

Fever and Rash

Tips

- Centrally distributed maculopapular eruptions
- Peripheral eruption
- Confluent desquamative erythemas
- Vesiculobullous or pustular eruption
- Urticaria-like eruptions
- Nodular eruptions
- Purpuric eruptions
- Eruption with ulcer or with eschars.



Rickettsial infection

- Gram **negative** bacteria, associated (or not) with arthropods and necessitating (or not) eukaryotic cells for growth
- Spotted fever group : *Rickettsia rickettsii* (RMSF), etc.
- Typhus group : *R. typhi* (Murine typhus), *R. prowazekii*
- Scrub typhus group : *Orientia tsutsugamushi*

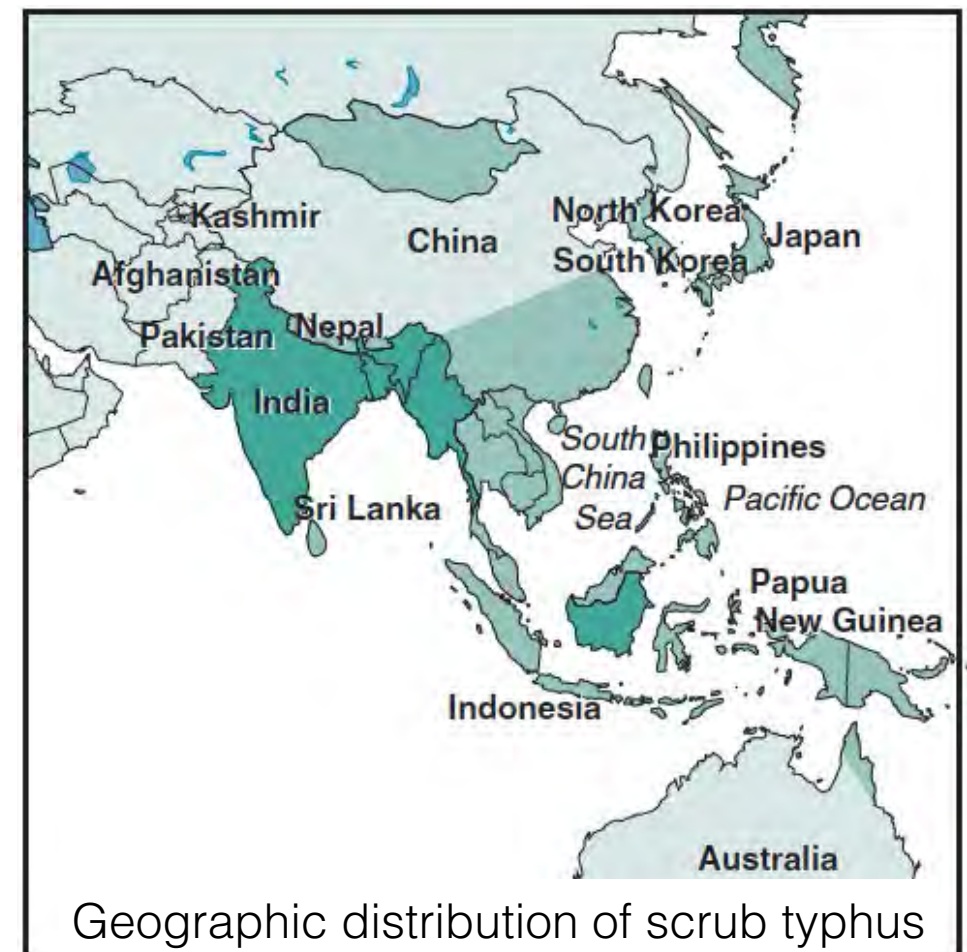
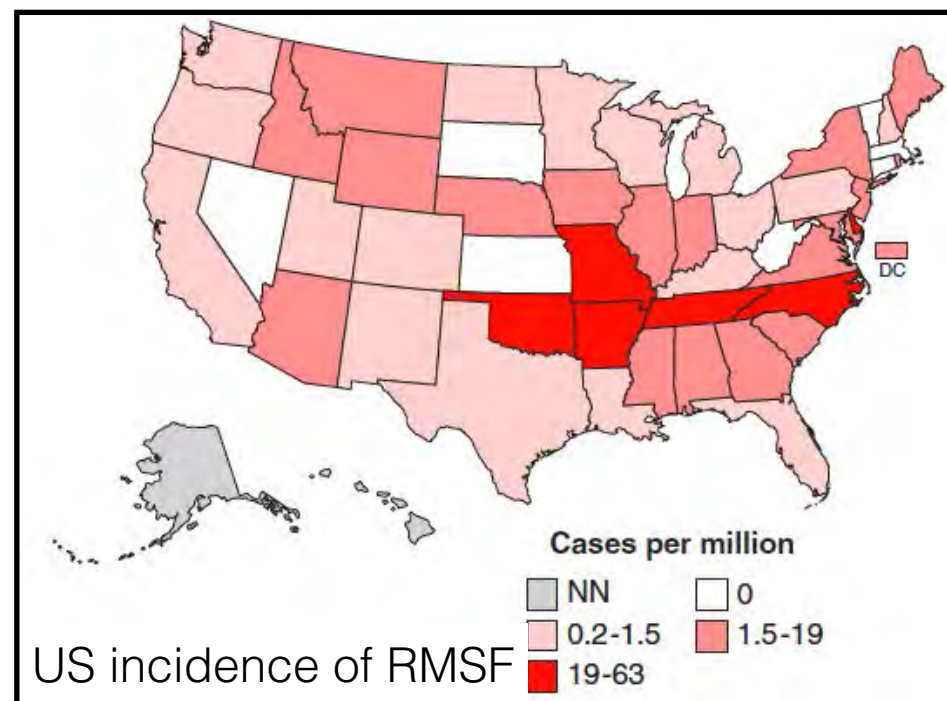
Vectors of Rickettsioses

