

# Tick Vaccines - "How do they work?"

## Overview

Tick vaccines can play an exceptional role in the modern veterinarian's toolkit. Tick infestations on cattle cause disease transmission, anemia, loss in productivity, and damage to hides. Where acaracides (topically applied insecticides formulated against ticks) can offer a short-term relief, ticks develop resistance to the acaracides, reducing their effectiveness. Medgene's tick vaccine is a long-term, sustainable solution that can add an important tool in the fight against ticks and control of tick-borne diseases.

Medgene's tick vaccine uses the host animal's immune system to produce antibodies that impact the attached tick. The antigens in our vaccine are proteins that are present in the tick and play critical roles in normal growth and health of ticks. We produce these tick antigens in our recombinant protein production system for use in vaccine. As the attached tick engorges on a blood-meal, these antibodies are ingested along with the blood and other immune components, where they bind to the natural proteins in the tick.

Ticks feeding on animals immunized with tick vaccines have been found to have reduced (engorgement) tick feeding, reduced egg laying, reduced egg hatching, and impaired larval development. Together, these effects reduce the number of feeding ticks, reduce the tick burden, and more importantly interfere with the ability of ticks to transmit diseases like Texas Cattle Fever, Anaplasmosis, Theileria, and others.

While vaccines targeting the Texas Cattle Fever tick have been in use for decades, the application of this technology to a broader range of ticks is unique to Medgene, and represents a new tool to limit tick infestation and reduce transmission of diseases carried by these organisms.

Currently, Medgene has antigen targets for tick species including: *Rhipicephalus microplus* (Asian blue tick, Southern cattle tick, Cuban tick), *Rhipicephalus annulatus* (Cattle tick, North American Cattle tick, Texas Fever tick), *Dermacentor variabilis* (Dog tick), *Haemaphysalis longicornis* (Asian Longhorn tick), *Amblyomma americanum* (Lone Star Tick), *Amblyomma maculatum* (Gulf Coast Tick), *Ixodes scapularis* (Deer/Black-legged tick).

For more detailed information, click here\*

<https://www.mdpi.com/2076-0817/12/9/1071>

\*Third-party resource, offered for professional consideration only.

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