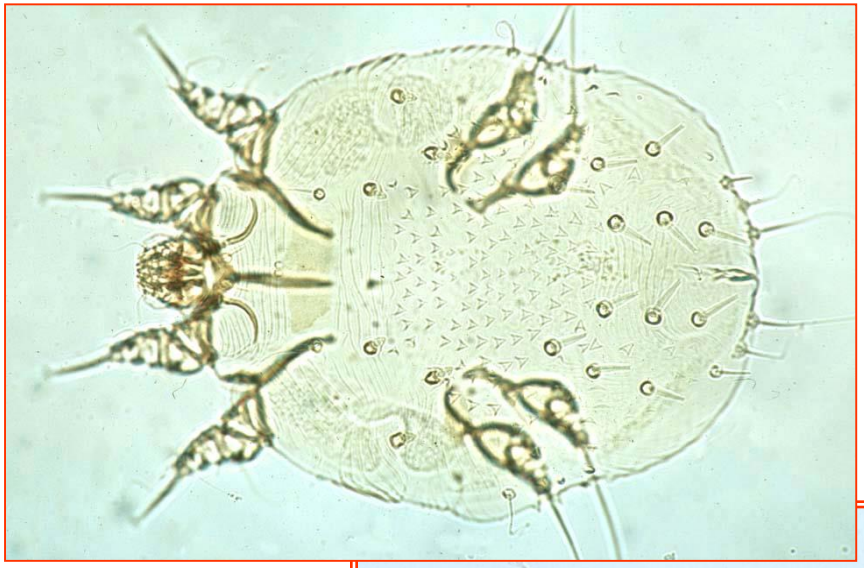
A 6 years old male child presented to the OPD of LRH with intensely pruritic rash on hands for 1 week duration.


©Derm101

SCABIES AND OTHER MITES



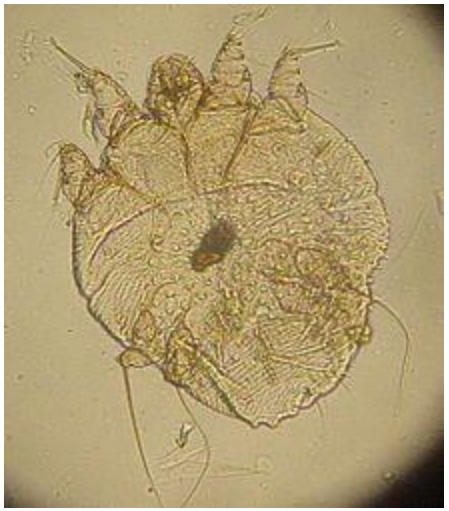
- Morphologically similar to ticks

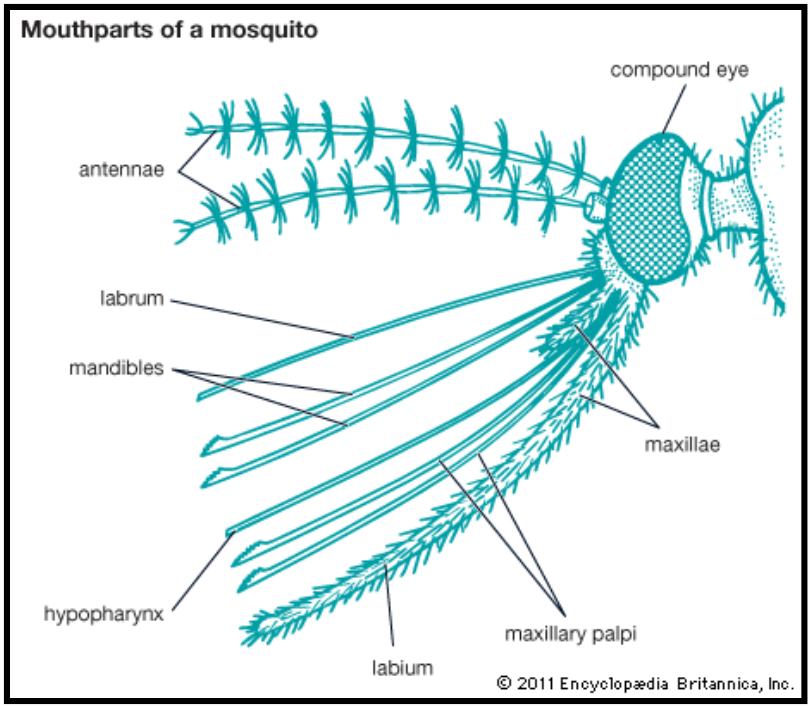
- Smallest arthropods (0.1mm – 2mm)

