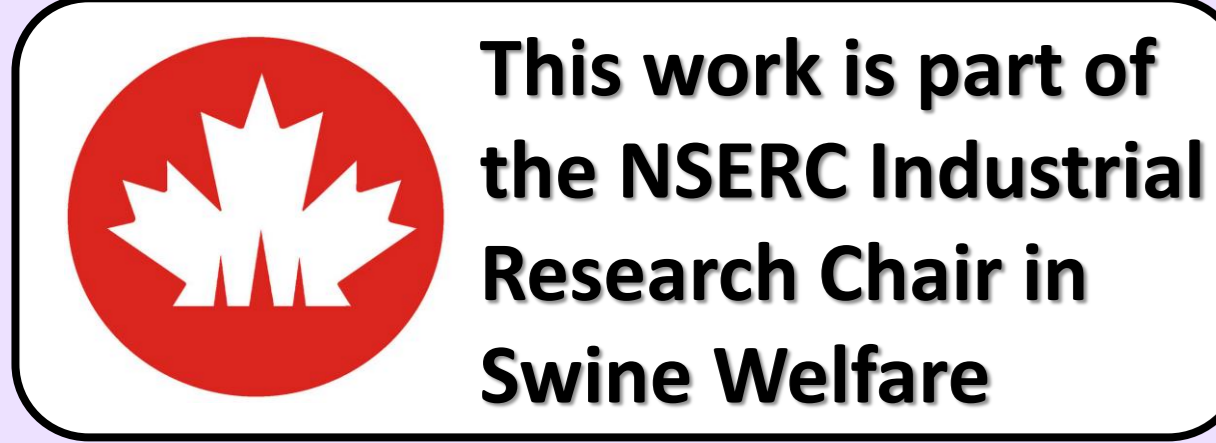


# Measuring Stress Resilience in an Out-of-Feed Event Using Cortisol and Oxytocin in Growers Given Early Life Modifications



Siba Khalife, Darian Pollock, Maria Lopez-Arjona, Jose J.C. Madrigal, Jennifer A. Brown, and Yolande M. Seddon

Department of Large Animal Clinical Sciences, Western College of Veterinary Medicine, University of Saskatchewan, Saskatoon, SK, Canada

## 1. Introduction

- There are two early life periods where the pigs' behaviour develops most: 0-4 weeks of age and 4-12 weeks of age.
- In these periods, the development of a pigs coping ability is influenced, which may have long lasting consequences on their ability to respond to production relevant stressors.
- Early life management modifications that are easy to implement and support behaviour development in pigs are needed.
- Stress causes unwanted outcomes like DFD and PSE pork, lower gains, and negative welfare.
- **Objective:** To measure if the early life management influences how pigs cope with a typical production stressor: an out of feed event.