| | TICK-BORNE | FLEA-BORNE | LOUSE-BORNE | MITE-BORNE |
|--|---|-----------------|----------------------|-------------------------|
| Rickettsiae | | | | |
| Spotted fever group | <i>R. rickettsii</i> <i>R. conorii</i> <i>R. japonica</i> <i>R. sibirica</i> <i>R. australis</i> <i>R. slovaca</i> <i>R. africae</i> <i>R. honei</i> <i>R. aeschlimanii</i> <i>R. helvetica</i> <i>R. parkeri</i> <i>R. heilongjiangensis</i> <i>R. raoultii</i> <i>R. massiliae</i> <i>R. amblyommii</i> <i>R. monacensis</i> <i>R. philipii</i> strain 364D | <i>R. felis</i> | | <i>R. akari</i> |
| Typhus group | | <i>R. typhi</i> | <i>R. prowazekii</i> | |
| Scrub typhus group (<i>Orientia</i>) | | | | <i>O. tsutsugamushi</i> |

Clinical Manifestations

Tips

- Fever, rash, and headache were considered for years the diagnostic clue for rickettsial diseases
- Inoculation eschar, or localized lymphadenopathy
- Systemic infection



RMSF rash

MP rash with petechiae



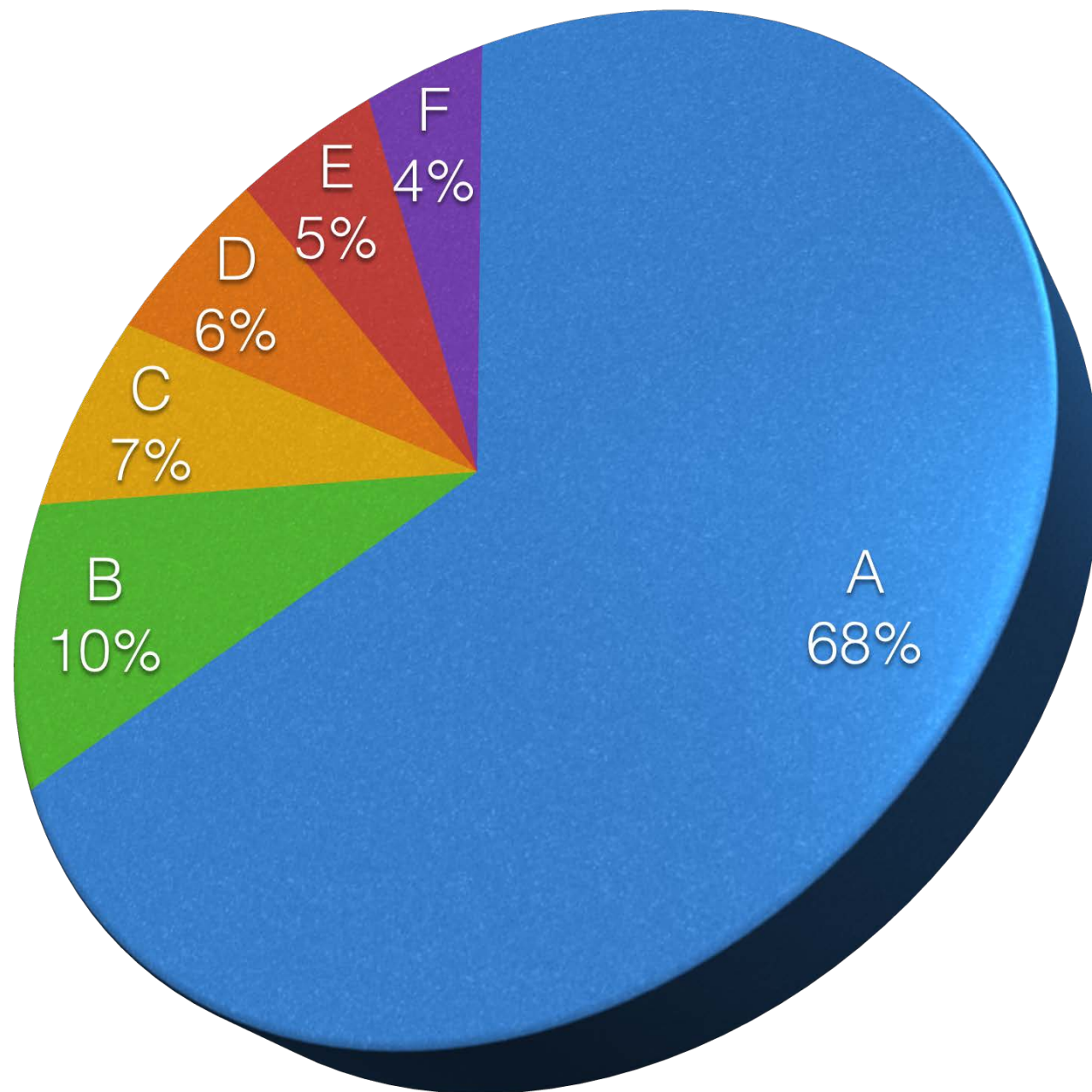
Clinical Findings and Target Cells for Rickettsiosis, Ehrlichiosis, and Anaplasmosis