- Arachnida differ from Insects

  Lack antenae and wings

  Unsegmented body




Mouthparts of a mosquito
compound eye
antennae
labrum
mandibles
maxillae
hypopharynx
maxillary palpi
labium
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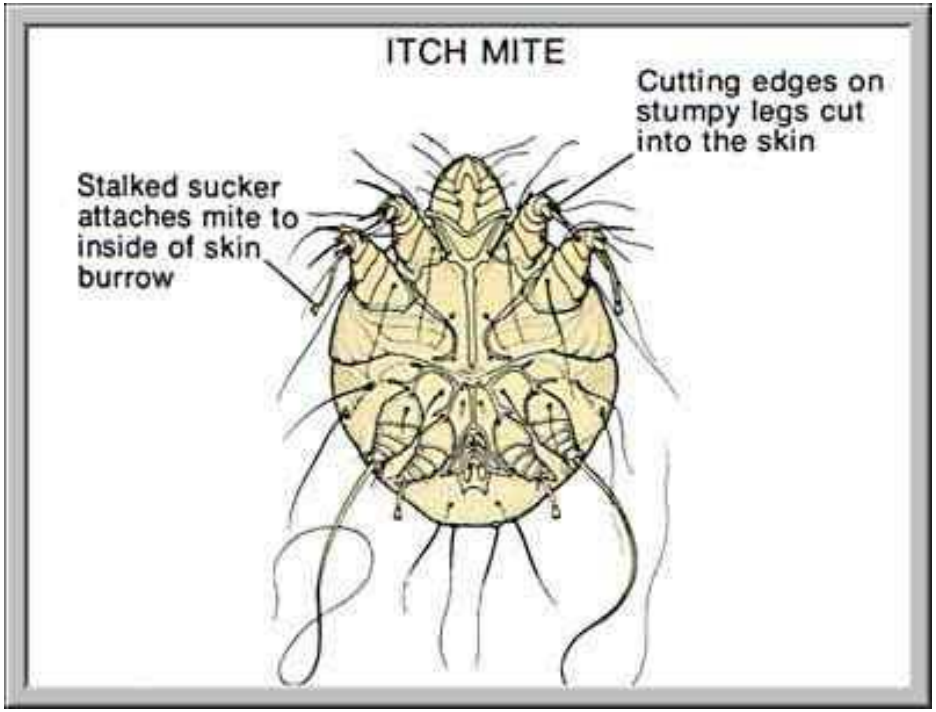

ITCH MITE
Cutting edges on stumpy legs cut into the skin
Stalked sucker attaches mite to inside of skin burrow

Medically important mites:

Diseases caused by mites;

Scabies – infestation of *Sarcoptes scabiei* mite

Dermatitis - caused by follicle mites

House dust allergies - caused by house dust mite *Dermatophagoides pteronyssinus*

Diseases transmitted by mites;

Scrub typhus – transmitted by Trombiculid mite

SCABIES MITES

Order: Astigmata

Family: Sarcoptidae

Scabies or itch mites occur on man is

Sarcoptes scabei

It is a obligatory parasite of man

Different biological forms in dogs, horses & other animals - but rarely infest humans

Distribution:

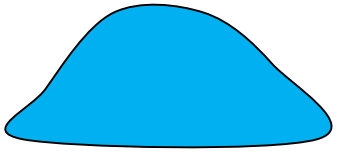
- Scabies is found worldwide
- Affects people of all races and social classes
- Can spread rapidly under crowded conditions where close body and skin contact is frequent
- Institutions such as nursing homes, extended-care facilities, and prisons are often sites of scabies outbreaks
- Child care facilities also are a common site of scabies infestations

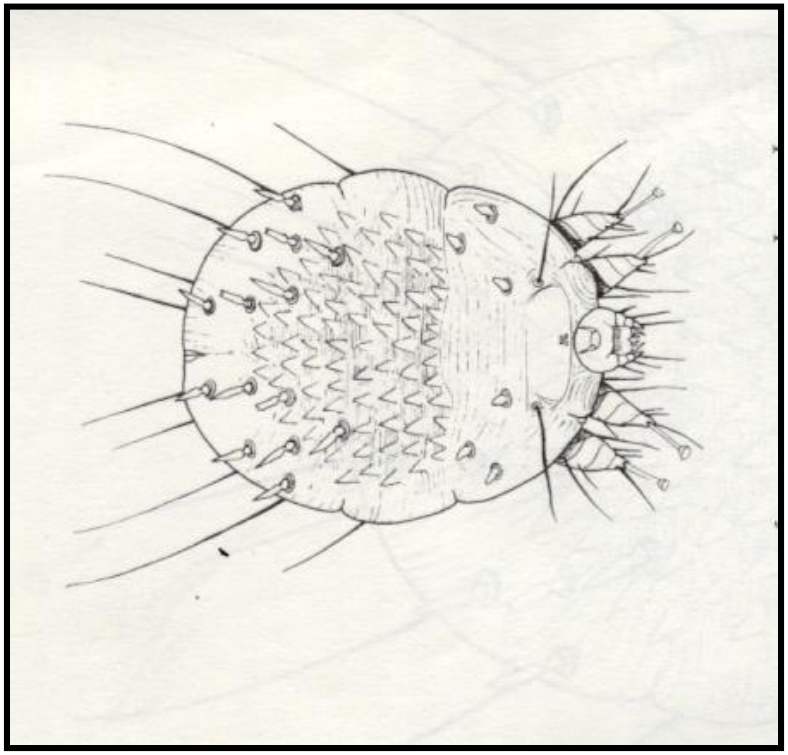
Morphology:

