

Patent Status

Patents pending in USA,
Europe, China, Canada,
Australia, New Zealand and
Japan

License Status

Looking for partners to
develop commercial animal
vaccines

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Animal Vaccine for *C. difficile*

C. difficile is known to infect horses, pigs, cattle and dogs¹ and anti-microbial drugs are not considered a sustainable long term solution to eliminating disease, similar to the situation in humans. Certain strains of *C. difficile* have been considered indistinguishable between humans and other mammals suggesting that animals may be a reservoir for this pathogen.

We have developed a vaccine for *C. difficile* for use in animals and we are currently investigating its use in animals.

Description:

Cell surface polysaccharides (PSI and PSII) from highly virulent *C. difficile* ribotype 027, have been conjugated to CRM₁₉₇ and tested in mice^{2,3}. Both of the de novo PSI and PSII are highly immunogenic, and PS-II appears to be common to all strains of *C. difficile*, which suggests that PS-II may be an excellent broad based vaccine target for this pathogen.

Advantages:

- Patented composition of matter (PSI and PSII)
- PSI and PSII can be produced by chemical synthesis^{4,5}
- PSII generates high antibody IgG titers in mice²
- Has been conjugated to a proven carrier protein (CRM₁₉₇)
- Vaccine targets pathogen immunity not just toxin neutralization

Potential Markets:

- Equine medicine to prevent colitis and enteritis
- Porcine and bovine medicine to prevent economic losses in food animal production.
- Canine medicine to reduce the risk of animal to human transmission

Status:

- Researchers are combining PSII with proteins from other pathogens to form multi-pathogen and multivalent second generation vaccines
- Researchers around the world are attempting to validate the efficacy of using *C. difficile* PS-II in a vaccine
- We need a partner to advance our animal vaccine program

1. Gould and Limbago, Clinical Infectious Disease 51, (2010) 557-582.
2. Ganeshpillai et al. Carbohydrate Research 343 (2008) 703-710.
3. Cappelletti et al. Glycoconjugate Journal 28 (2011) 265.
4. Danieli et al. Organic Letters 13 (2011) 378-381.
5. Martin et al. Chemical Communications 47 (2011) 10260-10262.