| DISEASE | RASH | RASH SPECIFICITY | ESCHAR | ENLARGED LYMPH NODES |
|---|------|------------------|-------------------------|----------------------|
| Rocky Mountain spotted fever (<i>Rickettsia rickettsii</i>) | 90% | 45% purpuric | No | No |
| Mediterranean spotted fever (<i>R. conorii</i>) | 97% | 10% purpuric | 72% | Rare |
| Siberian tick typhus (<i>R. sibirica sibirica</i>) | 100% | Macular | 77% | Yes |
| Queensland tick typhus (<i>R. australis</i>) | 100% | Vesicular | 65% | Yes |
| Israeli spotted fever (<i>R. conorii israelensis</i>) | 100% | Macular | Rare | No |
| Flinder's Island spotted fever (<i>R. honei</i>) | 85% | 8% purpuric | 28% | Yes |
| Astrakhan fever (<i>R. conorii caspiensis</i>) | 100% | Macular | 23% | No |
| African tickbite fever (<i>R. africae</i>) | 30% | Vesicular | 100% multiple | Yes |
| Japanese spotted fever (<i>R. japonica</i>) | 100% | Macular | 90% | No |
| Lymphangitis-associated rickettsiosis (<i>R. sibirica mongolitimonae</i>) | Yes | Macular | Yes (could be multiple) | No |
| Tick-borne lymphadenopathy (<i>R. slovaca</i> , <i>R. raoultii</i>) | No | Macular | Yes | Yes |
| <i>Rickettsia helvetica</i> | No | — | No | No |
| Far Eastern spotted fever (<i>R. heilongjiangensis</i>) | Yes | Macular | Yes | Yes |
| <i>R. aeschlimanii</i> | Yes | — | Yes | No |
| Flea-borne spotted fever (<i>R. felis</i>) | Yes | Macular | Yes | ? |
| Rickettsialpox (<i>R. akari</i>) | 100% | Vesicular | 100% | Yes |
| Epidemic typhus (<i>R. prowazekii</i>) | 50% | Macular | No | No |
| Murine typhus (<i>R. typhus</i>) | 50% | Macular | No | No |
| Scrub typhus (<i>Orientia tsutsugamushi</i>) | 30% | Macular | 50% (could be multiple) | Yes |
| Ehrlichiosis (<i>Ehrlichia chaffeensis</i>) | 36% | Macular | No | 25% |
| Anaplasmosis (<i>Anaplasma phagocytophilum</i>) | <10% | Macular | No | No |
| Infection by <i>Ehrlichia ewingii</i> | — | — | — | — |
| <i>Neorickettsia sennetsu</i> | | | No | Yes |
| <i>Wolbachia</i> (filariasis) | No | No | No | No |
| <i>R. parkeri</i> | No | No | Yes | Yes |

