

# Effect of a higher dose of gonadorelin hydrochloride at the first GnRH of the breeding-Ovsynch of a fertility program on ovulation rate and pregnancies per AI in first service lactating Holstein cows



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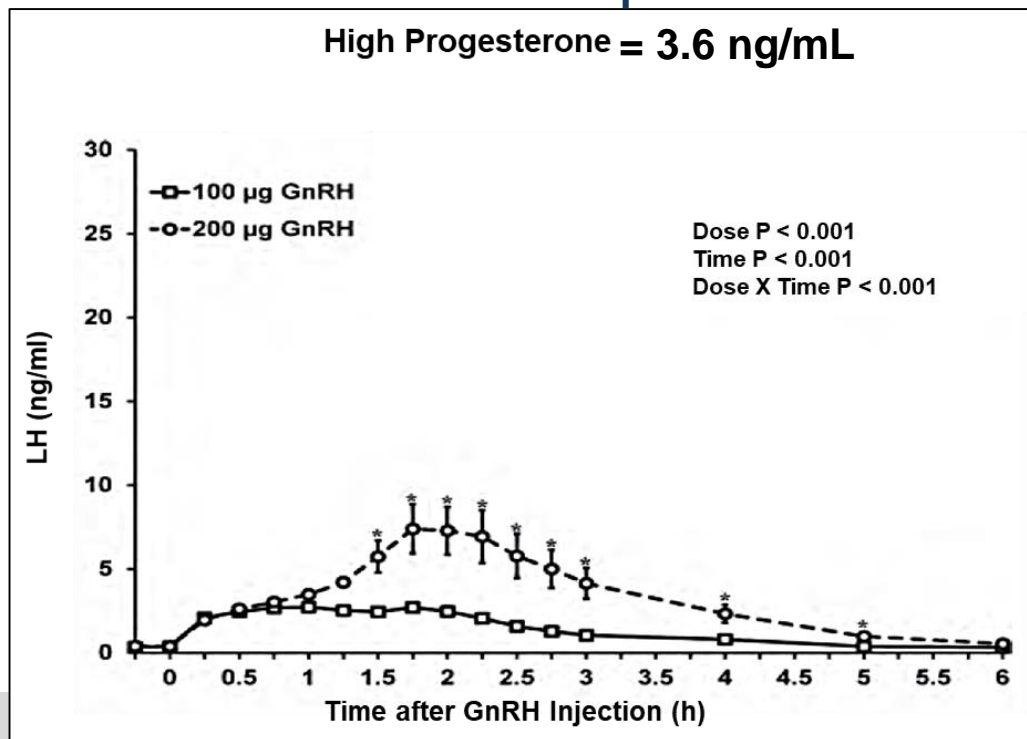
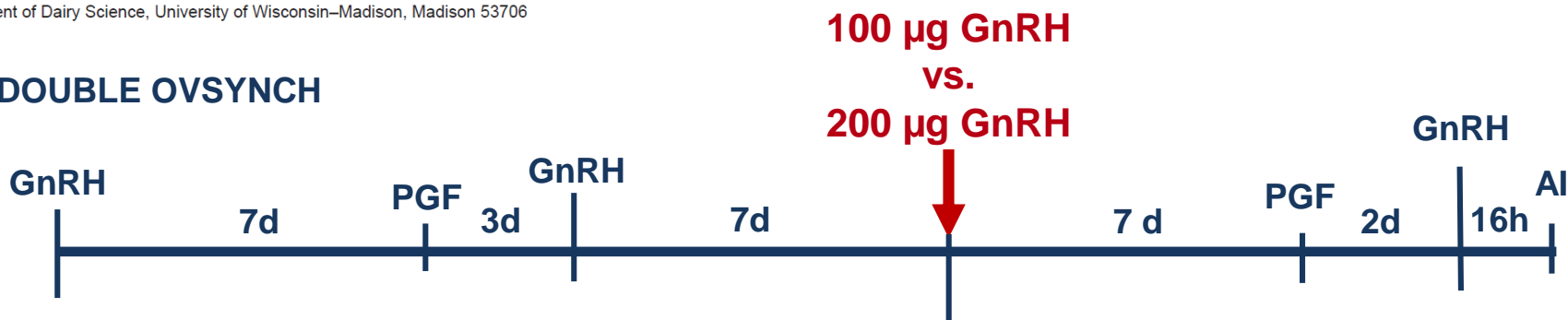


