

Implications of stress in sows for performance & welfare & for the resilience of piglets to stress/disease



Laura Boyle

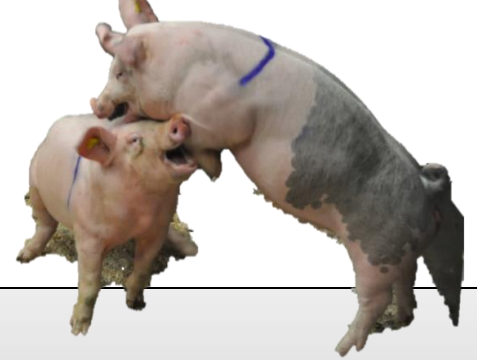
K. O'Driscoll¹, S. Foister^{1,2}, R. Peden², S.P. Turner², J. Marchewka³

¹PDD, Moorepark, Fermoy, Co. Cork, Ireland

²SRUC, Easter Bush, EH25 9RG, Scotland, UK, ³Institute of Genetics and Animal Breeding, Polish Academy of Sciences, Dept. Animal Behaviour, Magdalena, Poland



Introduction

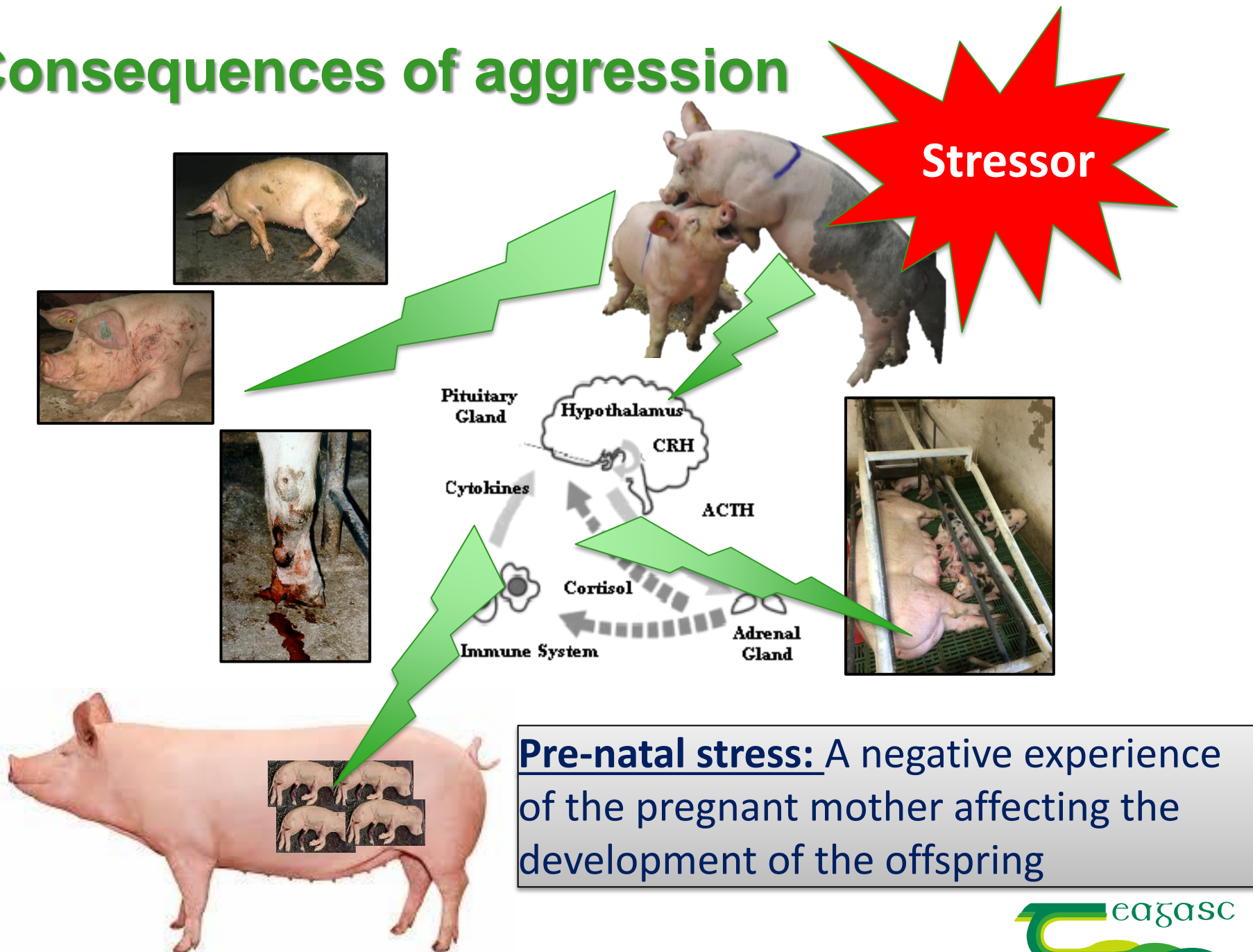


- Group living is a stressful experience for sows
- **Social stress**: acute (i.e. mixing) and chronic (e.g. competition)
- Low space allowances, competition for access to resources, lack of hide areas to escape from bullying and lack of differentiated areas

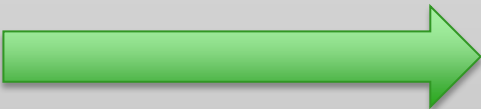
(Spooler et al., 2009)



Consequences of aggression



Implications

- Sow reproductive performance in Ireland still lags behind that of our competitors
- Highest sow replacement rate in the EU (55% - *Interpig*, '17)
- **Pre-natal stress**: poor immunity and coping ability in the piglets
- Difficulty coping with weaning stress?
- Pigs are highly susceptible to disease at weaning
-  **high antibiotic usage**
- Contribution to AMR?
- Suppressed growth and feed efficiency
- Constrains our ability to produce high quality pigs



SowWeanWel

- o 4 year project (2018-2020)
- o 1 Walsh Fellow
- o 3 main tasks

Aims:

- o To evaluate effect of chronic stress in pregnant sows on
 - sow welfare, health and reproductive performance
 - resilience of their piglets in terms of coping with stress and health challenges
- o Identify risk and protective factors associated with different housing and feeding systems for pregnant sows



Task 1: Relationship between aggression and sow reproductive performance

- Study conducted on a commercial farm (March to July 2018)
- Sows housed in self closing stalls for 28 days post service
- Over a 7wk period data collected on 263 sows in 11 groups of 24
- No. skin lesions, hair cortisol and sow performance (litter size/weight, BA, BD, weaning weight, mortality etc.)

