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“Eradication of Borrelia Persists for More Effective Treatment of Lyme Disease”

Dr. Ying Zhang is a Professor at Department of Molecular Microbiology and Immunology, Johns Hopkins Bloomberg School of Public Health, Baltimore, USA. His research interests are in bacterial persistence, antibiotic resistance, and pathogenesis, and translation of research findings into improved disease control. Although most of his productive research career is on understanding mechanisms of antibiotic resistance and persistence in *M. tuberculosis*, more recently, he has been working on the problem of persistent Lyme disease.

His group recently identified a range of FDA-approved drugs and drug combinations that have excellent activity against *Borrelia burgdorferi* persisters. These findings have generated considerable interest and opened up new opportunities for more effective treatment of persistent Lyme disease. In collaboration with colleagues, his group is interested to evaluate the promising drug candidates with high activity against *Borrelia* persisters and drug combinations in animal models and also in patients for more effective treatment of persistent Lyme disease.

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Conference Lecture Summary

In this presentation, I will discuss the problem of post-treatment Lyme disease syndrome (PTLDS) and its possible causes, the phenomenon of *Borrelia* persistence despite antibiotic treatment in animal models, the demonstration of *Borrelia* persister bacteria that are tolerant to current Lyme antibiotics in vitro. I will

then discuss our recent work on identification of FDA-approved drugs that are more active than the current Lyme antibiotics against *Borrelia burgdorferi* persisters. In addition, I will discuss various drug combinations and their effectiveness to eradicate more resistant *Borrelia* persisters including round bodies and biofilm-like microcolonies in in vitro systems. The implications of these findings for more effective treatment of persistent Lyme disease will be discussed.