

# A BRIEF INTRODUCTION TO THE WORLD OF TICKS

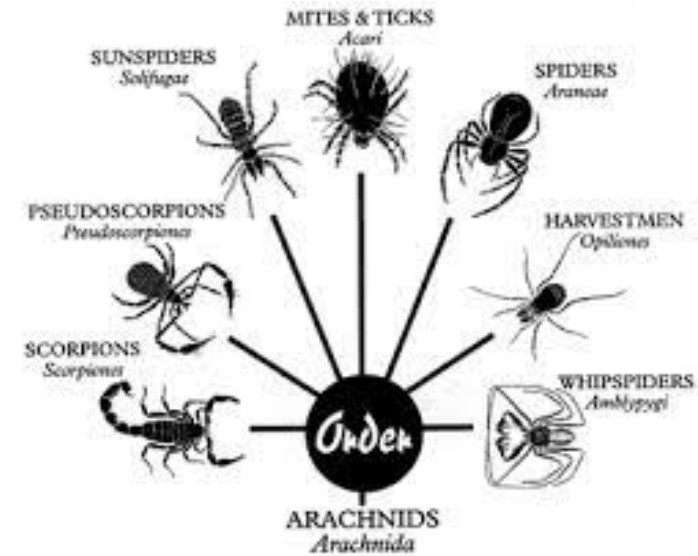
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Visiting Fellow Postdoc - Tick-Pathogen Transmission Unit

Laboratory of Bacteriology



Ticks are not insects —→ classified as **ARACHNIDS**



Relatives of spiders,  
scorpions and mites

# Tick Life Cycle

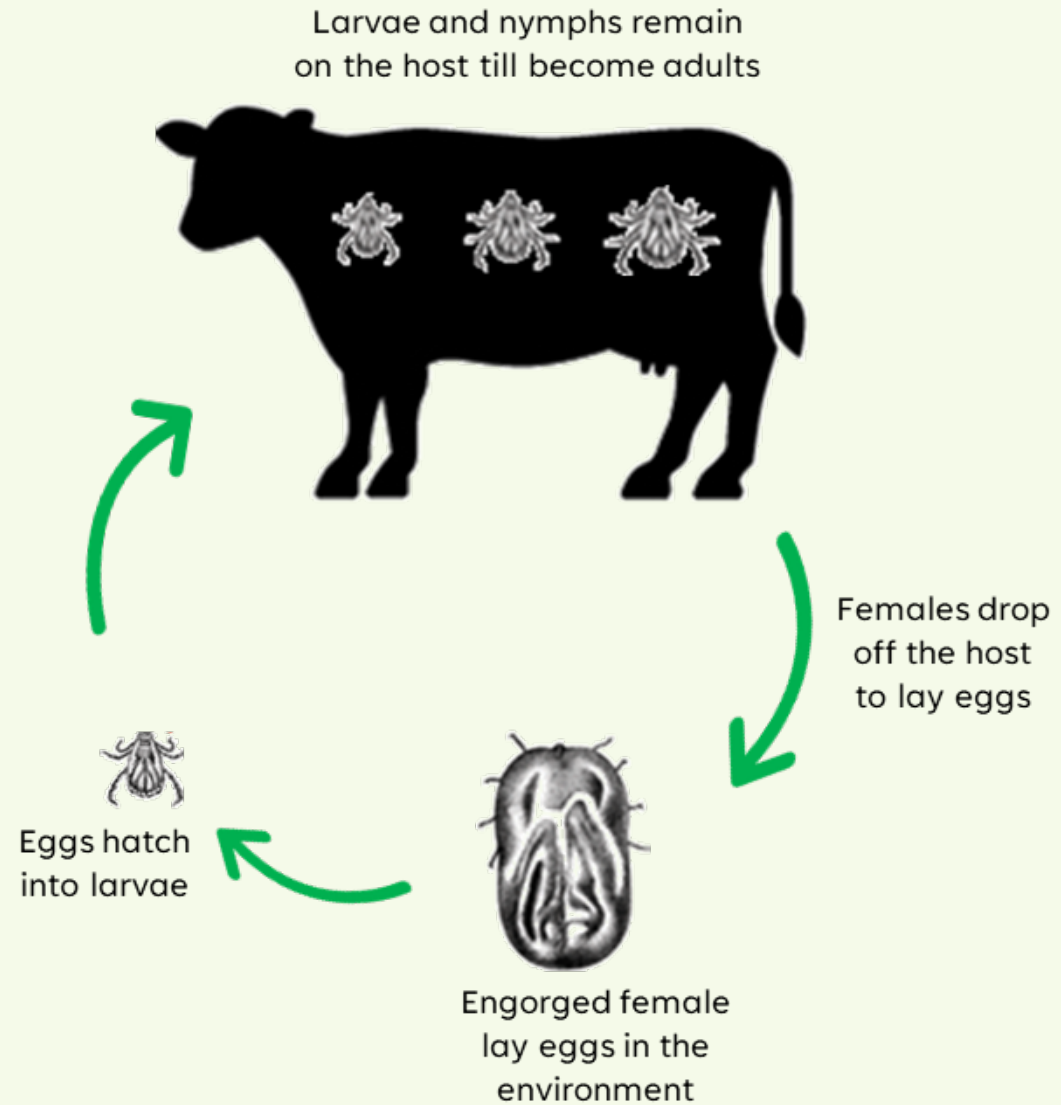
Four stages: **egg**, **larva**, **nymph** and **adult**  
(male and female)



To progress to successive life stages, ticks must successfully feed on a host  
(also known as having a blood meal).