School of  
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## Effect of progesterone on magnitude of the luteinizing hormone surge induced by two different doses of gonadotropin-releasing hormone in lactating dairy cows

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### DOUBLE OVSYNCH



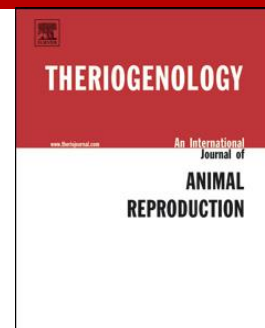
# Effect of increasing GnRH and PGF<sub>2α</sub> dose during Double-Ovsynch on ovulatory response, luteal regression, and fertility of lactating dairy cows

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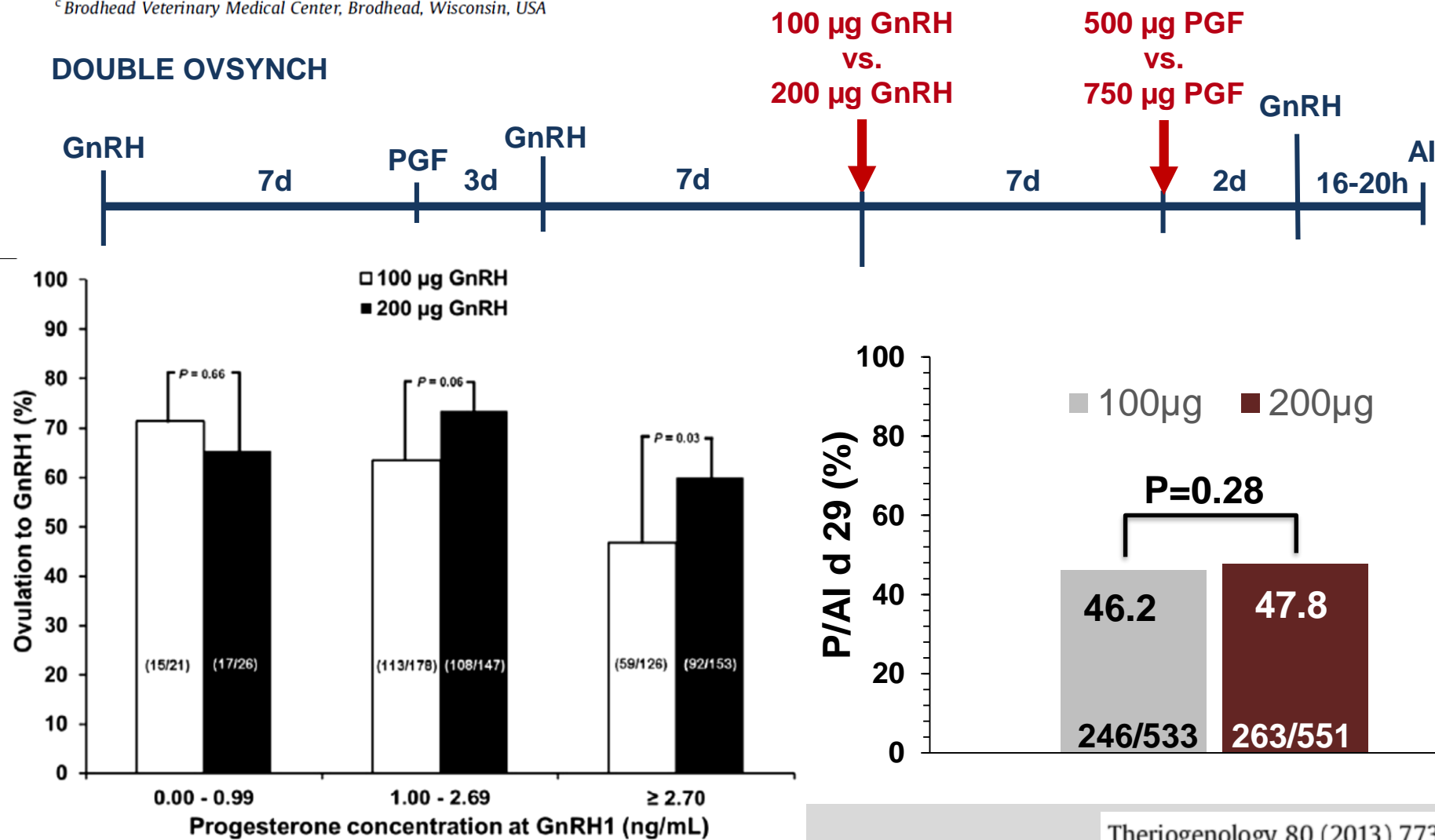
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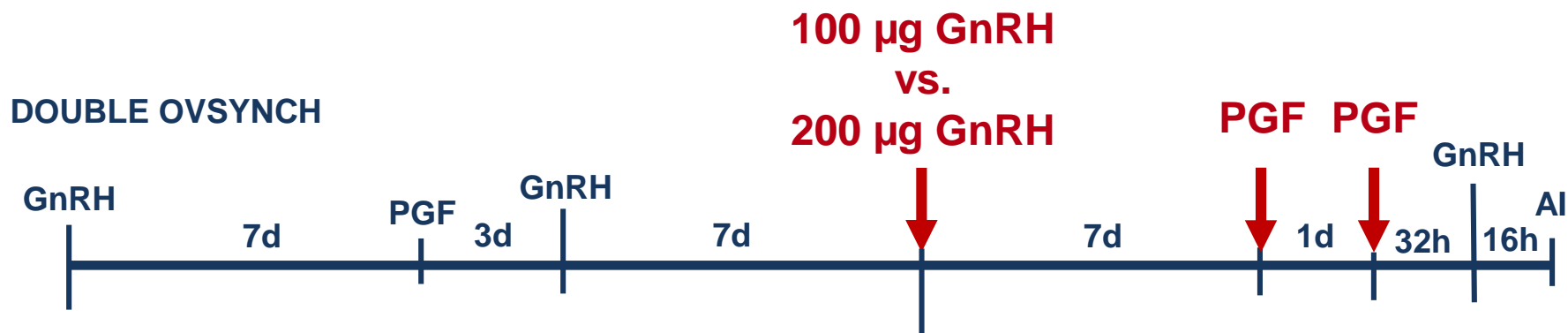
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## DOUBLE OVSYNCH



