

# STOPPING DISEASE IN ITS TRACKS: A NEW APPROACH TO ADDRESS ZOO NOTIC DISEASES

BY MASON KAUFFMAN, CEO, US BIOLOGIC



I grew up as a Boy Scout and love the outdoors. I love sharing family time in my yard as well as enjoying our local parks and other woodland areas. As much as I enjoy the outdoors, I also respect the “hidden dangers” that can exist in wildlife.

I’m referring specifically to “zoonotic diseases”, those diseases that spread from animals to humans. Woodland creatures that routinely come across our paths can be “reservoirs” for many diseases that are subsequently transmitted to humans by “vectors” like ticks and insects.

The effects can be devastating to humans, pets, and livestock. According to the Centers for Disease Prevention & Control

(CDC), approximately 75% of all emerging infectious diseases affecting humans are zoonotic. Commonly reported examples of zoonotic diseases include Ebola, West Nile Virus, Malaria, Rabies, and Lyme disease.

While their animal-origins have made zoonotic diseases difficult to control, U.S. BIOLOGIC has developed an innovative disease prevention solution that will be an important tool in controlling the spread of Lyme and other zoonotic diseases.

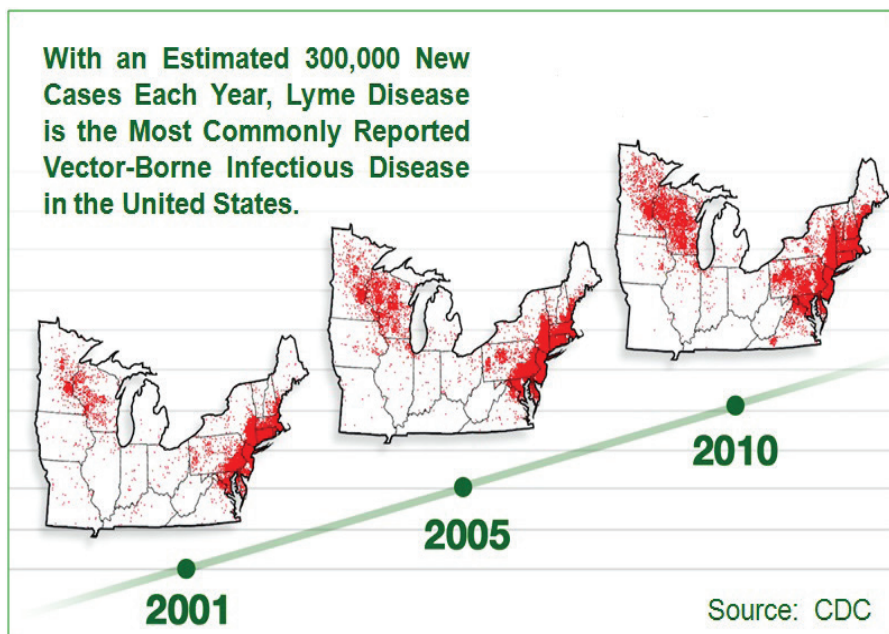
## LYME - A TERRIBLE DISEASE

Ticks pass *Borrelia*, the bacteria that causes Lyme disease, to other animals. The ticks themselves contract the

bacteria from mice. When the ticks feed again, sometimes as much as a year later, they either spread the bacteria to other mice, perpetuating the infection cycle, or they might feed on a human, potentially causing what can be a debilitating disease.

Lyme is an insidious disease causing arthritic-like symptoms, nervous disorders, cognitive deficits, and death due to Lyme-related heart disease. Lyme disease attacks quality of life, ruins careers, and causes unending pain not only to those infected, but to their families as well. There is also a tremendous financial burden. According to the CDC, the average cost of Lyme disease is over \$10,000 per case.

People who suffer from Lyme disease are not alone. Progression maps provided by the CDC.



**“THREE-HUNDRED THOUSAND PEOPLE. \$10,000 PER PERSON. LYME DISEASE COSTS THE U.S. OVER THREE BILLION DOLLARS, ANNUALLY.”**

People who suffer from Lyme disease are not alone. The CDC estimates over 300,000 people in the U.S. alone contract Lyme disease each year. Those most infected? Children aged 5-10 years, who could potentially suffer from the disease for their lifetime. While 95% of the disease cases are currently contracted in the Northeastern U.S. and upper Midwest states, the geographical expansion of the disease has grown dramatically.

Three-hundred thousand people. \$10,000 per person. Lyme disease costs the U.S. over three billion dollars, annually. There are several prevention methods. Residential pesticides, home landscape modifications, staying away from woodland areas, wearing long shirts and pants, and regular tick checks are all common methods of protection. Additional efforts have included culling deer, so that ticks have fewer places to mate. There is evidence that each of these techniques have some positive effect, but the case numbers still continue to surge.

