



Turun yliopisto  
University of Turku

# **Ticks and tick-borne pathogens in Finland: a crowdsourcing based study**

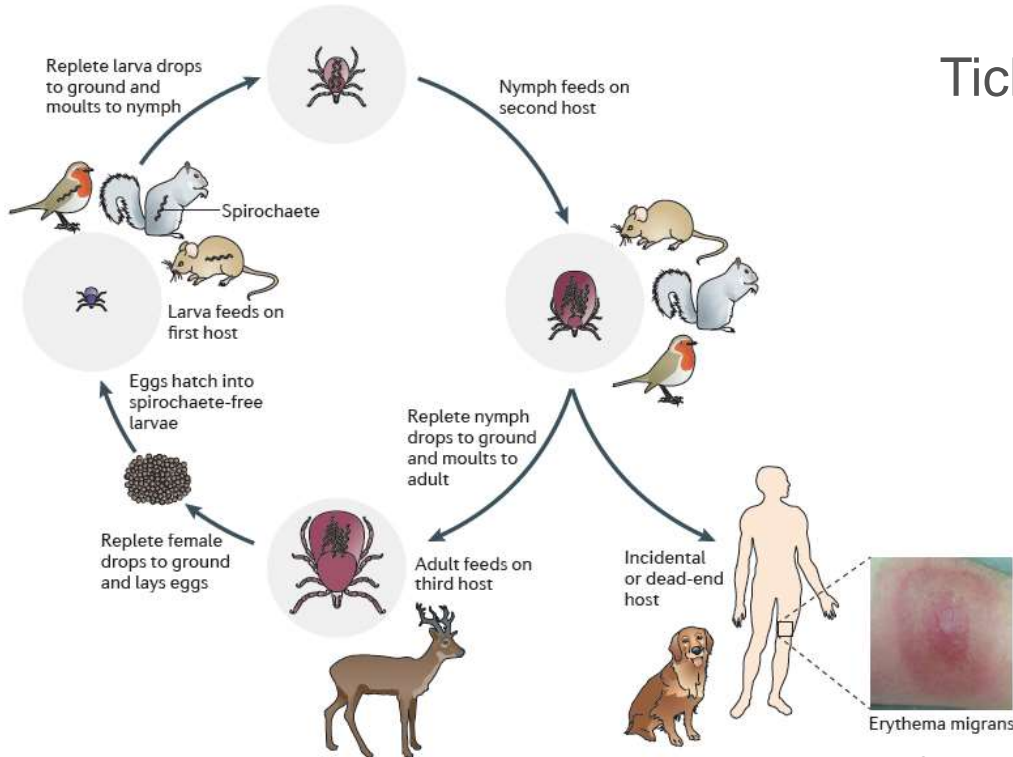
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# Transparency Declaration

- **Main occupation**
  - University of Turku, Finland
- **Secondary occupations**
  - Turku University Hospital, Turku Finland
  - Consultant: LSPL Oy, Reagena Oy, Labquality
- **Lecture fees:** Labquality
- **Copyright fee:** Kustannus Oy Duodecim
- **Grants**
  - Academy of Finland
  - Jane and Aatos Erkko Foundation
  - TYKS-SAPA
  - TYKS EVO
- **Position of trust**
  - Board of “The Scientific Foundation of Microbiologists in Turku” –foundation

# Ticks and tick-borne pathogens



## Tick-borne pathogens

- *Borrelia burgdorferi* s.l.
- TBEV
- *Borrelia miyamotoi*
- *Anaplasma phagocytophilum*
- *Rickettsia* spp.
- *Babesia* spp



