

Project Number & Title 2A -115 Novel Porcine *Actinobacillus* species – diagnostic tools and pathogenicity evaluation

Project Leader Conny Turni

Project Participants Pat Blackall and Youssef Abs El-Osta

Aims and Objectives Establish

Whether there are indeed one or more potential new species in the collection of *Actinobacillus* like organisms held by our laboratory. The pathogenic role of the new species will then be evaluated by examining field data linked to the isolates. For this part, the help of front line diagnostic laboratories and veterinarians was sought.

Key Findings

This work has confirmed the inadequacy of the 16S rDNA identification within the family *Pasteurellaceae*. None of the strains identified as *A. porcitosillarum/minor* by 16S rDNA sequencing were confirmed as such with the multi-locus sequence analysis approach used in this project. The work has also highlighted that no single conserved gene by itself can be used for identification in this family.

A new species was found, which for the purpose of the report was named *Actinobacillus* Taxon C. Some of the *Actinobacillus* Taxon C1 isolates are apparently quite pathogenic and appear to be causing significant pleurisy, lung lesions and abscesses, but is also associated with lesions and death at the farm level. Some of the farms had 40% lung lesions, 30% lung abscesses and 13.8% pleurisy at the abattoir. It was noted by one of the vets involved that the lesions, abscesses and pleurisy went down when this new species was targeted with antibiotics. This would further suggest that the new species is associated with pathological signs observed at slaughter. The fact that the *apxIBD* operon was found and that this operon is normally needed for either ApxI or ApxII toxins further points to the possibility of *Actinobacillus* Taxon C causing significant pathology. .

Application to Industry

This finding of a new species, named *Actinobacillus* Taxon C1 for the interim, which is associated with lesions and abscesses at the abattoir, but also with lesion and death at the farm level is an important finding for the industry. The similarity of some of the lesions/abscesses at slaughter associated with *Actinobacillus* Taxon C1 with the lesions and abscesses associated with *A. pleuropneumoniae* could indicate that these lesions could have been misidentified as *A. pleuropneumoniae*-linked lesions at slaughter check. The finding of up to 30% lungs with abscesses and 40% lungs with lesions reported on farms free of *A. pleuropneumoniae* but positive for *Actinobacillus* Taxon C1 suggests a significant impact on the industry by this organism.

The awareness of this new species is making it possible to have a closer look at farms with high pleurisy and farms, thought to be associated with *A. pleuropneumoniae*, to determine if *Actinobacillus* Taxon C1 is a problem on these farms.

Future directions would be to develop a PCR for the rapid and confident identification of *Actinobacillus* Taxon C1, so that front line laboratories can identify the species easily and therefore screen large sample numbers for this species to evaluate the impact on farms.