

Improving Pigs



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International impacts

The Institute for Animal Health (IAH) is an international reference laboratory for Swine vesicular disease and African swine fever. Neither are currently present in the UK but both are present in nearby countries so are a potential threat. Researchers at IAH are studying African swine fever to enable the development of a vaccine and diagnostic tests that can be used in the field.

Science can offer new insights and tools to help drive improvements for the pig industry in breeding strategies, disease resistance and animal welfare.

The Biotechnology and Biological Sciences Research Council (BBSRC) funds research, including fundamental research, to understand pig biology and to answer questions that are directly relevant to the pig industry.

Tackling disease

Recently, a £5m award was made to fund six years of research into four pig respiratory diseases. These diseases are a major welfare issue and cost the pig industry millions of pounds each year. The work will develop better ways of diagnosing infections and develop a novel vaccine.

Post-weaning multi-systemic wasting syndrome (PMWS), is a new disease estimated to cost the UK £30M per year but we know very little about it. BBSRC is funding a £2.4M project that aims to identify why PMWS occurs and to develop new methods to control the disease. The project is a collaboration with British pig farmers, the British Pig Executive (BPEX), Pfizer Ltd (UK) and BioBest.

More than 20 years after its emergence, Porcine reproductive and respiratory syndrome (PRRS) remains a major economic threat to the pig industry as well as a significant animal welfare and global food security issue. A BBSRC postgraduate studentship (in collaboration with Pfizer) will examine at a molecular level how the disease-causing virus infects pigs, leading to better control of the disease.

After the start of the 2009 swine flu outbreak, BBSRC, MRC, Department for Environment, Food and Rural Affairs (Defra) and the Wellcome Trust funded

Key facts

187M pigs in Europe

Worldwide, 106M tonnes of pork are produced each year

9M pigs produced for food in the UK each year



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four projects looking at this H1N1 virus. Two projects studied swine flu spread and evolution in UK pig herds and how interactions with farm workers affect this. The work provides evidence on the economic impact of H1N1 in pigs and on the need for intervention strategies in humans.

Improving welfare

BBSRC's five year, £8m Animal Welfare Programme has just been completed. Enhanced welfare relies upon measurement of good as well as poor welfare. Researchers worked closely with farmers and stockpersons to develop a novel tool – the PigQol – for use, on farm, to measure the quality of life of farmed pigs and their welfare as a herd.

A new experimental barn has enabled researchers to closely control the environment that their animals are kept in and accurately measure the welfare implications of different factors. Even moderately raised ammonia levels can lead to stress in pigs and low light levels lead to increased aggression – both obvious welfare concerns.

Even before birth, pig welfare can be compromised by their mothers' experiences. Pre-natal stress, such as mixing pregnant gilts, can cause female offspring to become more likely to savage or crush their own piglets when they farrow. Pre-natally stressed offspring also react differently to normal farm practices, such as weaning, which results in an increased growth check post weaning.

Related work has shown that tail docking alone does not have major long term negative effects on healthy,

unstressed pigs. Nonetheless, studies have shown that tail-docking is acutely painful for piglets so the practice itself still represents a welfare concern that must be balanced against the welfare implications of not docking the animals.

Basic underpinning research

A first draft of the pig genome was released by the Swine Genome Sequencing Consortium in 2009, the annotation of which was supported by funding from BBSRC. The genome sequence and associated tools provide valuable resources for research on sustainable production traits in pigs, including feed efficiency and disease resistance.

Scientists are working to identify all the genes that contribute to the way that white blood cells work in the pig immune system. Eventually this will provide a rational basis for breeding strategies to generate pigs with improved disease resistance.

Researchers are working to understand which genes are important for the formation of muscle fibre types that are linked with favourable meat characteristics such as tenderness and colour. This could help breed pigs for improved meat quality.

About BBSRC

BBSRC is the UK funding agency for research in the life sciences and the largest single public funder of agriculture and food-related research.

Sponsored by Government, in 2010/11 BBSRC invested around £470 million in a wide range of research that makes a significant contribution to the quality of life in the UK and beyond and supports a number of important industrial stakeholders, including agriculture, food, chemical, healthcare, and pharmaceutical sectors.



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