# Objective

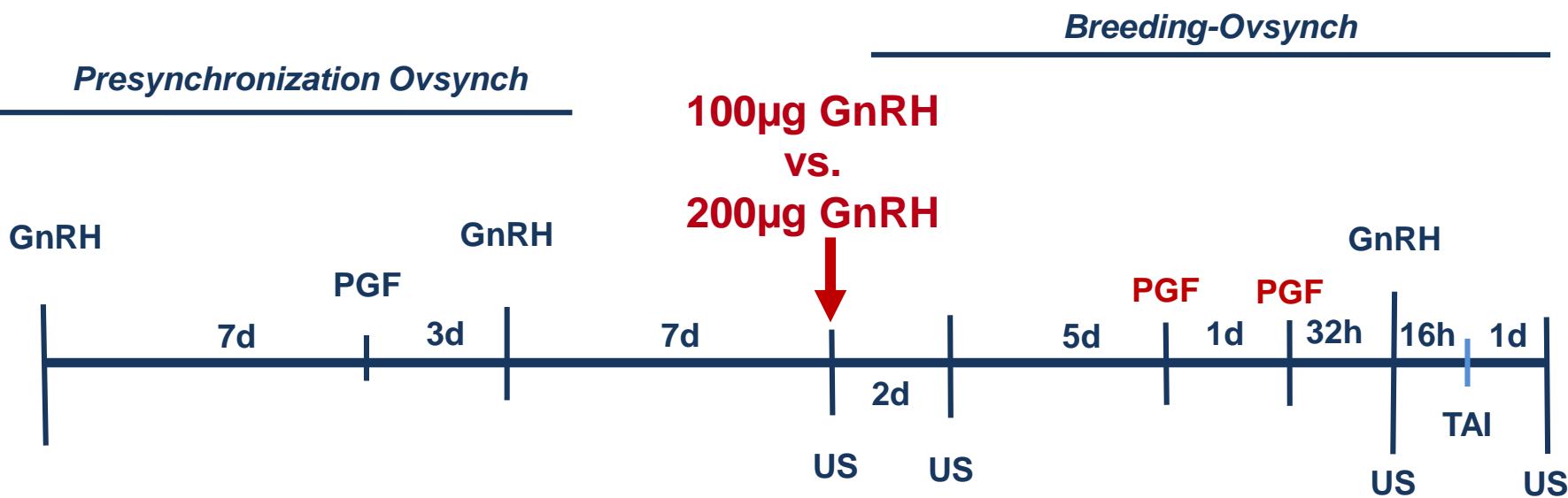


Improve the ovulation rate at the first GnRH of the breeding-Ovsynch by increasing the dose of gonadorelin hydrochloride, and thereby enhance first service pregnancies per AI in lactating dairy cows treated with Double-Ovsynch with two PGF.

# Hypothesis

Cows receiving a 200 $\mu$ g dose of gonadorelin hydrochloride will have a higher ovulatory response to the first GnRH of the breeding Ovsynch and P/AI compared with cows that receive 100 $\mu$ g of GnRH.

# Experimental design



- Complete randomized design
- September of 2019 to September of 2020
- GnRH (gonadorelin hydrochloride) and PGF (25mg dinoprost tromethamine)
- Holstein cows, n= 1,912 (primiparous: n= 720; multiparous: n= 1,192)
- DIM at day of treatment: 64 – 75 primiparous, 59 – 70 multiparous
- Average milk production at treatment: Mult.: 56.3 ± 5.8 kg Prim.: 39.9 ± 4.8 kg
- Ultrasound (US): day of treatment (n= 1,295) and last GnRH (n= 910)

- **Semen:**

- Conventional semen: Angus (primiparous: n= 21 ; multiparous: n= 292) and Holstein (primiparous: n= 302; multiparous: n= 794) sires
- Sexed semen (primiparous: n= 235; multiparous: n= 42)

- **Cows that did not receive Timed-AI:**

- Delayed AI: primiparous: n= 41; multiparous; n= 18
- Embryo transfer: primiparous: n= 113; multiparous; n = 43

