



**CAMBRIDGE**  
TECHNOLOGIES

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## BOVINE RESPIRATORY DISEASE NEW SOLUTIONS TO ONGOING PROBLEMS

**Bovine Respiratory Disease (BRD)** is one of the most common, yet most complex, health issues facing today's cattlemen and veterinarians. Affecting an estimated 97 percent of United States feedlots and 21.2 percent of cattle<sup>2</sup>, the disease carries an average treatment cost of \$23.60 per case<sup>4</sup>.

Often referred to as Shipping Fever or Pneumonia, BRD involves a number of factors such as the age, environment, and immunity of the animal as well as several different pathogens. Stressed cattle during weaning, transport, and co-mingling in the feedlot, tend to be at the highest risk for BRD<sup>3</sup>. Both bacterial and viral agents can come into play, making it difficult to gain protection via traditional commercial vaccines.

### CLINICAL SIGNS<sup>3</sup>

- Fever greater than 104°F
- Discharge from eyes, nose, mouth
- Coughing
- Difficulty breathing
- Decreased appetite
- Depression/loss of interest in surroundings
- Lethargy
- Low head/droopy ears

### COMMON PATHOGENIC CAUSES<sup>1</sup>

- Mannheimia haemolytica
- Bibersteinia trehalosi
- Histophilus somni
- Pasteurella multocida
- Mycoplasma spp.
- Trueperella (formerly Arcanobacterium) pyogenes
- Bovine Herpes Virus (BHV-1)
- Bovine Respiratory Syncytial Virus (BRSV)
- Bovine Parainfluenza Virus (PI-3)
- Bovine Coronavirus (BCV)
- Influenza D Virus (IDV)<sup>5</sup>

## PRECISION VACCINOLOGY™

Autogenous vaccines from Cambridge Technologies employ next generation diagnostics and state of the art production technology to create a customized product targeting the disease-causing agents in the affected herd(s). Our industry-leading molecular diagnostics, including metagenomics and next-generation sequencing, identify the specific antigens threatening the herd(s) which may need to be included in the product. Then, the experienced production team can formulate and manufacture a vaccine customized to the needs of each individual customer, including antigen concentration, multiple adjuvant choices, dose sizes, and the option of SoliDose® implants. SoliDose® implants are the tool to use in cattle for the convenience of two doses in one application and for the safety of reduced endotoxins when vaccinating against gram negative bacteria.



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### WHY AUTOGENOUS?

**SPECIFIC:** Autogenous vaccines from Cambridge Technologies are the most targeted, science-driven solution available. The vaccines will be built around the disease strains that are identified as potential threats to the herd in question.

**SPEED AND FLEXIBILITY:** The nature of autogenous products means a speedy turnaround, so that emerging threats can be dealt with in a timely fashion. Should a new strain or agent emerge, future manufacturing runs of the autogenous product can be altered to include the new threat.

**ANTIBIOTIC STEWARDSHIP:** Many cases of clinical disease are treated with antibiotics. However, the recent implementation of FDA guidance 209 and 213 along with the expansion of the Veterinary Feed Directive has created a need for an alternative to managing animal health. Autogenous vaccines offer veterinarians and their clients a flexible management tool to counter emerging and evolving diseases.

**SERVICE AND SOLUTIONS:** The customer and technical service at Cambridge Technologies extends beyond the vaccine bottle. Our experienced team partners with veterinarians and cattlemen through every step of the process, from initial diagnostics through product testing and shipment, and continued monitoring moving forward.

#### SOURCES:

1. Caswell, J. Failure of Respiratory Defenses in the Pathogenesis of Bacterial Pneumonia of Cattle. <http://journals.sagepub.com/doi/pdf/10.1177/0300985813502821>. *Veterinary Pathology* 2014, Vol. 51(2) 393-409. Accessed July 23, 2017.
2. Hause BM, Huntimer L, Falkenberg S, Henningson J, Lechtenberg K, Halbur T. An inactivated influenza D virus vaccine partially protects cattle from respiratory disease caused by homologous challenge. *Veterinary Microbiology*. 2017; 199:47-53.
3. Johnson K, Pendell D. Economic Impact of Reducing Bovine Respiratory Disease in United States Beef Cattle Feedlots. <https://ageconsearch.umn.edu/record/206872/files/BRD%20poster%20AAEA%20final%20to%20upload%20with%20cover%20page.pdf>. Presented July, 2015. Accessed July 22, 2017.
4. Meat & Livestock Australia. Bovine Respiratory Disease. <https://www.mla.com.au/research-and-development/animal-health-welfare-and-biosecurity/diseases/infectious/bovine-respiratory-disease/>. Updated 2016. Accessed July 23, 2017.
5. USDA- APHIS. Types and Costs of Respiratory Disease Treatments in U.S. Feedlots. [https://www.aphis.usda.gov/animal\\_health/nahms/feedlot/downloads/feedlot2011/Feed11\\_is\\_RespDis.pdf](https://www.aphis.usda.gov/animal_health/nahms/feedlot/downloads/feedlot2011/Feed11_is_RespDis.pdf). Published April, 2013. Accessed July 22, 2017.



#### FOR ORDER PLACEMENT AND ORDER STATUS:

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