

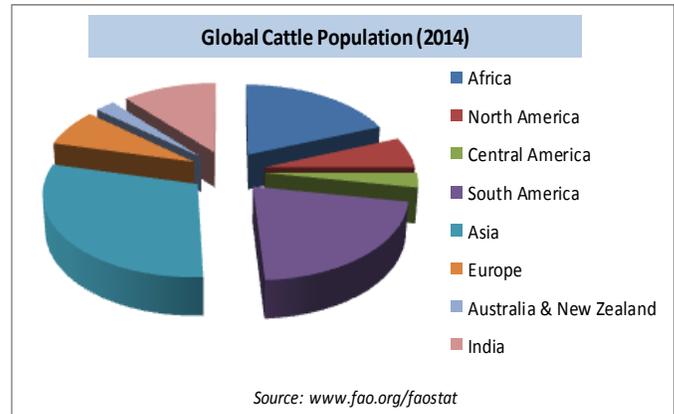
## Message from the President



We're entering the fall calving season in North America and we recently returned from spending two productive days with primarily bovine veterinarians in Omaha, Nebraska, attending the 2017 AABP Conference. It was a pleasure to meet so many practitioners, many of whom were familiar with our product for calf scours, Amplimune® and/or recognized its predecessor, Immunoboost®.

A number of veterinarians told us how important Amplimune has become to their cattle producer clients. Some are using it in mature cows for a variety of ailments (see *Mycoplasma* article on page 2), recognizing that an immunotherapeutic like ours that creates a non-specific immune response in the animal can be useful on many fronts.

We are continuing to work with veterinarians in the field to assess the efficacy of Amplimune in different diseases or in different settings (e.g., veal operations). As we collect data in these studies, our goal is to publish or present it so that it becomes widely available for reference.



Meanwhile, the Company is actively seeking marketing partnerships for Amplimune and our other MCWF products, in North America and beyond.

## Amplimune® Co-Operation Agreement Signed for China

Early this month, we announced the signing of a co-operation agreement with Hoken Biotechnology (Beijing) Co., Ltd. Under the agreement, Hoken has become the exclusive distributor for NovaVive's cattle immunotherapeutic, Amplimune, in The People's Republic of China, the Kingdom of Thailand, Malaysia and the Republic of Indonesia.

More than 114 million cattle are raised in China alone (2014, FAOStat). An increasing demand for cattle protein products (milk and meat) has driven a significant expansion in the Chinese cattle industry over the last several decades. The same health concerns that are seen in North American cattle herds are seen in Chinese herds. As of May, 2017, the Chinese government announced that all food products are now being tested for antibiotic residue. If any residue is

found, the products cannot be sold. There are no registered antibiotic alternative products available in China.

Under the co-operation agreement, NovaVive has committed to assist Hoken in conducting clinical studies to support the submission of regulatory dossiers to Asian veterinary products regulatory authorities. When the product is successfully registered, Hoken has committed to provide sales, marketing and technical support.

"Hoken has a solid reputation for introducing North American products in Asia, and has numerous key contacts in government and industry that will facilitate our success," said Graeme McRae, President of NovaVive.



Graeme McRae, President of NovaVive and Kit Shum, President of Hoken, sign the co-operation agreement.

The two parties have agreed to negotiate a Joint Venture to commercialize and/or manufacture the product for sale in the territory when sales to China would support such an initiative.

# Potential for MCWF in Controlling Mycoplasma in Cattle Herds

*Mycoplasma bovis* (*M. bovis*) is a pathogen known to cause respiratory disease, arthritis, mastitis, and other conditions in cattle. Infections caused by this pathogen have a significant impact on the health, welfare and productivity of dairy and beef cattle, and can cause substantial economic losses to producers. Current preventative and treatment strategies rely on the use of antimicrobials (antibiotics) and vaccines, however, their efficacy against *M. bovis* is limited.

In a Serbian case study, 84 cows and heifers on a dairy farm received multiple doses of Mycobacterium Cell Wall Fraction (MCWF), the NovaVive technology, over a two-month period in 2014. Following MCWF treatment, all cows were closely monitored for the occurrence of any systemic or local adverse reactions.

Following MCWF administration, the incidence of chronic pneumonia and polyarthritis syndrome (CPPS) was reduced from 29.3% in 2014 to 15.9% in 2015. In addition, the average number of days in milk for cows removed from the herd more than doubled in 2015 compared to 2014.

The case study surmised that continued MCWF treatment may have assisted in better disease control at the farm level.

“The report stated that the use of MCWF could provide a significant health and cost benefit to farm management, which may be of particular interest for organic farming operations where the use of antibiotics is prohibited,” said Dr. Aleksandar Masic, Vice-President of Research and Development at NovaVive Inc. “Additional controlled studies are planned to further explore MCWF applications and application protocols with a view to improving the health status of cattle in both dairy and beef operations.”

“Reducing the use of antimicrobial therapies in animals will help to reduce the antimicrobial resistance trend. MCWF represents a potential alternative to antimicrobials to control clinical signs associated with *M. bovis* infection in cattle,” added Dr. Masic.

This case report has been published in a Serbian peer-reviewed veterinary journal, [Veterinarski Glasnik](#).

A formulation of MCWF (Amplimmune®) is currently approved by regulators in the U.S. and Canada as an immunotherapeutic for the treatment of diarrhea in neonatal calves.

Visit <http://novavive.ca/bovine-research> for the full publication.



*Joints of affected heifers before and after MCWF application.*

## Another Canine Cancer Success Story: Rigsby Stevens



Rigsby Stevens is a three-and-a-half-year-old, 100-pound “lap dog”. He lives with his human family – Wendy Stevens and her daughter, Barbara - in Birmingham, Alabama.

When Rigsby was less than a year old, a spot in his mouth was identified as fibrosarcoma. It turned out to be a large mass and the estimated life expectancy for Rigsby without treatment was between 3 and 18 months.

Dr. Mary Claytor at Oxmoor Animal Clinic is Rigsby’s veterinarian. She suggested trying NovaVive’s Immunocidin®, which is approved by U.S. and Canadian regulators for the treatment of canine mammary tumors, but can be used for the treatment of different types of malignancies in dogs.

The first dose of Immunocidin was administered to Rigsby in late December, 2015. After initially becoming ulcerated and draining, the tumor shrunk by about 5 times over the next six months.

By September, 2016, the tumor had almost completely disappeared, but then in returned in February. Rigsby was put back on regular Immunocidin treatments until June, when the tumor mass was determined to be stable.

Says Wendy, “Rigsby continues to thrive and, more importantly, impress everyone

with his courage and his progress and his will to make it another week, month, year ... a lifetime he deserves!”

*Read more about Rigsby’s story on our Canine Facebook page.*



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