# Global distribution of *Ixodes* ticks and Lyme borreliosis

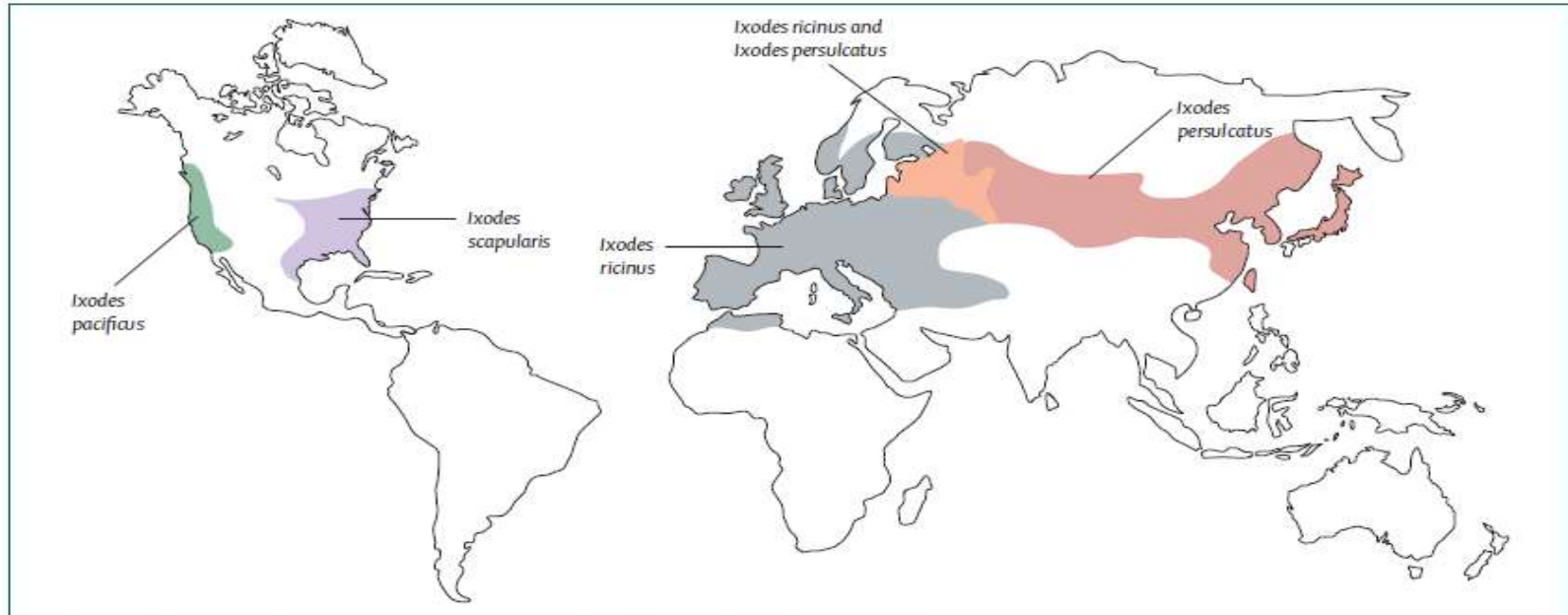
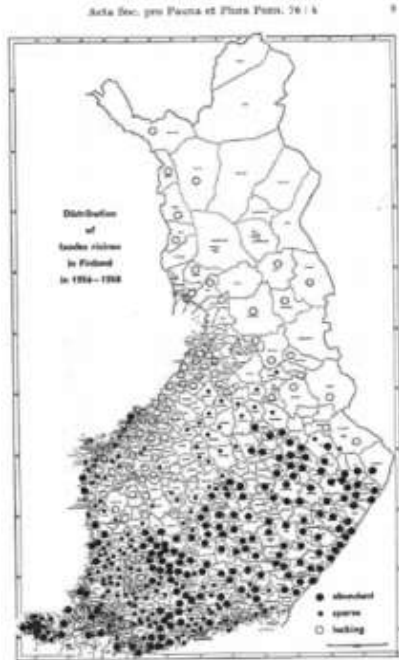


Figure 1: Global distribution of the vectors (*Ixodes ricinus* species complex) of Lyme borrelia  
Reproduced with permission from the European Concerted Action on Lyme Borreliosis.