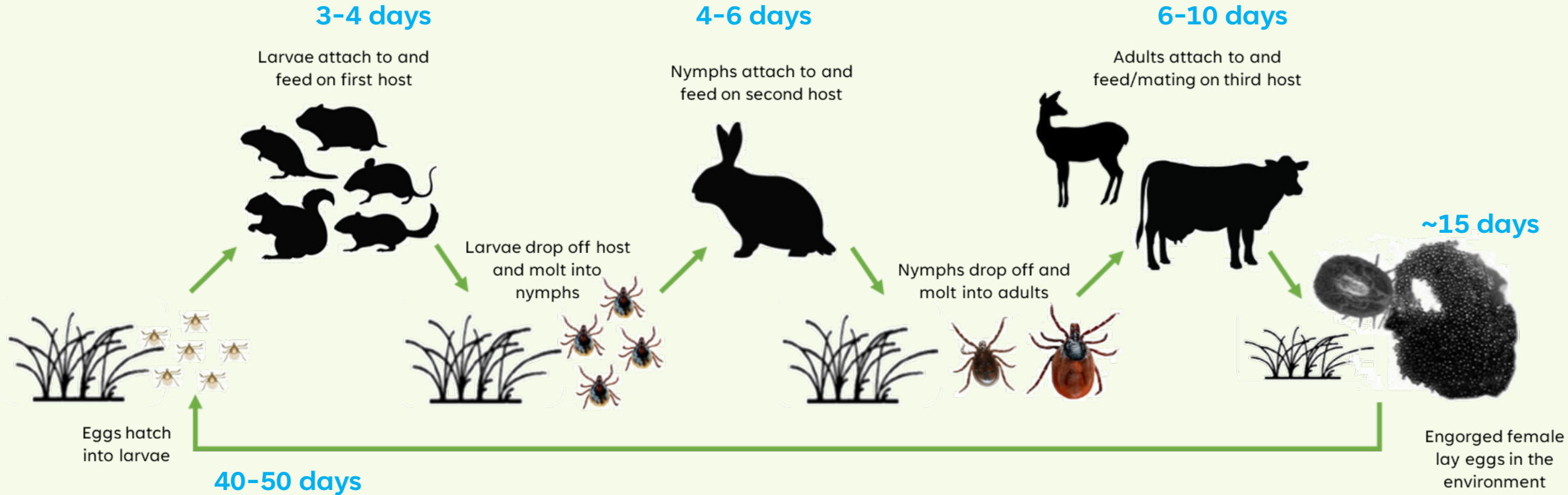
# Tick Life Cycle

→ **One-Host Tick Life Cycle**



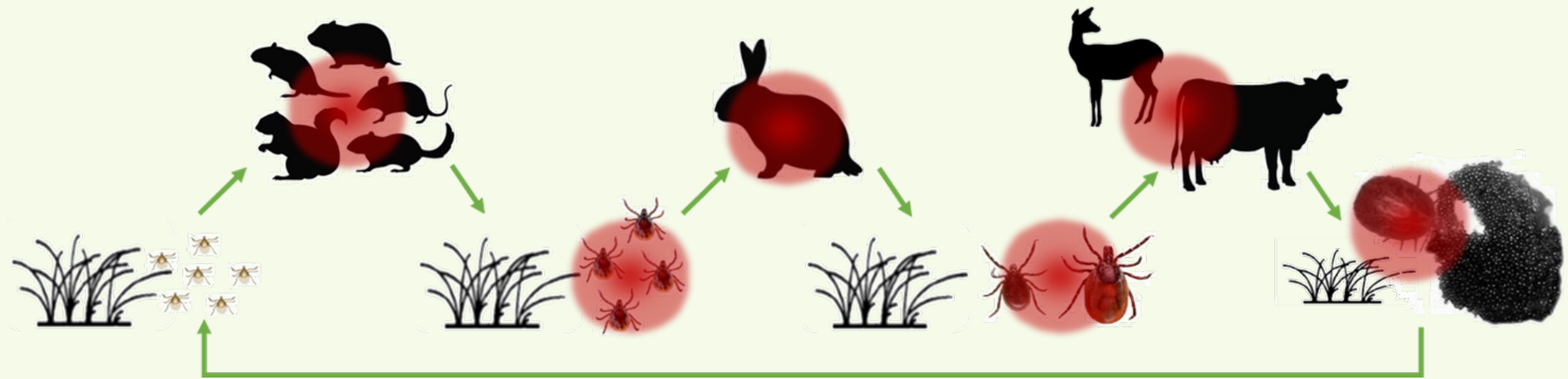
# Tick Life Cycle

## → Three-Host Tick Life Cycle



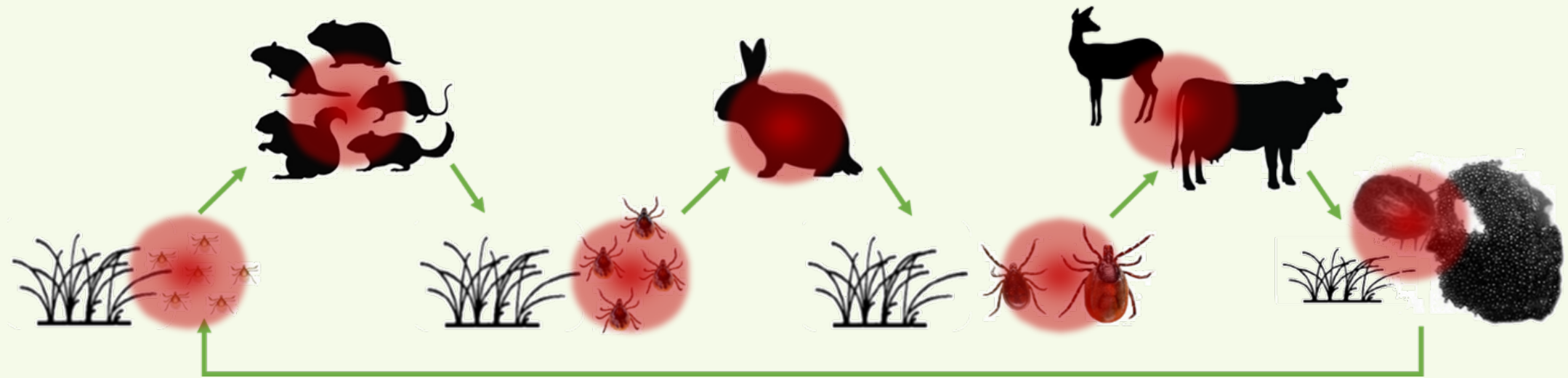
# Tick Life Cycle and Pathogens Acquisition

