



# NORTH ASIAN TICK BORNE RICKETTSIAL

CRIMEAN FEDERAL UNIVERSITY NAMED AFTER S.I.GEORGIEVSKY OF VERDANSKY

DEPARTMENT OF MEDICAL BIOLOGY

STUDENT NAME : MUTHUSAMY KALAIKANNASELVI KIRUTHIKA

SCIENTIFIC LEADER : SVETLANA SMIRNOVA

# DISEASE: TICK BONE RICKETTTSIA

- GEOGRAPHICA DISTRIBUTION: North asian



# TICKS



- COMMON TICKS

- The super family IXODOIDEA includes 3 families
- FAMILY IXODOIDEA (hard ticks)
- FAMILY ARGASIDAE (soft ticks)
- FAMILY GAMASIDAE

# LIFE CYCLE

- The life cycle of various species lasts from 4 years in northern regions
- They dwell In meadow's,forests,storages,pature



- Larvae hatch feed on blood then drop to the ground



[CLICK HERE TO WATCH THEM GROW](#)

 **Female Adult-stage *Ixodes scapularis*  
Growth Comparison**

Egg laid by female



- Larvae hatch feed on blood then drop to the ground



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**Female Adult-stage *Ixodes scapularis*  
Growth Comparison**

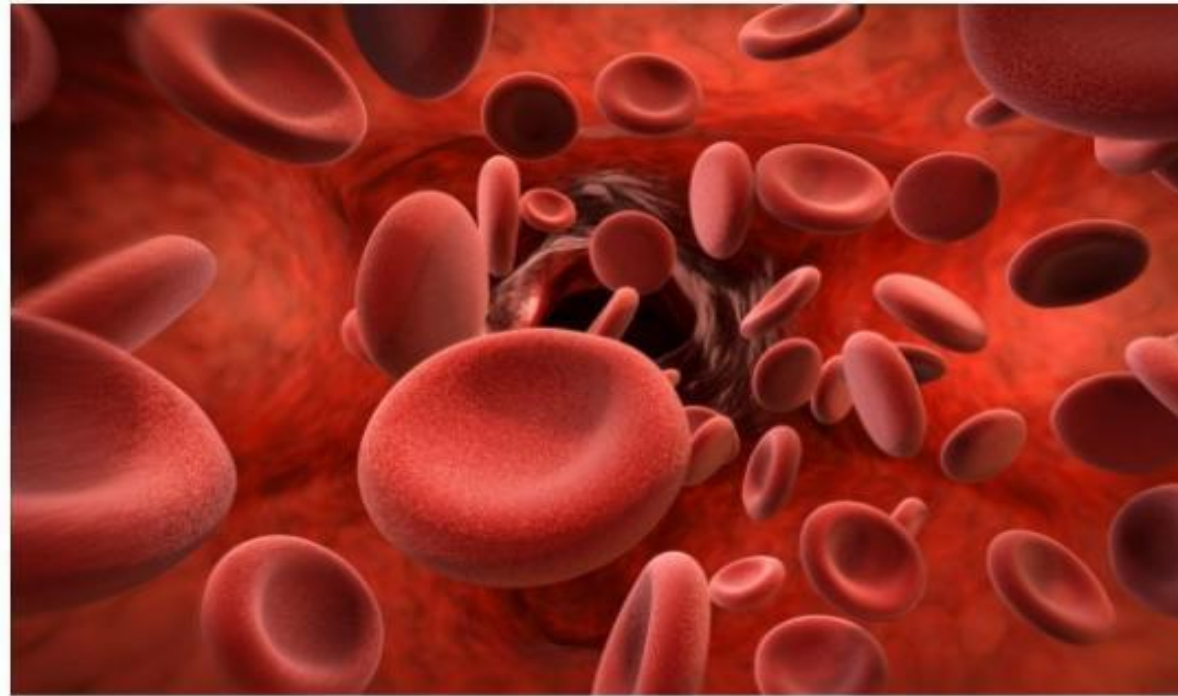


- They moult into nymphs

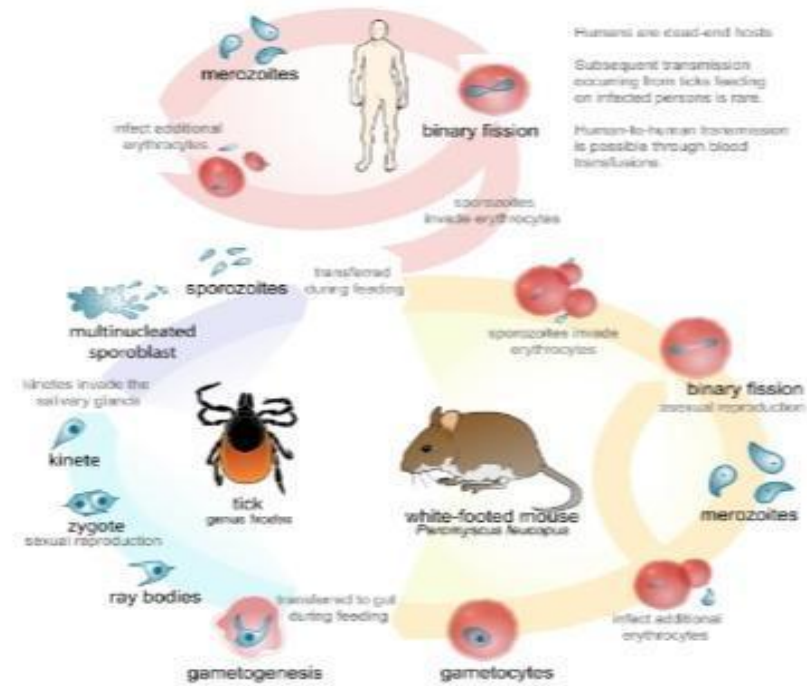
\*Nymphs feed on blood and moult into adults



Adult male and female feed on blood



# Life cycle takes several months (1-2 years)





# Pathogenesis

- ▶ Tick bite
- ▶ Phagocytized into endothelial cells
- ▶ Replicate in the cell cytoplasm and nucleus
- ▶ Oxidative and peroxidative injury to cell membrane
- ▶ Leads to vasculitis
- ▶ Erythematous spots
- ▶ Microhemorrhages creating petechial rash



