

# Diurnal plasma zinc fluctuations in highly prolific sows

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# Introduction

## ➤ Zinc (Zn): why?

### Functions

- Growth & development
- Immune system
- DNA expression



# Introduction

- Determine Zn status

## Difficulties

- Zn requirements
- Markers
  - Albumin
  - Alkaline phosphatase (ALP)
  - Metallothionein (MT)
  - Plasma Zn

# Objective

Evaluate whether plasma Zn fluctuates throughout the day in breeding sows

# Materials and methods

## Animals

- 10 highly prolific sows (RA-SE Genetics)
  - 6 multiparous
  - 4 primiparous
- Mid-gestation: day 44
- 1 day



# Materials and methods

## Diets

- Feed intake:
  - Mid-gestation: 2.6 kg
- [Zn as ZnO] gestation diet: 129 mg/kg
- *Ad libitum* water

# Materials and methods

## Management

- Individual housing
  - Farrowing crates
  - Sides covered with epoxy coated multiplex



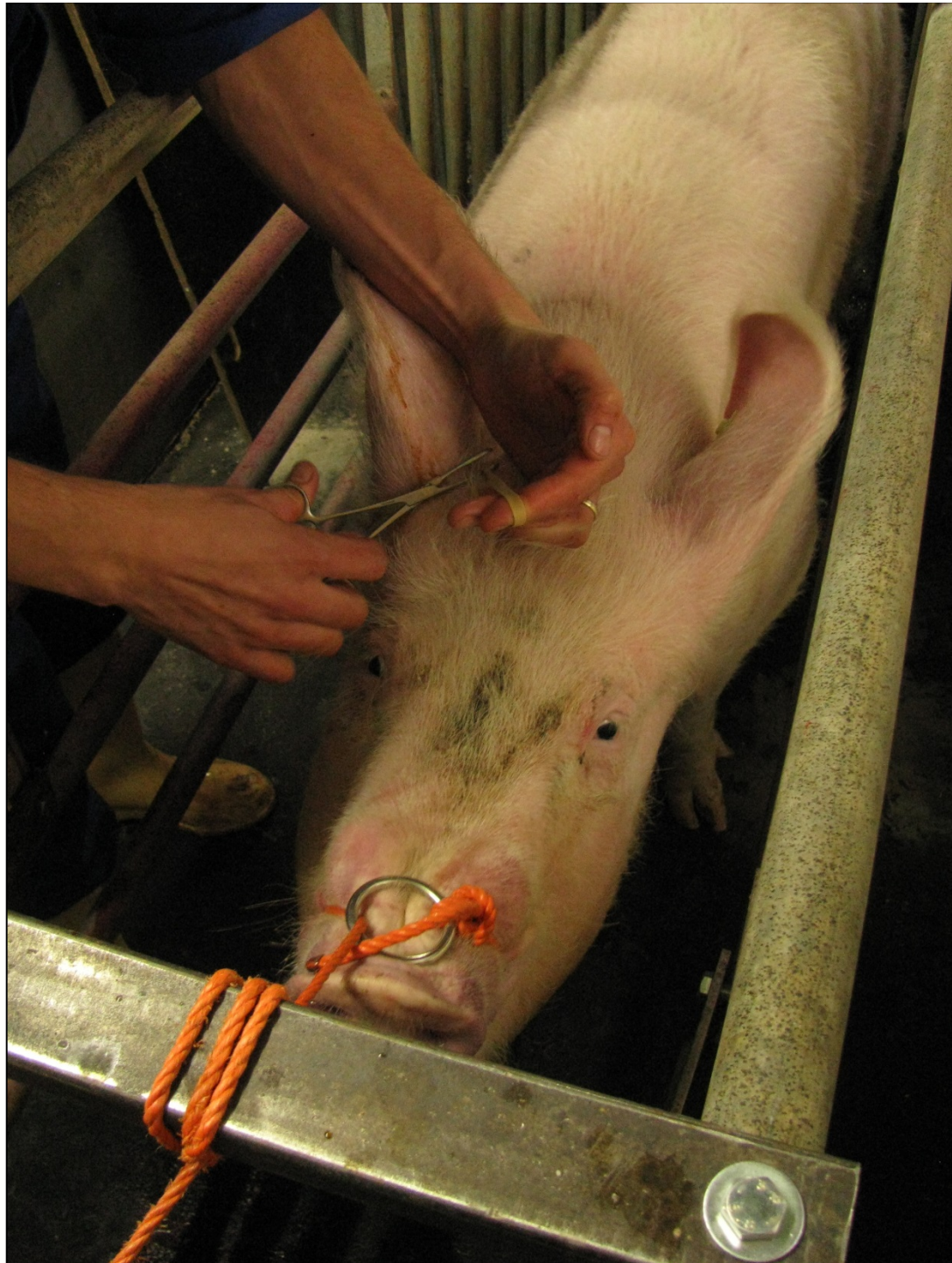
# Materials and methods

## Cannulation

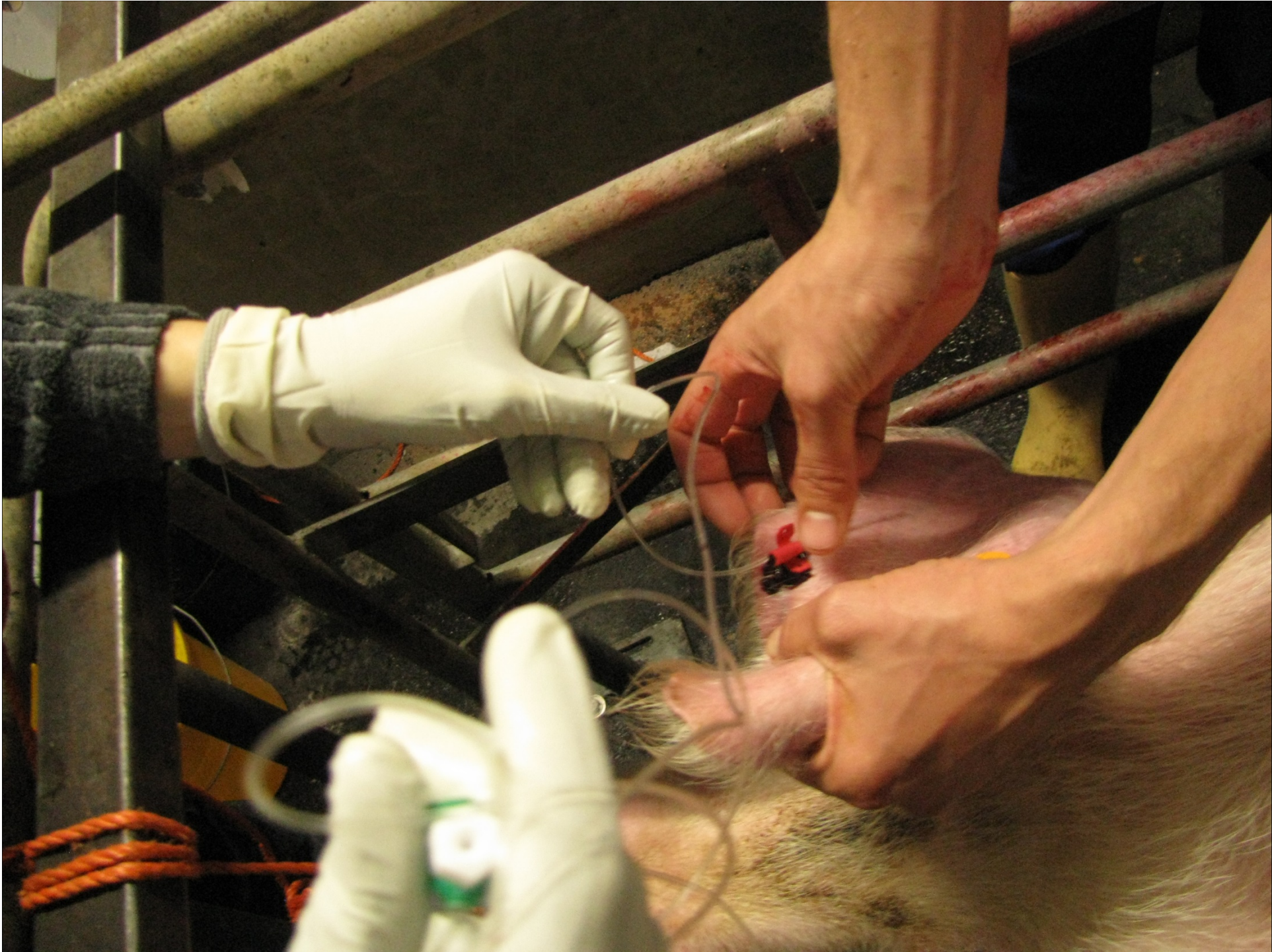
- Day -1
- Cannula
  - Ear vein
  - 175 cm polyvinylchloride tube (Ø 0.8mm)