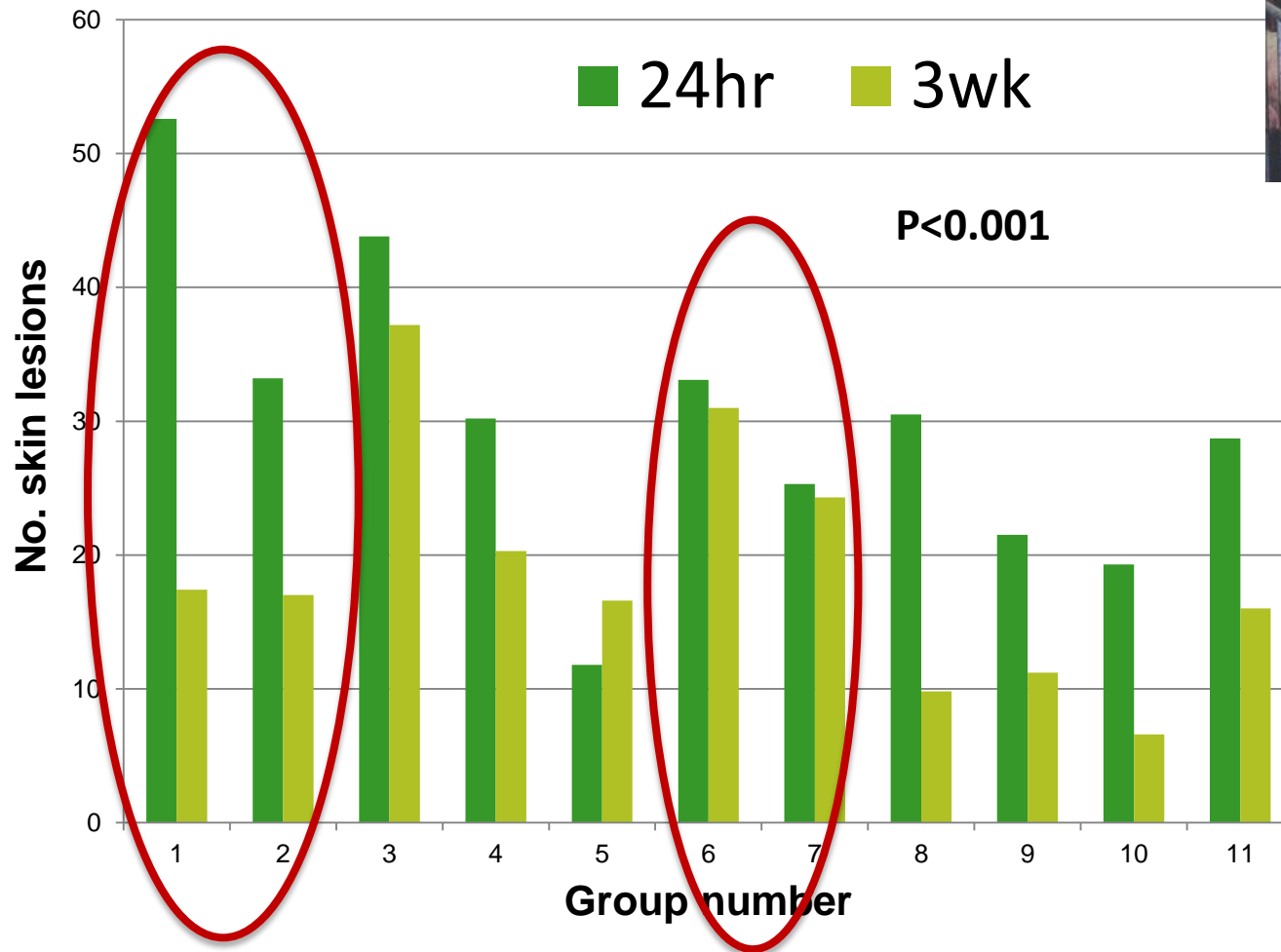


Task 1: Relationship between aggression and sow reproductive performance

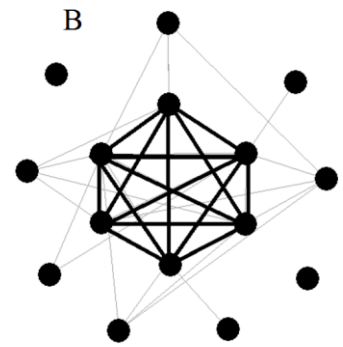
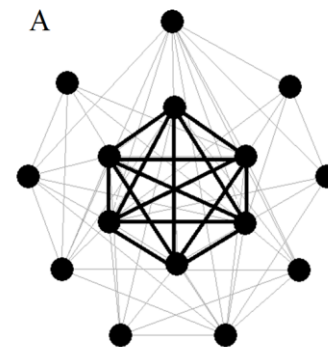
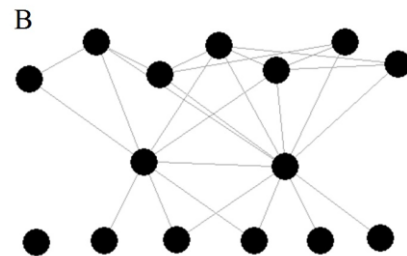
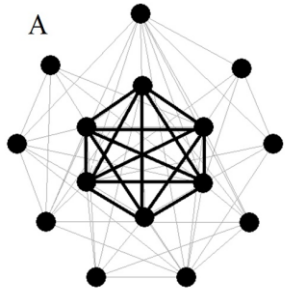
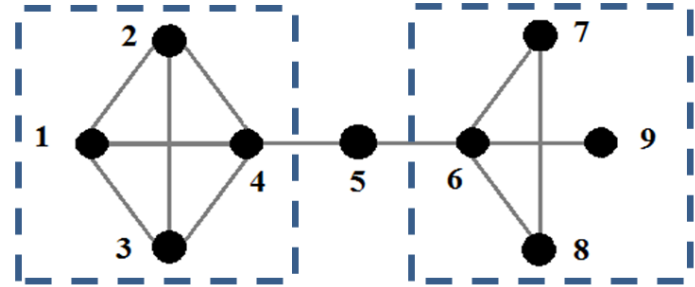
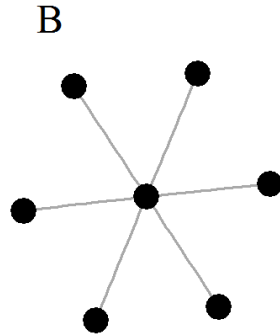
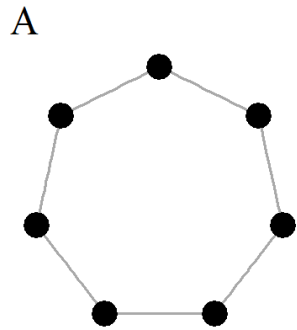
- Skin lesions are a proxy measurement of aggression
- Counted number of skin lesions post-mixing (d29) and 3 weeks later (d50)
 - Front (head, neck, shoulders & front legs)
 - Middle (flanks & back)
 - Rear (rump, hind legs & tail)



Variation between groups in no. skin lesions



Social network analysis



No. skin lesions (median [min. - max.]) post mixing (PM)



Region	24hr PM	3wk PM
Front	13 (0-117)	5 (0-46)



- ↓ no. lesions between 24hrs & 3wks PM
- Sows being attacked from behind (chronic aggression)
- Variation between groups and between sows

Task 2: Factors influencing aggression in sow housing systems

- Uniformity of sow housing systems in Ireland presents a challenge in conducting such epidemiological research
- Collaboration with Institute for animal breeding and Genetics in Poland
- More variation in sow herd sizes and housing/feeding systems than in Ireland
- Poland is similar to Ireland in terms of its intensiveness



Task 2: Factors influencing aggression in group housing systems

- Polsus - Select farms/arrange visits
- Collect data on housing & management
- Animal based assessments
- Herd reproductive performance data (Polsus)
- Epidemiological evaluation of risk and protective factors



Task 3

Part A: Benefits of minimising chronic stress for pregnant gilts

- Commercial farm using small static groups
- Mix pregnant gilts with sows into two housing systems after service
 - 1) Social stress
 - 2) Reduced social stress
- Welfare, health, physiological and immunological measures as well as performance and antibiotic usage


Part B: Benefits to piglets

- Piglets will be followed from birth to slaughter
- Intense measures through to the end of the 2nd weaner stage (vitality, weights, coping/healing ability, stress responses, AB use)
- Expect that piglets will be better able to cope with weaning stress

Take home message

A pig is visible in the foreground, looking towards the camera. In the background, three people are standing in a doorway. One person is wearing a white protective suit, another is in a blue uniform, and a third is in a dark blue uniform. The setting appears to be a pig farm or a research facility. A sign with the number '50' is visible on the wall.

SowWeanWel will yield information on how to improve sow productivity/longevity, produce better quality pigs and reduce AB use

A close-up shot of several piglets. They are light pink with some darker spots. One piglet is in the center, looking directly at the camera. Other piglets are visible around it, some with their heads tilted.



Thank you!



- Pig farmer and staff
- Erik Scholten