## **Etiology**

**The etiologic agent is *Rickettsia prowazekii*, an obligate intracellular bacterium that is closely related antigenically to the agent that causes murine typhus (*Rickettsia typhi*). The organism is cocobacillary but has inconstant morphologic characteristics. Reproduction is by binary fission and diplobacilli are produced that are frequently seen in tissue sections. Special staining (Giemsa) provides good visualization of the organisms in the cytoplasm of cells.**

# Laboratory Diagnosis

Culture & isolation

Serologic test

## Culture & isolation

Blood is **inoculated** in guinea pigs/mice.

Observed on **3rd – 4th** week.

Animal **responds** to different rickettsial species can **vary**.

Difficult & dangerous because of the highly **infectious** nature of rickettsiae.

### Symptoms:

- ✓ Rise in temperature – all species.
- ✓ Scrotal inflammation, swelling, necrosis – *R.typhi*, *R.conori*, *R.akari* (

# PREVENTION

## PREVENTION

- ▶ Prevention Agricultural workers and others working with animals should use insect repellent on exposed skin and clothing.
- ▶ Insect repellants containing DEET (N, N-diethyl-m-toluamide) are the most effective in warding off ticks.
- ▶ Wearing gloves and other protective clothing is recommended. Individuals should also avoid contact with the blood and body fluids of livestock or humans who show symptoms of infection.
- ▶ It is important for healthcare workers to use proper infection control precautions to prevent occupational exposure.
- ▶ An inactivated, mouse-brain derived vaccine against CCHF has been developed and is used on a small scale in Eastern Europe.
- ▶ However, there is no safe and effective vaccine currently available for human use.
- ▶ Further research is needed to develop these potential vaccines as well as determine the efficacy of different treatment options including ribavirin and other antiviral drugs.



