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TITLE
DEVELOPMENT OF A STREPTOCOCCUS SUIS SEROTYPE 9 ANIMAL MODEL – DOSE FINDING STUDY

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CONTENT

Background and objectives
Clinical Streptococcus suis serotype 9 (SSU9) infections occur frequently on pig farms and are difficult to prevent and control. Animal models are necessary to evaluate interventions to reduce/prevent clinical signs due to SSU9. The objective of this study was to define the most convenient inoculation dose with SSU9 in order to develop a SSU9 challenge model.

Material & Methods
Three Groups of pigs (7 pigs/group) were inoculated with SSU9 both orally (fixed dose; to achieve intestinal colonisation) and intra-tracheally (3 increasing doses), immediately upon arrival. Animals were observed for clinical signs and sampled frequently up to end of study (14 days after inoculation) for culture and PCR.

Results
After inoculation several animals showed locomotion or neurological disorders. 10 pigs were removed before end of study and 8 of them tested positive for SSU9 in blood culture before euthanasia. In only 4 pigs SSU9 could be demonstrated at post-mortem examination. The surviving pigs carried SSU9 in their tonsils, at various study days after inoculation but not in faeces. In 3-6 pigs per Group SSU9 was detected in jejunum, ileum, rectum. Group 3 (highest dose) did not show increased morbidity and mortality compared to lower doses.

Discussion & Conclusion
No clear dose-response effect was found. The mild response in the highest dose group emphasizes the great variability that can be encountered with SSU9 challenge models. In several pigs intestinal colonization was achieved. It is concluded that when using the selected SSU9 strain, the middle dose (at least 109 CFU/pig, orally and intra-tracheally) is required for clinical response in at least 50% of the pigs. As the lag phase until clinical signs and/or death due to SSU9 was at least two days in Group 1/2 in this study, a time window to evaluate interventions to reduce/prevent clinical signs is available.