## Transstadial transmission

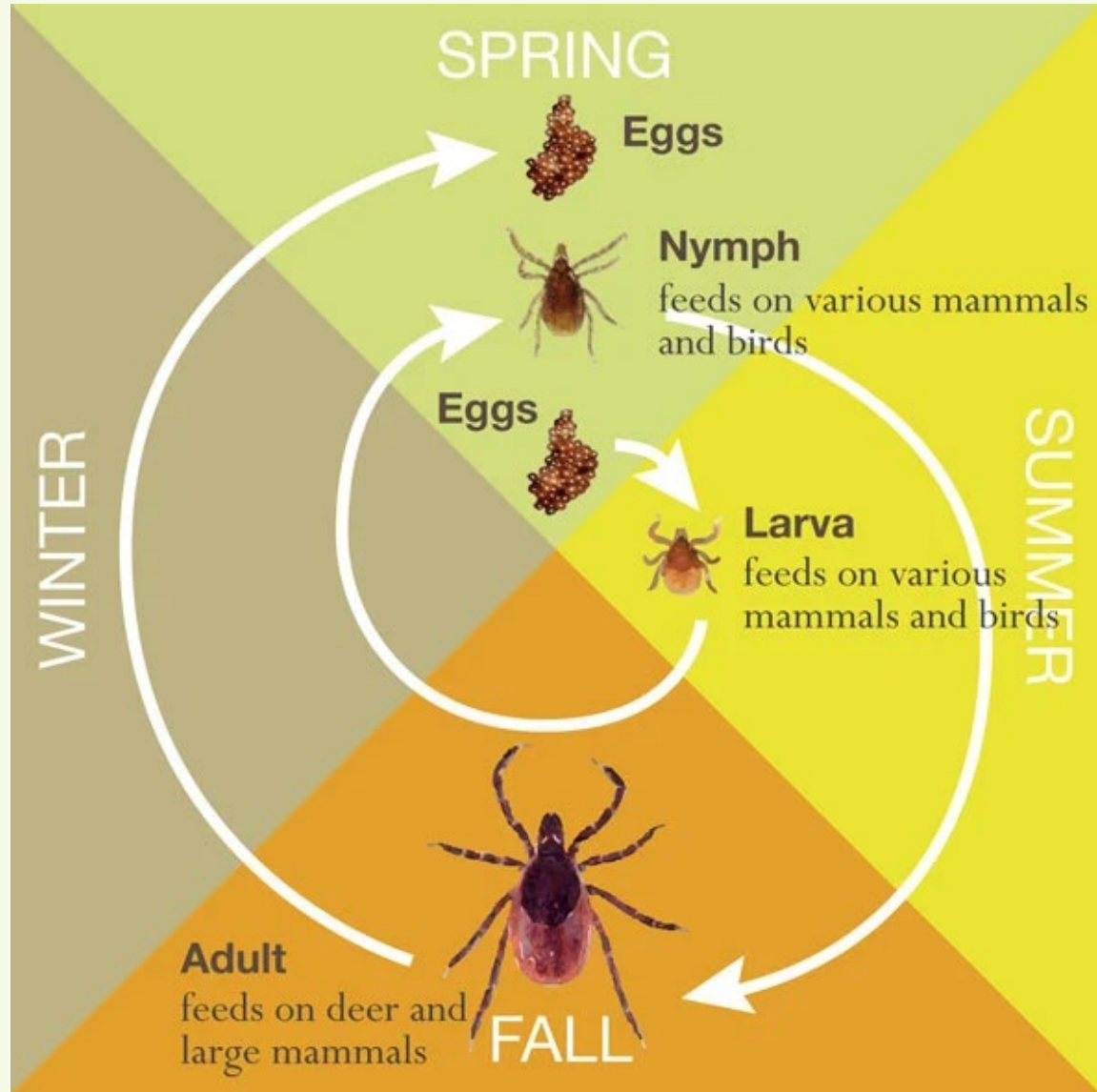




## Transovarial transmission



# Tick Season







American dog tick  
(*Dermacentor variabilis*)



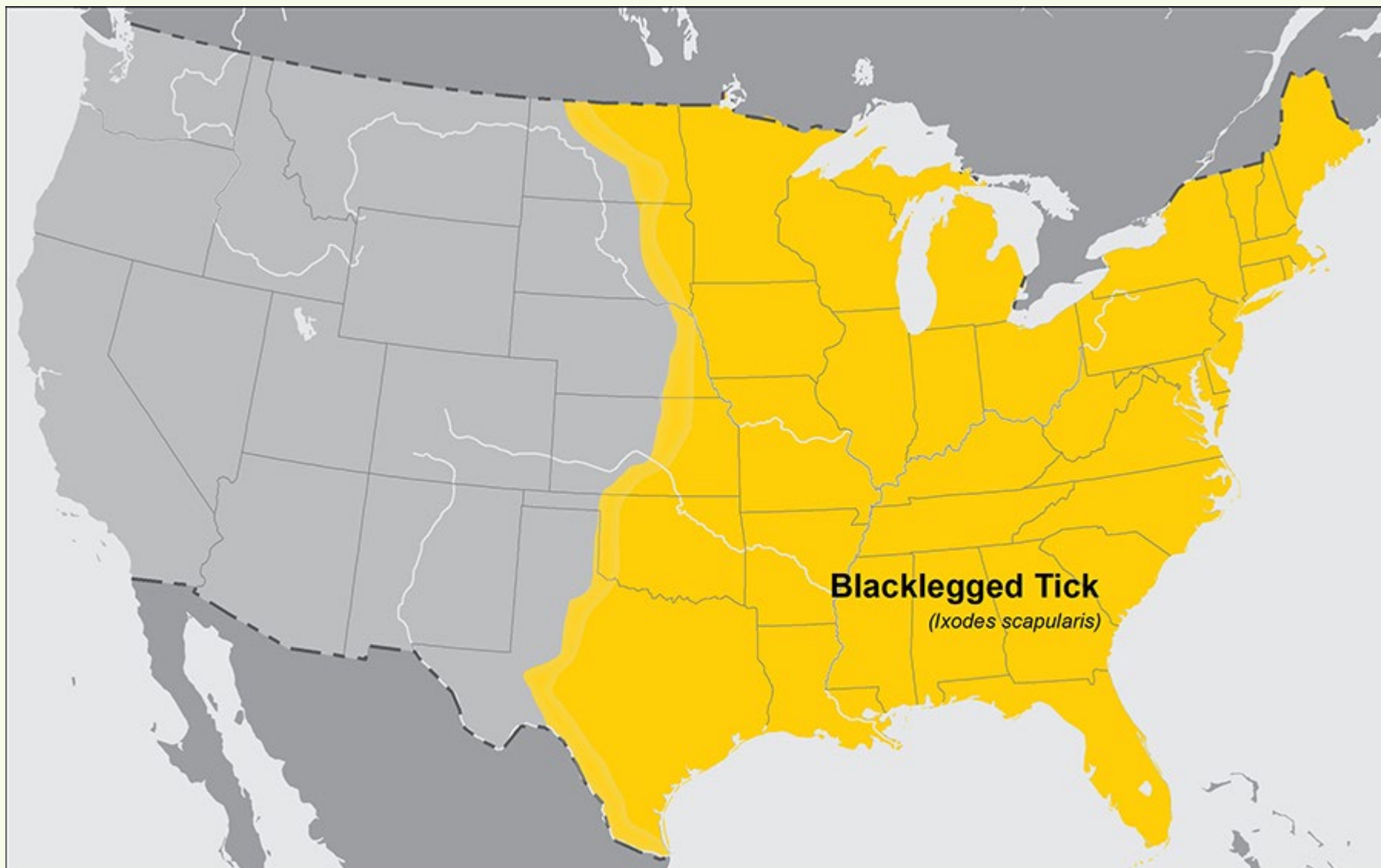
**Tularemia and Rocky Mountain spotted fever.**