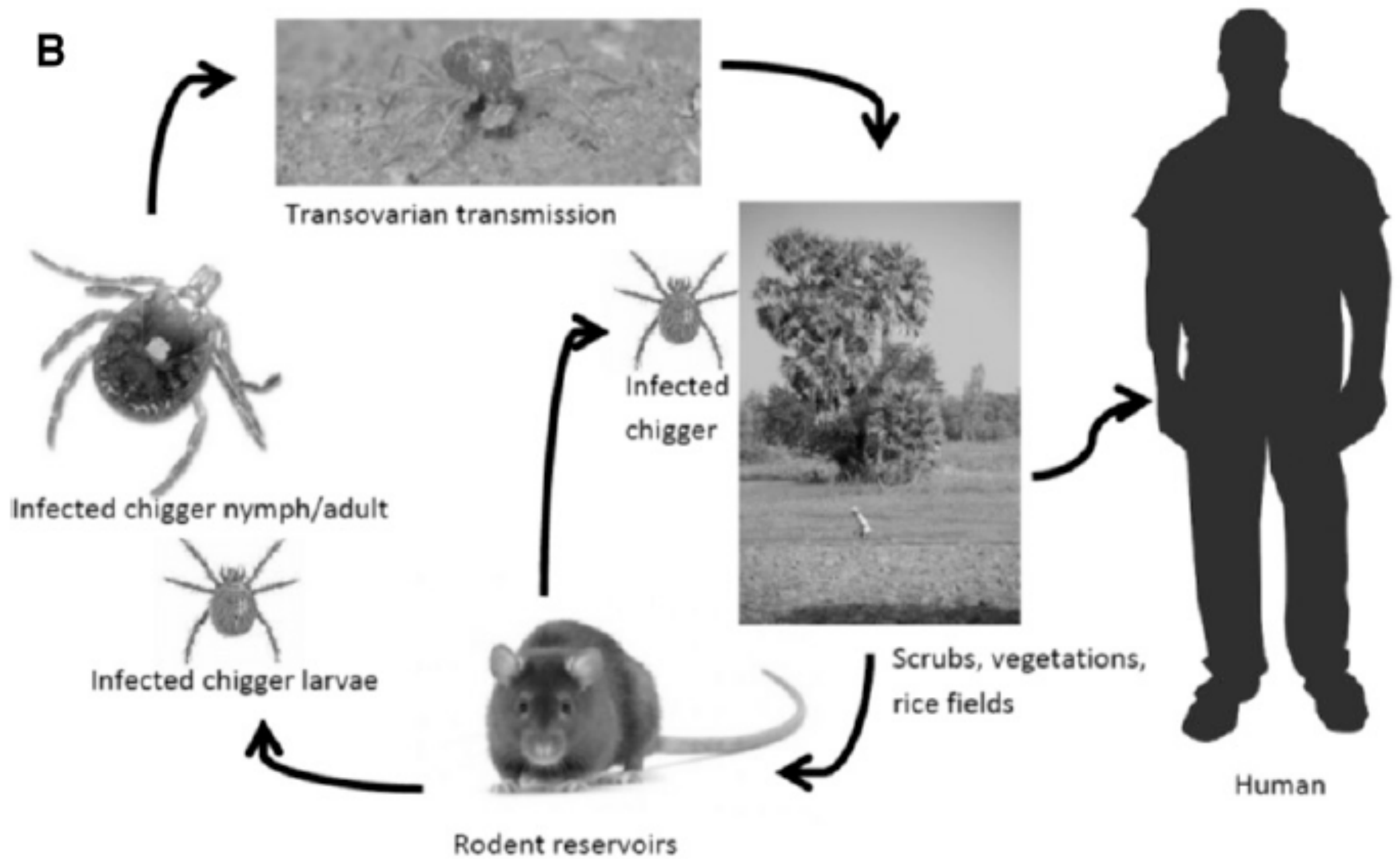
Scrub typhus

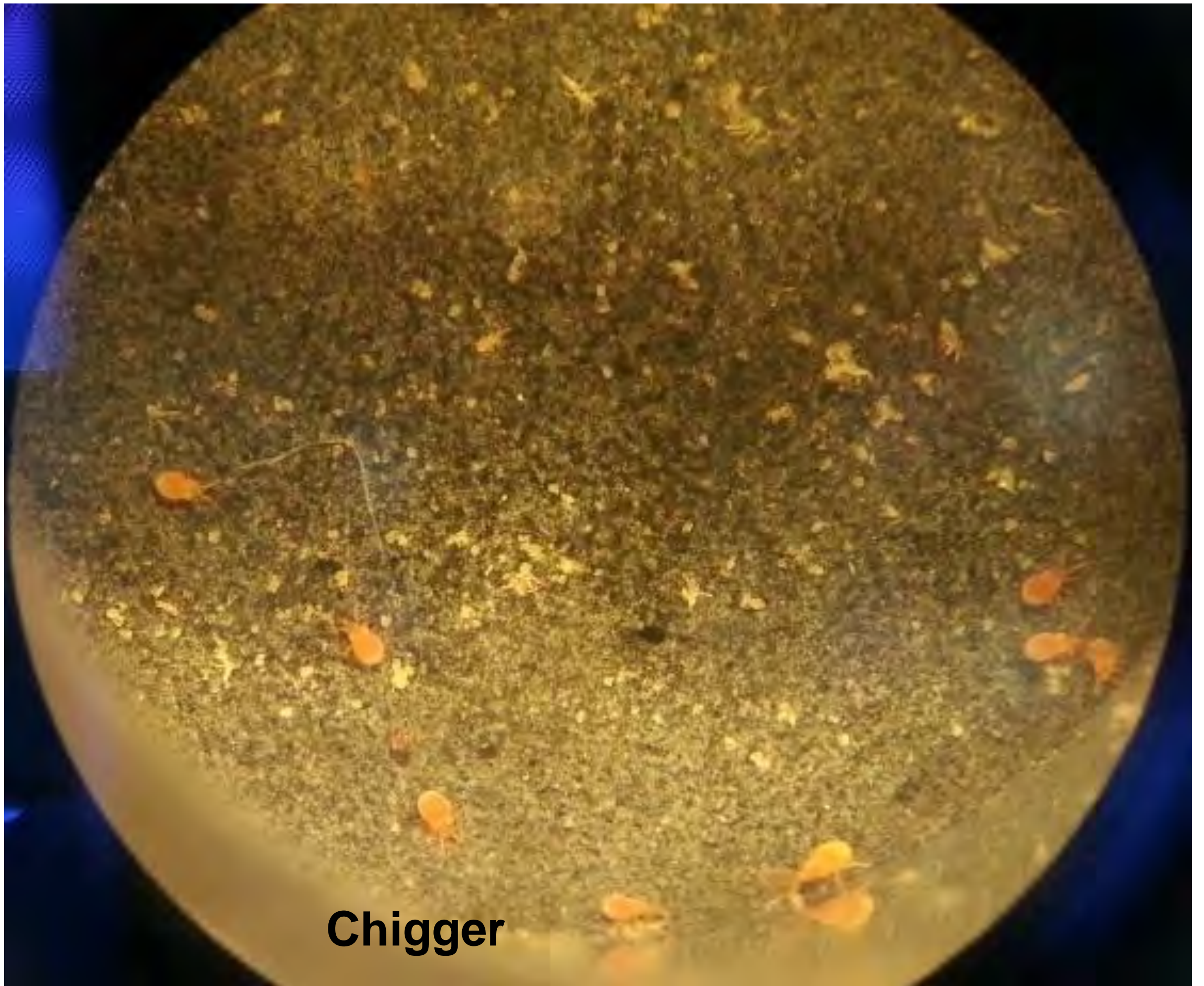
- *Orientia tsutsugamushi*, six distinct serological strains (Gilliam, Karp, Kato, Shimokoshi, Kawasaki, Kuroki) were detected by immunoperoxidase reactions
- The vector : larva of leptomnembidium mites (chiggers)

Percent IFA antibody responses to the various strains of *O. tsutsugamushi* in Thailand



- A = Gilliam-Karp-Kato strains**
- B = Gilliam strain**
- C = Kato strain**
- D = Karp strain**
- E = Karp-Gilliam strains**
- F = Karp-Kato strains**





Chigger

Scrub typhus

- Incubation period 5–10 days
- Febrile illness begins, of painful axillary or inguinal lymph nodes.
- Eschar : a firm adherent black scab, 3–6 mm in diameter, with a fine red margin, which is painless
 - scrotum or in the axilla, in 50–80% of cases

- The usual typhus accompaniments of suffused conjunctivae and face, severe headache, drowsiness, apathy, pain in the shins and other muscles, and, more characteristically, generalized lymphadenopathy and hepatosplenomegaly.
- In severe cases,
 - Meningoencephalitis ensues with neck stiffness, delirium, focal signs, papilledema and coma
 - Myocarditis
 - Oliguria with uremia is common in severe cases
 - ARDS and septic shock

Eschar