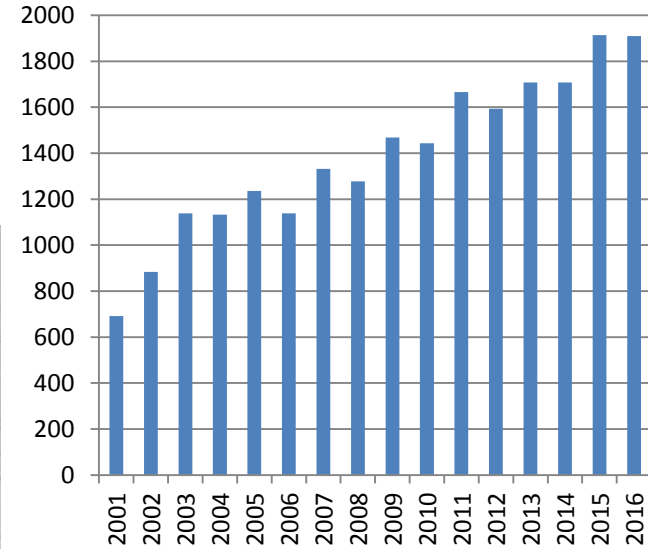
Staneek Lancet 2012



# Ticks and LB in Finland



Tick observations in 1956-58 (Öhman et al 1961)