American dog tick  
(*Dermacentor variabilis*)



Blacklegged tick  
(*Ixodes scapularis*)



**Lyme disease, anaplasmosis, relapsing fever, ehrlichiosis, babesiosis, and Powassan virus disease.**



American dog tick  
(*Dermacentor variabilis*)



Blacklegged tick  
(*Ixodes scapularis*)



Brown dog tick  
(*Rhipicephalus sanguineus*)



possible Rocky Mountain spotted fever





American dog tick  
(*Dermacentor variabilis*)



Blacklegged tick  
(*Ixodes scapularis*)



Brown dog tick  
(*Rhipicephalus sanguineus*)



Lone star tick  
(*Amblyomma americanum*)



**Ehrlichiosis, Heartland virus, tularemia, and STARI.**



American dog tick  
(*Dermacentor variabilis*)



Blacklegged tick  
(*Ixodes scapularis*)



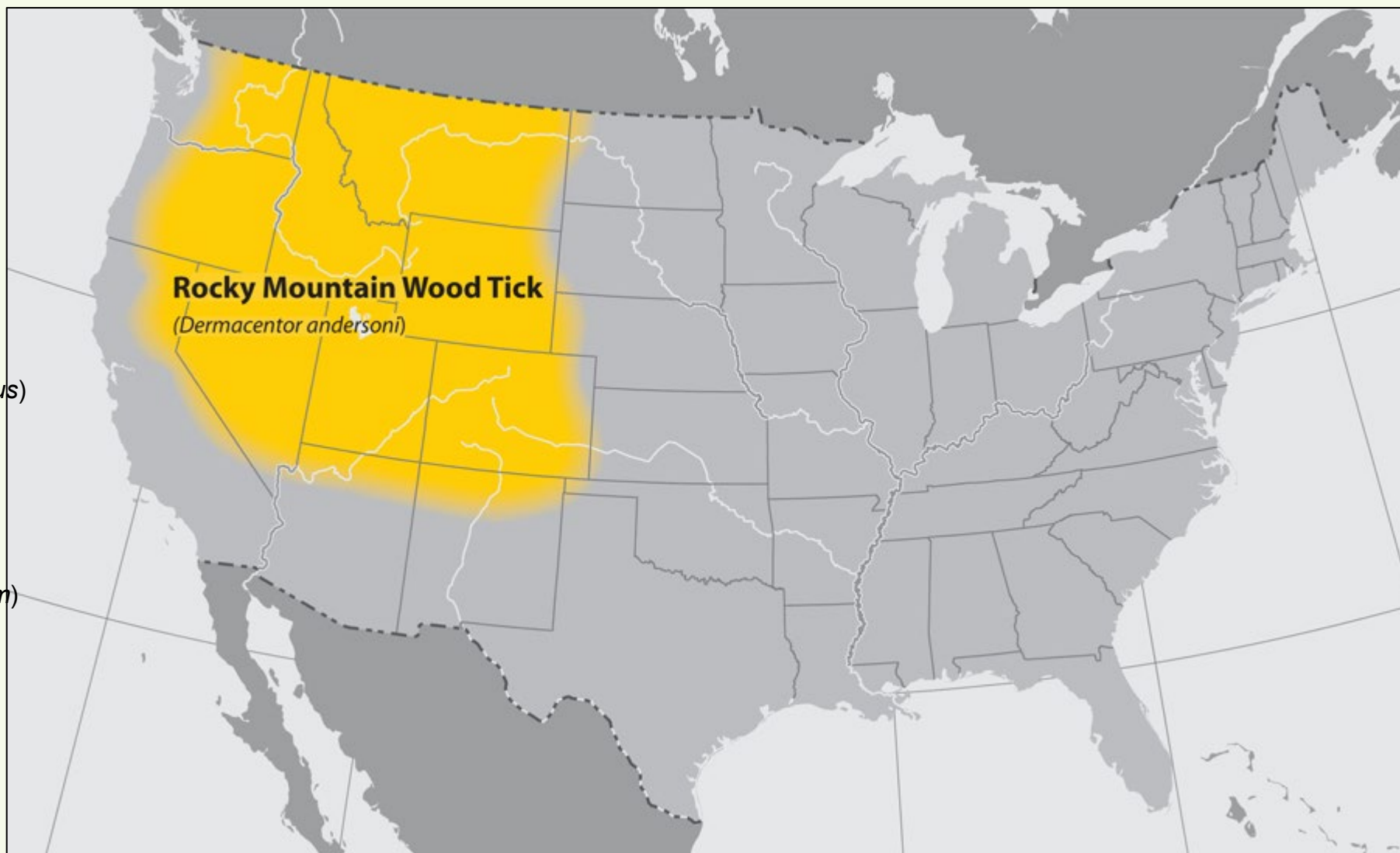
Brown dog tick  
(*Rhipicephalus sanguineus*)



Lone star tick  
(*Amblyomma americanum*)



Rocky Mountain  
wood tick  
(*Dermacentor andersoni*)



**Rocky Mountain spotted fever, Colorado tick fever, and  
tularemia.**





American dog tick  
(*Dermacentor variabilis*)



Blacklegged tick  
(*Ixodes scapularis*)



Brown dog tick  
(*Rhipicephalus sanguineus*)



