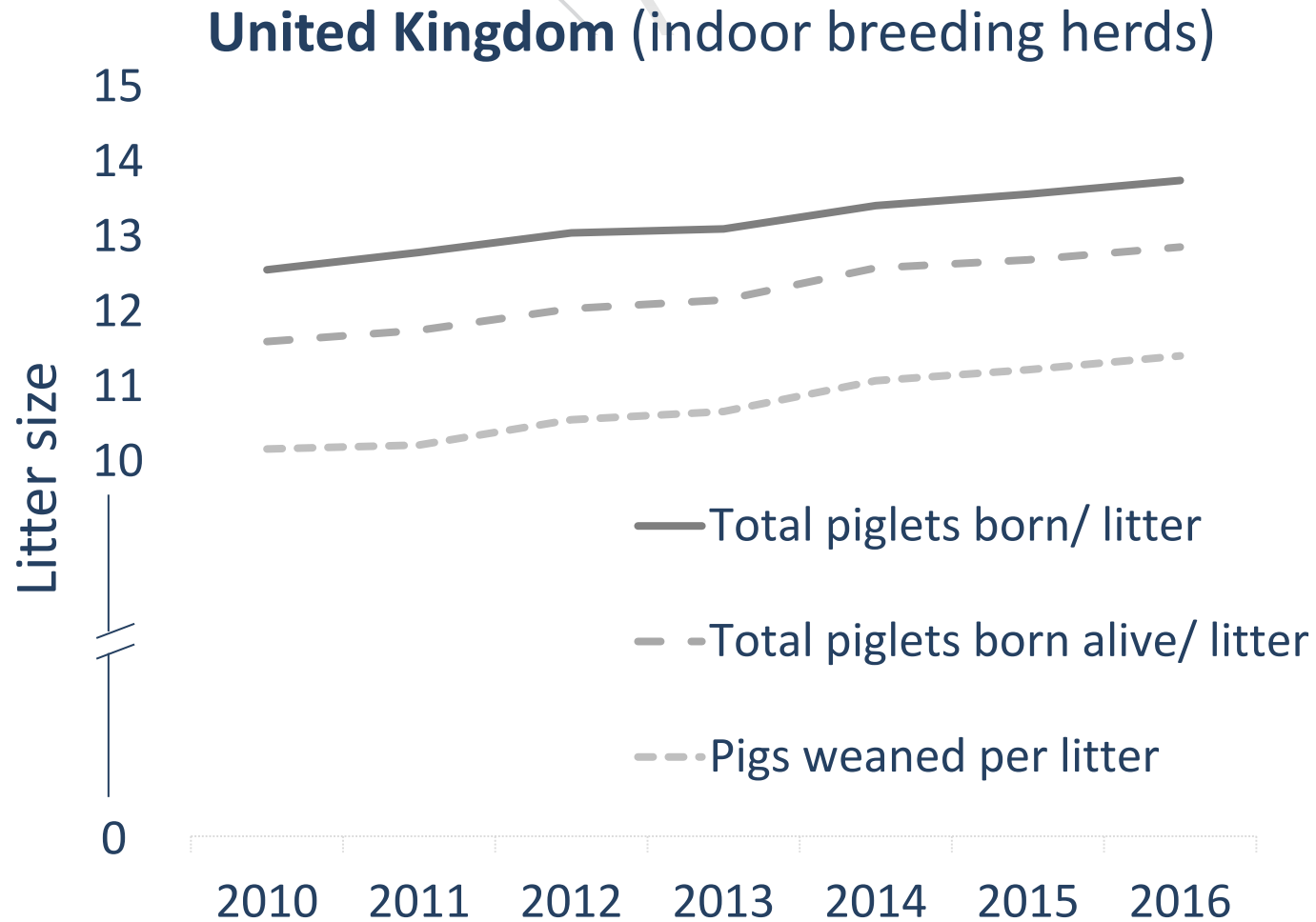# Cross fostering affects the performance of both small and heavy piglets throughout production

