ANTI-MÜLLERIAN HORMONE SECRETION IN DOE KIDS

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CONTEXT = 1st breeding in young goats

Success of 1st breeding is a major concern

Fertility rates after artificial insemination :

- highly variable
- and low, around 40% (Idèle, 2012).

Breeders consider two main criterias before breeding their does :

- age > 5 months
- weight > 32 kg

There is no known hormonal marker for sexual precocity.

ANTI-MÜLLERIAN HORMONE

- Anti-Müllerian hormone (AMH) is produced by granulosa cells on antral and pre-antral follicles.
- AMH is used in human medicine as a marker of the ovarian reserve.
- In cows and goats, AMH is a predictive endocrine marker of the response to a superovulation treatment and further embryo production (Monniaux *and al.,* 2011).

ANTI-MÜLLERIAN HORMONE

In ewe lambs, Lahoz et al. (2012) showed that AMH plasmatic concentration at 3,6 months of age was a predictive marker of fertility at first breeding.

In their experimental conditions, they could determine a threshold level allowing discrimination between low/high fertility potential ewe lambs (92pg/mL) .

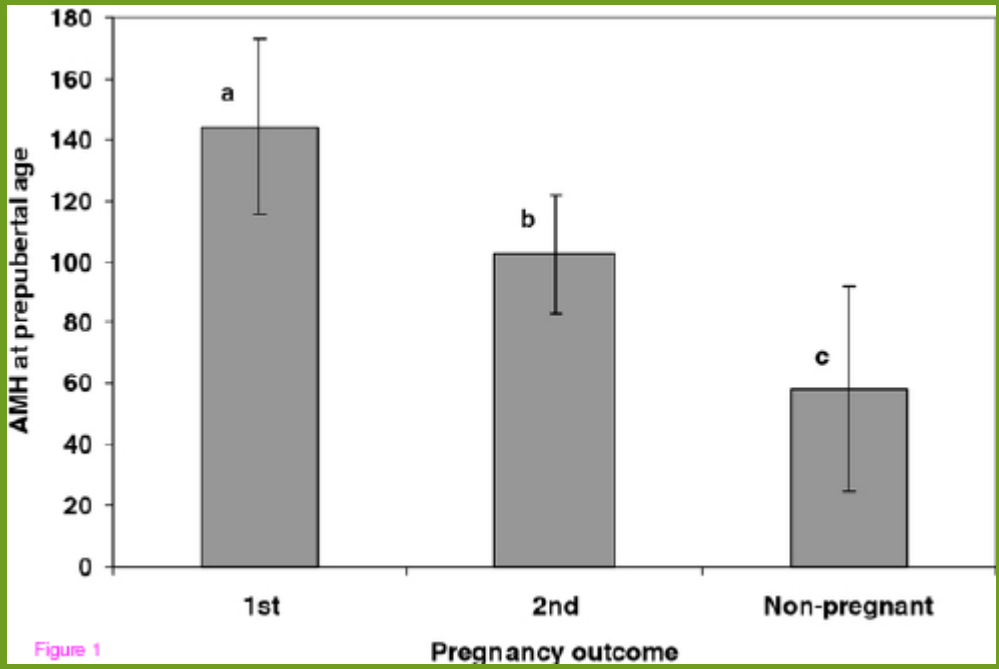


Figure 1

OBJECTIVE OF THE STUDY

- The main objective of this study was to monitor AMH secretion variations from birth to first reproduction on doe kids and to confront AMH values at a given age to first reproduction fertility rates.
- The long term objective is to assess the predictability of sexual precocity and fertility with AMH plasma levels in young nanny goats.

