Docket #: S21-414

Human secretoglobin protein inhibits growth of Borrelia burgdorferi

Researchers at Stanford and the University of Helsinki discovered that a human secretoglobin protein found in sweat gland cells acts as a novel host defense mechanism against Lyme disease. It does so by inhibiting growth of Borrelia burgdorferi, the main causative agent of Lyme disease.

Approximately 1 in 7 people worldwide currently have or have had Lyme disease, with prevalence highest in Central Europe, East Asia, and Western Europe. The standard of care is antibiotic treatment, from which most patients make a full recovery. However, between 5 – 20% of patients report persistent physical and/or neurological symptoms after antibiotic treatment. These mechanisms for disease persistence, as well as biological risk factors, remain poorly understood. The inventors discovered that a mutation to the gene encoding a human secretoglobin protein reduced the inhibition of *Borrelia burgdorferi* growth, and increased the susceptibility to Lyme Disease. This invention, therefore, identifies a novel target for therapeutic intervention, both prophylactically and to potentially treat late-stage Lyme disease.

Stage of Development
Preclinical

Applications

- Treatment of Lyme Disease (e.g. recombinant protein therapy, gene editing, small molecule agonists, etc.)
- Possible treatment of late-stage Lyme Disease
- Prophylactic in high-risk areas/populations (especially those carrying the missense variant to the human secretoglobin gene)

Advantages

- Possible topical treatment
- Alternative to antibiotic treatment
- Prophylactic avenue of treatment

Publications

- Strausz, S., Abner, E., Blacker, G. et al. SCGB1D2 inhibits growth of Borrelia burgdorferi and affects susceptibility to Lyme disease. *Nat Commun* **15**, 2041 (2024).

Patents

- Published Application: 20240316145

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