Anne Huting, Ian Wellock, and Ilias Kyriazakis

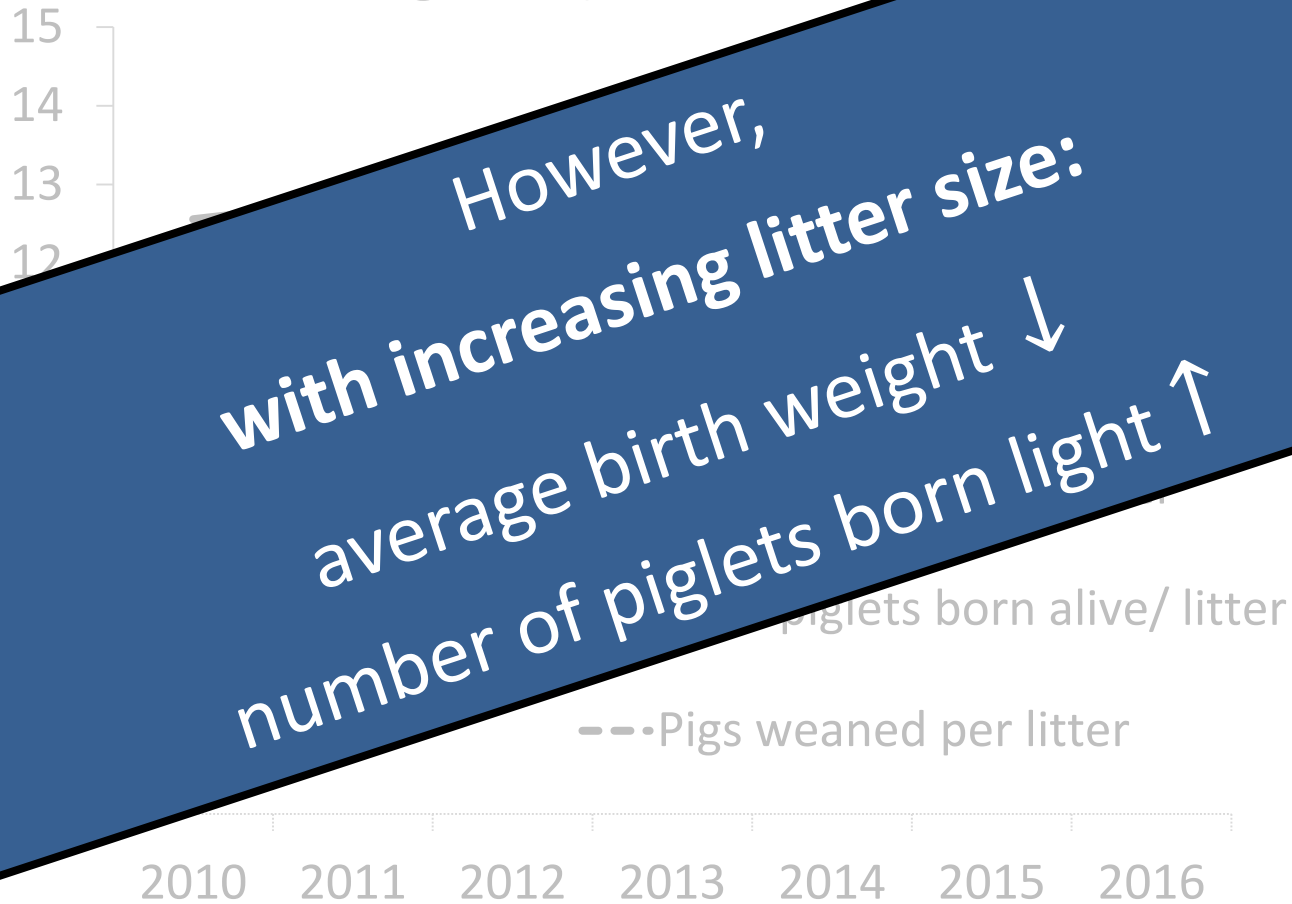# The problem

- Litter size as **breeding goal**

United Kingdom (indoor breeding herds)

Litter size (y-axis): 0, 10, 11, 12, 13, 14, 15

Legend:
— Total piglets born/ litter
– – Total piglets born alive/ litter
- - - Pigs weaned per litter

Years (x-axis): 2010, 2011, 2012, 2013, 2014, 2015, 2016

AHDB pork

The problem

- Litter size as **breeding goal**

United Kingdom (indoor breed...)

15
14
13
12

However,
with increasing litter size:
average birth weight ↓
number of piglets born light ↑

