



15 MONTH  
Duration of Immunity<sup>1</sup>

# BROAD COVERAGE IS BETTER COVERAGE

VANGUARD<sup>®</sup> crLyme is the **first** and **only** canine Lyme disease vaccine that contains **two recombinant proteins**:

- An outer surface protein A (OspA)
- An OspC chimeric protein containing antigenic material from **seven common types** of OspC known to be expressed in cases of canine Lyme disease<sup>2</sup>

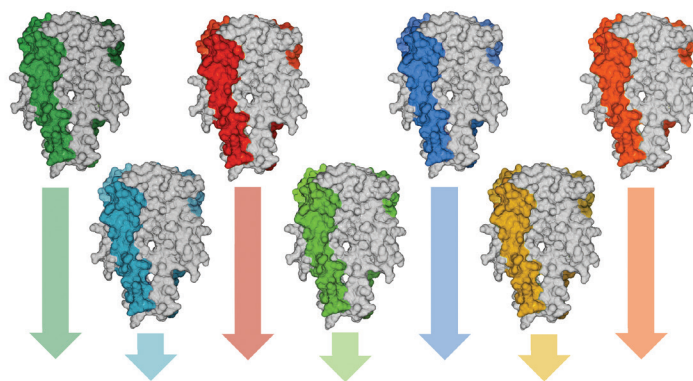
Its innovative formulation helps elicit a **targeted immune response** to *Borrelia burgdorferi* bacteria and allows for a **broad spectrum of coverage**.

**Indication:** For vaccination of healthy dogs 8 weeks of age or older as an aid in the prevention of clinical disease and subclinical arthritis associated with *Borrelia burgdorferi*.

**Administration:** 1 mL subcutaneously; dogs should be administered 2 doses, 3 weeks apart.

## VANGUARD crLyme Chimeric Recombinant Technology

7 types of OspC proteins commonly seen in canine Lyme infections



OspC chimeric protein

OspA protein

## WHY IT IS IMPORTANT TO CONSIDER OspC VARIABILITY IN LYME DISEASE PREVENTION

- Multiple types of OspC have been discovered in Lyme-infected dogs<sup>2</sup>
- Each *Borrelia burgdorferi* can only express one type of OspC.
- Ticks can be infected with multiple *B. burgdorferi* bacteria, and therefore multiple types of OspC can be expressed<sup>2</sup>
- Antibody response to OspC is type-specific.<sup>3</sup>

### Until now...

It was not immunologically feasible to address OspC variability via vaccination. At most, previously available vaccines have only contained and protected against one type of OspC.

## THE PREVALENCE OF LYME DISEASE IS INCREASING

- The Centers for Disease Control and Prevention noted a 28% increase in the U.S. human incidence rate between 2005 and 2013.<sup>4</sup>
- The Companion Animal Parasite Council noted over 265,000 positive canine cases in 2016.<sup>5</sup>
- One in 16 dogs in the United States test positive for Lyme disease.<sup>5</sup>

## EFFICACY DEMONSTRATED IN A 15-MONTH DURATION OF IMMUNITY STUDY<sup>1,6</sup>

- Helped prevent transmission of *B. burgdorferi* from infected ticks to vaccinated dogs.
- A significant reduction of ( $p < 0.0001$ ) of *B. burgdorferi* infection was observed in vaccinated dogs when compared to placebo control.
- Helped prevent Lyme disease-associated joint swelling and skin inflammation.

## DEMONSTRATED SAFETY<sup>7</sup>

In a field safety study, the most common non-serious adverse events were injection site edema, injection site pain and lethargy.

Visit **VANGUARDcrLyme.com** for more information about this innovative vaccine.

<sup>1</sup> Data on file, Study Report No. B864R-US-12-037, Zoetis Inc.

<sup>2</sup> Rhodes DV, Earnhart CG, Mather TN, Meeus PF, Marconi RT. Identification of *Borrelia burgdorferi* ospC genotypes in canine tissue following tick infestation: implications for Lyme disease vaccine and diagnostic assay design. *Vet J*. 2013;198(2):412-418. doi:10.1016/j.tvjl.2013.07.019.

<sup>3</sup> Kenedy MR, Lenhart TR, Akins DR. The role of *Borrelia burgdorferi* outer surface proteins. *FEMS Immunol Med Microbiol*. 2012;66(1):1-19. doi:10.1111/j.1574-695X.2012.00980.x.

<sup>4</sup> Lyme disease incidence rates by state, 2005-2014. Centers for Disease Control and Prevention National Center for Emerging and Zoonotic Infectious Diseases (NCEZID) Division of Vector-Borne Diseases (DVBD). <http://www.cdc.gov/lyme/stats/chartstables/incidencebystate.html>. Accessed September 12, 2018.

<sup>5</sup> Parasite prevalence maps. Companion Animal Parasite Council. <https://www.capcvet.org/maps/#2017/all/lyme-disease/dog/united-states>. Accessed September 12, 2018.

<sup>6</sup> Data on file, Study Report No. B865R-US-12-018, Zoetis Inc.

<sup>7</sup> Data on file, Study Report No. B961R-US-12-009, Zoetis Inc.