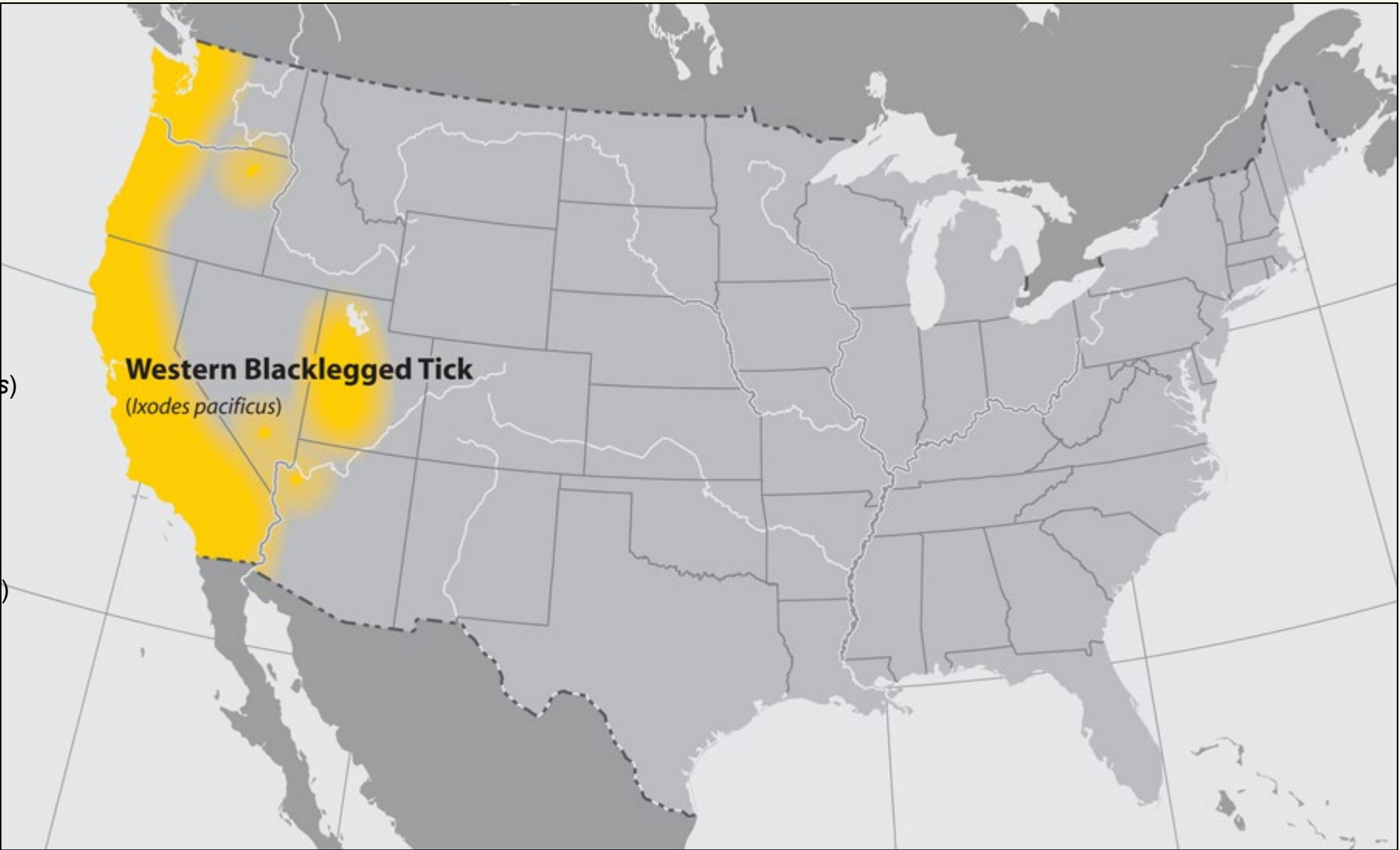
Lone star tick  
(*Amblyomma americanum*)



Rocky Mountain  
wood tick  
(*Dermacentor andersoni*)



Western blacklegged tick  
(*Ixodes pacificus*)



**Anaplasmosis and Lyme disease.**

Cases Reported in US:



**ANAPLASMOSIS**



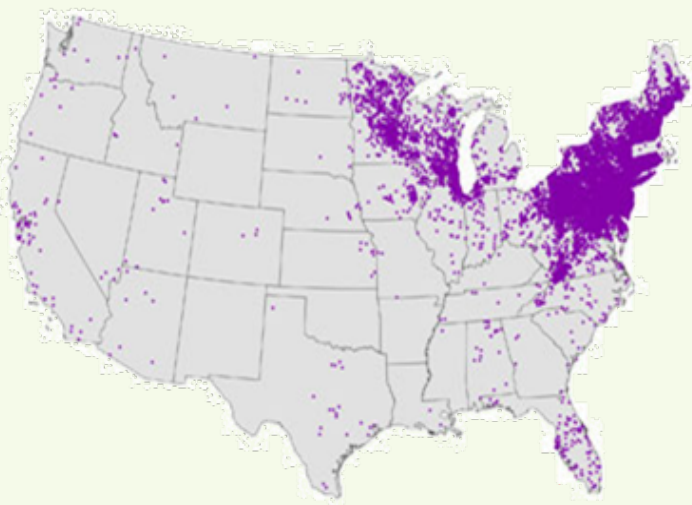
**BABESIOSIS**



**SPOTTED FEVER RICKETTSIOSIS  
(INCLUDING ROCKY MOUNTAIN SPOTTED FEVER)**



**EHRlichiosis**



**LYME DISEASE**



**TULAREMIA**



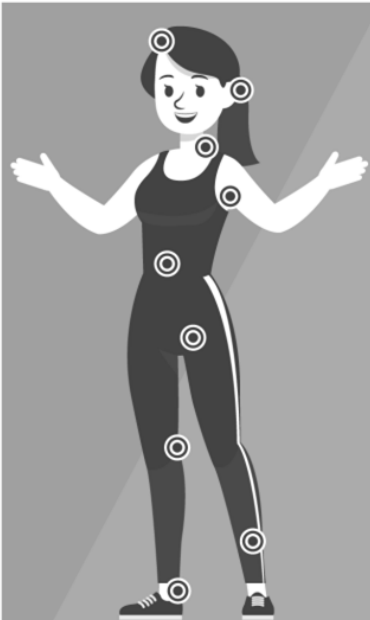
**Ticks can't jump or fly!**



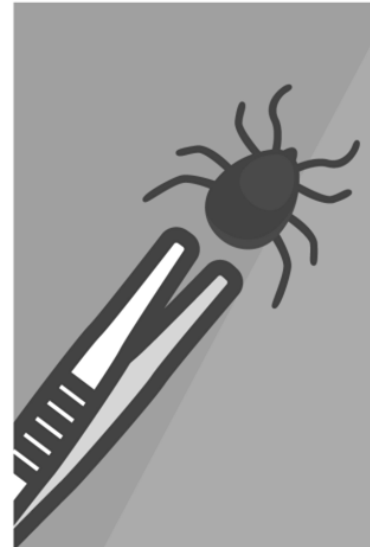
→ climb tall grasses or bushes and wait for a potential host