- **Pregnancy diagnosis:**

- US at 32 and 46 d post-AI by farm vets blind to treatments

- **Statistical analysis:**

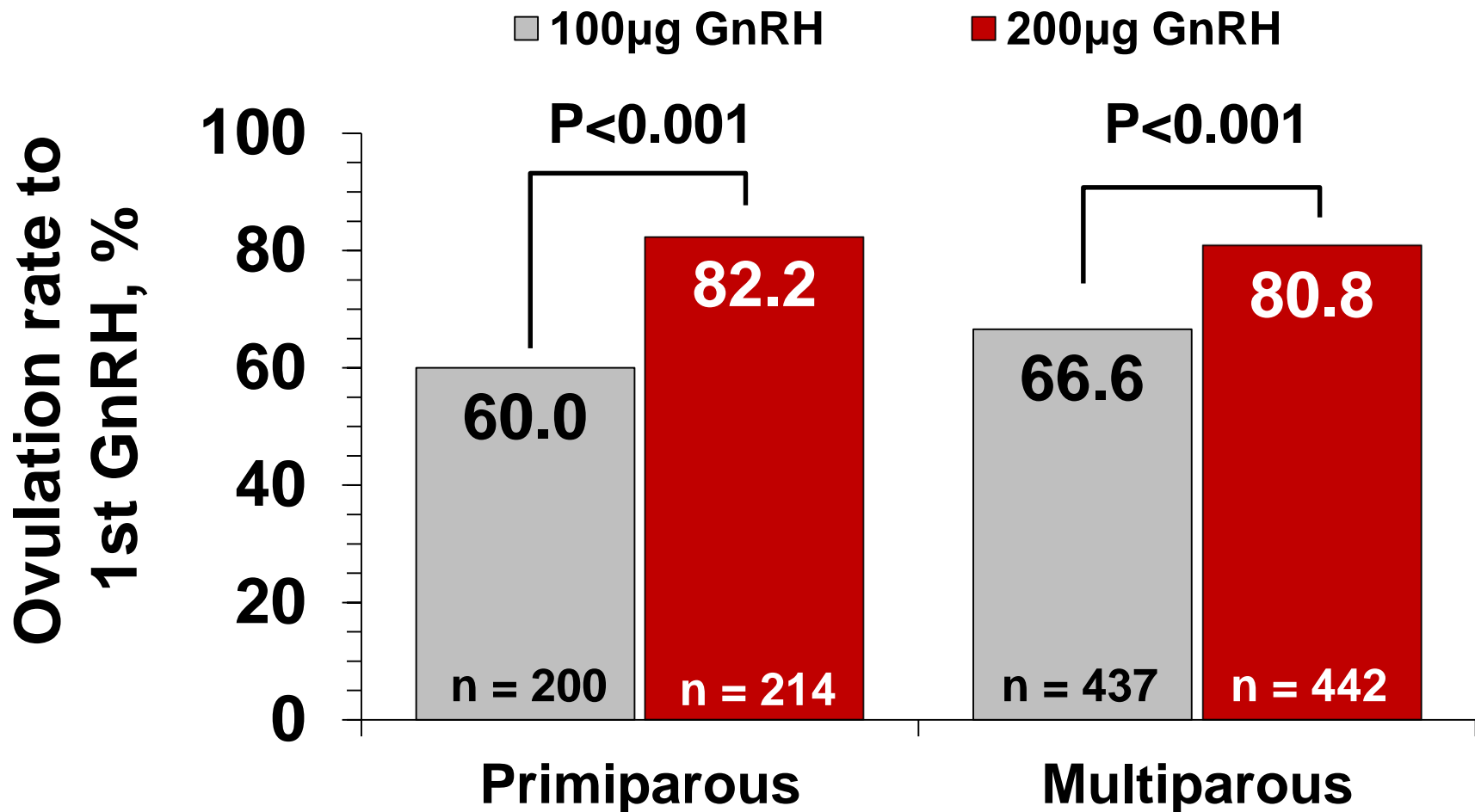
- Binary variables:

- E.g., Ovulation rate, P/AI (only conventional semen)
- Logistic Regression (Proc Glimmix – SAS), one tailed test
- Fixed effects: treatment, parity (1 vs 2+) and treatment by parity interaction.