...piglets born alive/ litter

-‑-‑Pigs weaned per litter

2010   2011   2012   2013   2014   2015   2016
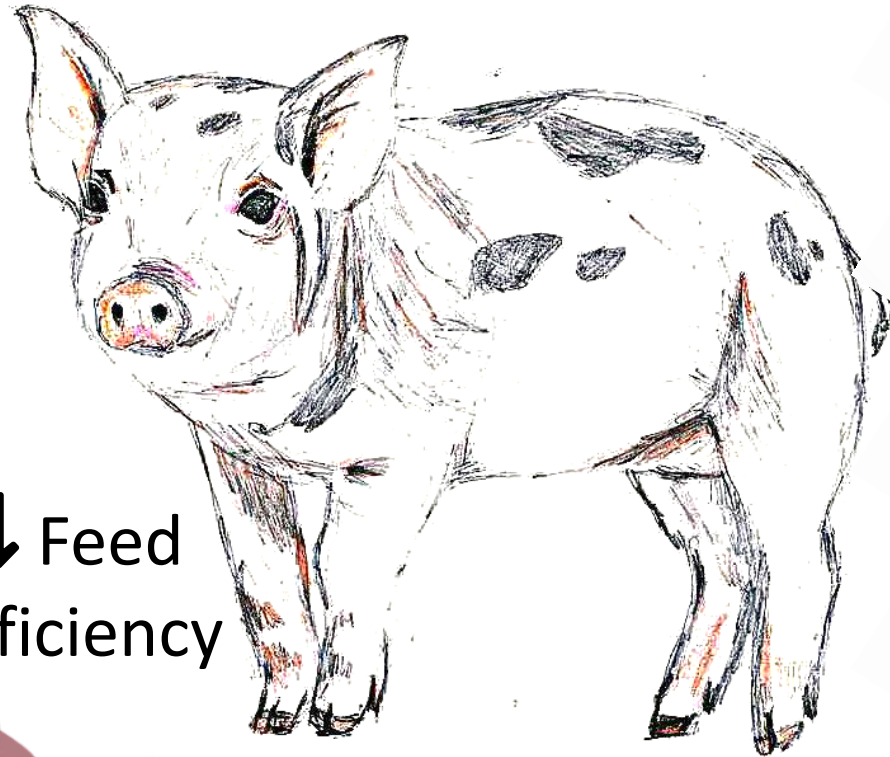
The problem

Fatter carcass

↓ Growth performance

↓ Feed efficiency

Batch inefficiency

↓ Profit

Management strategies

- **Cross fostering**
    - Reducing BW variation
    - Benefits **Light** piglets:
        - ↓ Mortality
        - ↑ Pre-weaning performance

    ➤ What is the effect on **Heavy** piglets?

- **Creep feed**
    - Additional nutrient source
    - Adaptation digestive tract
    - Reduces post-weaning growth check

    ➤ Does **litter composition** play a role?

Aim & Hypothesis

Aim:

*'What is the effect of **litter mate weight** and **creep feed** availability on performance of piglets born **Light** and **Heavy**?'*

Hypothesis:

Cross fostering

- **Light** piglets in **UNIFORM** litters → perform <u>better</u>…
- **Heavy** piglets in **UNIFORM** litters → perform <u>similarly</u>…

… compared to those in **MIXED** litters

Creep feed provision

Piglets that are more likely to eat creep feed, are:

- **Heavy** piglets in **UNIFORM** litters

Litters with creep feed → perform better

Experimental design

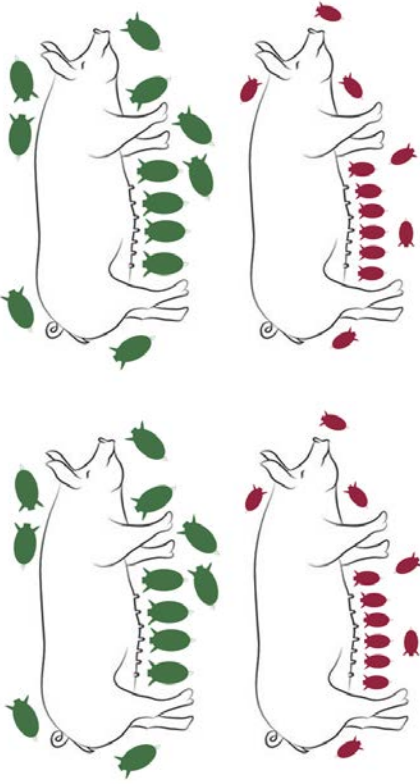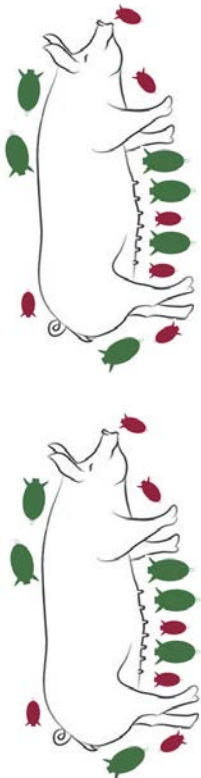**Cross fostering** (>12 - <24h after birth)