(Wientjes *et al.*, 2012)





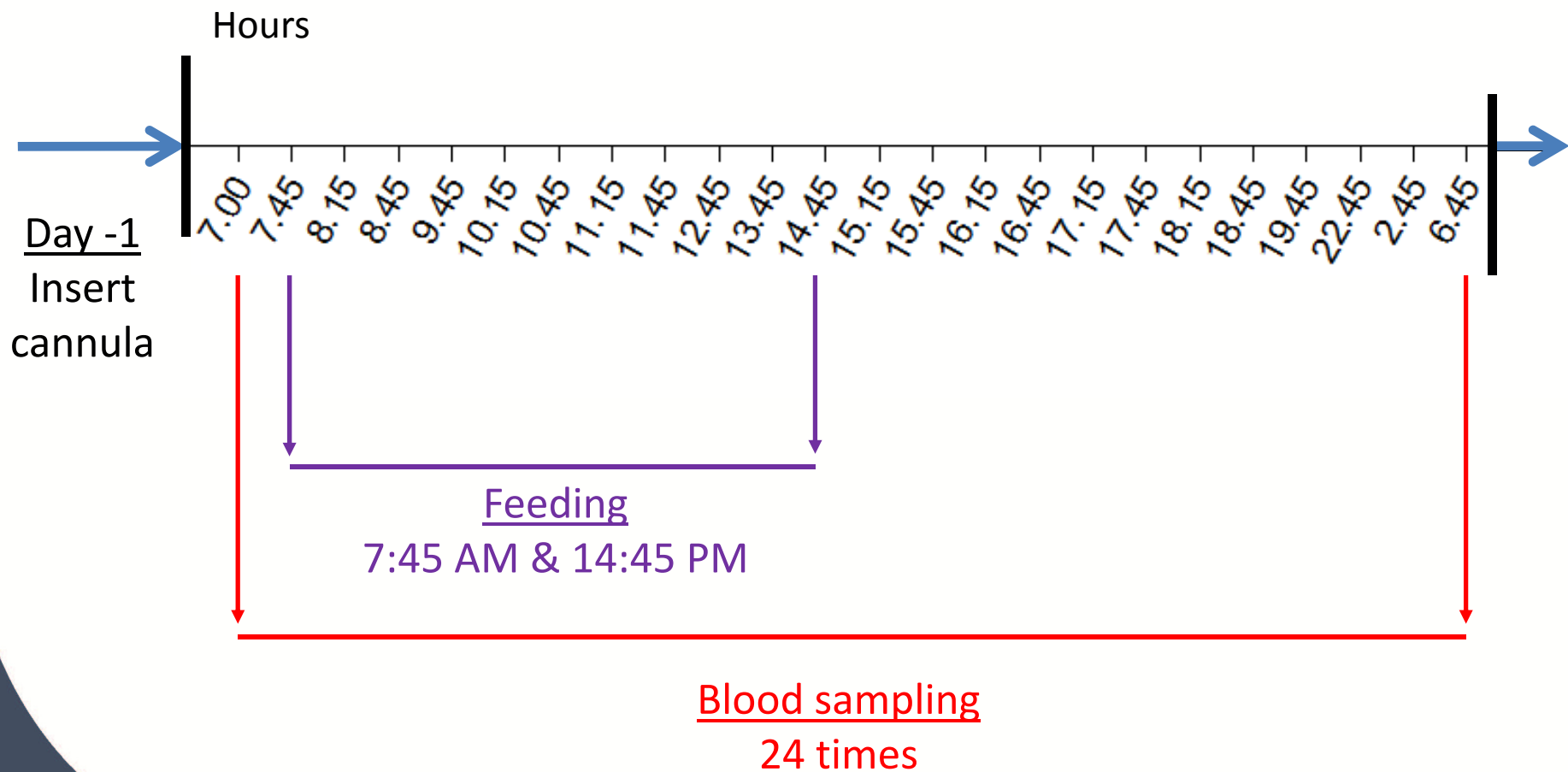


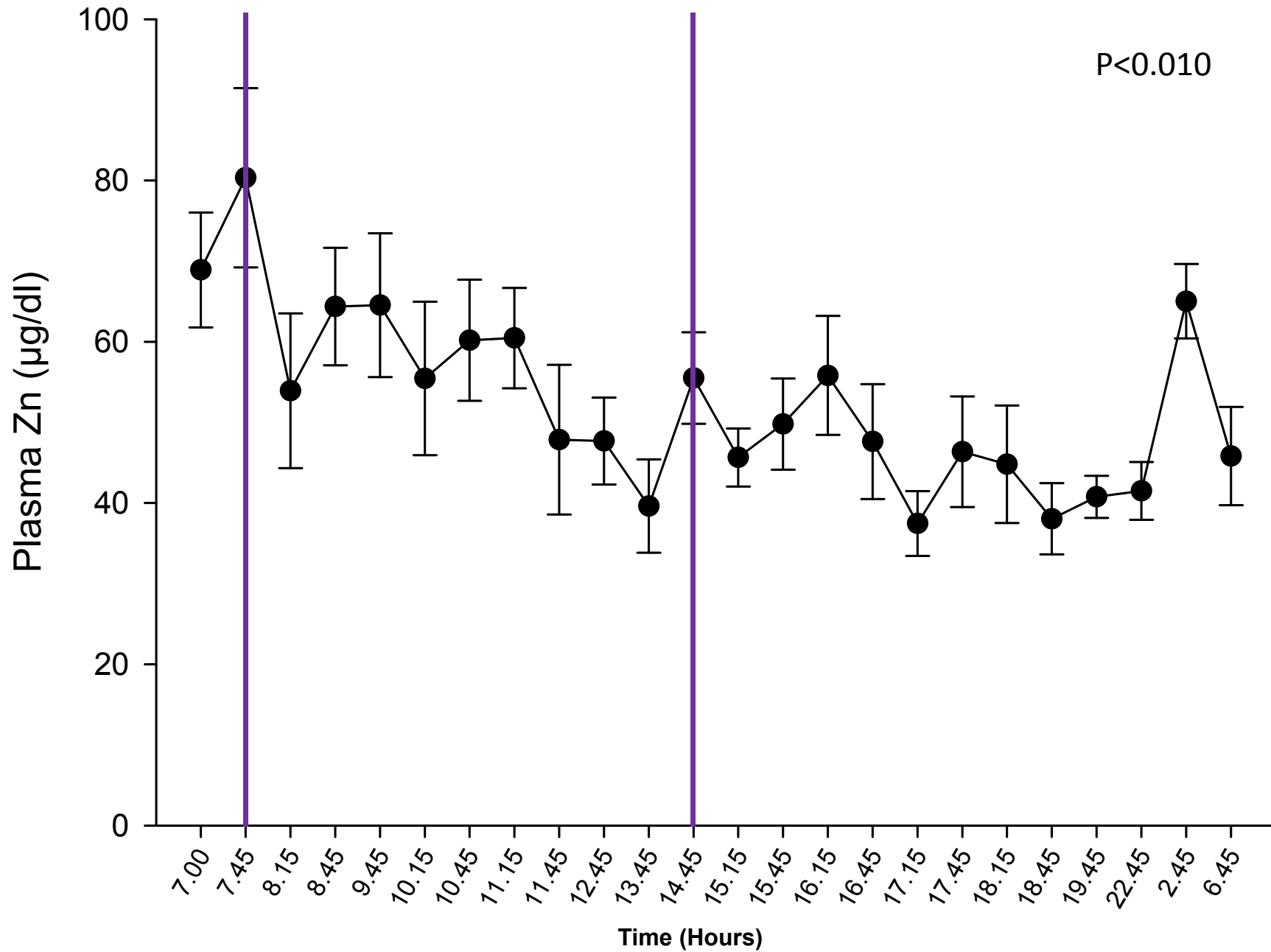


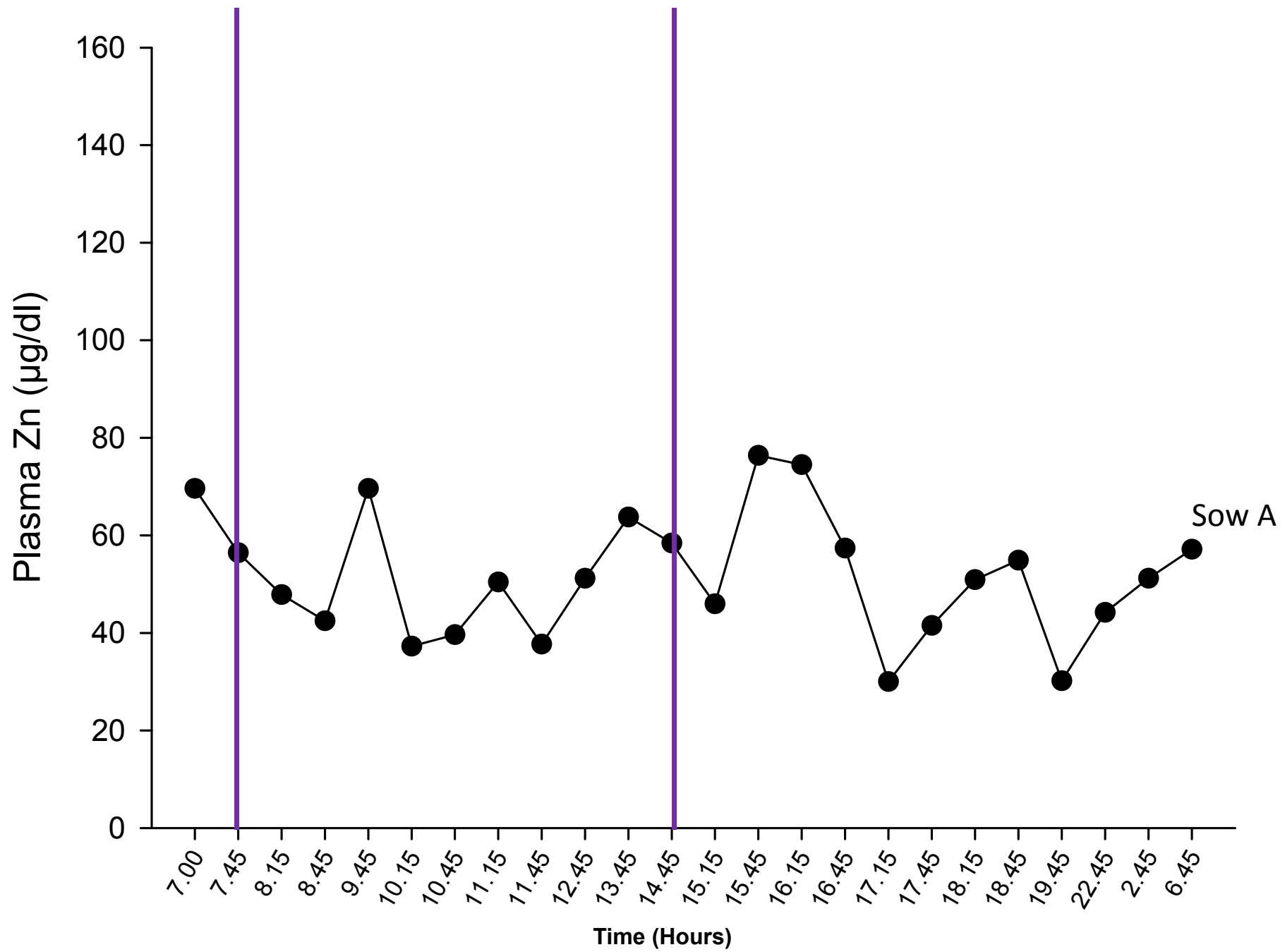




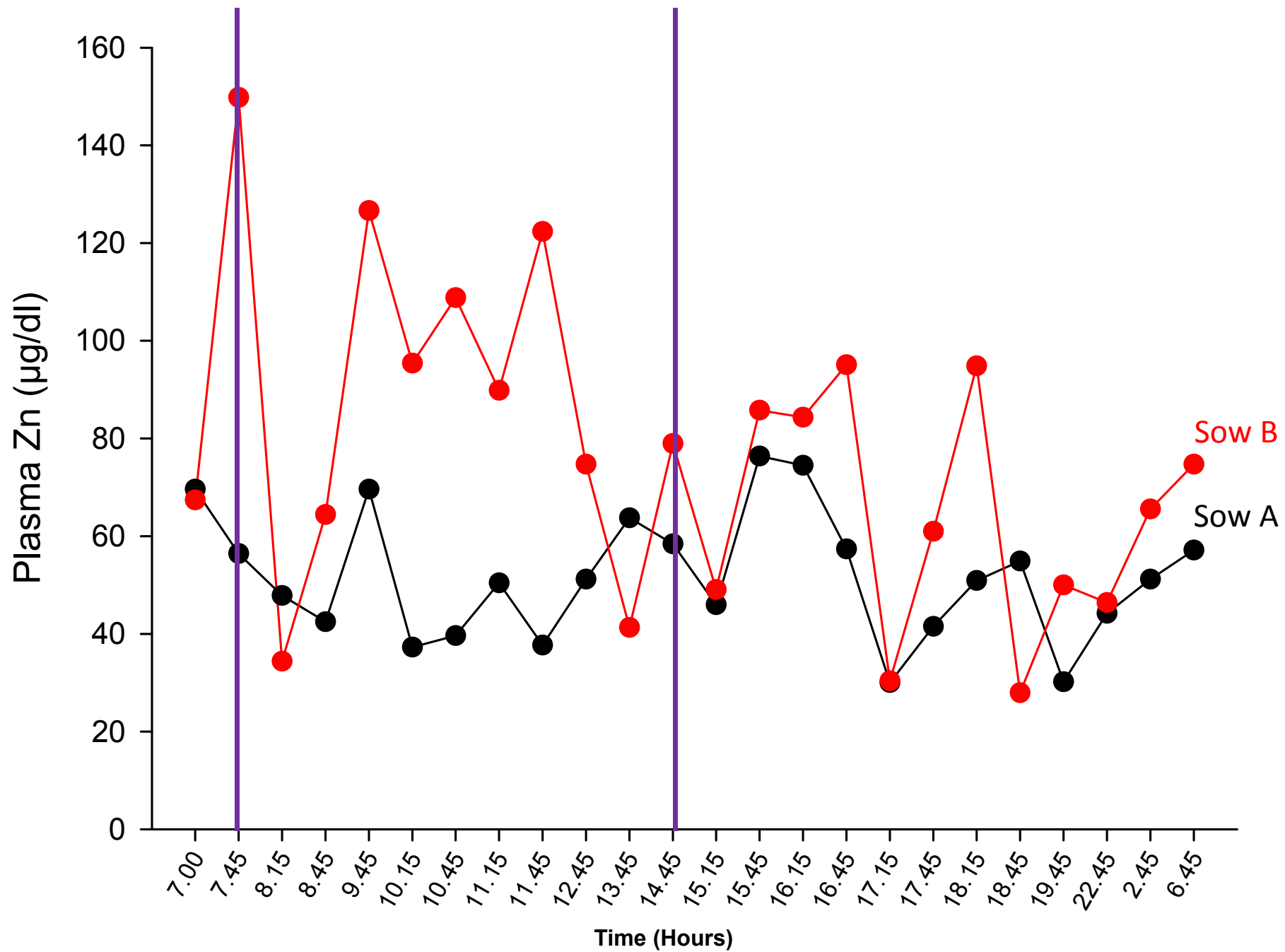
# Materials and methods











# Discussion

- Plasma Zn fluctuations
  - Humans
    - Decreased towards next feeding
    - Circadian rhythm

# Discussion

- Extremely high variation
  - Between sows
  - Between measurements at consecutive points in time of same sow
- Effect reproductive cycle



# Conclusion

## Plasma Zn as biomarker for Zn status

- Diurnal fluctuations

.....standardized moment of blood sampling

# Conclusion

## Plasma Zn as biomarker for Zn status

- High variations

.....to compare groups

# Thank you for your attention



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