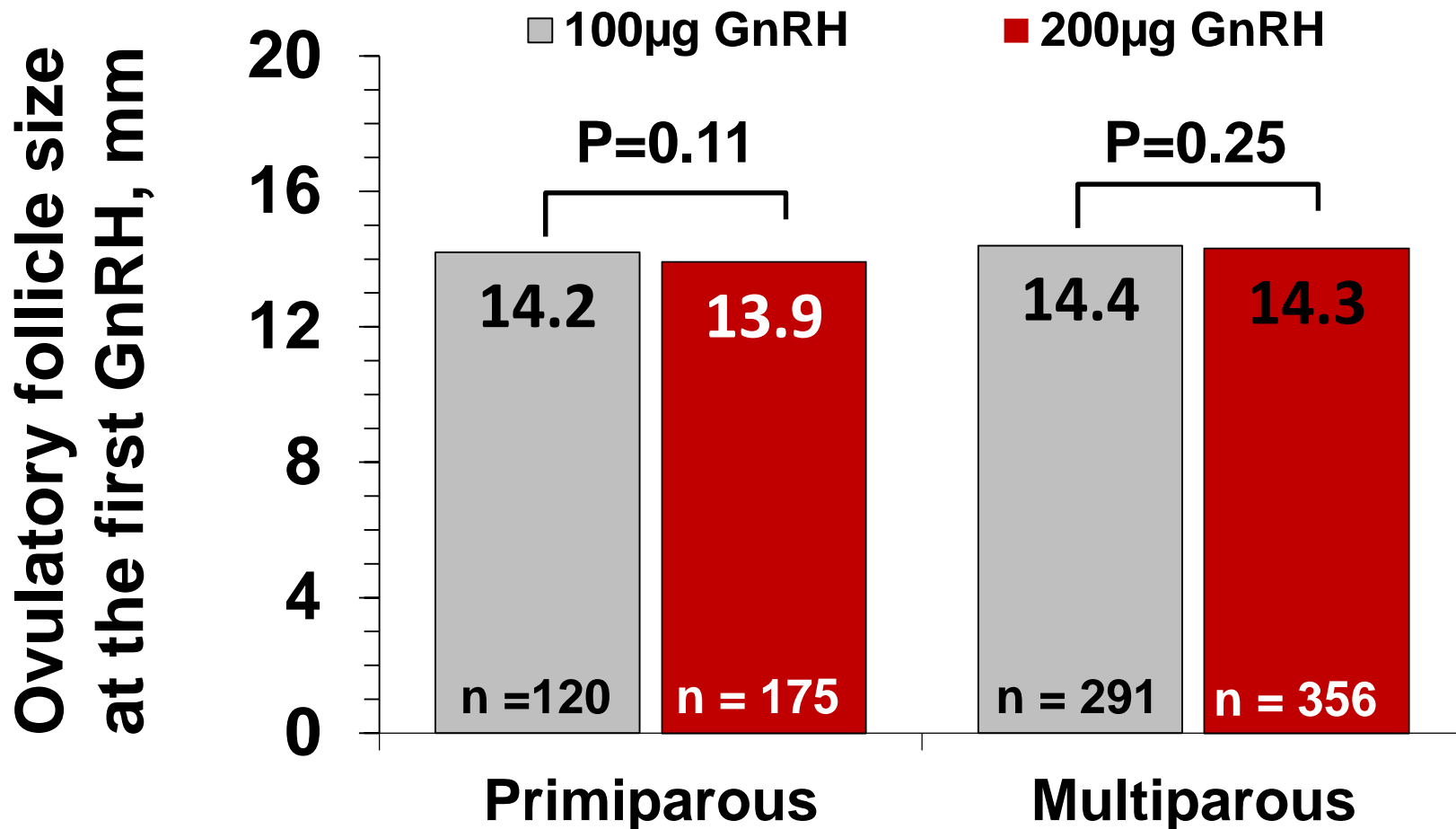
- Continuous variables:

- E.g., total luteal area and follicle size
- Linear Regression (Proc Mixed – SAS)
- Fixed effects: treatment, parity (1 vs 2+) and treatment by parity interaction.