EXPERIMENTAL DESIGN

Experiment 1 = INRA experimental flock (PATUCHEV)

- 30 does born in november

- **monthly monitoring** of :
  - AMH plasmatic levels,
  - weight and chest width.
- **transrectal ultrasonography** twice before breeding for follicular activity monitoring
- bred during **non-breeding season** :
  - AI mid-june
  - Bucks from 3rd July until 2nd August

EXPERIMENTAL DESIGN

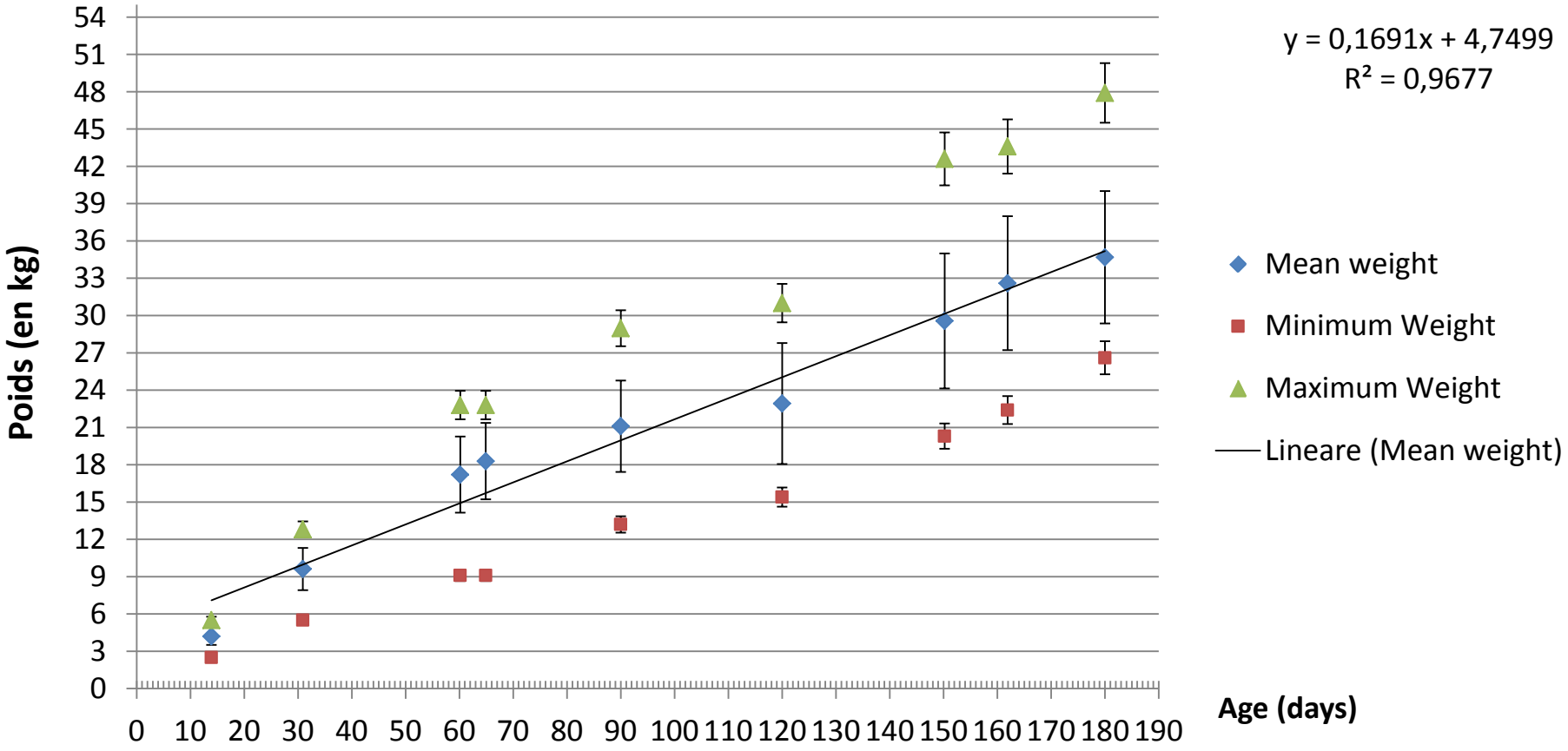
- **Experiment 2 =** in a private farm
  - 110 does born from AI during late september
  - **AMH assays** at age 3 months and 6 months (+/- 4d)
  - bred with bucks during **seasonal anoestrus**