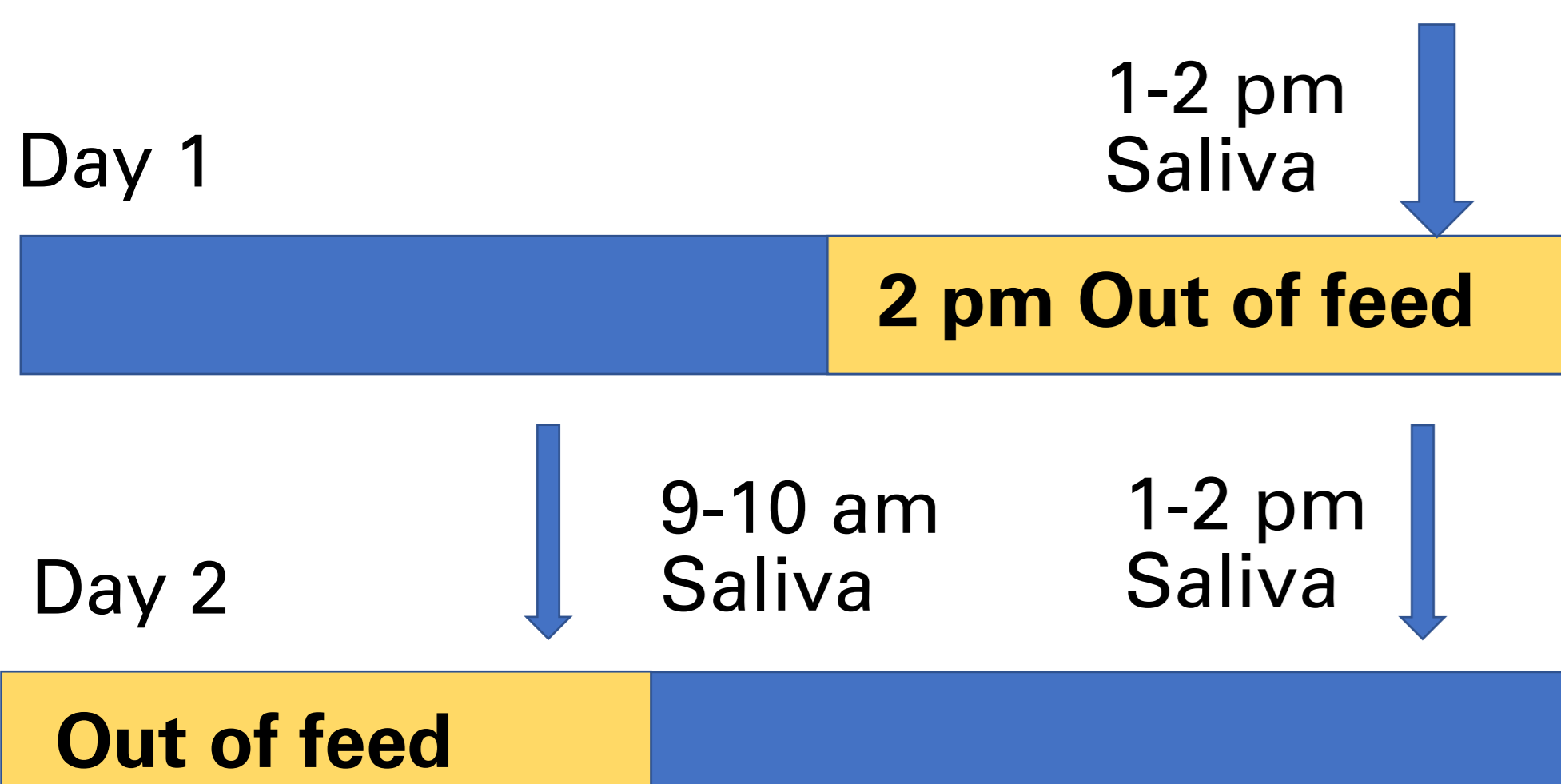
## 2. Methods

Pigs were reared in four treatments:

Treatment	Farrowing	Nursery-12 weeks	12 weeks-slaughter
Enhanced-Enhanced	Chewing materials Extra Space Human contact	Chewing materials Extra Space Human contact	Standard Conditions
Enhanced-Standard	Chewing materials Extra Space Human contact	Standard Conditions	Standard Conditions
Standard-Enhanced	Standard Conditions	Chewing materials Extra Space Human contact	Standard Conditions
Standard-Standard	Standard Conditions	Standard Conditions	Standard Conditions