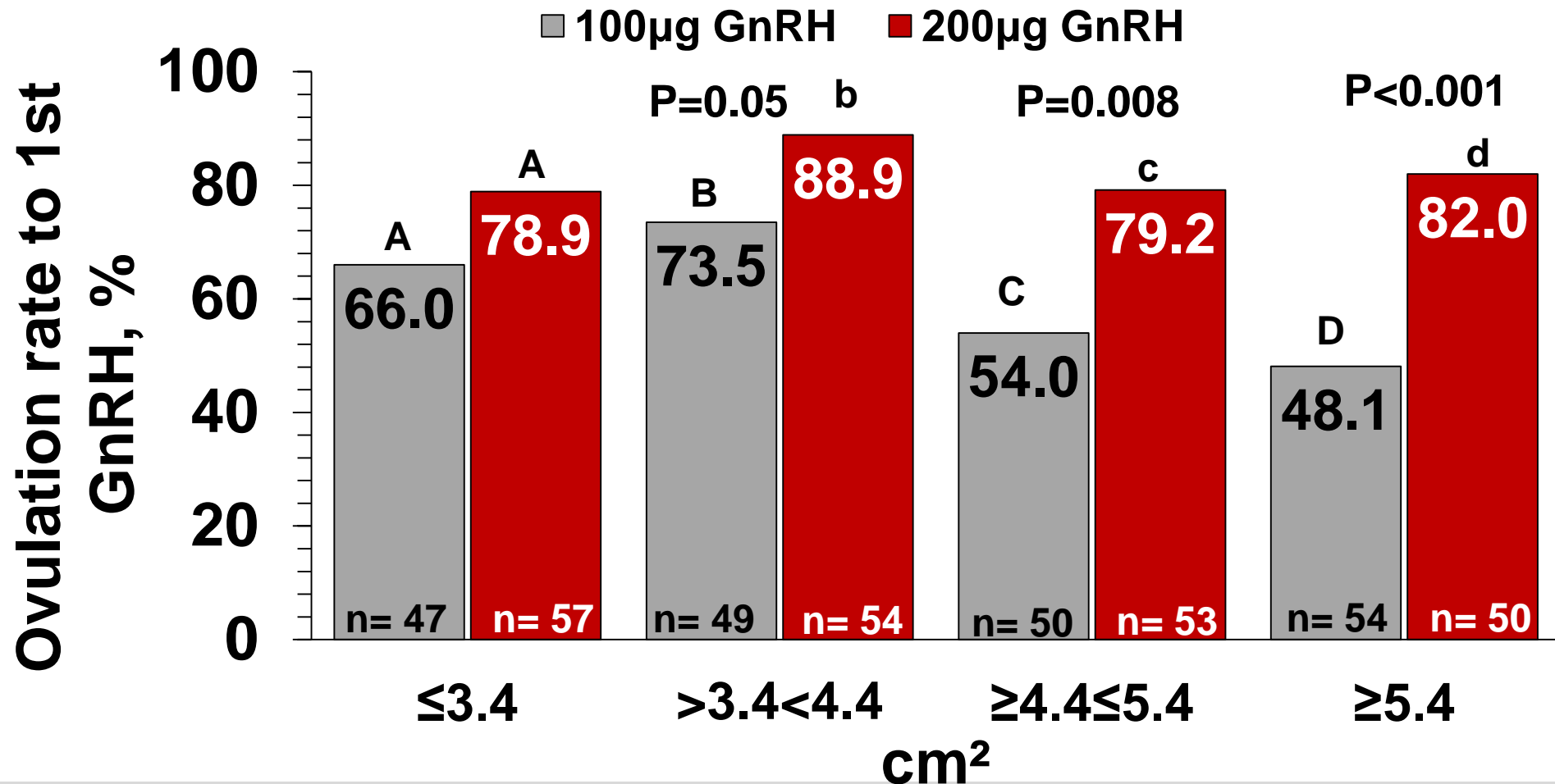
# Effect of treatment on ovulation to the 1<sup>st</sup> GnRH of the breeding-Ovsynch by parity



