Bartonella can produce systemic disease and an assortment of symptoms in a variety of organ systems:

<table>
<thead>
<tr>
<th>Symptom Type</th>
<th>Symptoms and Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-specific/General</td>
<td>Fever of unknown origin, granulomatous inflammation, fatigue, weight loss, irritability, headaches, migraines, rash</td>
</tr>
<tr>
<td>Cardiovascular/Hematologic</td>
<td>Endocarditis, myocarditis, pericarditis, hemolytic anemia, hypertension, pulmonary thromboembolism, cardiac arrhythmias</td>
</tr>
<tr>
<td>Neurological</td>
<td>Hallucinations, vision loss, peripheral neuropathy, polyneuropathy, transverse myelitis, encephalopathy, areflexia, numbness, seizures</td>
</tr>
<tr>
<td>Ocular</td>
<td>Uveitis, retinal vasculitis vitritis, neuroretinitis, intraocular inflammation</td>
</tr>
<tr>
<td>Rheumatologic</td>
<td>Arthritis, arthralgia, chronic fatigue, myositis, myalgia, systemic vasculitis, osteomyelitis, bone pain</td>
</tr>
<tr>
<td>Vasoproliferative</td>
<td>Bacillary angiomatosis, peliosis hepatitis, Carrion’s disease</td>
</tr>
</tbody>
</table>

**Risk Factors**
- Outdoor or indoor exposure to fleas, biting flies, ticks and other arthropods
- Working or living with pets or other animals
- Naturally weakened or compromised immune systems due to age (younger children, adolescents, aging adults), cancer treatment, immune disorders and immune suppressive therapy

Up to 28% of symptomatic veterinarians and over 40% of chronically ill patients have tested positive for Bartonella using ePCR, compared to 0% of healthy controls (Lantos, 2014; Maggi 2012)

**Why Are Conventional Diagnostics Inadequate?**

**IFA serology**
- Bartonella avoid the immune response, resulting in an IFA false negative rate of up to 83% in chronically infected patients
- Cannot identify active infection
- Cross-reactivity with other bacteria is common
- Useful for monitoring treatment response

**Culture**
- Bartonella are difficult to grow without complex nutritional and growth conditions

**Microscopy**
- Cannot differentiate between a low-level Bartonella infection, other related organisms or processing artifacts

**Cyclical Bacteremia**
- Bartonella cycle in and out of the blood stream from tissues. Testing at a single point in time can result in false negatives simply because the bacteria are not in the blood at the time of patient sampling

**How does serial testing account for the cyclical presence of Bartonella in the blood?**

Our True Triple Draw™ method further addresses cyclical bacteremia by obtaining and testing three blood specimens during a 5–8 day period (e.g., M-W-F).

**Adapted from Harms, 2012**

**ePCR™ overcomes these limitations**

Animals exposed to fleas and ticks are likely to be infected with Bartonella. Up to 80% of stray cats, 50% of pet cats, and 4–28% of domestic dogs are exposed to Bartonella in their lifetime.
Why is Bartonella ePCR™ necessary for detection?

Bartonella ePCR uses a specialized patented BAPGM™ enrichment medium and processes that exponentially grow Bartonella to levels that are detectable using PCR. The Bartonella ePCR platform detects active, low-level infections.

Healthy Pets, Healthy Families™

Bartonella infection can result in severe, life-threatening symptoms in both humans and companion animals, including dogs, cats, and horses. The good news is that infection is both treatable and preventable, especially when detected early.

Find it. Treat it. Prevent it.

- Learn about important diseases, like Bartonella, that pets can acquire from arthropods and accidentally spread to families
- Practice flea and tick prevention to protect everyone from Bartonella infection
- Use the right test when you suspect Bartonella infection to ensure appropriate and timely treatment
- Consider testing healthy animals with a history of flea and tick exposure for Bartonella

Bartonella ePCR was developed by infectious disease researchers at North Carolina State University. The ePCR platform is based on over 20 years of research experience and more than 100 scientific publications on human and animal Bartonella.

Without Enrichment Culture

Risk of FALSE NEGATIVES

With BAPGM™ Enrichment Culture

Greater sensitivity and more TRUE POSITIVES verified by DNA sequencing

The ePCR Advantage

Trusted expertise in Bartonella research and diagnostics

- BAPGM processes increase sensitivity for low-level and cyclical infections
- Multiple genus-level PCRs designed to detect all pathogenic Bartonella species
- DNA sequence verification confirms positives and identifies infecting species
- True Triple Draw method further accounts for cyclical bacteremia

Up-to-date information on emerging zoonotic and vector-borne infectious disease is available at www.galaxydx.com

Galaxy Diagnostics, Inc.
Phone: 919-313-9672
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Bartonella ePCR is compliant with the federal Clinical Laboratory Improvement Amendments (CLIA), which requires that all laboratories testing human specimens be certified by the federal government. Results from testing are to be used in conjunction with clinical findings to establish diagnosis.

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