

# Key to Lyme disease's locale may be found in the gut of a tick

January 16 2014

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Normal microbiota of the tick gut are necessary to maintain the integrity of the glycoprotein-rich mucus lining of the gut (stained in pink), which is required for colonization of Lyme Disease spirochetes, Yale researchers have found.

The prevalence of Lyme disease varies greatly between different locales throughout the Northeast, even though the deer ticks that transmit Lyme bacterium are common throughout the entire region.

A new study by researchers at the Yale School of Medicine suggests an

unusual explanation to the mystery: differences in the makeup of microbes in the guts of the ticks.

The disruption of microbiota in the guts of the tick *Ixodes scapularis*—a known vector for Lyme and other human diseases—prevented colonization of the Lyme disease spirochete *Borrelia burgdorferi*, the Yale team showed. Yale researchers plan to investigate whether bacterial variations in the tick gut helps account for regional differences in Lyme disease infection rates, said Erol Fikrig, senior author of the paper. For more information, please read the January issue of the journal *Cell Host & Microbe*.

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**More information:** "Gut Microbiota of the Tick Vector *Ixodes scapularis* Modulate Colonization of the Lyme Disease Spirochete." Sukanya Narasimhan, Nallakkandi Rajeevan, Lei Liu, Yang O. Zhao, Julia Heisig, Jingyi Pan, Rebecca Eppler-Epstein, Kathleen DePonte, Durland Fish, Erol Fikrig. *Cell Host & Microbe* - 15 January 2014 (Vol. 15, Issue 1, pp. 58-71)

Provided by Yale University

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