- Female (0.3-0.4mm) just visible by naked eye

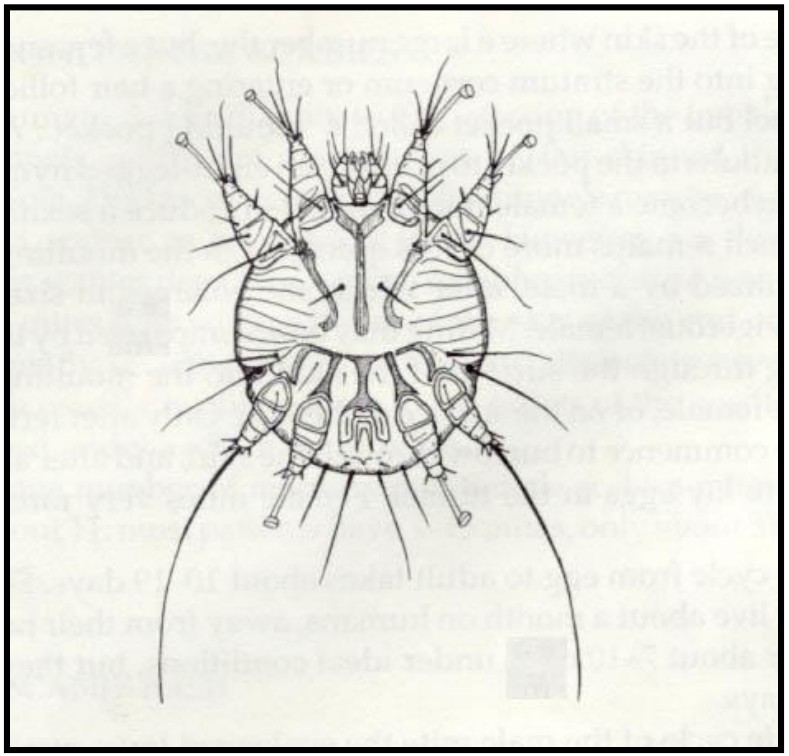
- Whitish disk shaped

- Convex dorsally; flattened ventrally





Dorsal view - Female



Ventral view - Male

- are spherical, eyeless mites with four pairs of legs (two pairs in front and two pairs behind)

- They are recognizable by their oval, ventrally flattened and dorsally convex tortoise-like bodies and multiple cuticular spines

- No demarcation into cephalothorax or abdomen occurs

- Surface has folds covered with short bristles

- The front legs end in long, tubular processes known as suckers, and the hind legs end in long bristles.

- The male has suckers on all legs except the third pair, which distinguishes it from the female.

♀

0.3mm – 0.4mm

Twice the size of male

1st and 2nd pairs contain suckers

Surface of the ♀ is covered with fine transverse striations.