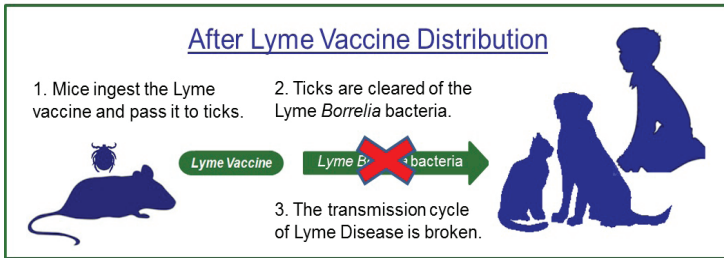
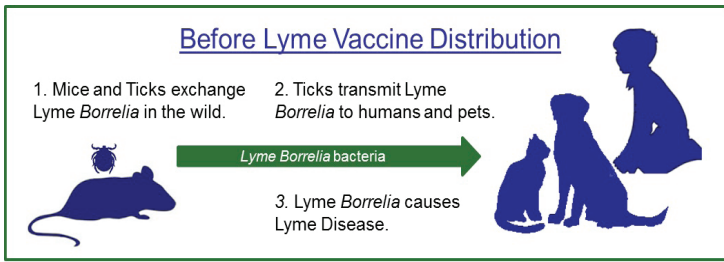
#### A NEW PARADIGM

Scientists have long understood the transmission cycle of Lyme disease from mice, to ticks, and then to humans and other animals. The answer is to address Lyme disease at the original source of tick infection, the mouse. US BIOLOGIC has achieved this solution by developing an innovative disease prevention platform. The technology is based on ten years of research by a University of Tennessee scientist, Dr. Maria Gomes-Solecki, who asked the important question: If mice are the species that most often infect ticks, why not use the mice as vehicles to break the transmission cycle?

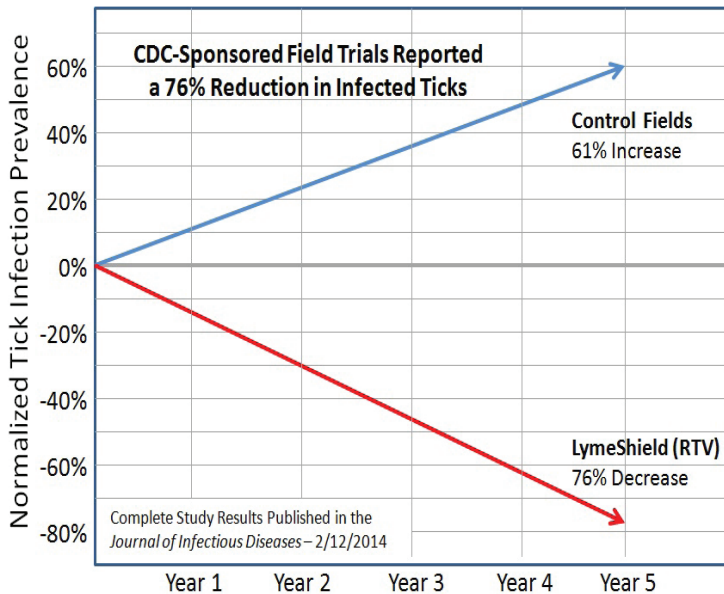
Dr. Gomes-Solecki began testing a new process whereby she took a vaccine known to effectively block transmission of *Borrelia* and reformulated it into a simple vaccine pellet that could be distributed in areas where there is the greatest interaction of mice, ticks, and people. Once mice consume the vaccine pellets, the transmission cycle of Lyme disease is broken.

The National Institutes of Health and CDC supported the research with over \$6 million dollars in the R&D funding. After five years of field trials in New York, the new technology drove down the number of infected ticks by 76%. In those fields that were tested but not treated, the number of infected ticks grew by 61%. The authors of the published study noted “Implementation of such a long-term public health measure could substantially reduce the risk of human exposure to Lyme disease.”

The field trial results garnered national attention when they were published in the *Journal of Infectious Diseases*. The paper was co-authored by partners at the Cary Institute, the CDC, and Penn. Once her research was complete, Dr. Gomes-Solecki turned to US BIOLOGIC to commercialize her technology into one of the world’s first solutions to curtail the spread of zoonotic disease. ■



People who suffer from Lyme disease are not alone. Progression maps provided by the CDC.



Field trial study results (Image by US BIOLOGIC, based on a 2014 Journal of Infectious Diseases paper).



The author, **MASON KAUFFMAN** is the President, CEO, and Board Chairman of US BIOLOGIC. He was part of FedEx's pioneering teams from 1978-1994 before leaving to found, grow, and exit his own businesses. Those companies, Express Logistics and Accuship, each earned Inc. Magazine's 500 Fastest Growing Company status.

## ABOUT US BIOLOGIC

US BIOLOGIC was founded on the principle that the world needs a safe, effective, and cost-efficient solution to curtail the spread of zoonotic diseases, beginning with Lyme disease. The company is focused on commercialization of proven technologies using its proprietary oral delivery platform. The company partners with inventors from other companies, universities, and government agencies.

US BIOLOGIC's board leadership team includes Nashville's Mike Shmerling (XMI High Growth Fund CEO) and David Williams, retired CEO and Chairman of Sanofi (the world's largest manufacturer of vaccines). Also leading the company are strong science leaders like Tom Monath, MD, a former director of infectious diseases at the CDC and Tommy Thompson, four-time governor of Wisconsin and past Secretary of the US Department of Health & Human Services. These board members have joined US BIOLOGIC based on its innovative disease prevention solutions and vision.

**Sustainable.  
Scalable.  
Transformative.**

In November 2013, US BIOLOGIC was recognized at the Global South Summit as the top company in the Global Food Health Innovation Challenge (GFHI). In that challenge, a prestigious group of scientists and business experts celebrate companies with solutions to the world's biggest food and health challenges. US BIOLOGIC exemplifies the tenants of Global Action Platform, offering "sustainable, scalable, and transformative innovations in food, health, and prosperity."