**PREVENT**



**CHECK**

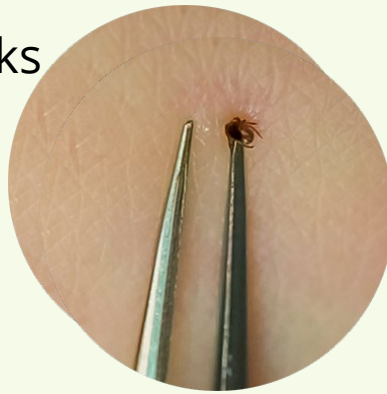


**REMOVE**

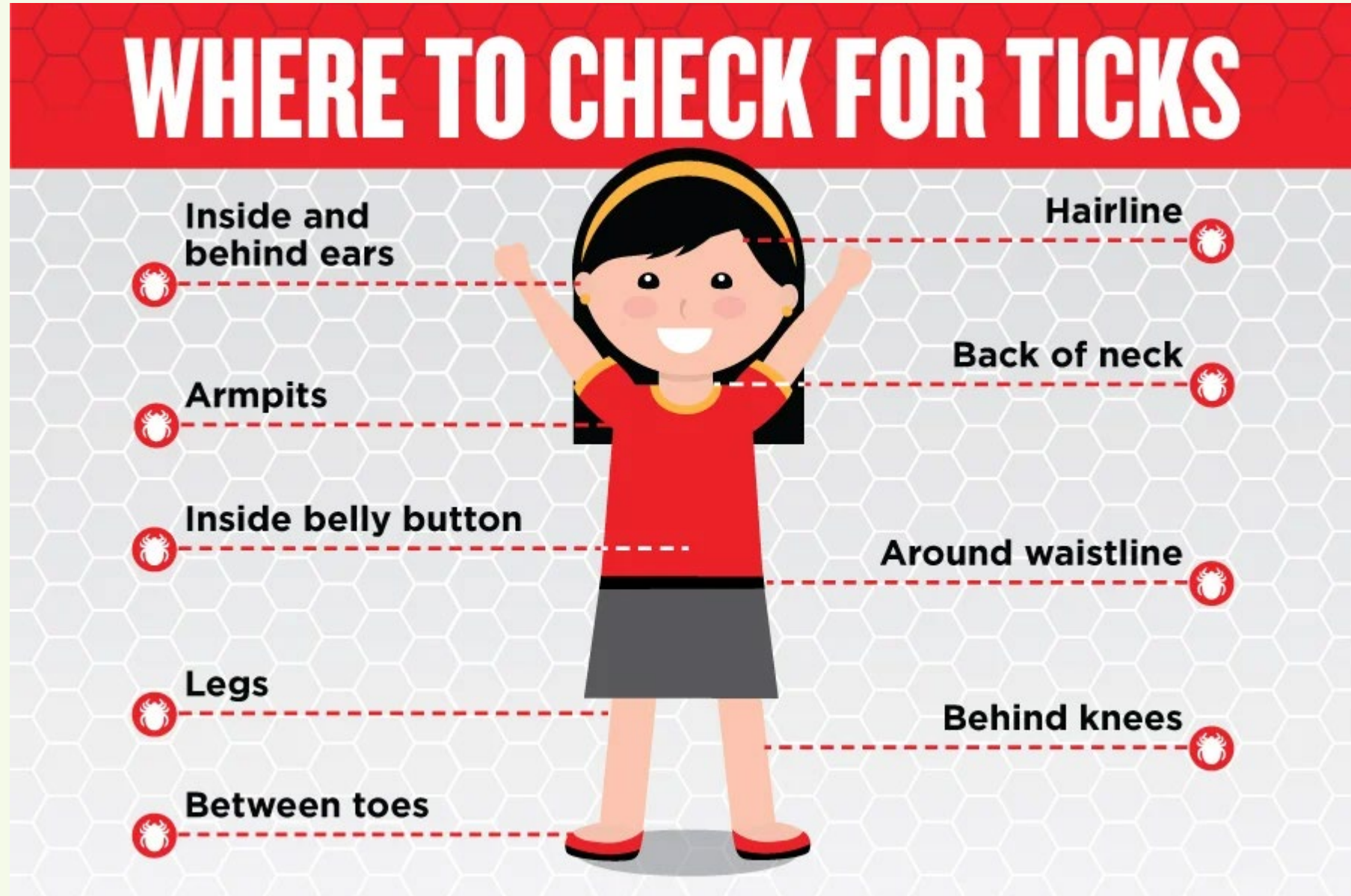


# Tick Bite Prevention Tips:

1. Use insect repellents on clothes and shoes
2. Wear long sleeve shirts and pants
3. Wear white or light-colored clothes
4. Wear shoes or boots
5. Tie back long hair
6. Walk in the middle of the trail
7. Tuck the shirt into pants and pants into socks



## Tick Bite Prevention Tips:

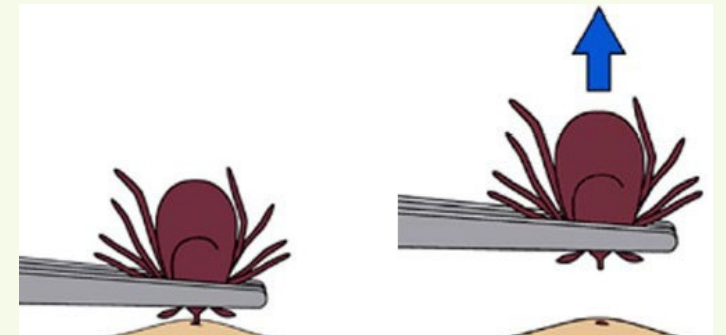
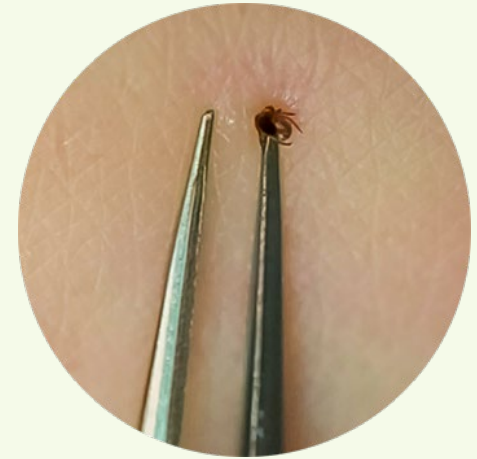


# Found a tick? Don't panic.

In most cases, the tick must be attached for **36 to 48 hours** or more before the Lyme disease bacterium can be transmitted.