Dorsal surface bears a number of specialized spines

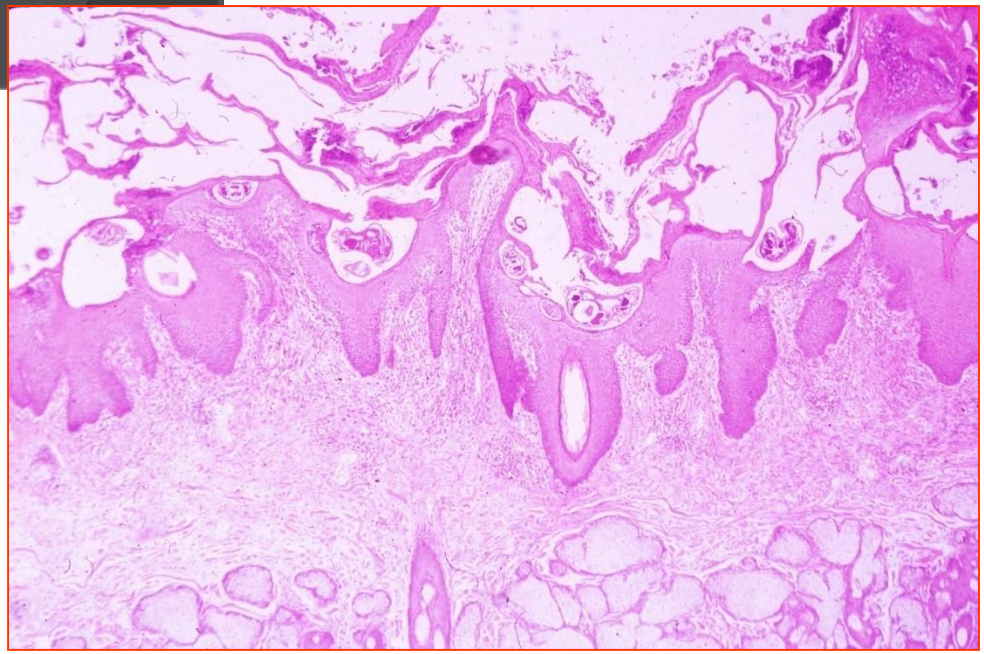
♂

0.2mm

Smaller

1st 2nd 4th pairs contain suckers

Scabies Burrows
(arrows point to mites)



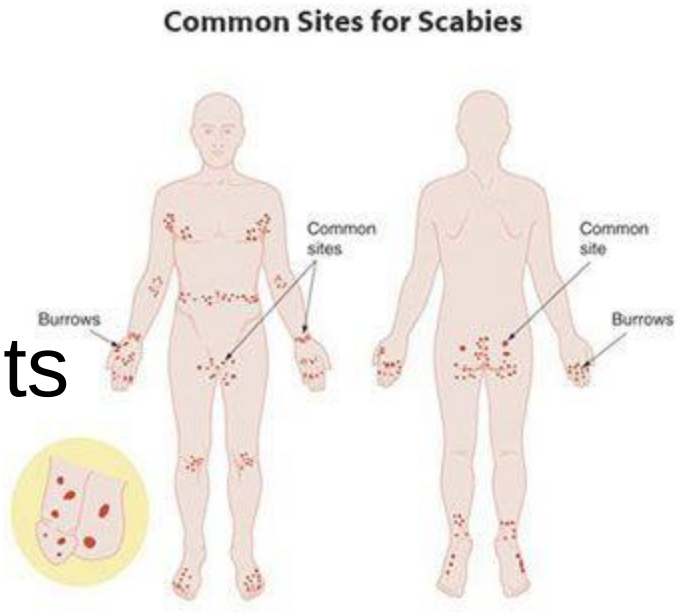
Life cycle:

- Female mites select places of the body where the skin is thin & wrinkled

  Between fingers, elbows, feet, penis, scortum, buttocks, axillae etc.

- Majority in hands

- Do not affect the face of adults



The scabies mite *Sarcoptes scabiei* var. *hominis* goes through four stages in its lifecycle: egg, larva, nymph, and adult

Mites dig into the surface layer of the skin (Stratum corneum) using cutting edges of the tibia of the front pair of legs & sharp chelicerae of the mouth parts.

Burry themselves in one hour

- Females excavate in winding tunnels

  - 2-3mm per day

- Results in thin twisting lines on the skin

  - few mm to several cm

- Mites feed on liquids oozing from the dermal cells chewed

- Female mite lay 4 - 6 large eggs
- Defecates daily

In three to four days

Six legged larvae emerge and crawl out of tunnel to surface

- Large number die; a few burrow into the surface layers

- A few enter a hair follicle to produce a pocket called ‘moulting pocket’