Birth weight class

600 g – 1.25 kg

1.50 kg – 2.00 kg

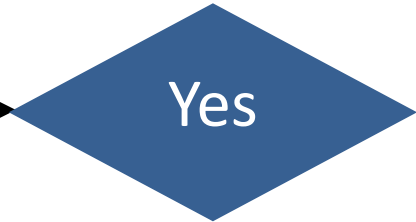**Creep feed** (>d10 - weaning)

Yes

No
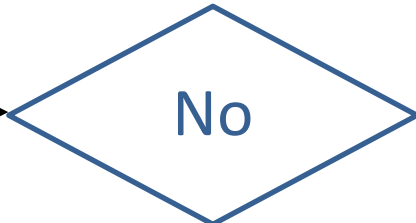
UNIFORM   **MIXED**

Measurements

General information:

Large White x Landrace
6 replicates per treatment

Daily Creep feed intake

BW

Birth (d0)

Weaning (d28)

Grower (d61)

Finisher (d88)

Slaughter (d165)

Litter level

Pen level
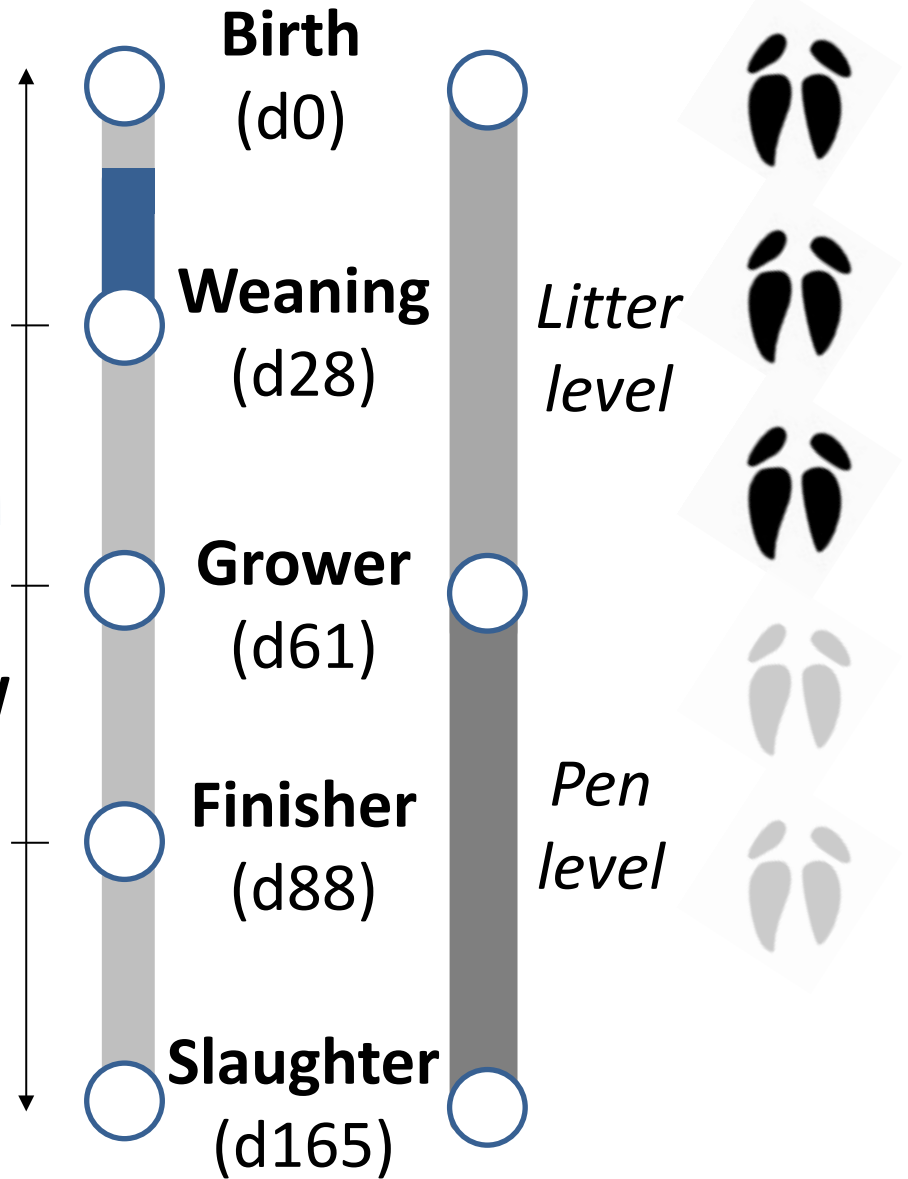
Results

- **Pre-weaning removal**

Litter composition	UNIFORM		MIXED			
Birth weight category	Light	Heavy	Light	Heavy	Total	P-value
No. of pigs on trial						
d0	144	144	77	77	144	
Reasons removal (%)						
Found dead <d2	4.2	0.0	3.9	0.0	2.1	**0.027**
Lost BW < d10	9.7	6.9[a]	7.8	1.3[b]	4.9	NS
Found dead (d2 - d28)	3.5	2.1	6.5	2.6	4.9	NS
Under 4 kg at d28	1.4[a]	1.4	5.2[b]	0.0	2.8	**0.083**
Total	18.8	10.4[a]	23.4	3.9[b]	14.6	**0.001**