1 MONTHLY MONITORING

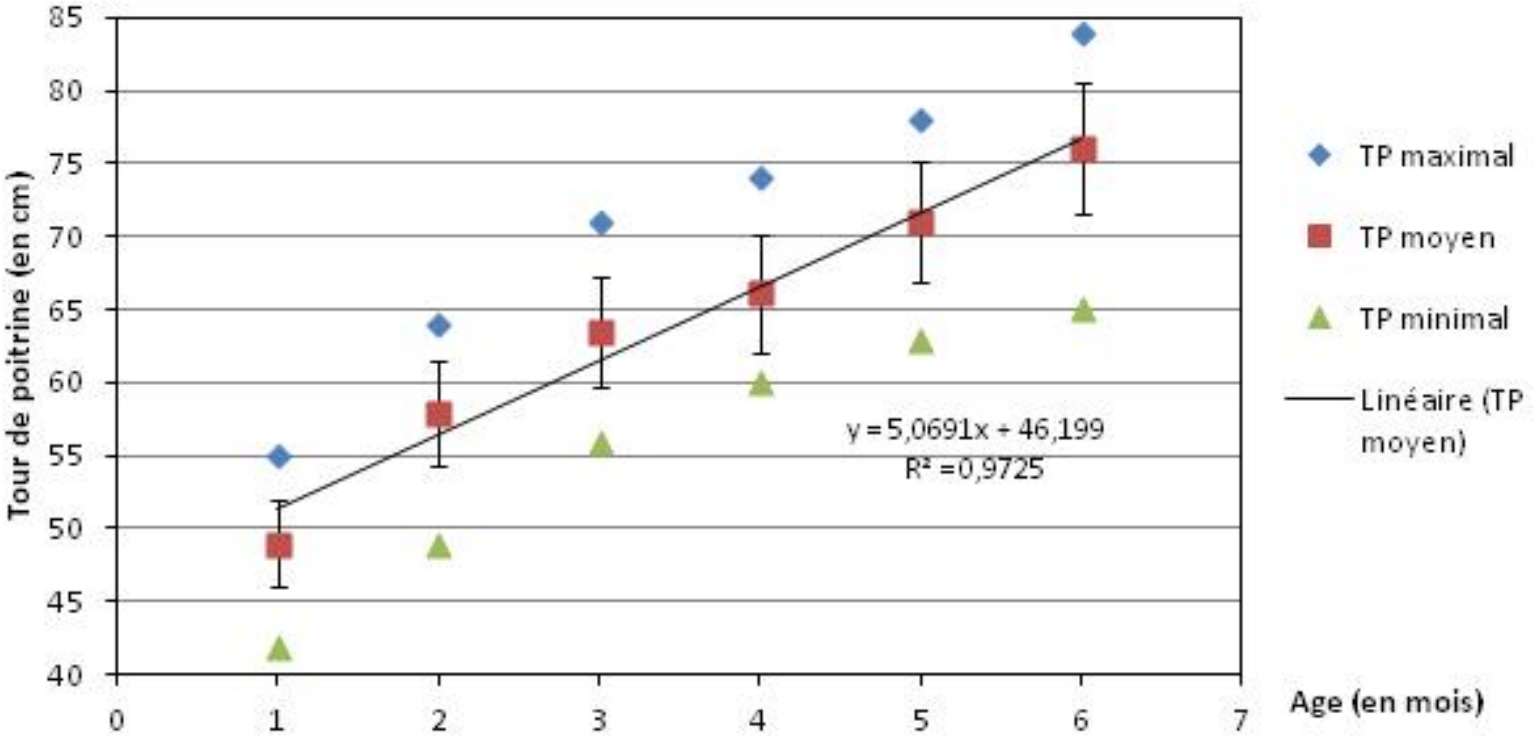
EXPERIMENTAL FLOCK

Weight

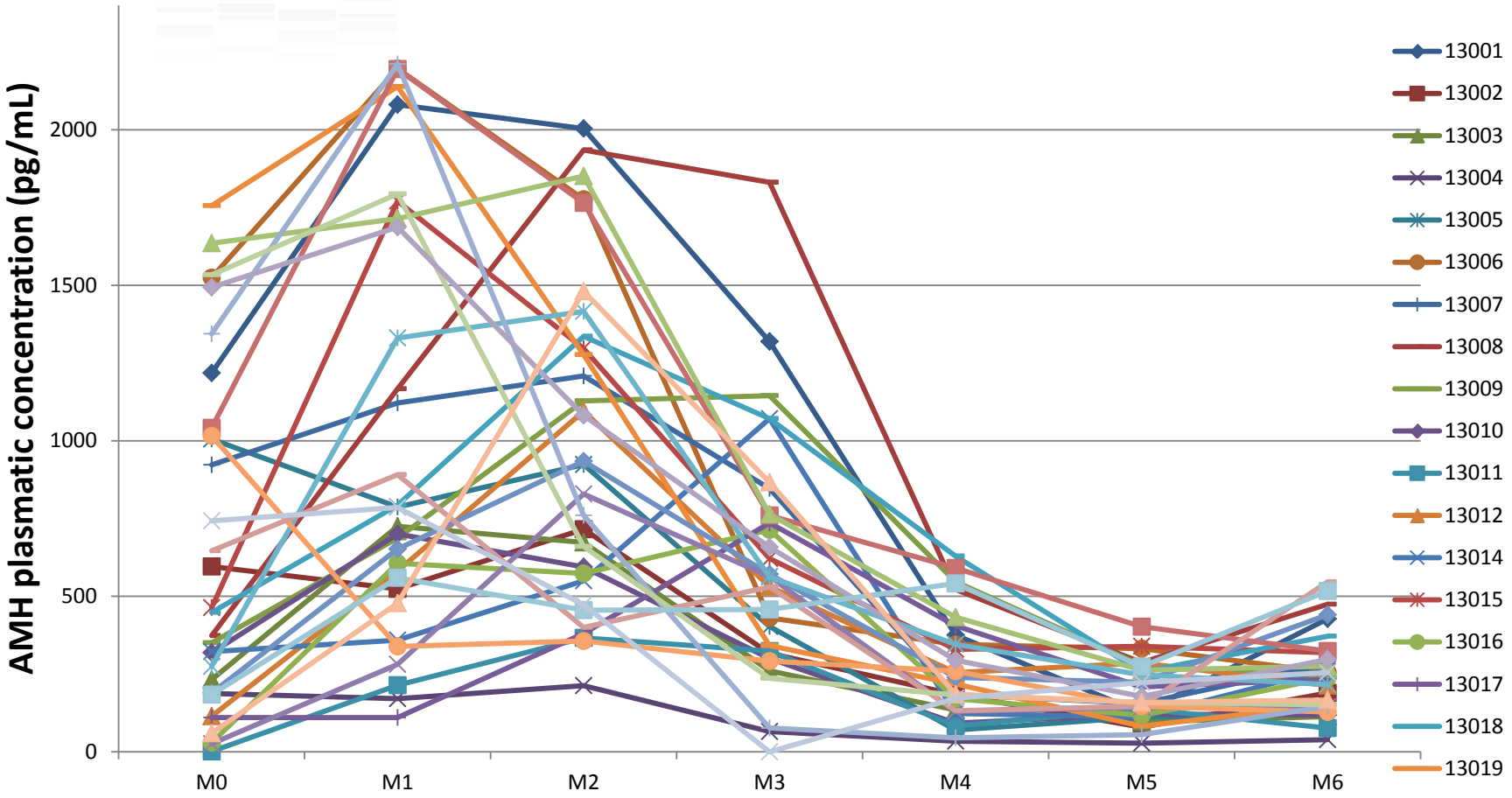
Weight monthly variations



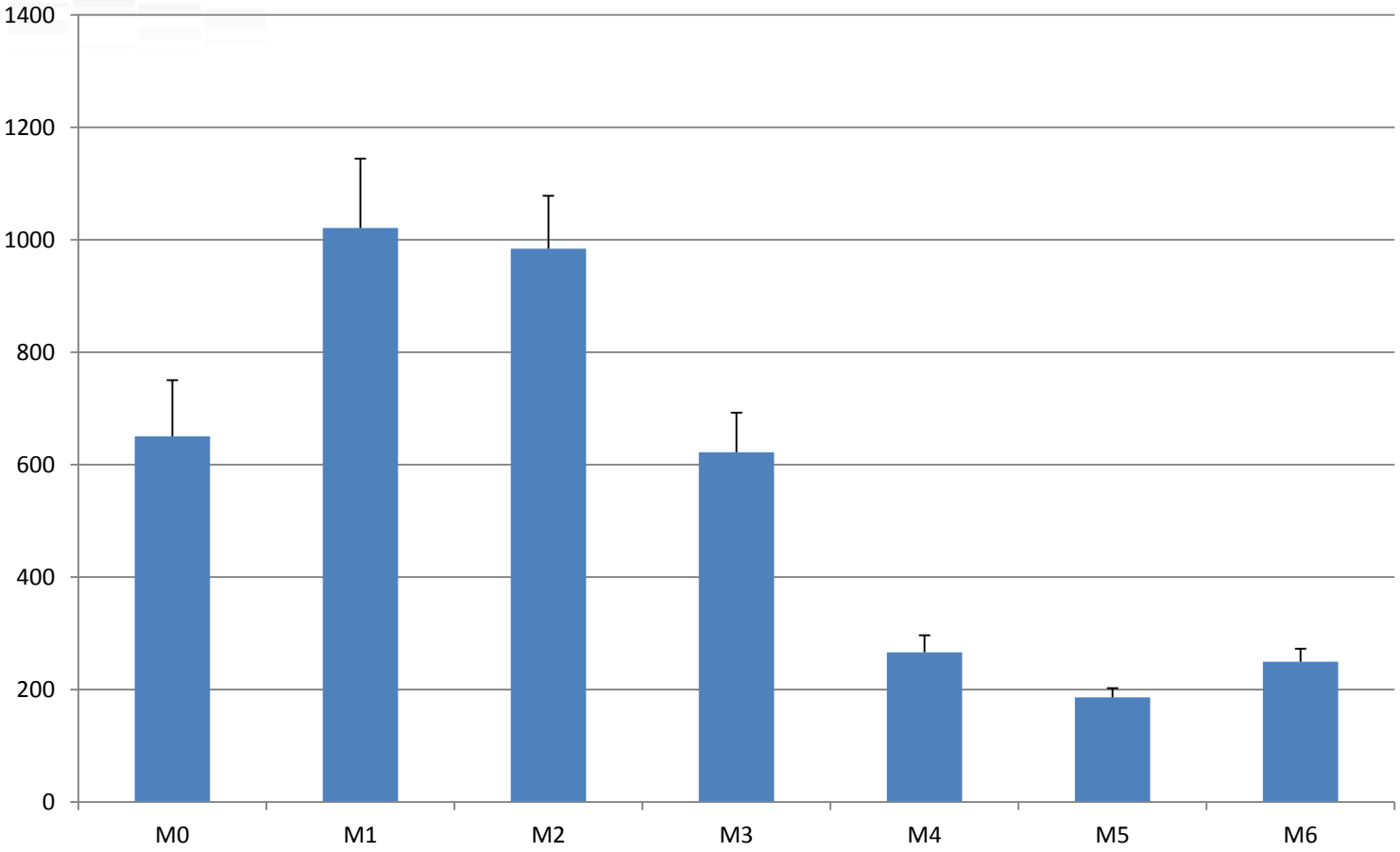
Chest width


85
80
75
70
65
60
55
50
45
40
Tour de poitrine (en cm)
0
1
2
3
4
5
6
7
Age (en mois)
y = 5,0691x + 46,199
R² = 0,9725
TP maximal
TP moyen
TP minimal
Linéaire (TP moyen)

Individual AMH plasmatic level per month



Mean AMH plasmatic level (n=31)



Experiment 1 = monthly monitoring

AMH secretion seems to follow a pattern
Levels are higher than in lambs

In spite of photoperiodic treatment + melatonin, cyclicity had not resumed at the time of synchronisation (assessed by ultrasonography)

Fertility was very low after AI (~25%) so further fertility results with bucks are needed to better assess the predictive value of AMH plasmatic level

