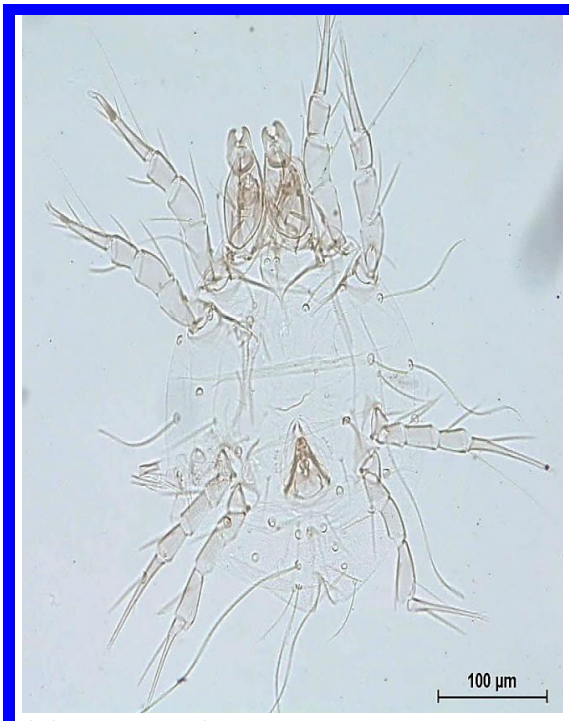
Dermatophagoides pteronyssinus



(a) 200x, male

(b) 200x, female

Blomia tropicalis



(a) 200x, male

(b) 200x, female

Storage mites are commonly found in storage facilities for grains such as wheat, corn, oats, barley and hay (Arlian & Morgan, 2003). They may contaminate or invade and thrive in processed foods made from the grains (e.g. flour, cereals and baking mixes) when these products become moist or are stored in humid environments. Mites and mite allergens may be carried over from the raw grains and contaminate the processed foods, even when they are stored under conditions that prevent mite survival. Significant exposure to storage mites and their allergens lead to occupational allergic diseases in agriculture, and baking industry. *Aleuroglyphus ovatus* belongs to order of Astigmata and is also known as brown legged grain mite. *A. ovatus* has a relatively short life cycle compared with other mites in which it requires approximately 2-3 weeks only for maturity (Hughes, 1976). *Glycycometus malaysiensis* belongs to Aeroglyphidae (super-family Glycyphagoidea) with very long idiosomal setae (body hairs) (Nadchatram, 2005). *Suidasia medanensis* belongs to Suidasiidae (super-family Acaroidea) and are commonly found in houses in tropical and subtropical countries (Mariana *et al*., 2000). Both *A. ovatus* and *S. medanensis* were isolated from the dust samples collected from the Animal Holding Facility of the International Medical University, Malaysia. *G. malaysiensis* was isolated from the house dust of homes at Klang Valley, Malaysia.

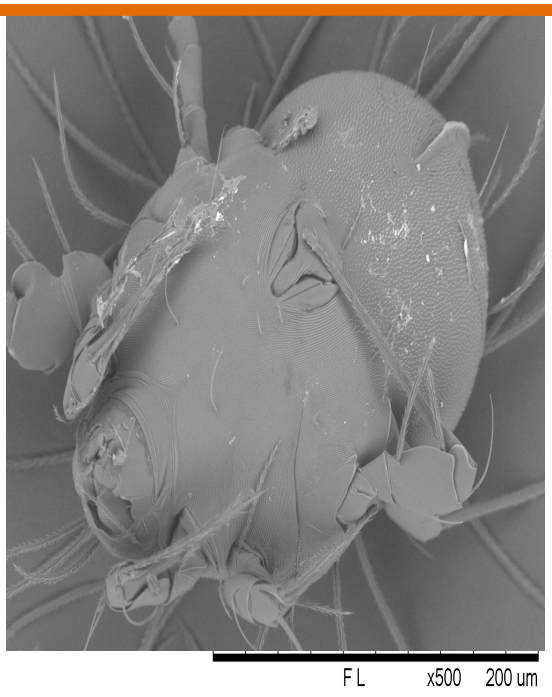
STORAGE MITES

Aleuroglyphus ovatus

(a) 200x, male

(b) 200x, female

Glycycometus (Austroglycyphagus) malaysiensis



(a) 500x, male

(b) 400x, female

Suidasia medanensis / pontifica

(a) 100x, male

(b) 100x, female

MITES ALLERGENS

Mite bodies and mite faeces are the major sources of many allergens in house dust that induce perennial rhinitis, asthma, atopic dermatitis and other allergic diseases (Colloff, 2009). Basically, the mite allergens can be classified into six categories: peptidases (mite allergen groups 1, 3, 6 and 9), glycosidases (groups 4, 12, 15 and 18), transferases (groups 8 and 20), small alpha-helical proteins (groups 5, 7 and 21), muscle proteins (groups 10 and 11) and the lipid-binding proteins (groups 2, 13 and 14). The remaining groups: 16, 17 and 19 are unclassified. Each mite species possesses its own allergenic components. However, cross-reactivity among the same group of allergens of different species may often be observed. Hence, the purified and crude mites can be widely applied for allergenicity studies, establishment of asthma animal models, diagnostic and/or invention of therapeutic measures.