- Larvae feed on damaged skin cells and in 2 -3 days become eight legged nymphs

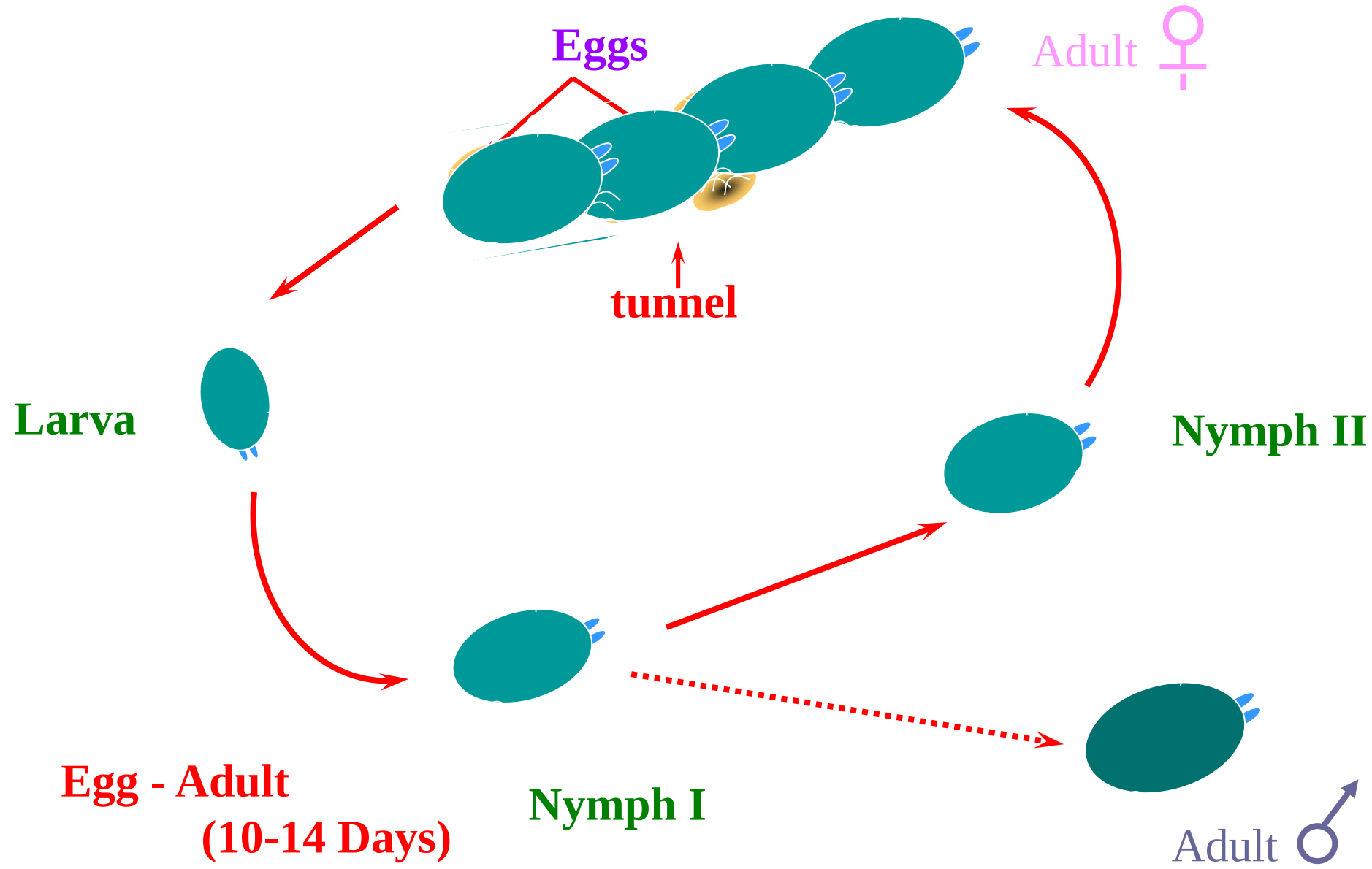
Nymph

Immature female mite

Remains in the pocket till mature and mates with a male

Mating takes place when a male burrows through the surface of the skin to moulting pocket or on the surface

S. scabiei Life cycle



Transmission:

- Either larvae or females spread the infestation

- Transmitted only by close contact

"a family infection"

If a person has never had scabies before, symptoms may take as long as 4-6 weeks to begin.

- an infested person can spread scabies during this time, even if he/she does not have symptoms yet.

- Amongst living in close association
    - when sleep together in the same bed
    - in overcrowded situations
    - in communities with inadequate water supply & poor hygiene

- Possible to get infected by sleeping in a bed formerly used by an infected person

- Incubation period – 6 - 8 weeks

Symptoms & Signs:

First stage;

slightly raised, itchy papule at the site of each mite

Scratching may destroy the mite & papule

↓

Become a pustule

Local sensitization followed by appearance of a rash – nocturnal itching

Later; generalized rash

- distribution does not correspond to the site of mite

In this hypersensitivity stage, difficult to demonstrate mites

Eruption occurs most commonly in axillae, around waist, inner thighs, back of legs etc.

