

VIASURE MULTIPLEX

Borrelia, Anaplasma & Coxiella Real Time PCR Detection Kit

Pathogen and product description

Tick Borne diseases comprise a group of infections transmitted to humans by the bite of ticks infected with bacteria, viruses, or parasites. Tick Borne diseases affecting humans include: Lyme disease, relapsing fever, babesiosis, anaplasmosis, ehrlichiosis, Q fever, Tick Borne encephalitis and spotted fever among others.

Lyme disease (or Lyme borreliosis) is the most common Tick Borne disease worldwide. It is caused by the spirochaete *Borrelia burgdorferi* and it is transmitted to humans through the bite of infected blacklegged ticks of the genus *Ixodes*. Typical symptoms of Lyme disease include fever, headache, fatigue and a characteristic skin rash called erythema migrans. If left untreated, infection can spread to joints, the heart, and the nervous system.

Borrelia miyamotoi and *B. hermsii* are species of spiral-shaped bacteria that is closely related to the bacteria that cause tick-borne relapsing fever (TBRF). First identified in 1995 in ticks from Japan, *B. miyamotoi* has also been detected in different *Ixodes* ticks species, whereas spirochete *Borrelia hermsii* is transmitted by its argasid tick vector, *Ornithodoros hermsi*. Patients with this infection were most likely to have fever, chills, and headache. Other common symptoms included body and joint pain and fatigue.

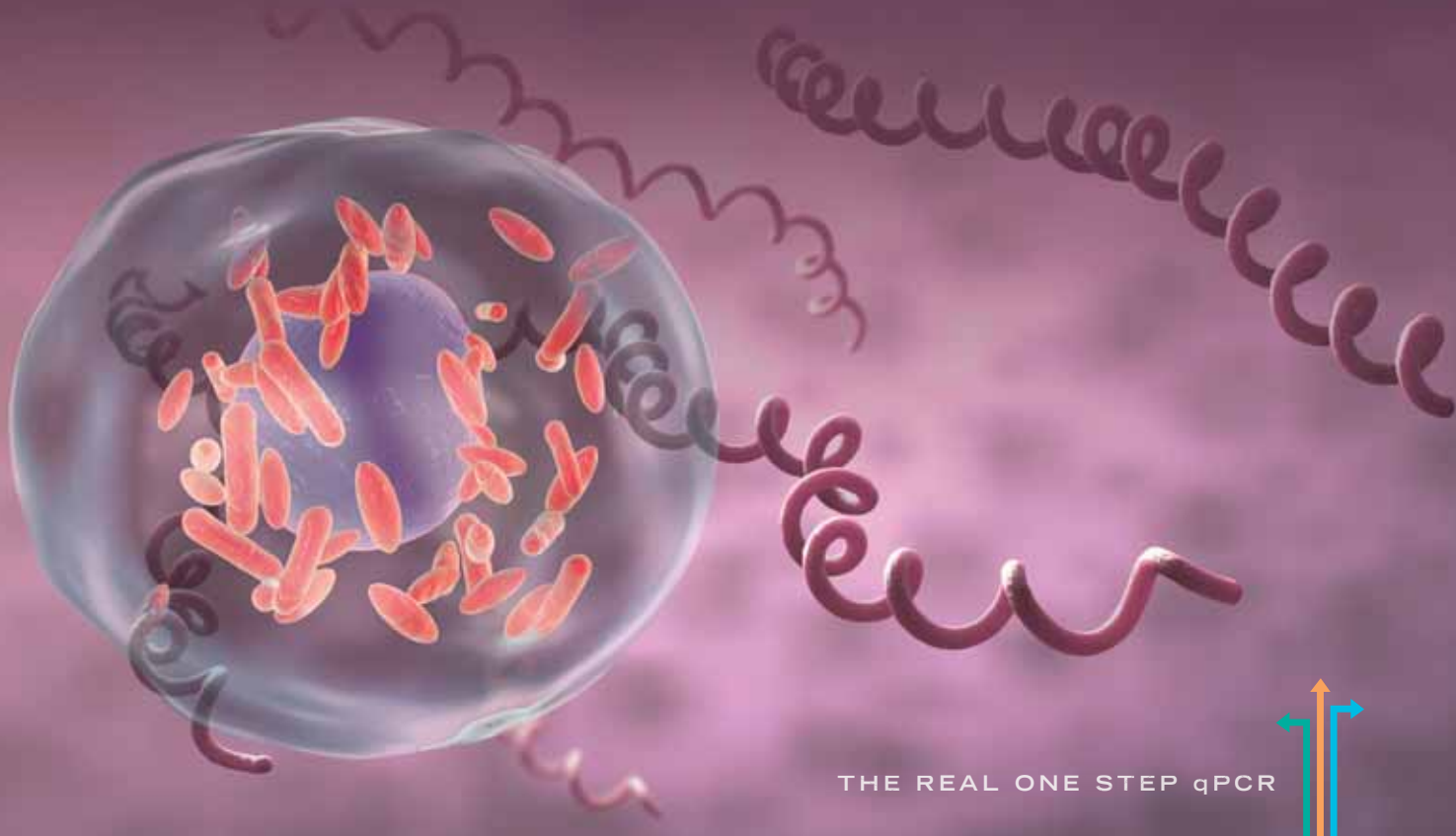
Anaplasmosis is caused by the bacterium *Anaplasma phagocytophilum*, and is transmitted to humans through ticks of the genus *Ixodes*. Anaplasmosis shows high clinical variability, with symptoms like headache, fever, chills, malaise, muscle pain, nausea, cough, confusion and rash. If not treated

correctly, anaplasmosis can evolve to severe clinical manifestations and even death in <1% of cases.

