

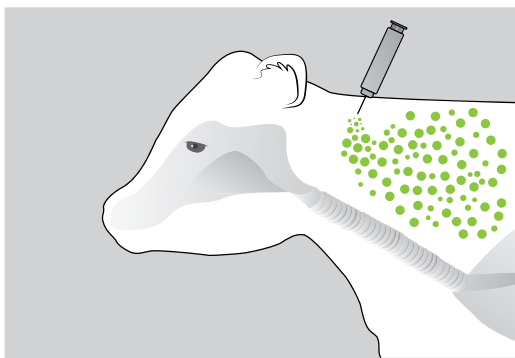
# HELP CALVES BUILD BETTER IMMUNITY AGAINST RESPIRATORY DISEASE.

INFORCE™ 3 & ONE SHOT® BVD | BOVI-SHIELD GOLD ONE SHOT®

## CHOOSE VACCINES THAT OVERCOME IBR DOMINANT ANTIGEN INTERFERENCE.

Typically, multiple respiratory vaccines are administered at the same time for convenience. But research shows that some vaccine components may interfere with the immune response to others.<sup>1,2</sup> As a result, not all components in the vaccines administered may deliver their full protective effect.

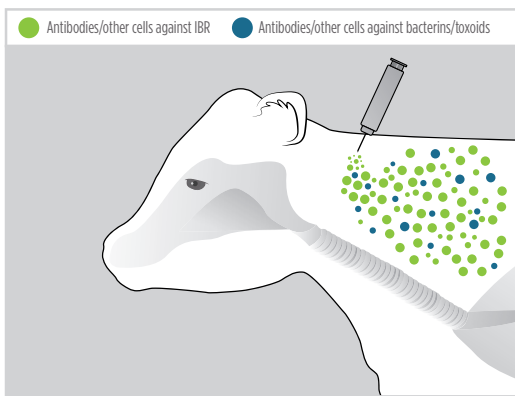
By applying 25 years of vaccine research and enhanced manufacturing methods, Zoetis developed two unique solutions to help ensure our respiratory vaccines provide the industry's highest levels of protection and ensure cattle receive the maximum health benefits of immunization.



When given a vaccine, the calf's immune system produces antibodies and other cells that help protect against disease.

## VACCINES HELP PROMOTE IMMUNITY.

Vaccines contain antigens, which are altered viruses, bacteria or toxoids that can mimic the real disease-causing agent but can no longer cause disease. Antigens stimulate the immune system to produce antibodies and other cells that recognize and fight specific viruses or bacteria.



When a naïve calf is injected with a conventional IBR vaccine, the animal's immune system can respond strongly against IBR at the expense of a full response to other vaccine antigens administered at the same time.<sup>1,2</sup>

## DOMINANT ANTIGENS CAN INTERFERE WITH THE IMMUNE RESPONSE TO OTHER VACCINE ANTIGENS.

Certain vaccine antigens have been identified as dominant antigens. These antigens, when administered via injection, can alter the animal's immune system response, negatively impacting the immune response to other vaccine antigens administered at the same time.<sup>1,2</sup> The infectious bovine rhinotracheitis (IBR) virus has been identified as a dominant antigen that interferes with the immune response to *Mannheimia haemolytica* in cattle not previously exposed to IBR disease or vaccination.<sup>1,2</sup>

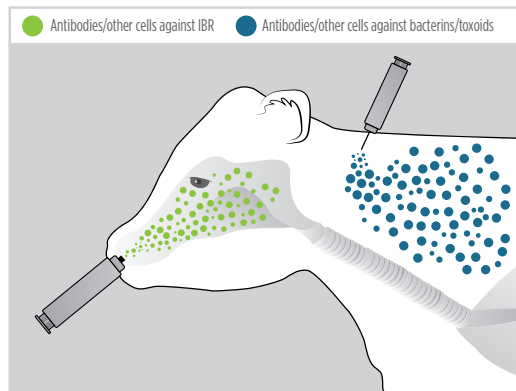
**zoetis**™

## INFORCE™ 3



### INFORCE™ 3 CIRCUMVENTS IBR DOMINANT ANTIGEN INTERFERENCE WITH INTRANASAL ADMINISTRATION.

The intranasal administration of the temperature-sensitive IBR component in INFORCE™ 3 helps avoid the risk of IBR dominant antigen interference with co-administered bacterin/toxoids vaccines, such as the *Mannheimia haemolytica* component of ONE SHOT® BVD. As a result, the animal receives the high levels of protection expected from both vaccines.



Intranasal vaccination with INFORCE 3 at the same time the calf receives ONE SHOT BVD results in the development of a robust immunity against both IBR and *M. haemolytica*.<sup>3</sup>



### BOVI-SHIELD GOLD ONE SHOT® IS BUILT TO HANDLE IBR DOMINANT ANTIGEN INTERFERENCE.

Using enhanced manufacturing processes, Zoetis was able to combine BOVI-SHIELD GOLD® 5 and ONE SHOT® into one vaccine to deliver the convenience of a single, injectable vaccine without compromising the efficacy and safety of the individual vaccines.



GREATER  
PURIFICATION



INCREASED LEVELS  
OF LEUKOTOXOIDS



ADDITION OF  
STABILIZERS

With the knowledge of IBR dominant antigen interference, Zoetis formulated BOVI-SHIELD GOLD ONE SHOT to stimulate the highest level of protection available against IBR and *M. haemolytica*.

**To learn more about how vaccines from Zoetis can deliver better immunity against respiratory disease, contact your veterinarian or Zoetis representative.**

<sup>1</sup> Harland RJ, Potter AA, van Drunen-Little-van den Hurk S, et al. The effect of subunit or modified live bovine herpesvirus-1 vaccines on the efficacy of a recombinant *Pasteurella haemolytica* vaccine for the prevention of respiratory disease in feedlot calves. *Can Vet J*. 1992;33(11):734-741.

<sup>2</sup> Cortese VS, Seeger JT, Stokka GS, et al. Serological response to *Mannheimia haemolytica* in calves concurrently inoculated with inactivated or modified-live preparations of *M. haemolytica* and viral combination vaccines containing modified-live bovine herpesvirus type 1. *Am J Vet Res*. 2011;72(11):1541-1549.

<sup>3</sup> Stollenow CL, Cortese VS, Seeger JT, Stokka GS, Weigel D. Immunologic response of beef calves to concurrent application of modified-live viral vaccine (intranasal and systemic administration) and systemically administered *Mannheimia haemolytica* bacterin-leukotoxoid. *Bovine Pract*. 2011;45(2):132-138.