Serologically confirmed LB in Finland



# How to map ticks and pathogens?



Flagging is too laborious and time consuming





# Finns take up easily crazy challenges!



**SWAMP SOCCER**



**BOOTTHROWING**



**WIFE CARRYING**



KOTIMAA 15.4.2015 Päivitetty: 15.4.2015

**Puriko punkki? ... ja lähetä  
kirjeku ... opistolle**

*"Bitten by a tick? Send it to the University"*



*7000 letters with ticks received in April-November 2015*



*"Let's ask the citizens to send us  
ticks!"*



25.4.2017



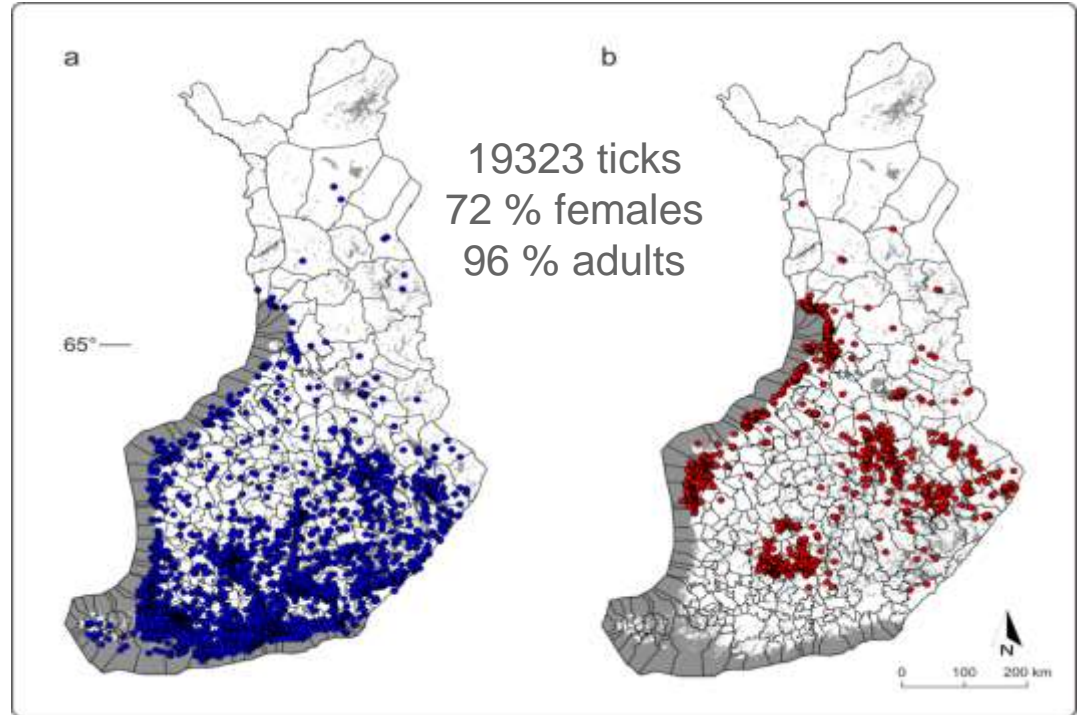


# *I. ricinus* and *I. persulcatus* in Finland<sup>9</sup>

Up: *Ixodes persulcatus*,  