2 AMH LEVEL AT GIVEN AGE / FERTILITY

PRIVATE FARM

Fertility

n = 107 does

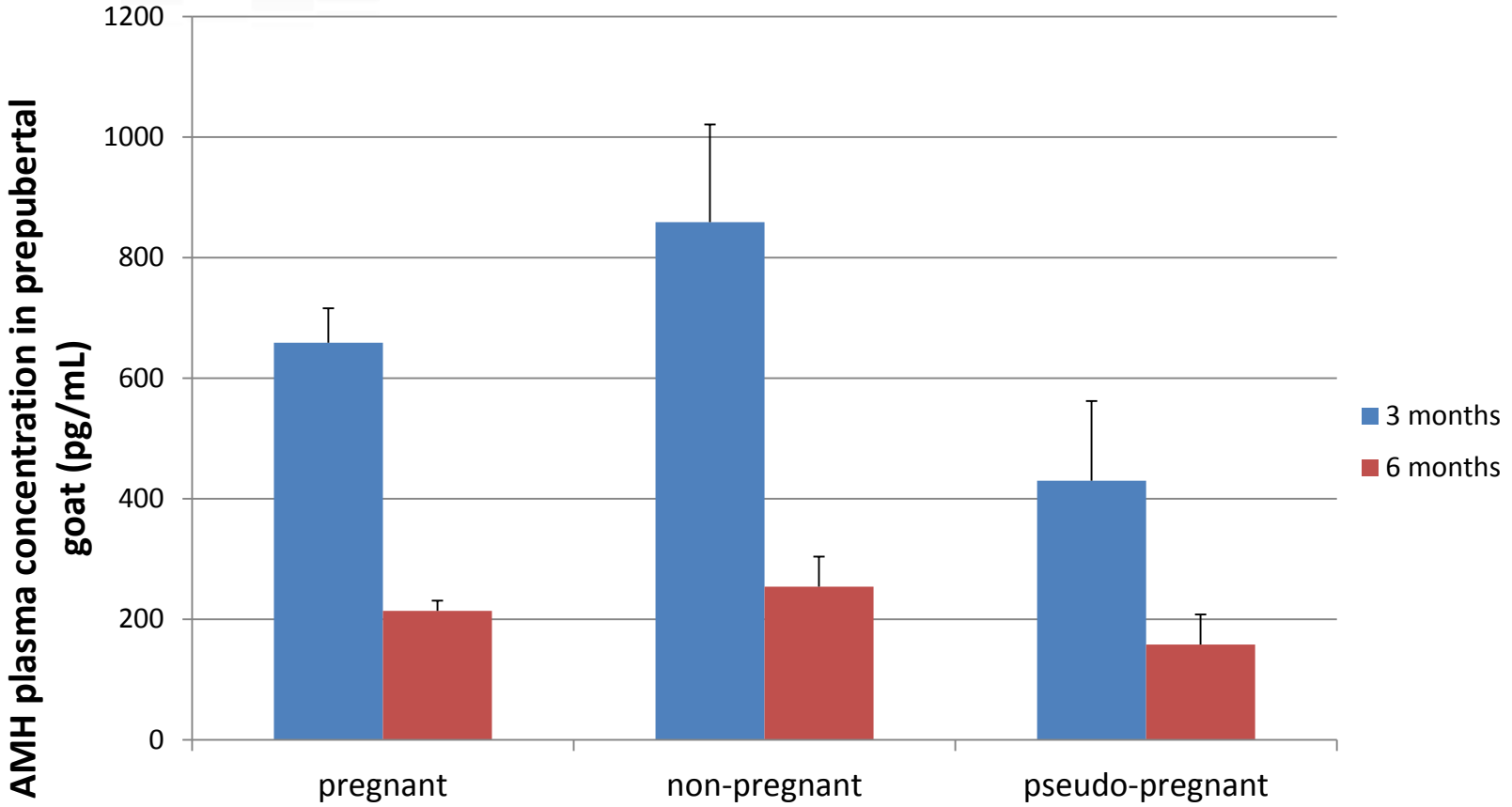
(complete breeding info + AMH samples)