**REMOVE**

1. DO NOT yank the tick out (the tick's mouth could remain)
2. Remove as soon as possible
3. Use a pointy tweezers
4. DO NOT squish the tick.
5. DO NOT use a match or liquid to smother the tick.
6. Clean bite area with antiseptic or soap and water



**Monitor for Symptoms (for at least 30 days)**

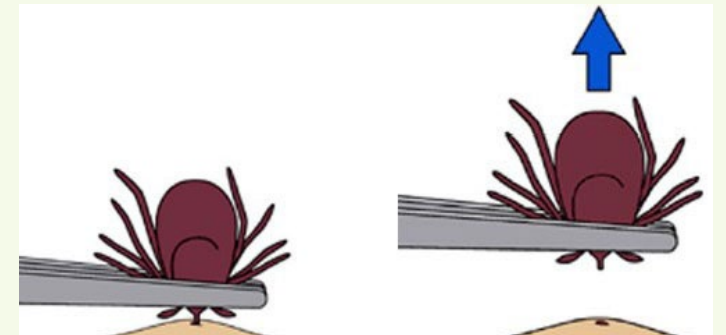
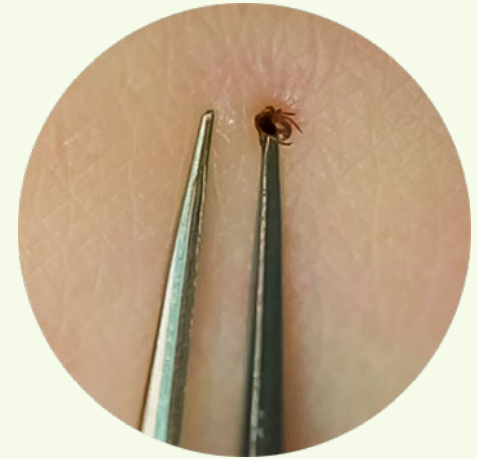


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# Monitor for Symptoms (for at least 30 days)

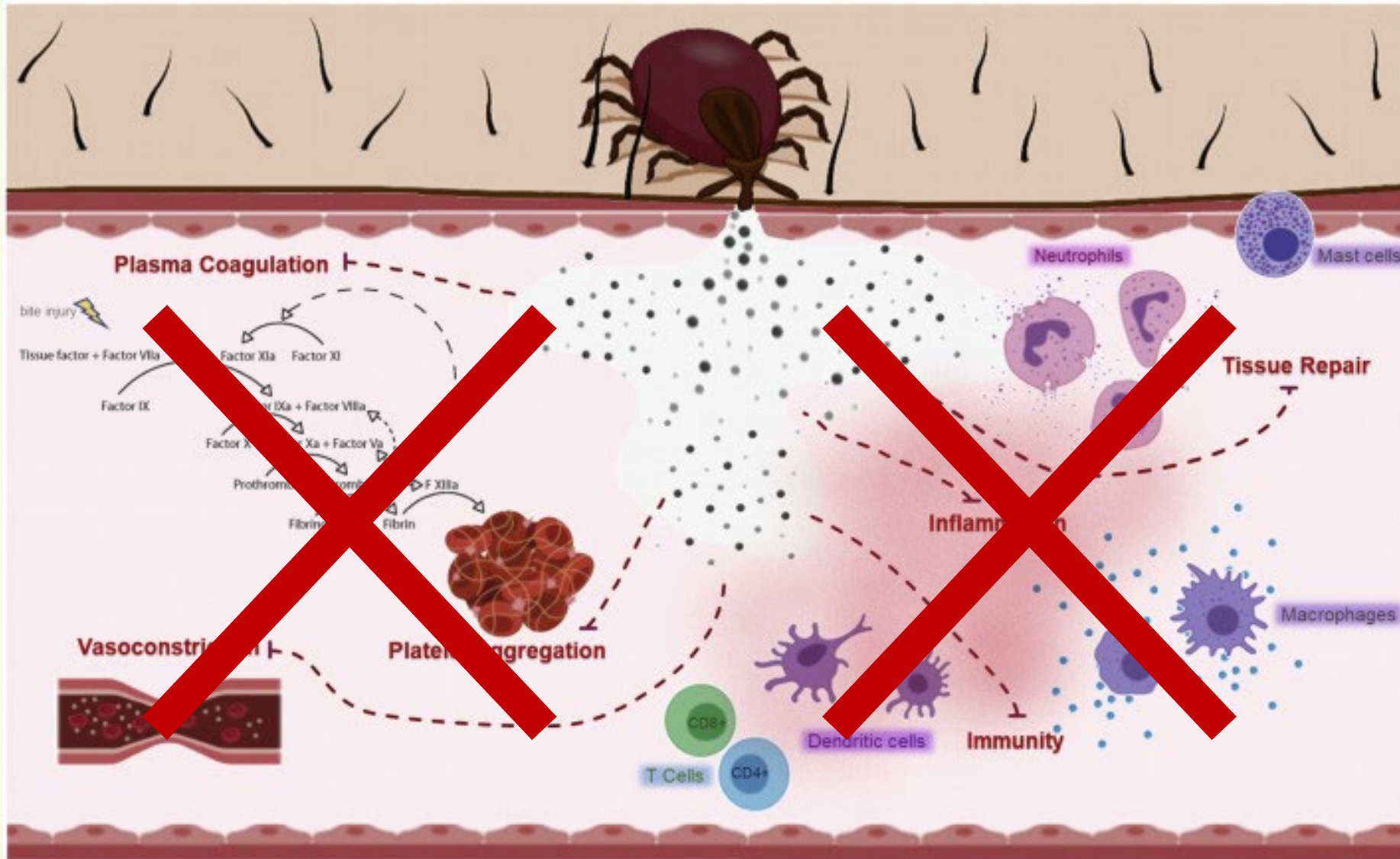
## Symptoms:

- Skin rash (any kind)
- Headaches or stiff neck
- Flu-like symptoms, including fever or chills
- Muscle or joint pain
- Joint swelling
- A small bump or redness at tick bite
- Fatigue or lack of energy
- Swollen lymph nodes
- Heart palpitations\*
- Fainting/syncope\*