Q fever is a zoonosis caused by the bacteria *Coxiella burnetii*. Cattle, sheep, and goats are the primary reservoirs of *Coxiella burnetii*, and transmission to humans occurs primarily through inhalation of aerosols from contaminated soil or animal waste, though it can be transmitted through tick bites. Only about 50% of the infected people show clinical symptoms, which are flu-like symptoms such as headache, fever, chills, fatigue, muscle aches, nausea, cough, chest pain and weight loss. In severe cases people may develop pneumonia or hepatitis.

Since most Tick Borne diseases show similar symptoms, diagnosis can be problematic. Real-time PCR assays have been shown to be a sensitive and specific diagnostic tool for the detection of the causative agent.

VIASURE *Borrelia, Anaplasma & Coxiella* Real Time PCR Detection Kit is designed for the diagnosis of *Borrelia burgdorferi* s.l., *Borrelia miyamotoi* and/or *Borrelia hermsii*, *Anaplasma phagocytophilum* and/or *Coxiella burnetii* in clinical samples. After DNA isolation, the identification of *Borrelia burgdorferi* s.l., *Borrelia miyamotoi* and/or *Borrelia hermsii*, *Anaplasma phagocytophilum* and/or *Coxiella burnetii* is performed by the amplification of a conserved region of the B31 gene (*Borrelia burgdorferi* s.l., *Borrelia miyamotoi* and/or *Borrelia hermsii*), *msp2* gene (*Anaplasma phagocytophilum*) and *IS1111* gene (*Coxiella burnetii*), using specific primers and a fluorescent-labelled probe.



Analytical sensitivity

VIASURE Borrelia, Anaplasma & Coxiella Real Time PCR Detection Kit has a detection limit of ≥ 10 DNA copies per reaction (Figures 1,2 & 3).

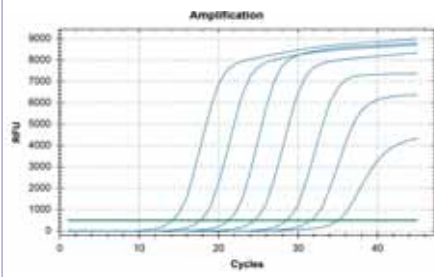


Figure 1. Dilution series of *Borrelia burgdorferi*/*Borrelia miyamotoi*/*B. hermsii* (10^7 - 10^1 copies/rxn) template run on the Bio-Rad CFX96™ Real-Time PCR Detection System (channel FAM)

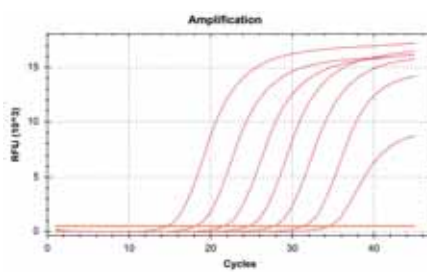


Figure 2. Dilution series of *Anaplasma phagocitophilum* (10^7 - 10^1 copies/rxn) template run on the Bio-Rad CFX96™ Real-Time PCR Detection System (channel ROX).

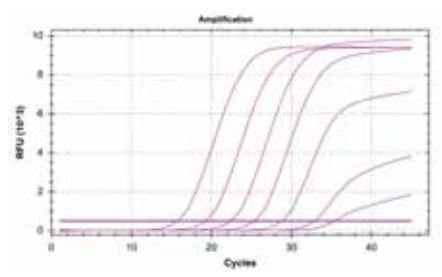


Figure 3. Dilution series of *Coxiella burnetii* (10^7 - 10^1 copies/rxn) template run on the Bio-Rad CFX96™ Real-Time PCR Detection System (channel Cy5).

Components

Reagent/Material	Description	Colour	Quantity
Borrelia, Anaplasma & Coxiella 8-well strips	A mix of enzymes, primers-probes, buffer, dNTPs, stabilizers and Internal control in stabilized format	White	6/12 x 8-well strip
Rehydration Buffer	Solution to reconstitute the stabilized product	Blue	1 vial x 1,8 mL
Borrelia, Anaplasma & Coxiella Positive Control	Non-infectious synthetic lyophilized cDNA	Red	1 vial
Negative Control	Non template control	Violet	1 vial x 1 mL
Water RNase/DNase free	RNase/DNase free water	White	1 vial x 1 mL
Tear-off 8-cap strips	Optical caps for sealing wells during thermal cycling	Transparent	6/12 x 8-cap strip

Work Flow

One-step rehydration of wells and add your extracted DNA



Kit References

Reference	Description
VS-BAC106L	VIASURE Borrelia, Anaplasma & Coxiella Real Time PCR Detection Kit 6 x 8-well strips, low profile
VS-BAC106H	VIASURE Borrelia, Anaplasma & Coxiella Real Time PCR Detection Kit 6 x 8-well strips, high profile
VS-BAC112L	VIASURE Borrelia, Anaplasma & Coxiella Real Time PCR Detection Kit 12 x 8-well strips, low profile
VS-BAC112H	VIASURE Borrelia, Anaplasma & Coxiella Real Time PCR Detection Kit 12 x 8-well strips, high profile
VS-BAC113L	VIASURE Borrelia, Anaplasma & Coxiella Real Time PCR Detection Kit 96-well plate, low profile
VS-BAC113H	VIASURE Borrelia, Anaplasma & Coxiella Real Time PCR Detection Kit 96-well plate, high profile



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