

Fever and Rash

- 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*

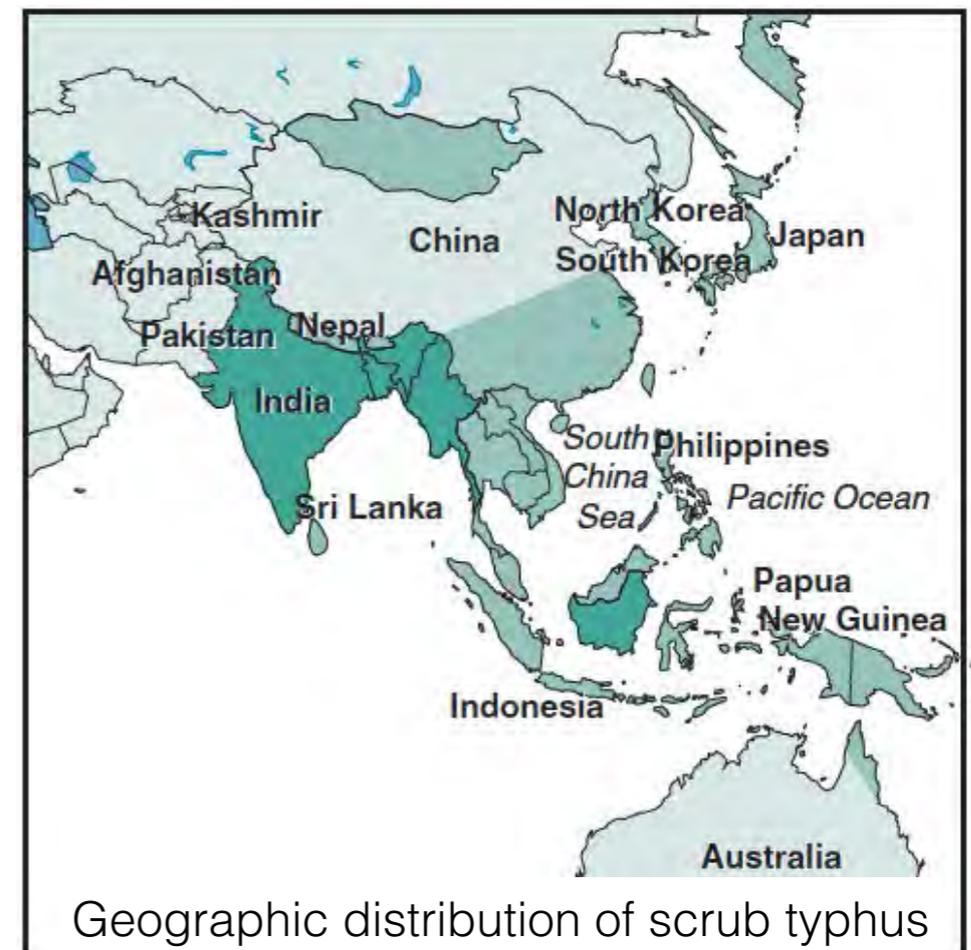
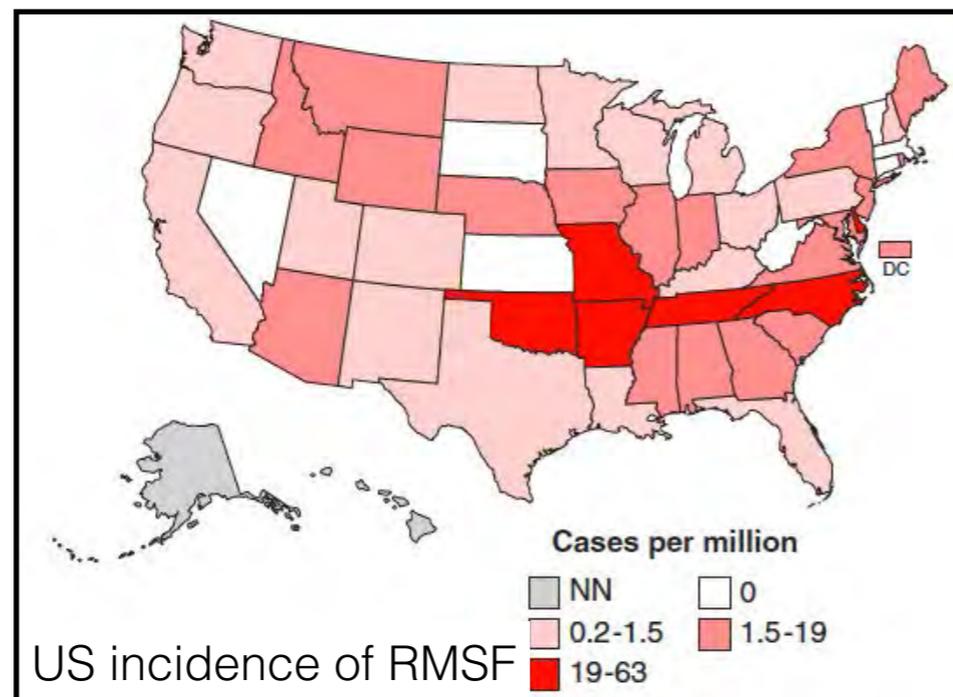
Vectors of Rickettsioses

