Tickborne BBB Direct Detect

Borrelia + Bartonella + Babesia – Digital PCR

Lyme + Co-infections

The most sensitive test methodology available for direct detection of *Bartonella, Babesia*, and *Borrelia* (BBB) species (spp) infections.

Confirms current infection by detecting DNA for a broad range of *Bartonella, Borrelia*, and *Babesia* species in whole blood at the genus level.

What are *Bartonella, Babesia* and *Borrelia*?

These elusive pathogens often evade immune response and direct detection by hiding in cells and tissue.

How Can Someone Be Exposed?

People can be exposed to *Bartonella, Babesia and Borrelia* through exposure to ticks, fleas, lice, sand flies, and potentially spiders. These vectors can carry multiple pathogens at once, making co-infections common. Household pets—especially cats and dogs—can also play a role by hosting fleas or ticks and, in some cases, directly transmitting *Bartonella* through scratches or bites. Even indoor pets can be a source of exposure.

Why Test for Bartonella, Babesia, and Borrelia?

Testing for *Bartonella, Babesia,* and *Borrelia* is essential because these stealth pathogens are commonly transmitted together and can cause overlapping, persistent symptoms that are often misdiagnosed. Identifying which of these infections are present helps providers tailor treatment more effectively—especially since each requires a different therapeutic approach. Without proper testing, co-infections can be missed, leading to incomplete or ineffective care.

What Patients Might Benefit From the Tickborne BBB Direct Detect Profile?

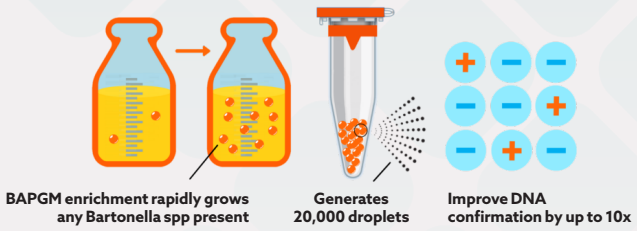
Patients presenting with flu-like symptoms, with or without Erythema migrans (EM) rash, and have lived or traveled to an area where Lyme disease is endemic.

Patients with chronic illness not improving, and past/present exposure to ticks, even with past treatment of Lyme, or Post-Treatment Lyme Disease Syndrome (PTLDS) or co-infections.

Methodology: Direct Multiplex DNA Digital PCR - d(PCR)

Traditional testing methods may miss active infections due to low pathogen levels or antibody variability. The TickBorne BBB Direct Detect Profile multiplex methodology addresses these challenges by combining two revolutionary technologies:

- **Digital PCR (dPCR)** technology overcomes the limitation of standard PCR testing for low-abundance microbial pathogen DNA by partitioning the sample into approximately 26,000 blood droplets and then performing a PCR reaction on each droplet. This powerful approach increases the sensitivity of standard PCR detection by up to 10 times.
- **Bartonella Proprietary Sample Enrichment:** *Bartonella* species often evade detection by even the most sensitive test methods due to their low abundance in blood samples. Utilizing Bartonella Alpha Proteobacteria Growth Medium (BAPGM), portions of the blood sample are cultured to amplify the bacterial load, enhancing detectability. This sample enrichment step increases the bacterial load to detectable levels for dPCR testing.



BAPGM enrichment rapidly grows any Bartonella spp present

Generates 20,000 droplets

Improve DNA confirmation by up to 10x

Patients with chronic illness not improving, and past/present exposure to ticks, fleas, lice, spiders or companion animals.

Symptoms:

- Abdominal pain
- Anorexia
- Anxiety and depression
- Arthritis
- Bladder and pelvic pain
- Body aches
- Cardiovascular issues (endocarditis)
- Carditis or heart block
- Changes in bowel habits
- Depression
- Eye and vision problems (such as floaters, light sensitivity, and blurry vision)
- Facial pain and tooth issues
- Fatigue / chronic fatigue / profound fatigue
- Fever
- Fibromyalgia
- Flu-like illness
- Headaches
- Joint pain
- Localized or disseminated EM
- Malaise
- Muscle pain / soreness
- Muscle/limb impairment or paralysis
- Neurological manifestations
- Neurological symptoms such as facial paralysis, blindness
- Psychiatric symptoms (rage)
- Rash "striae"
- Seizures
- Sleeplessness
- Swollen lymph nodes in the head, neck, arms, and along the shins

Backed by Science, Trusted by Clinicians – Powered by Galaxy Diagnostics.

MOSAIC DIAGNOSTICS

Discover the Power of MosaicDXs Tickborne BBB Direct Detect Profile

- **Identifies a broad range** of *Bartonella, Babesia, and Borrelia* species – utilizing genus level primers
- **Identifies cases missed by antibody testing** by utilizing direct multiplex DNA detection
- **Detects at lower levels** by enriching whole blood to increase DNA detection capabilities for *Bartonella* infections
- **Increased sensitivity** up to 10 times more patients are identified positive when compared to conventional detection methods.
- **Confirms DNA in blood** for a broad range of *Bartonella, Babesia,* and *Borrelia* – Ensures that infection with less common species is not missed.

Combinations and Complementary Test Recommendations

Tickborne BBB Direct Detect + *Bartonella* IgG Detect IFA

Along with a growing community of medical researchers worldwide, we recommend maximizing diagnostic data by testing for both antibodies and DNA evidence of infection, as each test provides critical support. Combining direct and indirect testing methods–specifically for *Bartonella* infection–enhances diagnostic accuracy, especially for patients with complex clinical presentations. Indirect methods, like serology tests, detect antibodies that indicate exposure to the pathogen, backing up a direct detection result.

- Bartonella IgG Detect uses IFA method to detect IgG to the top four *Bartonella* species affecting humans in North America based on clinical research. Results are reported as titers which can be used to support clinical suspicion of *Bartonella* infection or support the monitoring of treatment more closely than other serological tests that are not IFA.

Tickborne BBB Direct Detect + Lyme Borrelia Direct Detect

- **Lyme Borrelia (Nanotrap) Direct Detect** assesses the current presence of Lyme *Borrelia* infection in urine. Concentrations of Lyme *Borrelia* are so low in the blood that a blood draw is unlikely to capture the pathogen in the test tube.
- Why include *Borrelia* in the BBB assay? While the species associated with Lyme *Borrelia* often hide in tissues and don't free-circulate in high copy numbers in blood, the species associated with Relapsing Fever *Borrelia* do replicate to high numbers in the blood.
- As a result, combining the genus level BBB assay with the Nanotrap® urine antigen test for Lyme provides optimal coverage for the top flea and tick-borne infections.

Scan QR code now to learn more about our Tickborne BBB Direct Detect.

MOSAIC DIAGNOSTICS

CERTIFIED BY THESE PRESTIGIOUS ORGANIZATIONS

CLIA Certified CDPH California Department of Public Health

To learn more please visit Mosaicdx.com

Find references at MosaicDX.com/Test//Tickborne-BBB-Direct-Detect-1-Day-dPCR

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