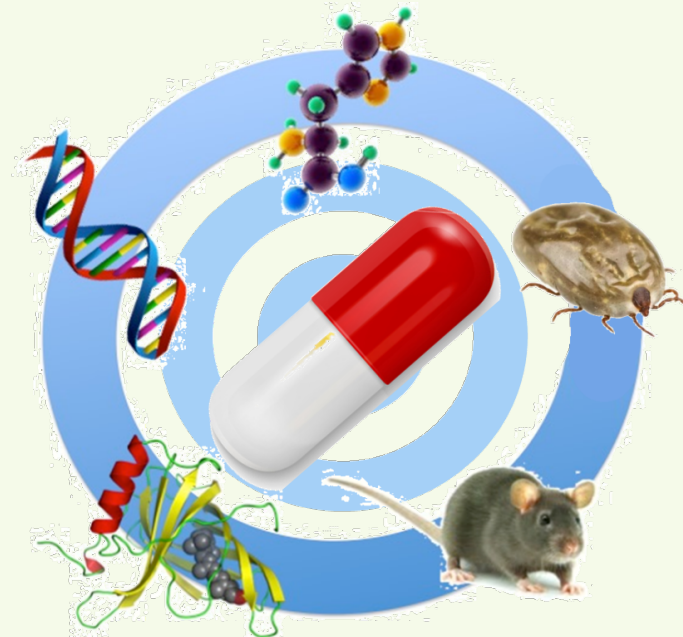
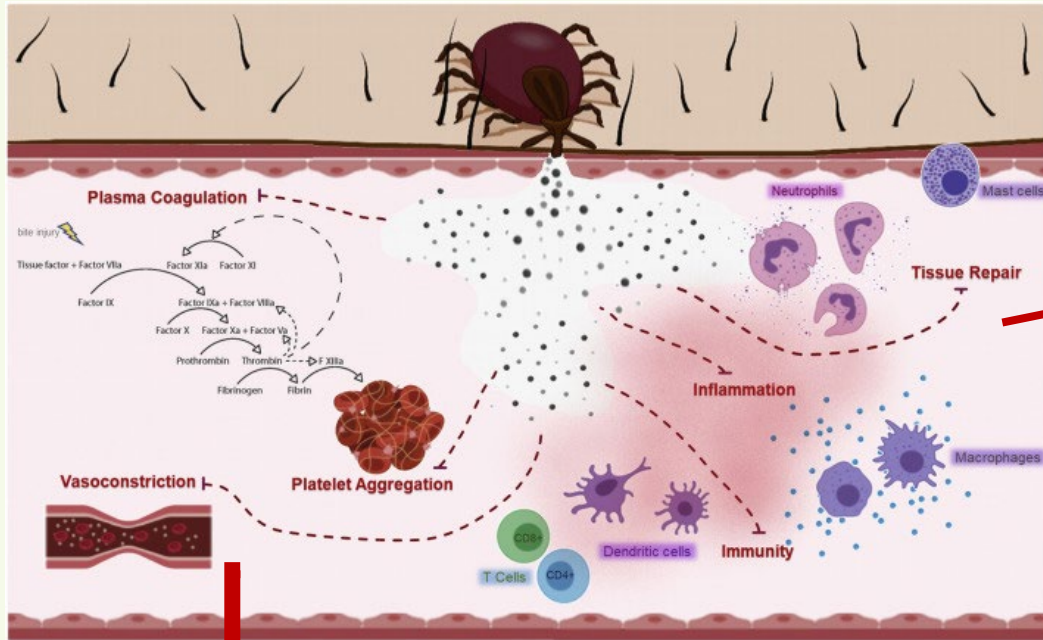
Report the tick bite!

# What we study at the lab?





# What we study at the lab?

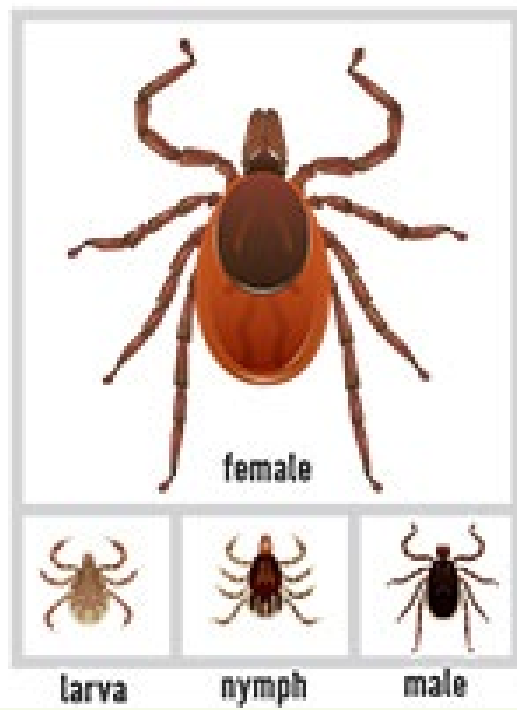




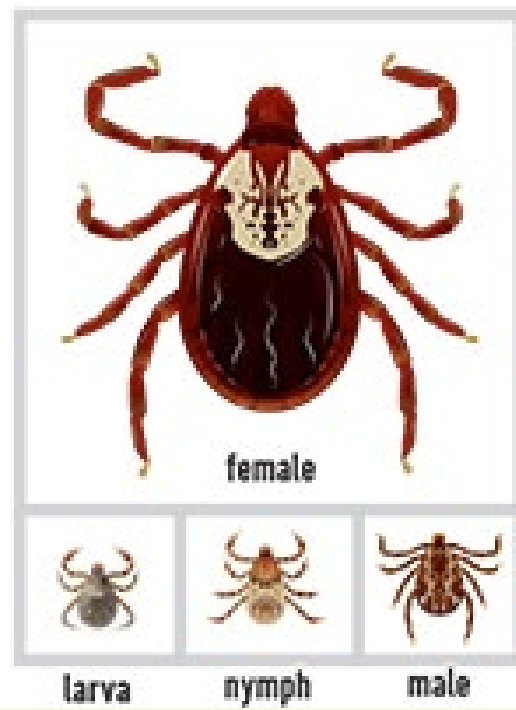
THANK YOU!

**Larissa Martins**, MSc, Ph.D.

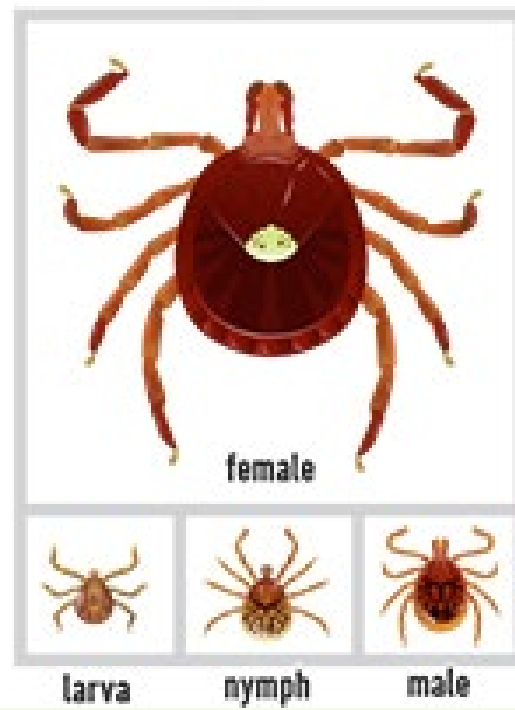
[llarissa.martins@gmail.com](mailto:llarissa.martins@gmail.com)



*Ixodes*



*Dermacentor*



*Amblyomma*