Vision: To prevent the occurrence, better diagnose, and resolve or minimize the impact of Lyme disease and other tick-borne illnesses, with emphasis on burden of disease

Mission: To understand the pathogenesis of Lyme disease and other tick-borne illnesses, to deliver innovative solutions to prevent, diagnose, and treat their manifestations for the benefit of US Service members and the American public, and to disseminate this knowledge

Program History
The Tick–Borne Disease Research Program (TBDRP) was established in fiscal year 2016 (FY16), when the efforts of Lyme disease advocates led to a congressional appropriation of $5 million (M). The TBDRP has received funding at a rate of $5M annually, totaling $20M for the period FY16–FY19. Each year, with input from the peer and programmatic review panels, the TBDRP strives to maximize its investment by supporting research that is innovative and impactful and aims to address fundamental knowledge gaps in the field of tick-borne diseases (TBDs)

Overarching Challenges
There are now at least 18 known infectious tick-borne pathogens, with 20 conditions and 13 illnesses resulting from tick bites.1 As tick populations grow and expand geographically, annual cases of Lyme disease and other TBDs, including spotted fever rickettsiosis, anaplasmosis, and ehrlichiosis, continue to increase with tens of thousands of new cases annually and more likely going undiagnosed.

Continued research efforts are critical in order to elucidate mechanisms of TBD pathogenesis, including host-pathogen interactions and the human immune response to these pathogens. There is a need for strategies to prevent tick bites by controlling the natural cycle of disease transmission and by developing methods to protect people from tick bites. Once an individual is bitten, it is vital that diagnostic tools are available for the direct detection of the tick-borne pathogen or detection of the host biomolecular signature. This will allow treatment to be tailored and initiated rapidly in patient populations suffering from acute and persistent symptoms due to Lyme disease or other tick-borne illnesses.

https://cdmrp.army.mil/tbdrp

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2 Percentage of total TBDRP funded studies, (number of awards)
Consumer Perspective

Second-grader Olivia Goodreau began experiencing body aches, brain fog, headaches, and other persistent symptoms. After 18 months, visiting over 55 doctors, Olivia was finally diagnosed with Lyme disease in 2013. Together, Olivia and her mother, Holiday, founded the LivLyme Foundation, which promotes research and patient support for those with Lyme disease. They also developed a free mobile application called TickTracker that allows users to track and report ticks in real-time using their geographical location.

Funded Investigator Perspective

Ying Zhang, MD, PhD, Johns Hopkins, Bloomberg School of Public Health

“There is currently no Food and Drug Administration-approved treatment for persistent Lyme disease despite the projection that it will affect 2 million people by 2020. Completion of our TBDRP-funded project will help to develop more effective treatments for the persistent Lyme disease.”

Yoonseong Park, PhD, Kansas State University

“Red meat allergy (RMA) is an emerging TBD in the US and worldwide, known to be caused by Lone Star tick bites in Southwestern states. Our TBDRP award focuses on elucidating the molecular nature of the allergen in the tick salivary gland using a mutant mouse model. Results from this study will uncover the biology and phenology of the specific ticks that cause RMA (e.g., stages, gender, and prior host) and establish guidelines for the prevention of RMA.”

Charles Chiu, MD, PhD, University of California, San Francisco

“The clinical diagnosis of Lyme disease and other tick-borne illnesses is challenging. With funding from the TBDRP, we are leveraging next-generation sequencing technology for the development of accurate diagnostic tests that will drive clinical trials and effective therapies.”

John S. Dumler, MD, Uniformed Services University

“With our TBDRP-funded award, we expect to identify drugs that allow us to simultaneously examine mechanisms of and abrogation of vascular permeability, as well as potential compounds to reduce severity, morbidity, and mortality for tick-borne rickettsial diseases. Should these studies prove successful, these drugs could be used as adjunct therapies to prevent the most dangerous complications and sequelae of TBDs.”

2 https://livlymefoundation.org/
4 https://ticktracker.com/