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PCR based diagnostic for Detection of Lyme Disease Bacteria

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Background

Lyme disease is the most common tick-borne disease in North America and is transmitted by blacklegged ticks carrying *Borrelia* bacteria. Infection by a tick takes at least 24 hours due to the time required for the bacteria to travel from the tick midgut to its salivary glands. Prompt removal and detection of ticks is the primary method for reducing infection; however, ~300,000 people are still infected with Lyme disease each year in the US alone.

The bacteria responsible for causing Lyme disease are members of the genus *Borrelia*, with 12 of the 36 known *Borrelia* species causing Lyme disease. Furthermore, the number of ticks infected with *Borrelia* bacteria is estimated to be increasing by 2.5% annually. Routine surveillance uses PCR testing on ticks to determine if they carry *Borrelia burgdorferi*, the most common species found in North America, however, new species have been detected and a shift in strain prevalence due to climate changes and regional restrictions of tick travel is expected to continue.

Our Technology

This new PCR platform provides a two-step method comprising PCR and sequencing to 1) detect the presence of *Borrelia* bacteria and to 2) identify the specific species present in the tick populations when needed. This novel set of PCR primers has been shown to successfully identify **eighteen** *Borrelia* species, and is positioned to be able to identify all Lyme borreliosis and relapsing fever species, such as the new species *Borrelia mayonii*, which was recently identified by the Mayo Clinic.

Areas of Application

- PCR based diagnostics
- Lyme disease in ticks

Competitive Advantages

- Diverse species detection
- Novel primer sequences leading to identification of new species

IP and Development Stage

- Patent filed
- Successfully shown identification of eighteen *Borrelia* Species