**Investigating Tick-Borne Disease**

*Suggested Learning Extensions: Activities and Readings*

*Extension Activities*:

Spatial Epidemiology of Tick-Borne Diseases in Kansas:

Using a PowerPoint presentation, students are guided through epidemiological data from the Kansas Department of Health and Environment. They are asked to analyze these data, develop graphs, maps, and design a pamphlet to inform members of the public.

One Health Kansas Marketing Project:

Students will design a multimedia presentation that describes the One Health mission.

PCR of simulated tick-borne pathogens:

If time, expertise, and equipment allow students can perform PCR tests of simulated patient sera (substituting *E. coli* cultures for patient samples) using *E. coli* detection kits purchased from Edvotek (product # 952 Water Quality Testing II: PCR Testing of Water Contaminants)

Field Experience--Tick collections:

Students can survey local habitats for the presence of ticks and catalog the diversity they see by walking through grasses while dragging large white sheets. Ticks will latch on the sheet while questing. Students can then count and identify the types of ticks they see and infer which tick borne diseases may be present in their area. ENSURE THAT STUDENTS TAKE PROPER SAFETY PRECAUTIONS WHILE SAMPLING!

*Suggested Readings and Resources:*

Arnold, Chris. ( 2014, May 23) Ticks Out in Force This Summer. *KSN News.* Retrieved from: <http://ksn.com/2014/05/23/ticks-out-in-force-this-summer/>

An informational article about tick borne illnesses originally published in Wichita, KS.

Associated Press. (2014, May 28) Officials Urge Caution as Tick Season Begins. *KWCH News.* Retrieved from: <http://www.kwch.com/news/local-news/officials-urge-caution-as-tick-season-begins/26214102>

A news alert regarding the emergence of Heartland Virus in Oklahoma.

Centers for Disease Control: [www.cdc.gov](http://www.cdc.gov)

One Health Kansas: <http://www.onehealthkansas.ksu.edu/>

Quammen, D. (2012). *Spillover.* New York, NY: W.W. Norton and Company.

This book explores several different zoonoses, their emergence, the efforts of the scientists who study them, their importance, and the link between emerging zoonoses and ecological disturbance. Chapters 44-47 specifically deal with the emergence and study of Lyme disease.

Robbins, J. (2012, July 14) The Ecology of Disease. *The New York Times*. Retrieved from: <http://www.nytimes.com/2012/07/15/sunday-review/the-ecology-of-disease.html?_r=3&pagewanted=all&>

This short essay originally appeared in the Sunday Opinion section of *The New York Times*. It offers an introduction to the concept of zoonoses and the link between environmental and human health.

Specter, M. (2013, July 1) Lyme Wars. *The New Yorker.* Retrieved from: <http://www.newyorker.com/reporting/2013/07/01/130701fa_fact_specter>

This long investigative essay appeared as a feature article in *The New Yorker*. It details the controversy that exists between the medical community and patients who claim to suffer from unsuccessfully treated Lyme disease. It describes the experience of a patient with chronic Lyme disease, follows the work of Lyme disease patient advocates and Lyme disease researchers.