Model: Chi-square

Results

- **Daily creep feed intake** (*LSM ± 95% CI*)
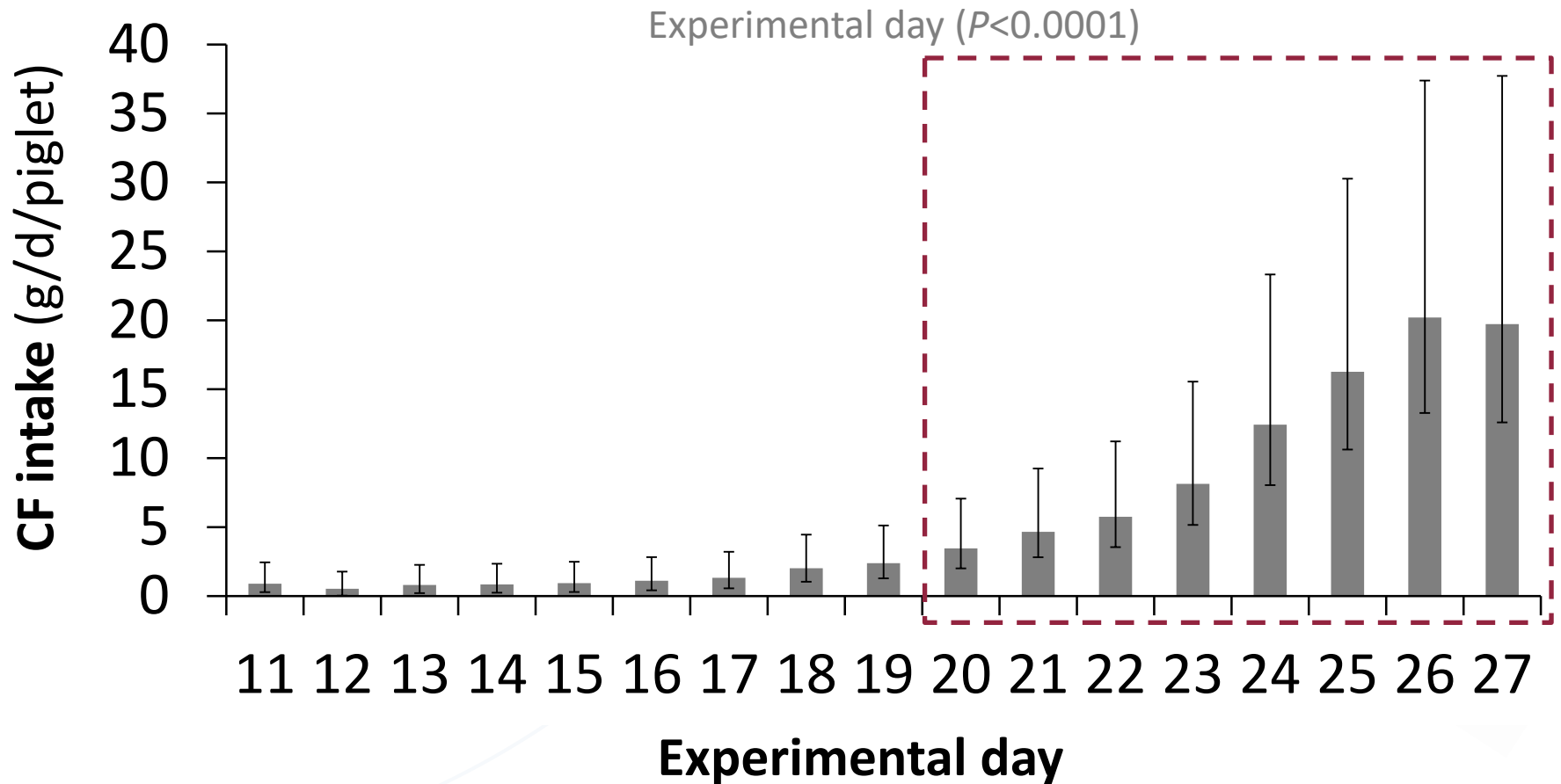
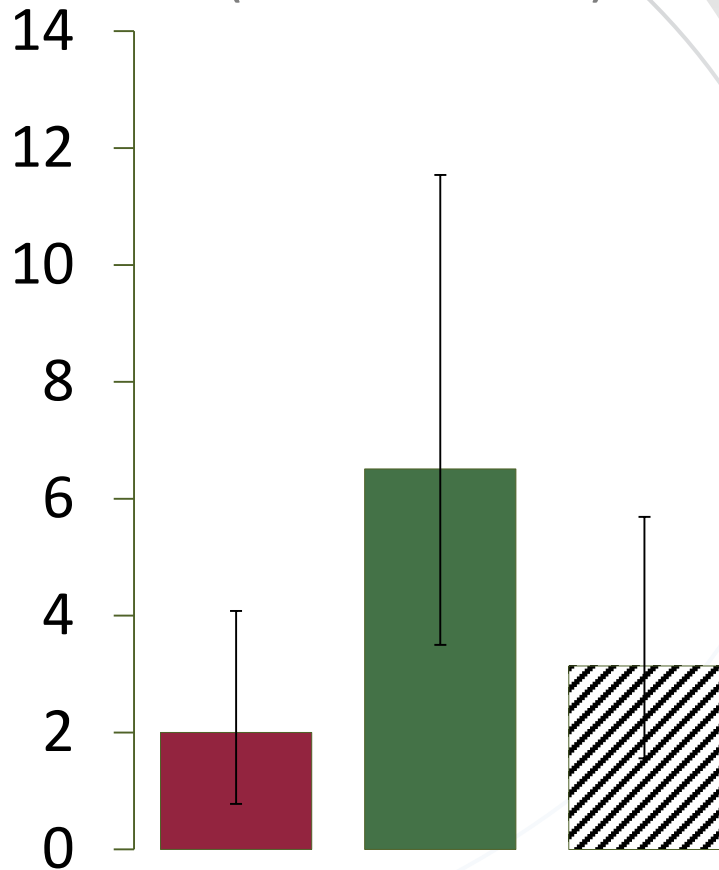**Model:** Proc GLM SAS; Random= batch; Back transformed data (log)