Ultimate Summer Guides:

# Keep Kids Safe From Ticks

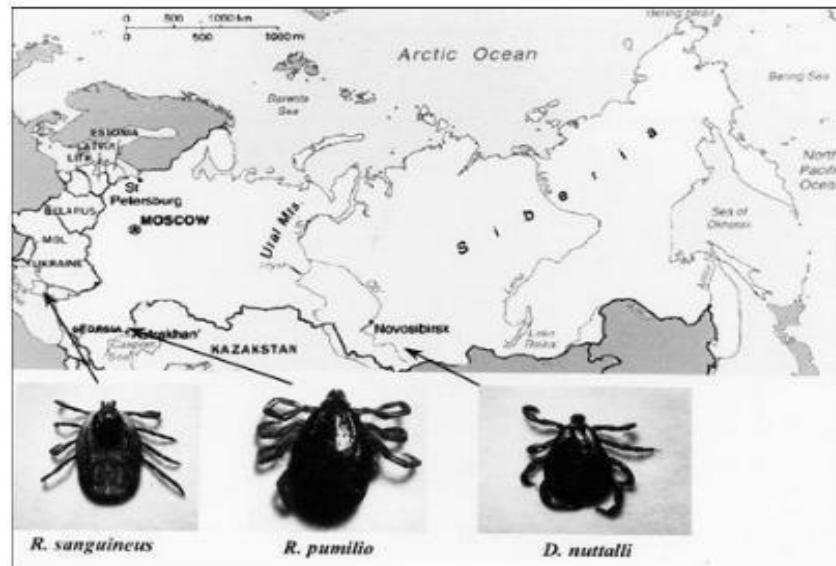
Plus: The Tick Toolkit



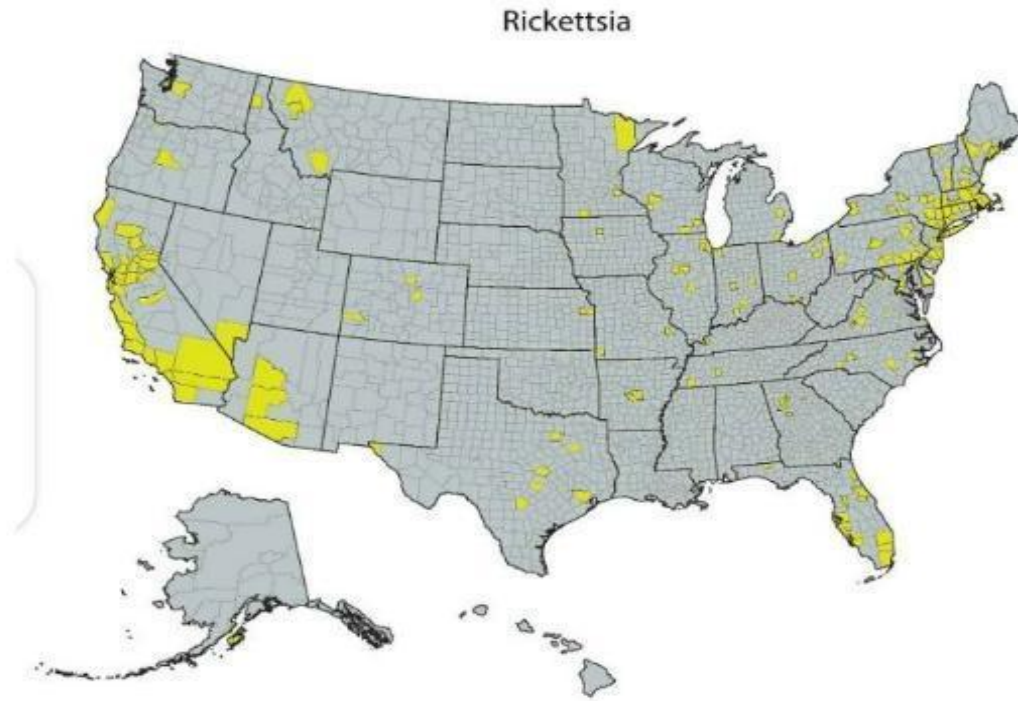
Did you know?