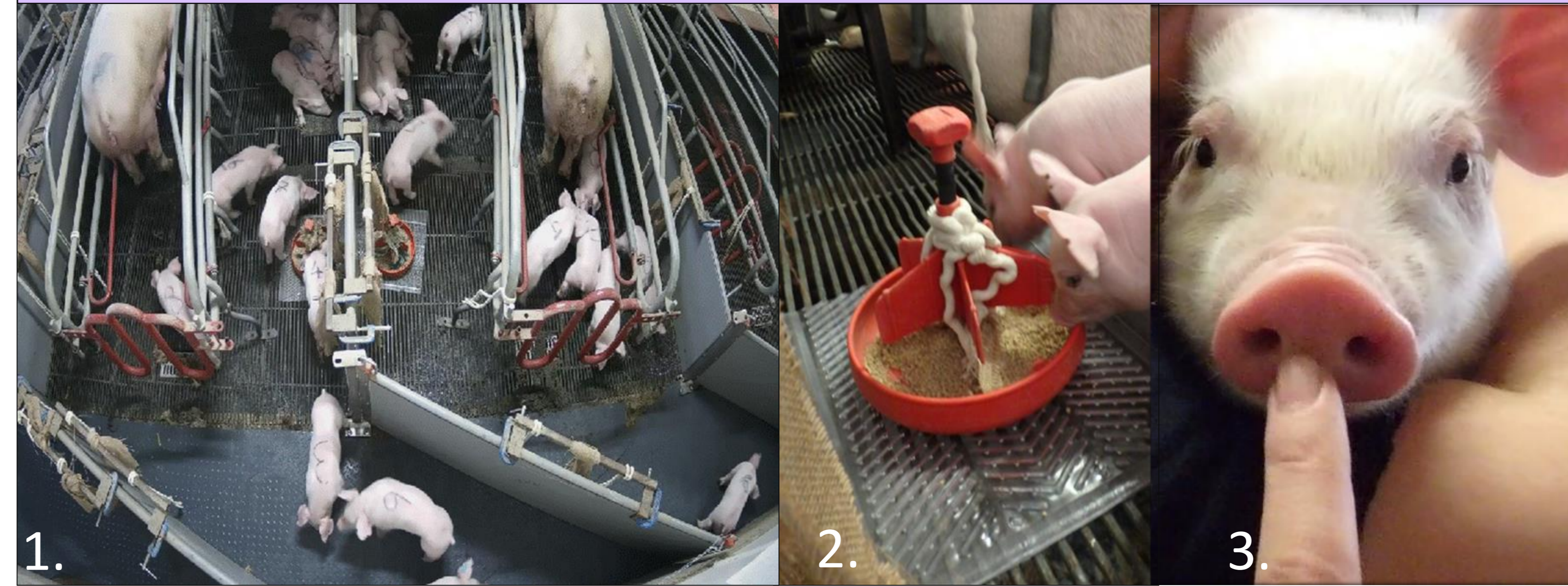
## Out-of-Feed Event

At 20 weeks of age, pigs were subjected to 16 hours of feed cut off.



Cortisol (physiological stress), Oxytocin (emotional wellness) were measured from saliva taken before, during, and after feed outage.

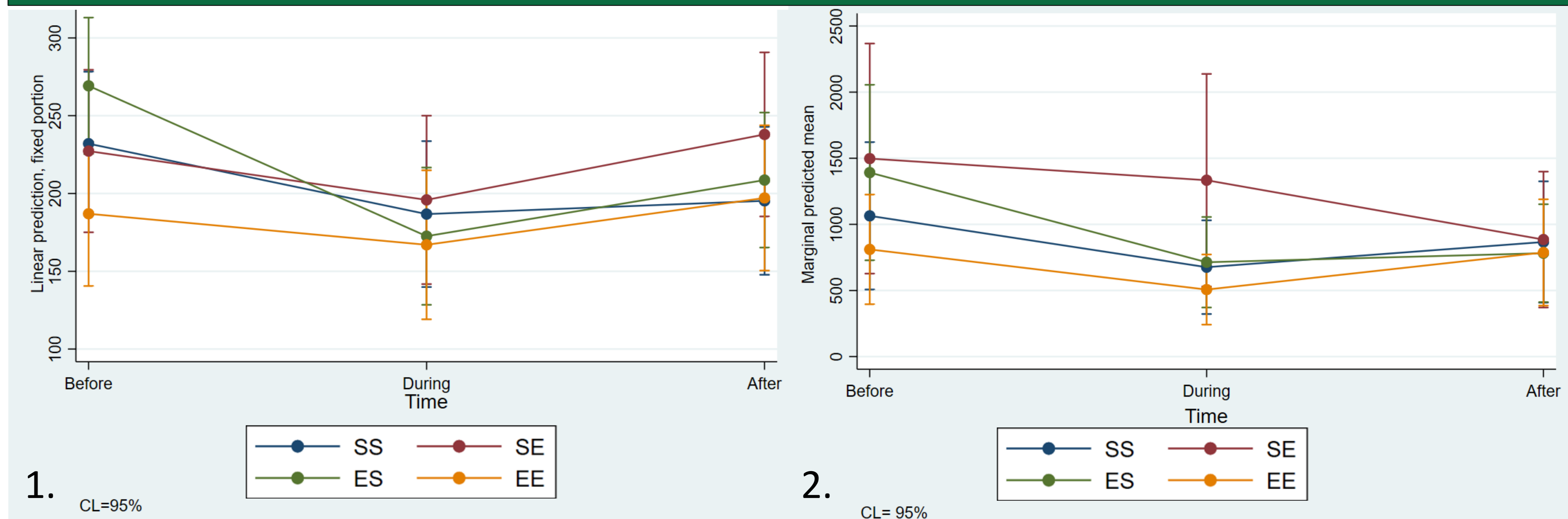
## 3. Treatments



Enhanced pigs were given  
 1. Extra space  
 2. Chewable materials  
 3. Human contact  
 Which are management modifications found to improve pig welfare and production in the literature.

## 4. Results

1. Cortisol (ng/mL) and 2. Oxytocin (pg/ml) levels in pig saliva before, during, and after feed cut-off



## 5. Implications

There was **no significant difference between treatments in cortisol or oxytocin before, during, or after the feed cut off.**

However, there was **high individual variation for oxytocin and cortisol levels.**

These findings suggest that while stress indicators in the saliva show no significant difference on the group average, individual pigs show very different responses to the same stressor even within each treatment. That there is no difference between treatments suggests that there was no effect of early life experience on the response to an out-of-feed event.

**Further analysis** of behaviour, injury, and two more salivary biomarkers (chromogranin-A, haptoglobin), **will determine if treatments affected the response to a stressful event later in life.**

Future results will help identify the value of different biomarkers to provide information on stress.

Thank you to our funders

