Aalto Bio Reagents

Tick-borne Disease Antigens

The number of tick-borne related illnesses have increased significantly in the last decade. According to the CDC, there has been a three-fold increase in disease cases from infected mosquitos, ticks and fleas in the US from 2004 to 2019, with cases reaching highs of 59,349 in 2017. The estimated number of unrecognized cases is presumably higher, because a tick bite is not always recognized and symptoms closely resemble those of other illnesses. While many of these tick-borne diseases may differ in presentation, their shared geographic distribution, vector and peak seasonality are important epidemiologic and diagnostic considerations. Consequently, there is an increasing need for assays that can detect the full spectrum of tick-borne agents as ticks are capable of harbouring a number of pathogens simultaneously.

Recombinant Borrelia Antigens:

Lyme disease is a multisystem disease caused by infections with the bacterium, Borrelia. Transmission to humans is typically through the bite of an infected tick. Although human infection can occur throughout the year, most cases occur during early summer months when the tick nymphal stage is most active.

Clinical features and methods for accurate diagnosis differ across continents owing to the type of causative Borrelia species. The predominant causative species in North America is Borrelia burgdorferi sensu stricto. In Europe, at least three species may be responsible: Borrelia burgdorferi and, more commonly, Borrelia garinii or Borrelia afzelii.



BEWARE

Species	Protein	GST-tag	His-tag
Recombinant Borrelia afzelii	DbpA	\checkmark	\checkmark
	OspA	\checkmark	\checkmark
	OspC	\checkmark	\checkmark
	p39	\checkmark	\checkmark
	p83/100	\checkmark	\checkmark
	VlsE	\checkmark	\checkmark
Recombinant Borrelia burgdorferi	DbpA	\checkmark	\checkmark
	OspC	\checkmark	\checkmark
	p41	\checkmark	\checkmark
Recombinant Borrelia garinii	DbpA	\checkmark	\checkmark
	OspC	\checkmark	\checkmark
	Pbi OspC	\checkmark	
	p58	\checkmark	\checkmark
Recombinant Borrelia spielmanii	DbpA	\checkmark	\checkmark
	OspC	\checkmark	

Due to the regionally differing occurrence of subtypes (genospecies) and the known variability of the cell surface proteins of Borrelia burgdorferi, antigen mixtures in serology assays are often preferred. Aalto Bio offers a wide range of recombinant Borrelia antigens including the immunogenic surface antigens OspC/OspA or DbpA, as well as VIsE and other proteins (p39, p41, p58, p83/100).



Veterinary





Polyclonal Antisera









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Tick-borne Encephalitis (TBE) Antigen:

Tick-borne encephalitis (TBE) is the most common tick-borne central nervous system infection in Europe and Asia. It is caused by three subtypes of TBE virus; European, Siberian and Far-Eastern, with the latter subtype causing the most severe illness.

TBE has become a growing public health challenge despite access to a vaccine. According to the European Centre for Disease Prevention and Control, the number of human cases of TBE in all endemic regions of Europe has increased by almost 400% in the last 30 years.

The diagnosis of TBE is based on the detection of specific IgM or IgG antibodies in serum or CSF since these antibodies are detectable in practically every case at the time of hospitalization. Aalto Bio Reagents's native TBE antigen (code BM 6154-b) is suitable for both IgG and IgM application and is being used in a number of commercially available CE marked assays.

Anaplasma Antigens:

Annual Incidence (per million of population) of Anaplasmosis in the US (2019)



The Anaplasma phagocytophilum is a bacteria responsible for the acute, tick-borne disease known as anaplasmosis. The illness is primarily spread in the US from the bite of the infected blacklegged tick (Ixodes scapularis), as well as the western blacklegged tick (Ixodes pacifus). In Europe, the primary vector is the Ixodes ricinus tick. This condition will generally present as symptoms of fever, chills, headache, and muscle pains.

In the US, Anaplasmosis is most prevalent in the Upper Midwest and Northeast regions. The CDC reported increases in cases from 348 in 2000 to 5,655 in 2019. The disease is also present in parts of Northern Europe and Southeast Asia, although the USA strains have shown higher morbidity and mortality

Diagnosis of Anaplasmosis is primarily based on clinical presentation and serological testing for IgG antibodies. Aalto Bio are now offering three Anaplasma antigens specific to the two major surface proteins involved in detection: p44 and Asp62, as well as the outer membrane protein: OmpA. These antigens are suitable for ELISA or immunoblot assay application.

Product	Code
Recombinant Anaplasma p44 antigen	CU 6417
Recombinant Anaplasma OmpA antigen	CU 6423
Recombinant Anaplasma Asp62 antigen	CU 6425

Clinical manifestation of these tick-borne diseases may be similar to that of other infections. Therefore, serological detection of disease-specific antibodies represents a fundamental aid to diagnosis. Aalto Bio Reagents is committed to providing the full range of raw materials for diagnostic assay development of vector-borne diseases which already includes Borrelia antigens, TBE antigen and Anaplasma antigens.



Veterinary





Disease State



Human Plasmas



Polyclonal Antisera



HIV Products

Mouse Monoclonal Antibodies



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