Epitogen Lyme VlsE IgG Assay

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Epitogen® Lyme VlsE IgG Assay: Redefining Lyme Disease Research

VlsE is a surface lipoprotein in *Borrelia burgdorferi* that undergoes antigenic variation through segmental recombination with silent cassettes. This process allows the bacterium to evade immune detection and persist in the host, creating significant variability in VlsE among different *Borrelia* species—posing a major challenge for research, diagnostics and vaccine development.

Using our proprietary Epitogen® technology, we successfully expressed **27 diverse full-length VlsE variants** representing key pathogenic species: *B. burgdorferi* sensu stricto, *B. afzelii*, *B. garinii*, *B. mayonii*, *B. spielmanii*, *B. bissetiae*, *B. bavariensis*, and *B. valaisiana*.

This expansive VlsE antigen panel is designed to advance *Borrelia* research, improve strain-specific diagnostics, and support accurate epidemiological tracking. Powered by our unique Epitogen® scaffold, it ensures precise antigen orientation for reliable comparison and high assay performance.

Intended Use:

The assay is designed for use in two key scenarios:

a) Strain Identification in Confirmed Lyme Disease Cases:

It provides additional insight into the specific Borrelia strain responsible for infection in patients who have already tested positive for Lyme disease. This information can support epidemiological tracking, inform treatment decisions, and enhance our understanding of regional strain prevalence.

b) Re-evaluation of Serology-Negative but Clinically Suspected Lyme Cases:

In patients presenting with clinical symptoms consistent with Lyme disease but who test negative on standard serological assays, this test offers an additional diagnostic tool. It may detect immune responses to less commonly targeted Borrelia species or variants, potentially improving diagnostic sensitivity and supporting earlier intervention.

Complementary Use with the Lyme VlsE IgM Assay:

When used in combination with the Lyme VlsE IgM Assay, this test provides deeper insights into the infection stage and immune system profile—offering enhanced diagnostic clarity and greater confidence in clinical decision-making.

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Antigen coating

1-27 VlsE *Borrelia* variants.

B Empty well.

N Scaffold control.

P Lyme antigen.

***Borrelia* Hermssi antigens**

***Borrelia* miyamotoi antigens**

Test Sample (3 samples/plate) – *apply Lyme positive sample.*

Differential VlsE assay layout

	Sample 1				Sample 2				Sample 3			
	1	2	3	4	5	6	7	8	9	10	11	12
A	VlsE 1	VlsE 2	VlsE 3	VlsE 4	VlsE 1	VlsE 2	VlsE 3	VlsE 4	VlsE 1	VlsE 2	VlsE 3	VlsE 4
B	VlsE 5	VlsE 6	VlsE 7	VlsE 8	VlsE 5	VlsE 6	VlsE 7	VlsE 8	VlsE 5	VlsE 6	VlsE 7	VlsE 8
C	VlsE 9	VlsE 10	VlsE 11	VlsE 12	VlsE 9	VlsE 10	VlsE 11	VlsE 12	VlsE 9	VlsE 10	VlsE 11	VlsE 12
D	VlsE 13	VlsE 14	VlsE 15	VlsE 16	VlsE 13	VlsE 14	VlsE 15	VlsE 16	VlsE 13	VlsE 14	VlsE 15	VlsE 16
E	VlsE 17	VlsE 18	VlsE 19	VlsE 20	VlsE 17	VlsE 18	VlsE 19	VlsE 20	VlsE 17	VlsE 18	VlsE 19	VlsE 20
F	VlsE 21	VlsE 22	VlsE 23	VlsE 24	VlsE 21	VlsE 22	VlsE 23	VlsE 24	VlsE 21	VlsE 22	VlsE 23	VlsE 24
G	VlsE 25	VlsE 26	VlsE 27	B	VlsE 25	VlsE 26	VlsE 27	B	VlsE 25	VlsE 26	VlsE 27	B
H	N	P	Hermsii	Miyamotoi	N	P	Hermsii	Miyamotoi	N	P	Hermsii	Miyamotoi