Detection & identification of Scabies infestation:

- By detecting females in twisting tunnels

  - Tunnels are readily seen in fair- skinned than dark skinned
  - Pepper like spots in tunnels due to faeces

Removing & identifying mites is more reliable

Surface layer of the skin at the end of the tunnel scratched away with a fine needle and mount on to a glass slide & examine under x40

Treatment and Control:

- Curable
- No resistant infection
- Drugs → Scabicides
- 2ry infection – antibiotics
- Health education
- Rx to contacts

Scabicides:

Numerous organic & inorganic compounds;

- Benzyl benzoate

  25% Adults ,12.5% Children

- 10% sulphur preparations (for infants)
- **5% permethrin**
- 1% lindane solution (not for infants & pregnant women)

- After a bath 20-25% BB emulsion can be painted neck down wards

- After 5-10 min. patient can redress; second bath after 24 hrs.

- Repeat treatment may be advisable (1 week after)

- Important to treat whole family

- Wash clothes.
    - Do all the laundry with the hottest water possible
    - 10 min. at 50ºC can kill mites
- Items may be dry-cleaned.

- Change the bedding or keep bedding unused for 4 days

- Carpets or upholstery should be vacuumed.
    - Vacuum the entire house

Pets do not need to be treated

Crusted (Norwegian) scabies

- Rare
- Patient has very large no of mites but little itching
- Thick crusts form on hands & feet
- Scaling eruptions over rest of the body
- Seen among immuno-compromised (esp. HIV) and elderly patients Highly infectious

Scrub typhus mites (Trombiculid mites)

Scrub typhus mites (Trombiculid mites):

Order: Prostigmata

Family: Trombiculidae

- Important spp. are,

Leptotrombidium akamushi

Leptotrombidium fletcheri

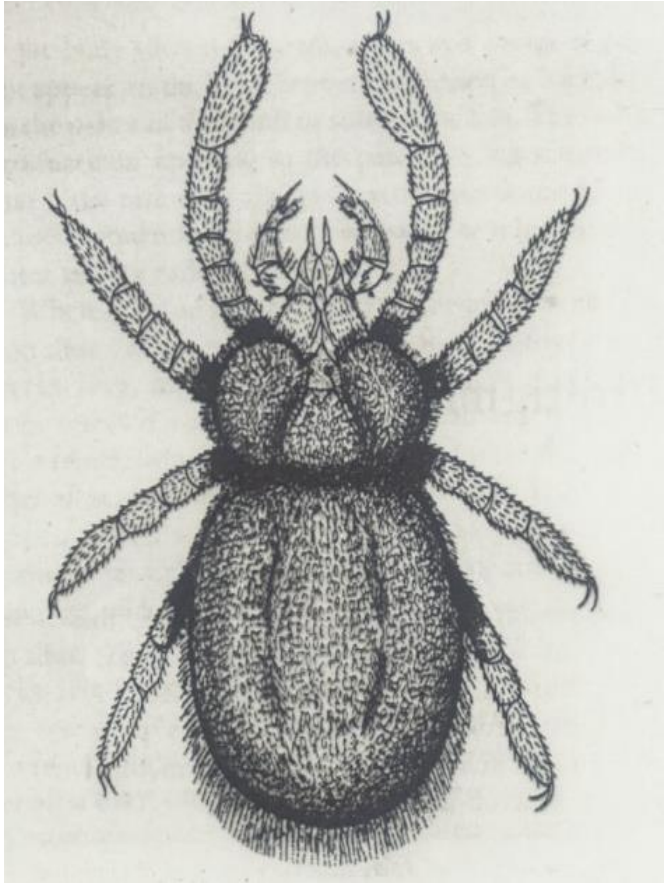
- Larval trombiculid mites are called "chiggers" or "red bugs"

Distribution:

Medically important spp. - mainly in Asia

Morphology:

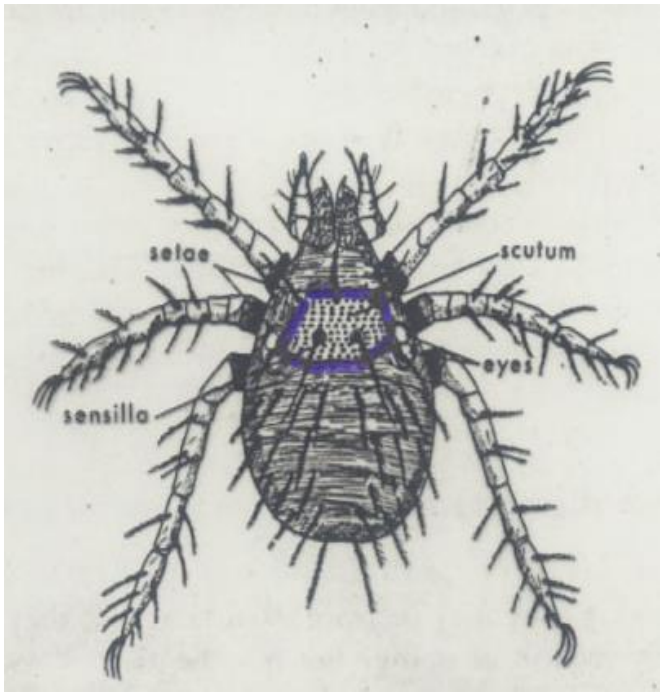
- Adults small 1-2mm
- Usually reddish
- Numerous feathered hairs on dorsal & ventral sides
- Velvety appearance
- Four pair of legs ending in paired claws