- Kids ages 5-14 are at highest risk for Lyme
- Ticks are prevalent in playgrounds, not just woods
- Two non-DEET repellents tested effective for 8 hrs

# Disease incident in crimea

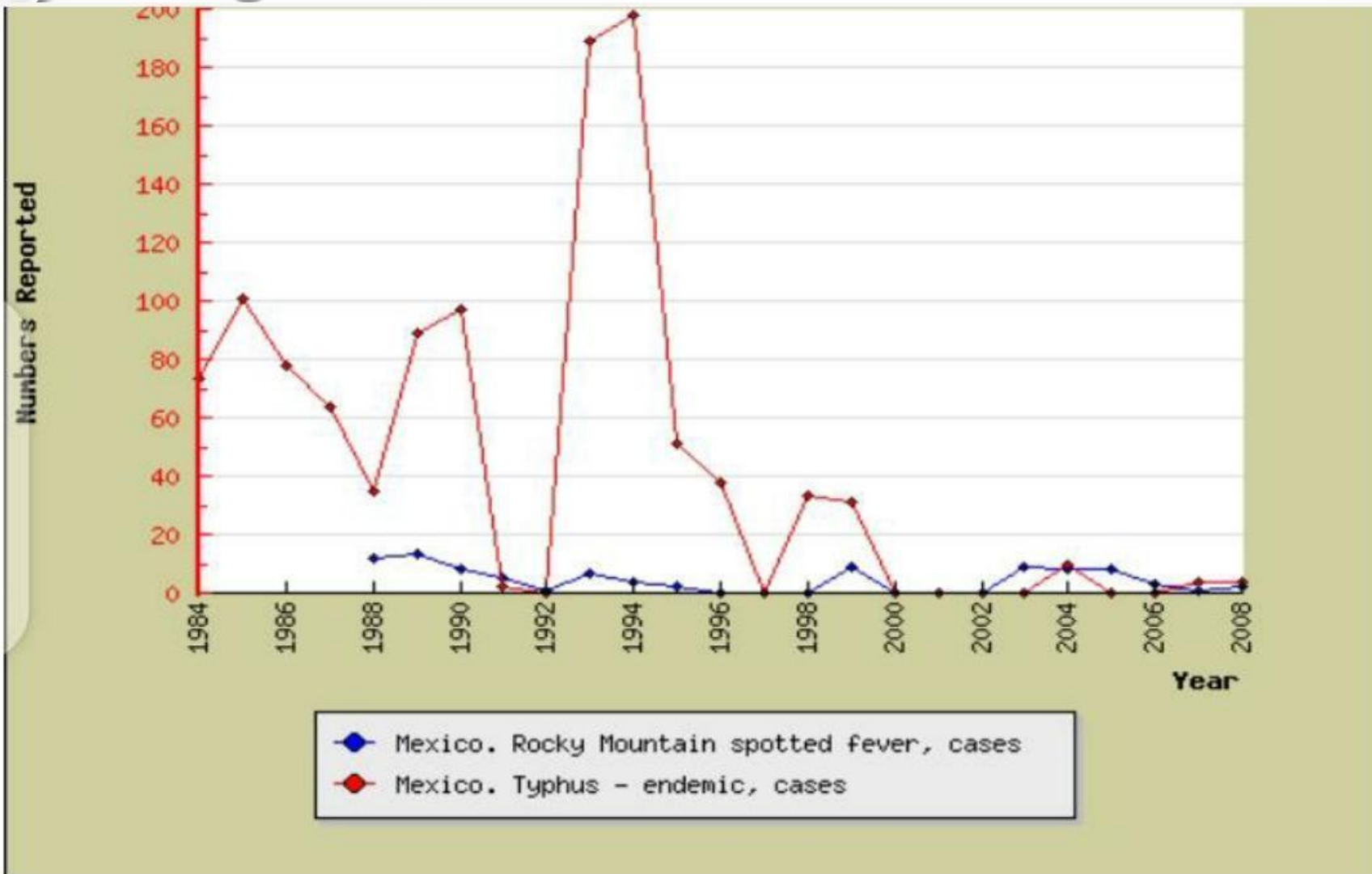


# Ticks mentioned in mountains



This Species cause Disease in India





# THANK YOU

*for making me so wonderfully complex*

*Psalm 139:14*

 bibleverses

