

Bartonella henselae



Electron micrograph of *Bartonella bacilliformis*, the *Bartonella* species that is closely related to *Bartonella henselae* but infects humans.

Samples:

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|---|--|
| Blood | EDTA-blood as is, purple-top tubes or EDTA-blood preserved in sample buffer (preferred) |
| Notes: Send all samples at room temperature, preferably preserved in sample buffer MD Submission Form | |

Interpretation of PCR Results:

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|--|--|
| High positive (> 1,000 copies/ml blood) | Bartonellosis [interpretation must be correlated to clinical symptoms] |
| Low positive (< 1,000 copies/ml blood) | |
| Negative | <i>Bartonella henselae</i> not detectable |

Bartonella henselae

Facultatively intracellular gram-negative bacteria of the genus *Bartonella* cause vector-borne diseases termed Bartonellosis ([Dehio, 2004](#)). The transmitting vectors for the disease are hematophagous (blood-sucking) arthropods and the reservoir hosts are mammals. *Bartonella henselae*, formerly known as *Rochalimaea henselae*, is an aerobic fastidious intracellular rod-shaped bacterium. As a feline-adapted pathogen, it colonizes endothelial cells immediately after infection. After being released in the blood stream, *Bartonella* bacteria infect erythrocytes and replicate within a phagosomal vesicle inside erythrocytes. The bacterium is transmitted to another host when the host is bitten by a flea or tick. The cat flea, *Ctenocephalides felis*, is the primary vector of *Bartonella henselae*.

Clinical Signs

Bartonella henselae disease is frequently subclinical; many cats are asymptomatic carriers for long periods of time. It has been reported that 30-60% of cats in the United States may be asymptotically infected at some time in their lives. In some cats, however, it does cause bacillary angiomatosis (BA), visceral bacillary peliosis, endocarditis, lymphadenopathy, neurologic dysfunction and retinal disease. The clinical signs include short-term fever, mild loss of sensation in their paws, lack of balance and disorientation but they often resolve in a week. Kittens (< 6 months) are more likely to be infected and to pass it to human than adult cats. Humans may develop a lymphadenopathy after scratch or bite from an infected cat (cat scratch disease, CSD). To prevent CSD, cat owners need to avoid cat bites/scratches, keep cats indoors, and use flea control. Infected cats can be effectively treated with antibiotics such as doxycycline or enrofloxacin.

Standard Diagnostic Methods

Traditional diagnosis relies on cumbersome cell culture methods, or more recently on PCR ([Ciervo et al., 2005](#)). Seroreactivity and bacteremia are frequently detected in cats with a history of flea infestation. Many genes have been used as a target for PCR detection of *Bartonella henselae*, such as the 16S/23S rRNA intergenic spacer region, or the heat shock protein (*groEL*), citrate synthase (*gltA*), riboflavin synthase a-chain (*ribC*), cell division protein (*ftsZ*) and the *pap31* extracellular matrix adhesion protein gene.

Our Method

The quantitative PCR approach we have developed uses the highly conserved 16S rRNA gene of *Bartonella henselae* as the amplification target, and detects single copies of the bacterial genome present in the sample input to the PCR.