Down: *Ixodes ricinus*

*Ixodes ricinus* 71 %

*Ixodes persulcatus* 29 %

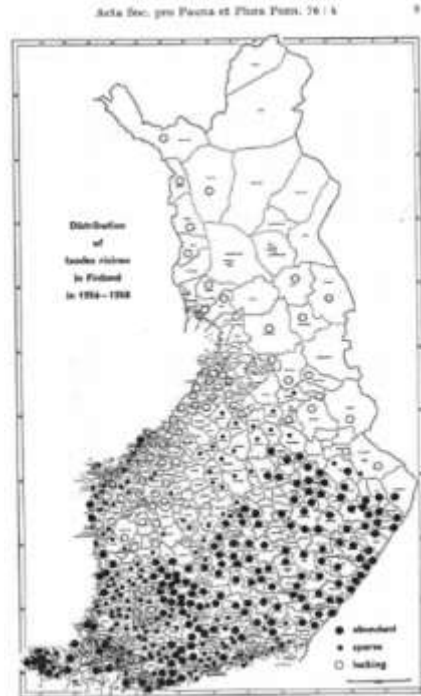




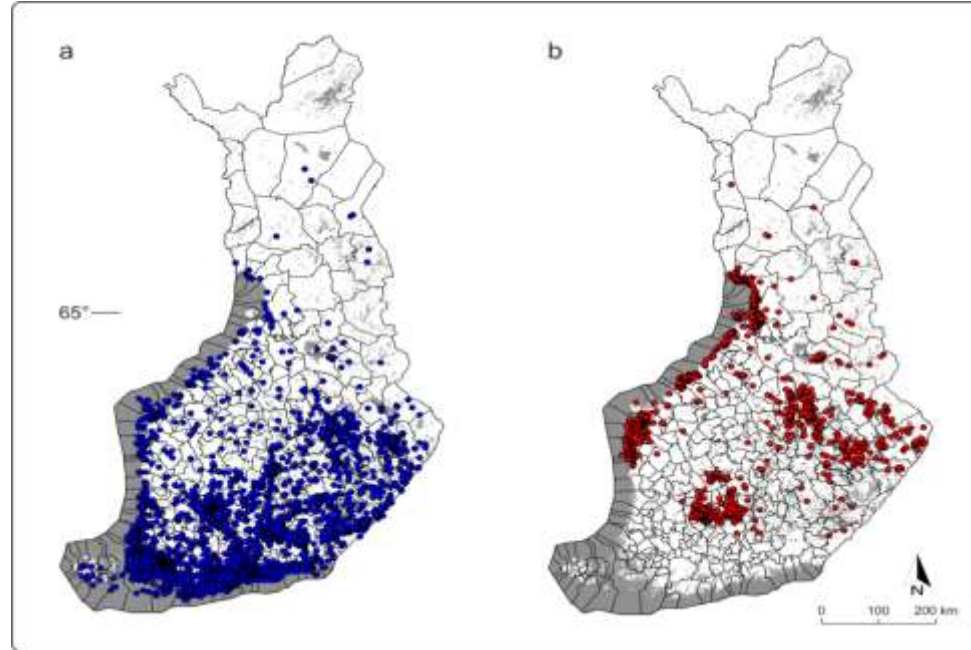
# Ticks 1956-58 and 2015

*Ixodes ricinus*

*Ixodes persulcatus*



1956-58



2015



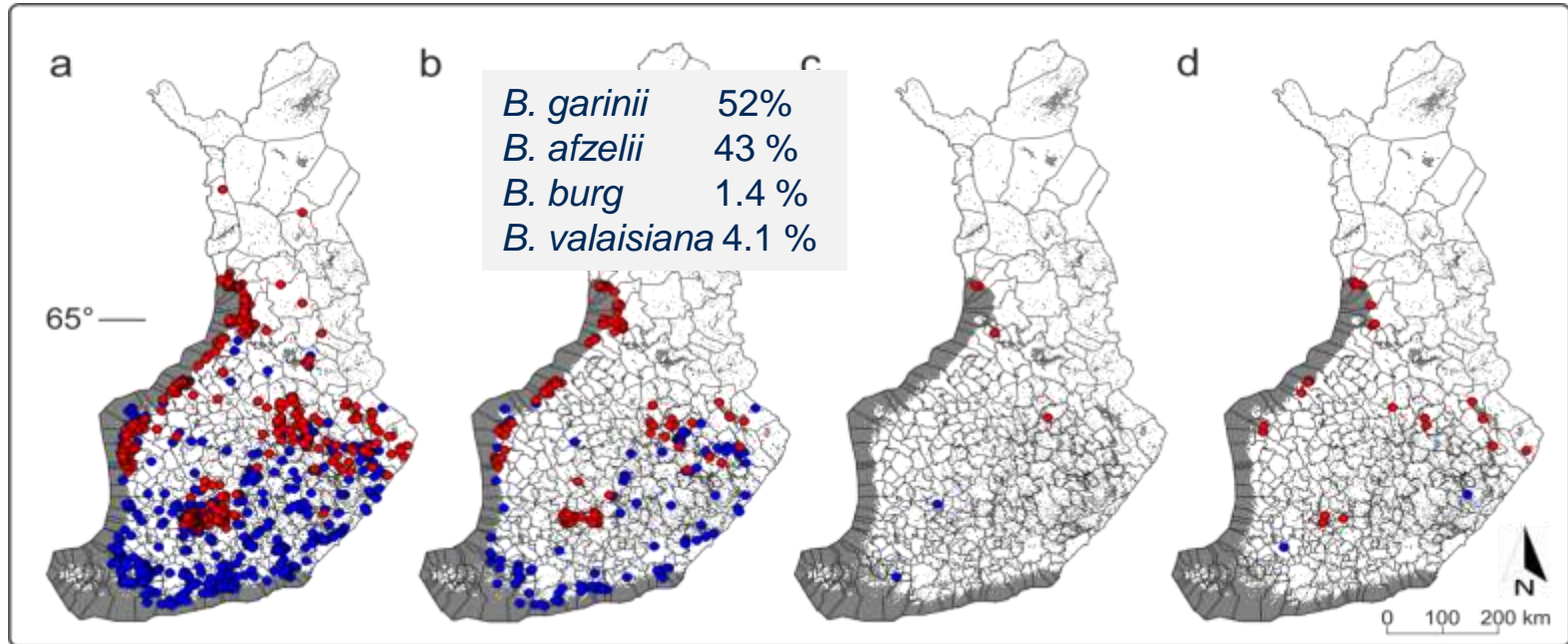
# *B. burgdorferi*, *B. miyamotoi* and *TBEV* in ticks

2000 analyzed

*B. burgdorferi* s.l.  
in 17 %

*B. miyamotoi*  
in 0.3 %

TBEV in  
1.6 %





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# THANK YOU



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TYKS-SAPA-LIIKELAITOS  
Varsinais-Suomen sairaanhoitopiiri