	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. heilongjianghensis</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



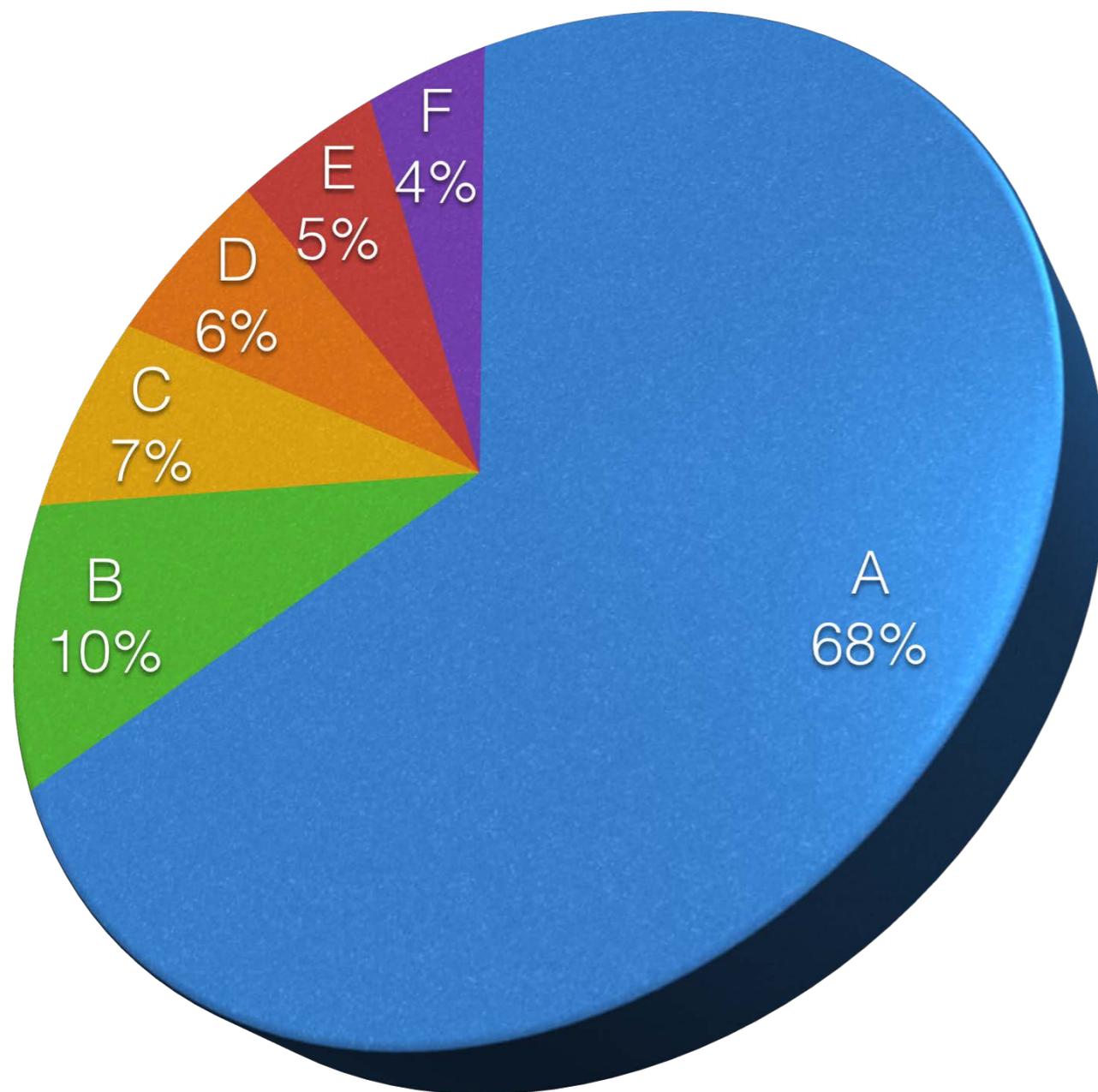
Clinical Findings and Target Cells for Rickettsiosis, Ehrlichiosis, and Anaplasmosis