Results

Daily intake (g/day/piglet)
(*LSM ± 95% CI*)

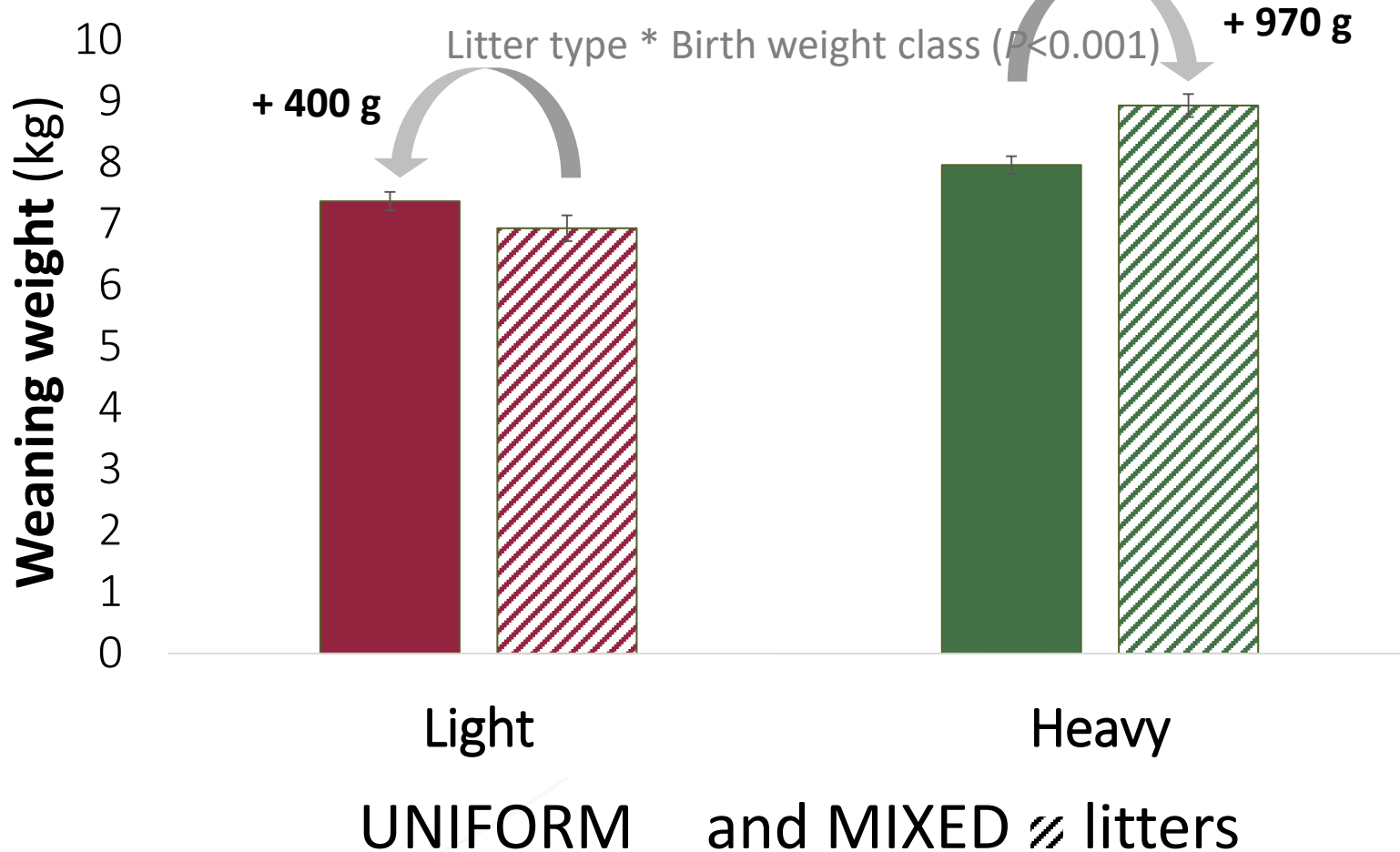**Total intake** (g/piglet)
(*LSM ± SEM*)
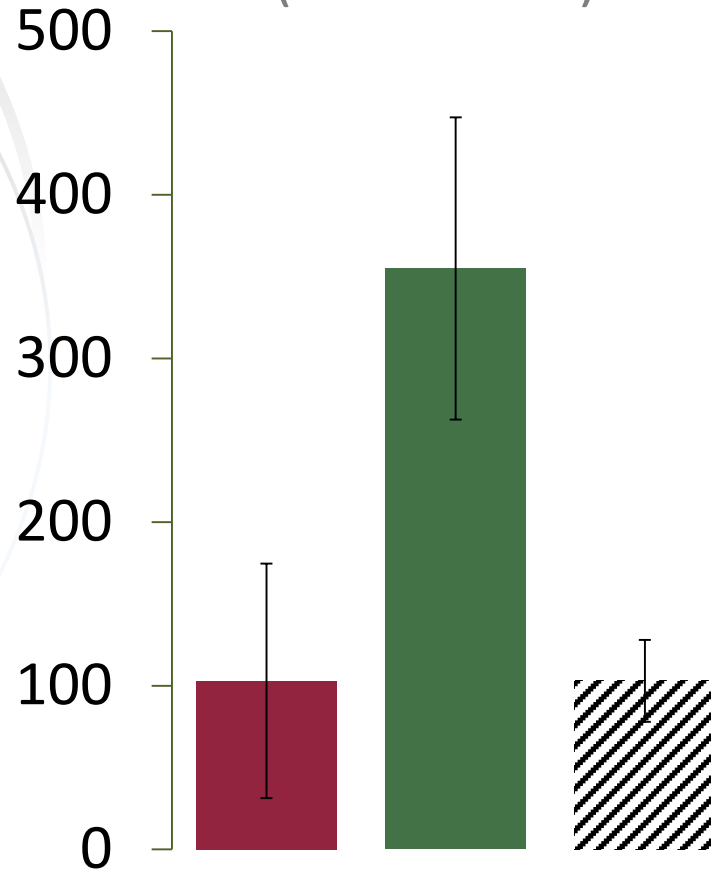
UNIFORM (**Light**)   ; UNIFORM (**Heavy**)   ; MIXED ⧄

Results

- **Pre-weaning performance** (*LSM ± SEM*)

Litter type * Birth weight class (*P*<0.001)

+ 970 g

+ 400 g

Weaning weight (kg)

Light   Heavy

UNIFORM   and MIXED ⁄ litters

Model: Proc Mixed SAS; Random= batch (litter); Weight= # of **L** and **N** piglets within litter

Results

- **Post-weaning performance** (*LSM ± SEM*)

Grower   *Finisher*   ⌐ g

Litter type * Birth weight class (*P*=0.0724)

+ 1100 g Litter type * Birth weight class (*P*=0.0203)

+ 1500 g

+ 400 g

No effect on ADG nor scaled ADG

MIXED ≈ litters

Body weight (kg)