- Body is constricted between 3rd & 4th pairs of legs ------- resembles figure of 8
- Palp & mouth parts clearly visible from above
- Nymphs resemble adults; smaller
- Only larvae are parasitic
- Larvae very small 0.13 - 0.3mm
- May increase six folds when engorged

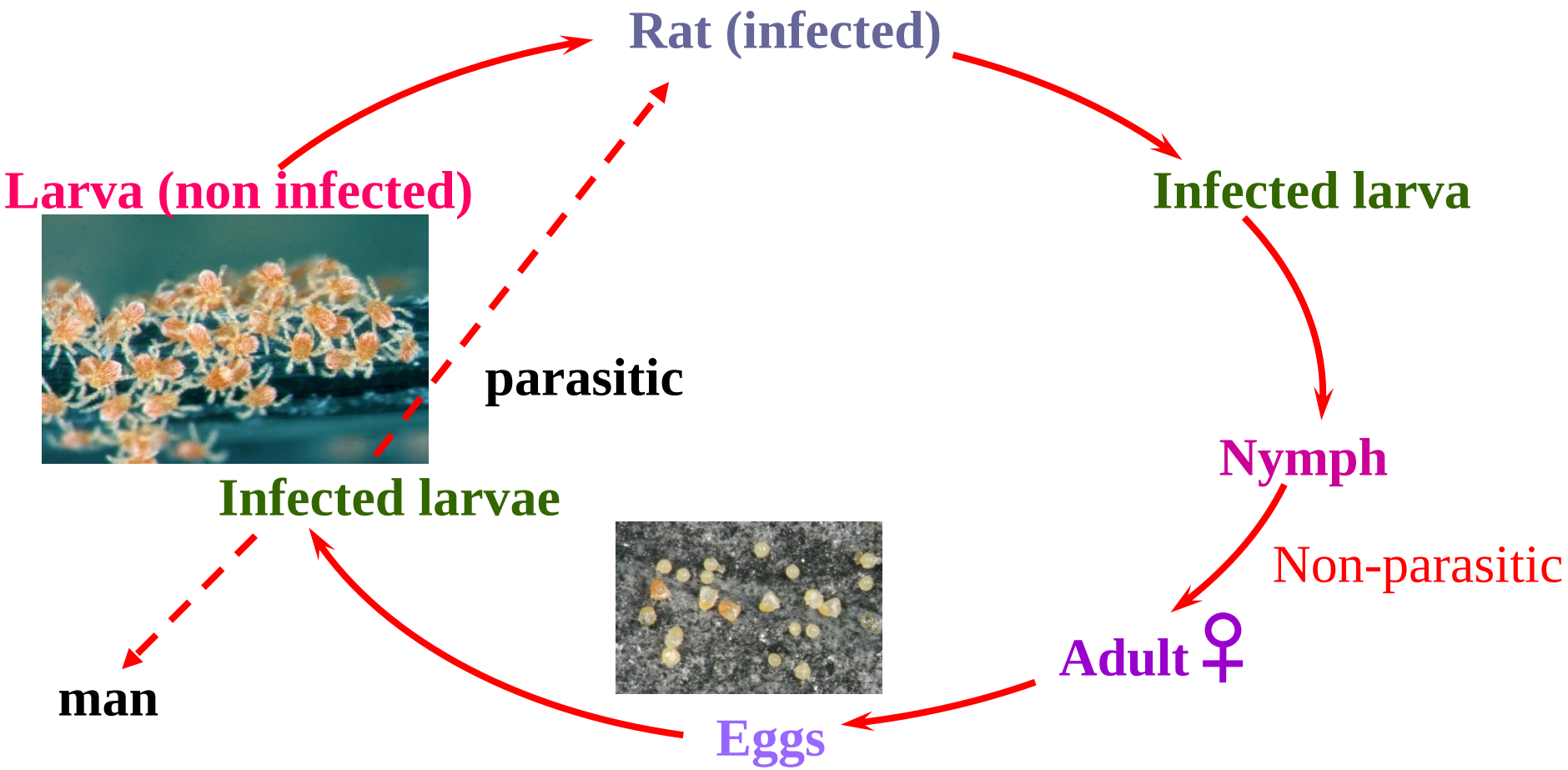
- Both legs and body are covered with fine feathered hairs
- Pentagonal or rectangular scutum present on dorsal side (hardly visible)

