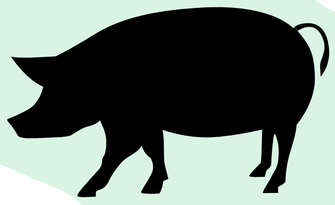
Hair Hormones as Biomarkers of Welfare in Swine

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Introduction

- Biomarkers evaluating chronic stress in swine are needed.
- Hormone levels within the hair & their circadian rhythms may indicate chronic stress.
- Hormones of interest:
  - **Cortisol:** ↑ hair concentrations & a flattened circadian rhythm is suggestive of chronic stress
  - **Dehydroepiandrosterone (DHEA)**: ↓ hair levels is suggestive of reduced mental & physical well-being
- Determining reference values & other factors influencing hormone levels is required.

Objectives

To determine if rearing environment influenced:

1. Hair cortisol & DHEA concentrations

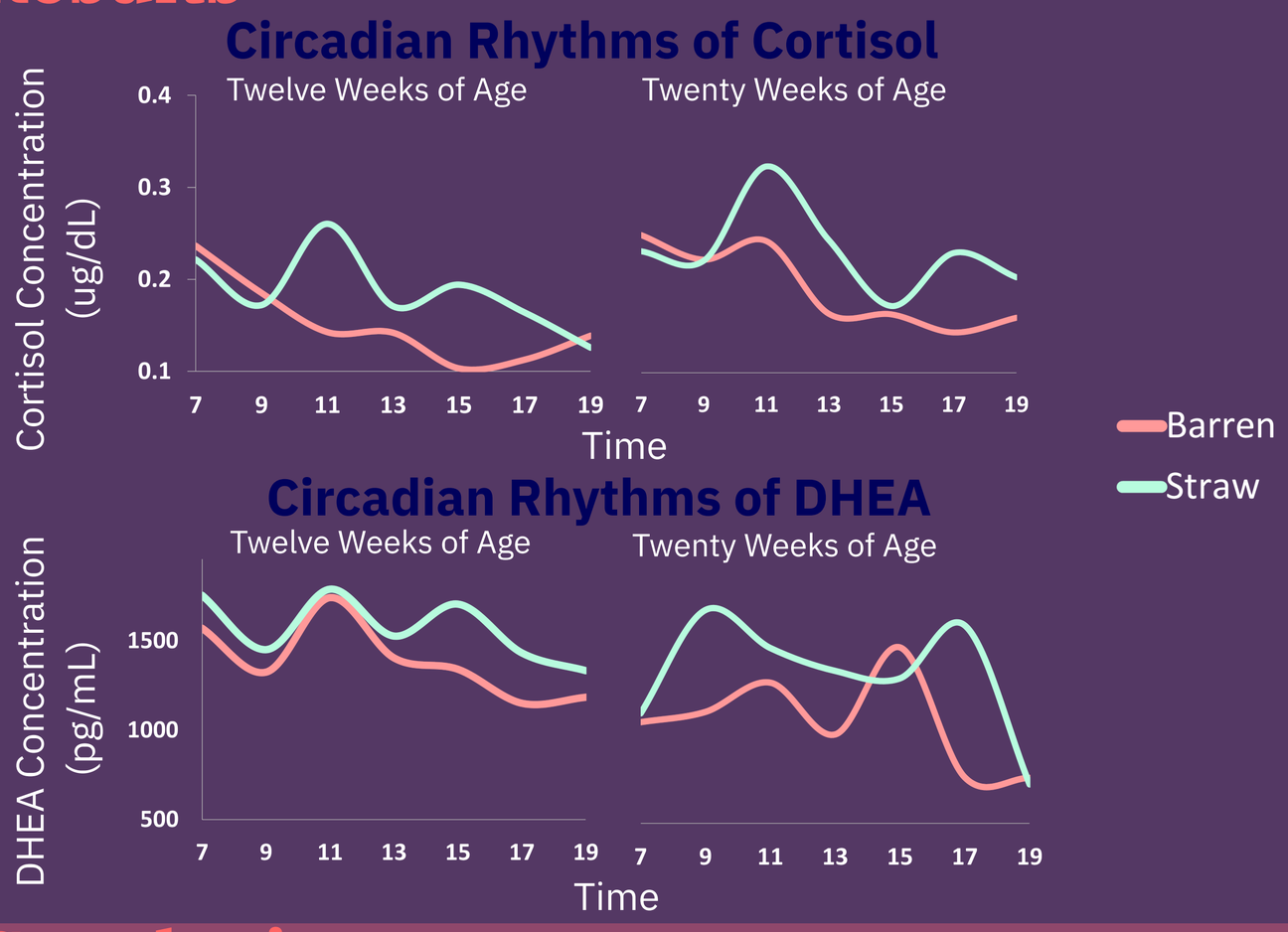
2. The circadian rhythm of cortisol & DHEA

Methods

- Litters (n=16) raised from birth to slaughter over two batches (born in spring & fall).
  - 50% given straw provisions
  - 50% raised in barren environments
- To determine effects of rearing environment hair & saliva take at 12 & 20 weeks of age.



Results



Rearing environment influenced the circadian rhythm of cortisol & DHEA

No effect of straw provisions on hair hormone concentrations.

21% & 19%

higher hair cortisol concentrations were seen in pigs born in spring vs those born in fall at 12 and 20 weeks of age

Conclusions

- Rearing environment effects the circadian rhythm of cortisol & DHEA, but this is not reflected in hair.
  - Further studies are needed to determine the sensitivity of hair hormones as biomarker of chronic stress.
- Other factors influence hair cortisol concentrations indicated by batch effects, this may be related to seasonal differences and, or heat stress.

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