45
40
35
30
25
1
1
10
5
0

Light   Heavy   Light   Heavy

UNIFORM   and MIXED ≈ litters
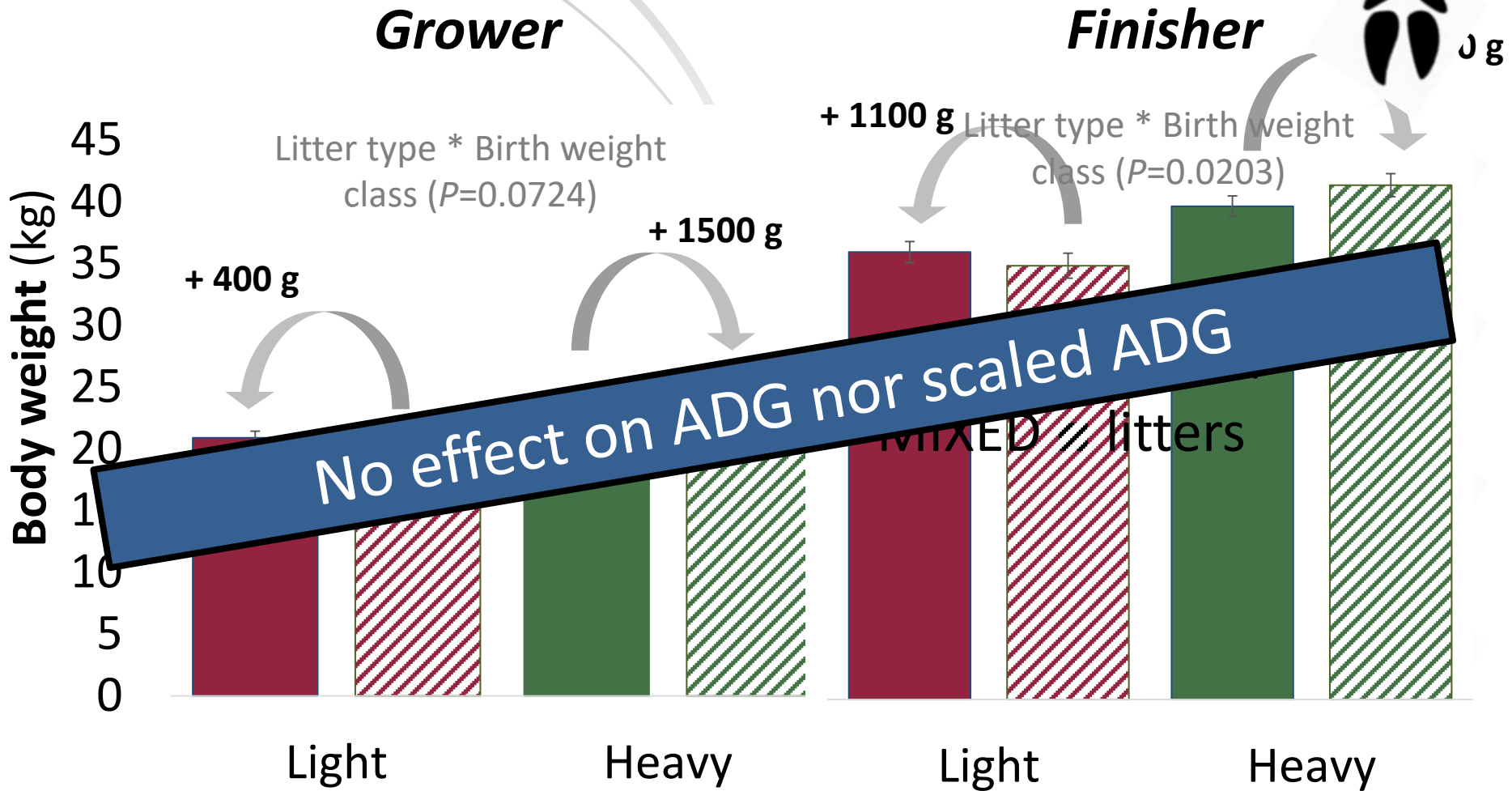
Model: Proc Mixed SAS; Random= batch (pen); Weight= # of **L** and **N** piglets within pen

Conclusions

The effect of cross fostering

- ↑ Performance of **Light** piglets in **UNIFORM** litters
  - ↓ # of piglets removed <4 kg at weaning

- ↓ Performance of **Heavy** piglets in **UNIFORM** litters
  - ↑ # of piglets removed for losing BW <10 days

Weaning weight advantage sustained to slaughter

The effect of creep feed provision

- Creep feed provision did NOT contribute to an improved pre-weaning performance

- **Heavy** piglets in **UNIFORM** litters ate the HIGHEST quantity

Acknowledgements

Project sponsors

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EAAP Scholarship

Thank you for your attention