Eggs



Larvel trombiculid

Scrub typhus Maintenance in wild rodents



Once a larva is infected, the infection is passed onto next generation **-transstadial** and **transovarial passage**

Medical Importance:

1. Nuisance

- Several spp. of trombiculids attack man
- Do not transmit disease
- But causes intense itching & irritation

  (Scrub Itch)

2. Scrub Typhus (Tustsugamushi disease)

- Caused by *Rickettsia tustsugamushi*

- Restricted to Asia (including Sri Lanka)

- Regarded as a zoonosis (from mice & rats)

- **Larvae are found on ground & climb up grasses**

- **On man they search for areas where clothing is tight against skin - waist, ankles**

The main symptoms of the disease are

- fever
- wound at the site of the bite
- spotted rash on the trunk
- lymphadenopathy

Complications: alteration of consciousness, splenomegaly, myocarditis

Untreated cases mortality - 30%

Diagnosis:

- Clinicallly
- Serology

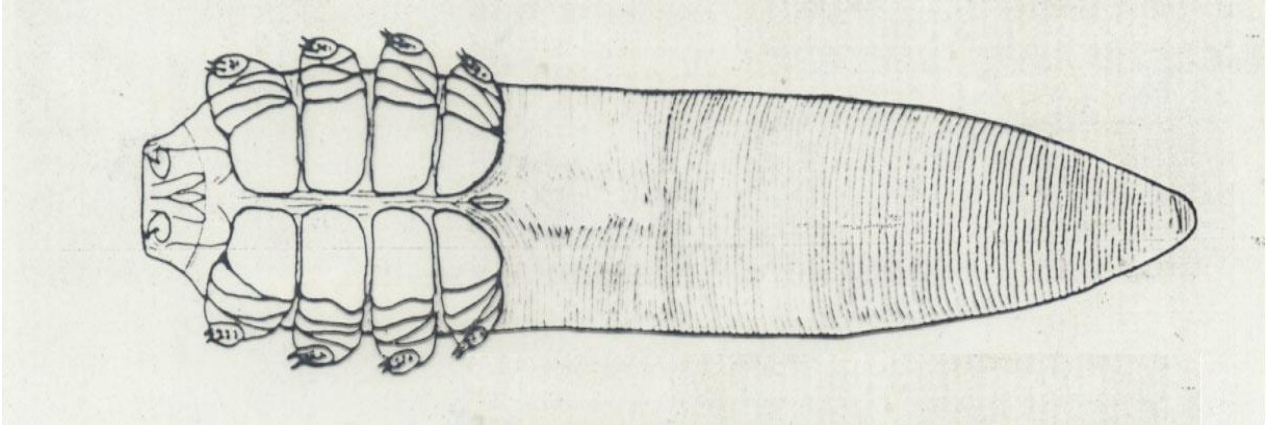
    Weil- Felix reaction – non specific

    Complement Fixation - Specific

Treatment:

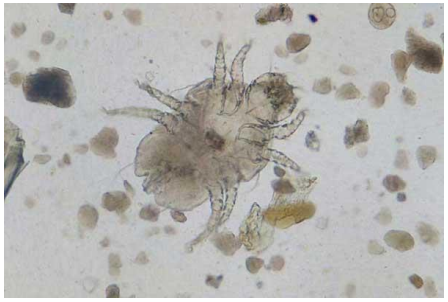
Antibiotics – Tetracycline / Chlorampenicol

Follicle Mites
Demodex folliculorum



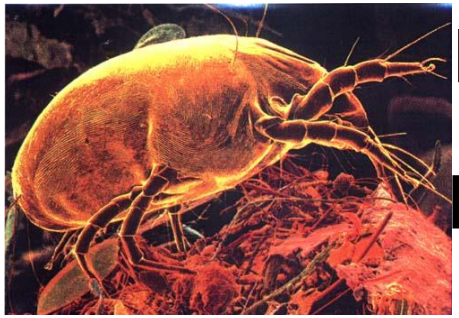
- Striated body, four pairs of short stubby legs
- Remarkably non-mite like
- Found in hair follicles & sebaceous glands
- Feeds on subcutaneous tissue
- Common on nose, eye lids, cheeks adjacent to nose
- Usually no adverse effects, sometimes dermatitis

HOUSE DUST MITE



Many species found in house dust

Sensitised individuals –



Bronchial Asthma

Extensive Dermatitis

Potent allergens in – Living mites

Dead mites

Mite feaces

THANK YOU