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, 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

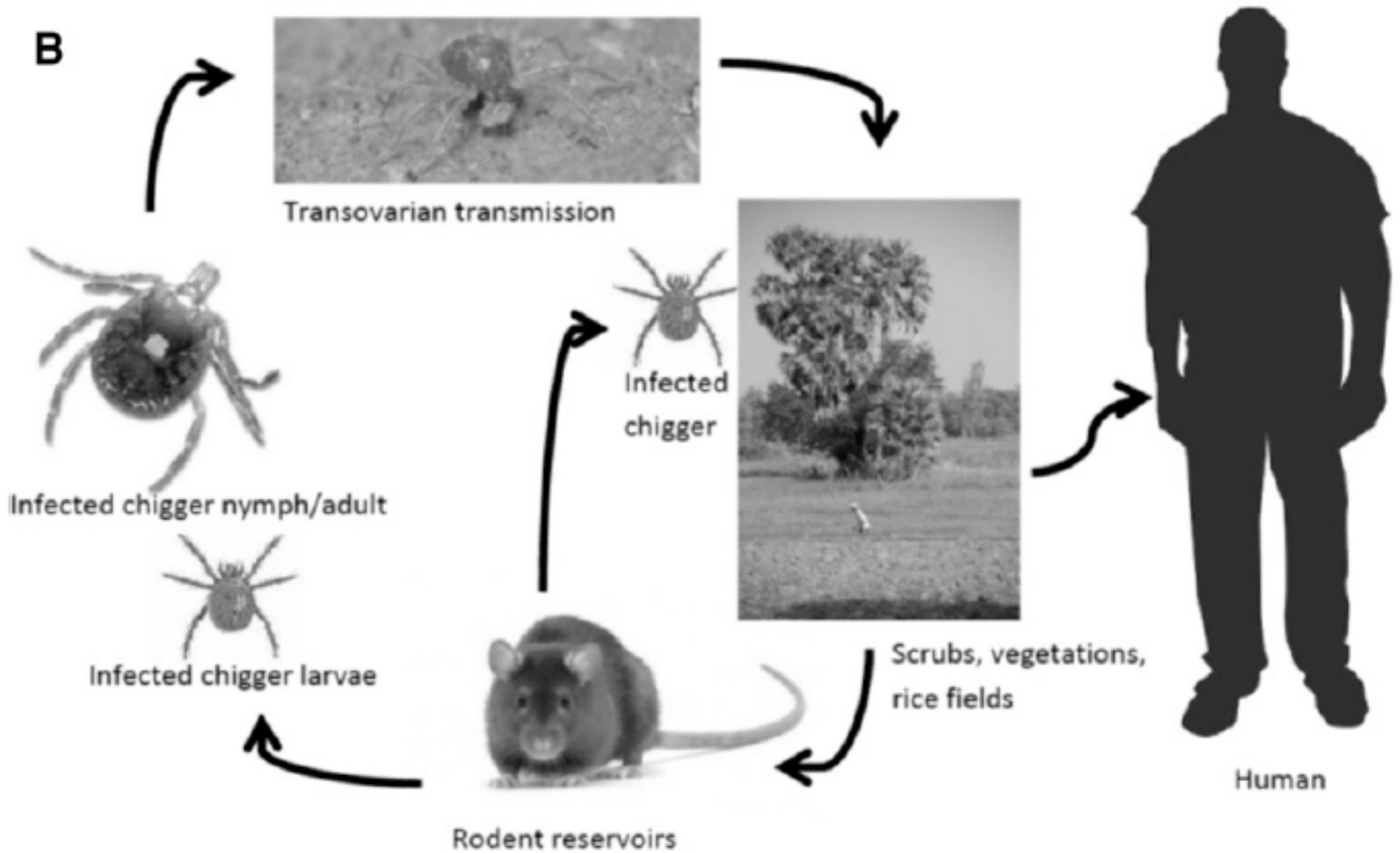
Scrub typhus

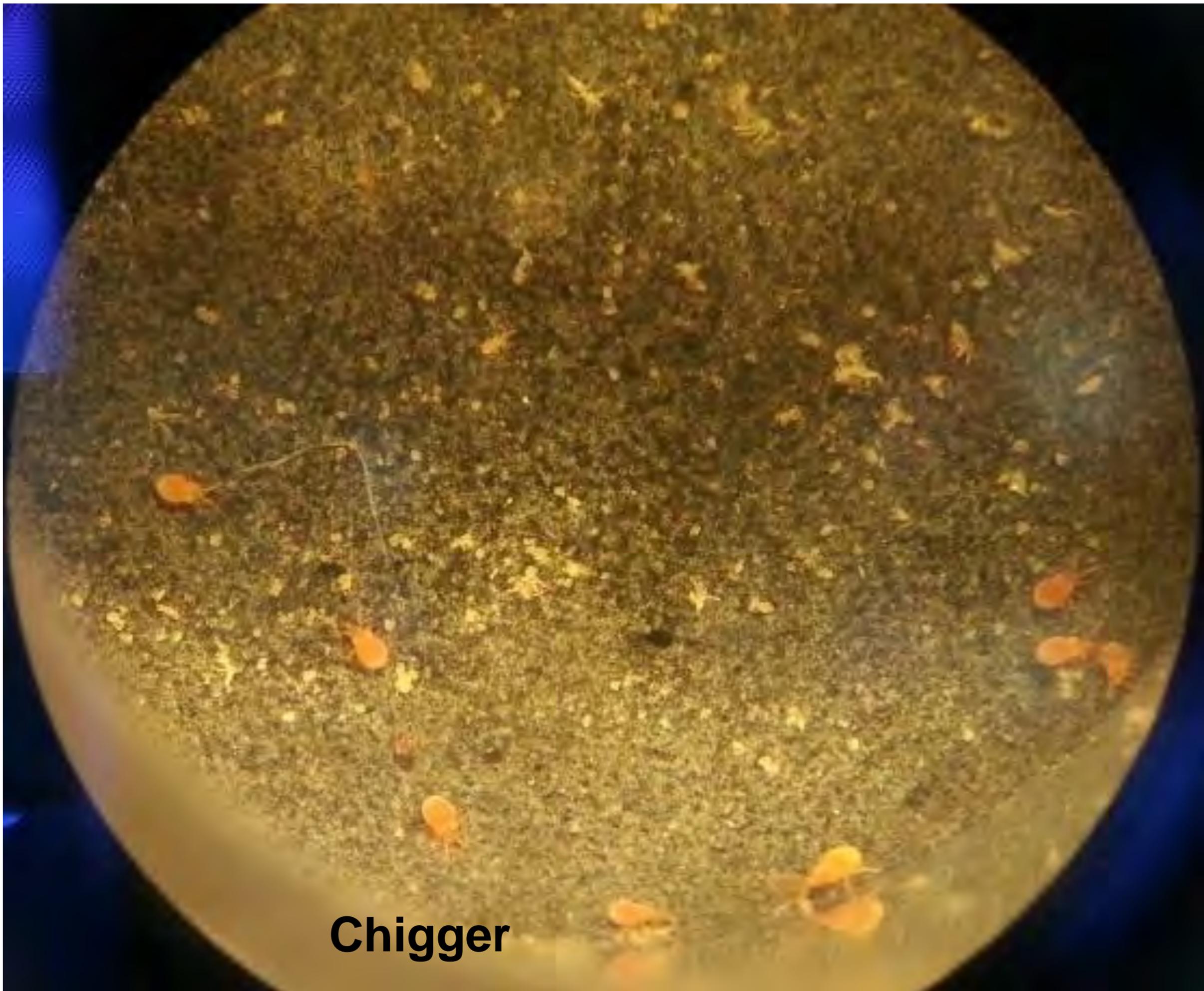
- *Orientia tsutsugamushi*, six distinct serological strains (Gilliam, Karp, Kato, Shimokoshi, Kawasaki, Kuroki) were detected by immunoperoxidase reactions
- The vector : larva of leptomnibidum mites (chiggers)

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