- **5 pseudopregnant**
- **11 non-pregnant**

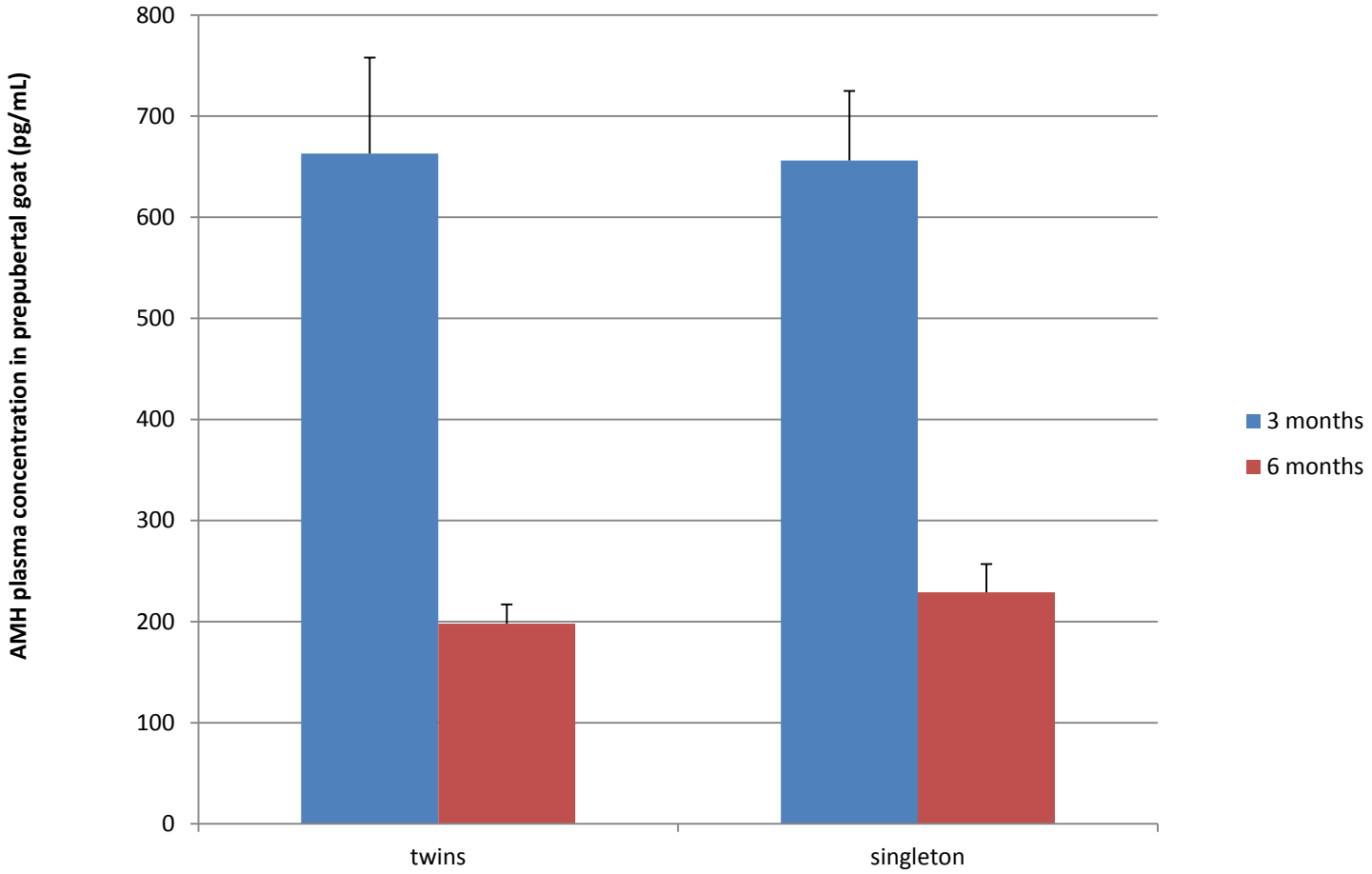
- **91 pregnant**

Global fertility = 85%

AMH plasmatic level and fertility



AMH plasmatic level and litter size (assessed by echography)



Experiment 2 = predictive value of AMH at 3 or 6 months of age

High fertility does not allow us to find a significant difference between AMH levels of pregnant and non-pregnant does

Results seem inversed as compared to lambs (higher value = lower fertility)

AMH level at 3 and 6 month of age does not seem predictive of litter size

Perspectives under progress…

- **Further thorough analysis of AMH / fertility correlation**
- **Monthly monitoring on a group of doe kids to be bred during breeding season**

THANK YOU
for your attention

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