We are delighted that the International Pig Veterinary Society Congress 2004, decided to select South Africa as the host country for the 20th IPVS Congress. The Pig Veterinarians of South Africa will ensure that this congress lives up to the best traditions of previous congresses; incorporating an interesting and topical scientific programme, fascinating accompanying persons tours and an excellent social programme, allowing delegates the opportunity to network with their overseas colleagues.

This, the first IPVS congress on the African continent, will undoubtedly be of enormous benefit in generating solutions to the emerging pig veterinary challenges, especially those related to exotic and changing viral diseases, decreased use of antimicrobials and nutritional advances. The congress is important to further pig veterinary science in South Africa, to encourage younger veterinarians to join the pig industry, as a vehicle to generate funds for research and to improve the pig industry in Southern Africa.

South Africa is a magnificent and beautiful country, and offers tourists value for money. Thus, pre and post congress tours will be a major attraction for delegates to come to South Africa. Durban, in KwaZulu Natal, is a vibrant multi-cultured city with magnificent beaches, easily accessible game parks, theme villages and a moderate winter climate making it an ideal tourist destination. We urge our colleagues throughout the world to use this opportunity to get a glimpse of the continent’s rich and fascinating wonders and to enjoy the hospitality of their African friends.

Dr Peter Evans
Chairman: Local Organising Committee: IPVS 2008
IMMUNOGENICITY AND PROTECTIVE EFFICACY OF ACTINOBACILLUS PLEUROPNEUMONIAE HB04C™ MUTANT OF LACKING A DRUG RESISTANCE MARKER AS A LIVE ATTENUATED VACCINE IN THE PIGS

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Introduction
Previously we reported the construction and characterization of a live, attenuated apxIIC inactivation mutant of A. pleuropneumoniae serotype 7 (HB04C) lacking a drug resistance marker by using a sucrose counter-selection strategy [1]. In this mutant, apxIIC region was targeted for disruption with a GFP gene to produce a mutant strain that secretes an inactivated ApxII protein with full antigenic properties and possessed a good immunogenicity in mice. The goal of this work was to further evaluate the safety and protective efficacy of the genetically defined ApxII toxin mutant strain HB04C™ of A. pleuropneumoniae as a live attenuated vaccine against homologous and heterogeneous challenge in pigs.

Materials and Methods
Bacterial strains: A. pleuropneumoniae filed isolates HB04 (serotype 7) and JL9901 (serotype 1) were used for challenge. The ApxII mutant of A. pleuropneumoniae serotype 7 HB04C™, was constructed in our previous work [1] and used for immunization of pigs.

Immunogen preparation: HB04C™ strain for live attenuated vaccine was inoculated in Tryptic Soy Broth (TSB) supplemented with NAD (10µg/ml) and grew at 37°C with shaking at 180 rpm to an optical density at 600 nm (OD600) of 0.8. The concentration of HB04C™ was determined by viable cell counts on agar plates. Meanwhile, bacteria were harvested by centrifugation, washed once in phosphate buffered saline (PBS), pH 7.0, resuspended with PBS and adjusted accordingly to the required concentration for immunization of pigs.

Safety test: Two groups of five 6-8 week-old male pigs were used. One group was injected intratracheally 2×10^8 CFU of HB04C™ while another group with the same CFU of HB04. The body temperature and increased respiratory rate were recorded daily. And dyspnea lethargy, loss of appetite, and for injection site reactions in animals were monitored.

Protection experiment: Analysis of antibody response: Serum samples were obtained and detected by ApxII-ELISA, complement fixation test and hemolysin neutralization test [2], respectively before the experiment, 2 weeks after the first vaccination, and 2 weeks after secondary vaccination by anterior vena cava venipuncture.

Results
HB04C™ was safe to the pigs. ApxII-ELISA analyses revealed strong antibody responses against the ApxII antigens. The vaccinated pigs showed medium level of hemolysin neutralization ability in serum samples, indicating that hemolysin protein without hemolytic activity was expressed in vivo by HB04C™ (Fig was omitted). All vaccinated pigs did not develop a detectable level of antibody by complement fixation test. (data not shown).

The live attenuated vaccine HB04C™ provided complete protection and 80% protection against homologous and heterologous infection. As vaccinated animals demonstrated significant reductions in lung damage and clinical signs of porcine pleuropneumonia while unvaccinated pigs suffered from severe pneumoniae and finally died. In contrast, two groups of five unvaccinated pigs died from overwhelming pleuropneumonia after challenge. A. pleuropneumoniae could be consistently recovered from lung of unvaccinated control pigs with the exception of one pig, indicating the potential of HB04C™ in prevention of A.pleuropneumoniae colonization in lungs.

Discussion
The route of vaccination may also play a key role in eliciting high level of cross-protection in pigs. This intratracheal route of challenge was chosen because it could mimic the natural infection route of A. pleuropneumoniae, which is known to induce a solidcross-protective immune response. Pigs vaccinated intratracheally with live attenuated vaccine had 100% and 80% protection against homologous (serotype 7, HB04) or heterologous (serotype 1, JL9901) A. pleuropneumoniae challenge, respectively, while control pigs showed fever and pneumoniae and finally died. The reason for incomplete protection to heterogeneous infection in HB04C™ vaccinated pigs might be lack of expression of Apx I protein in vivo that is a highly immunogenic virulence factor to stimulate antibody against ApxI-producing A.pleuropneumonaiet. To address this concern, a HB04C™-based mutant that expresses nontoxic ApxI should be constructed in our next work.

References