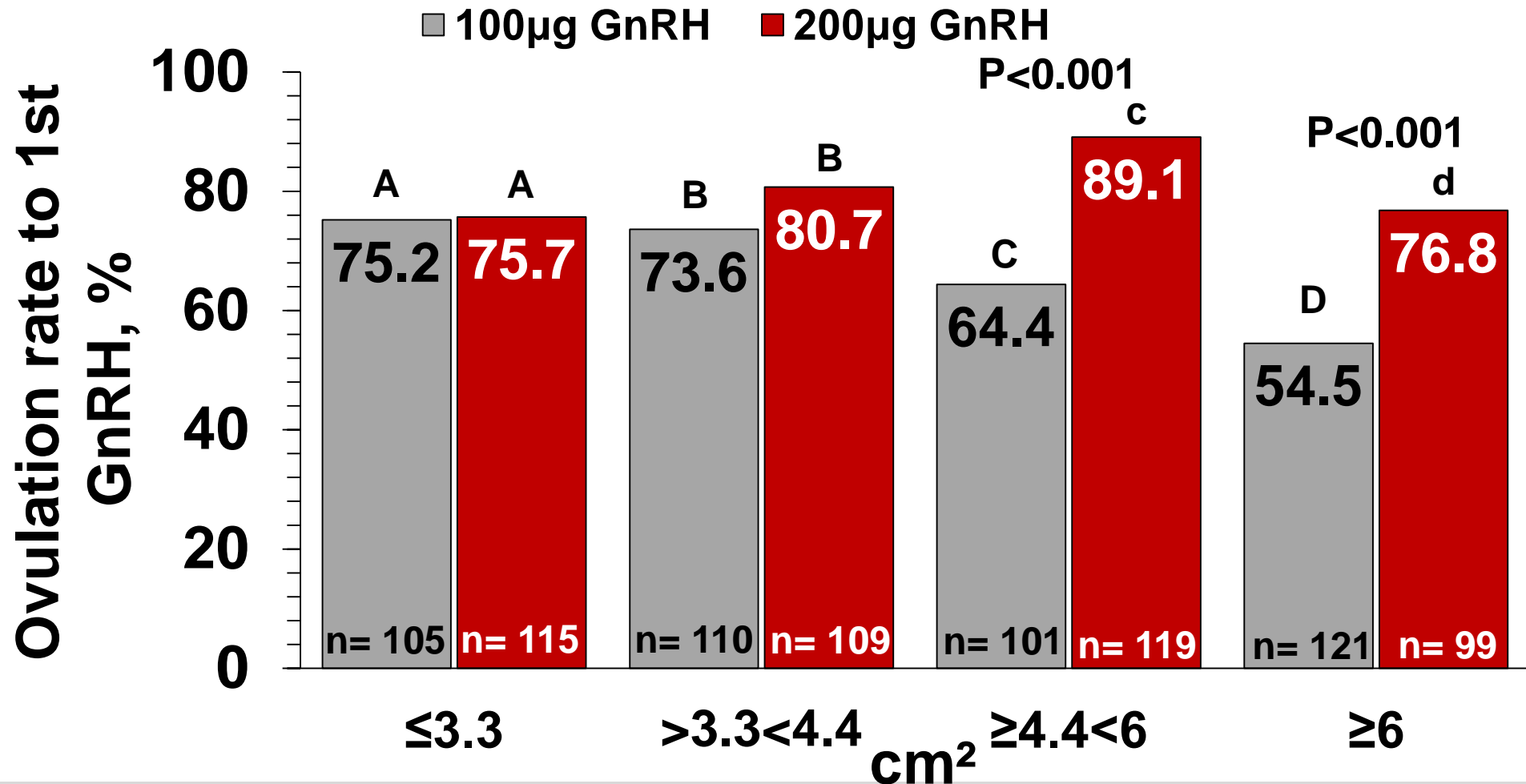
## Effect of treatment on ovulatory follicle diameter at the first GnRH of breeding Ovsynch



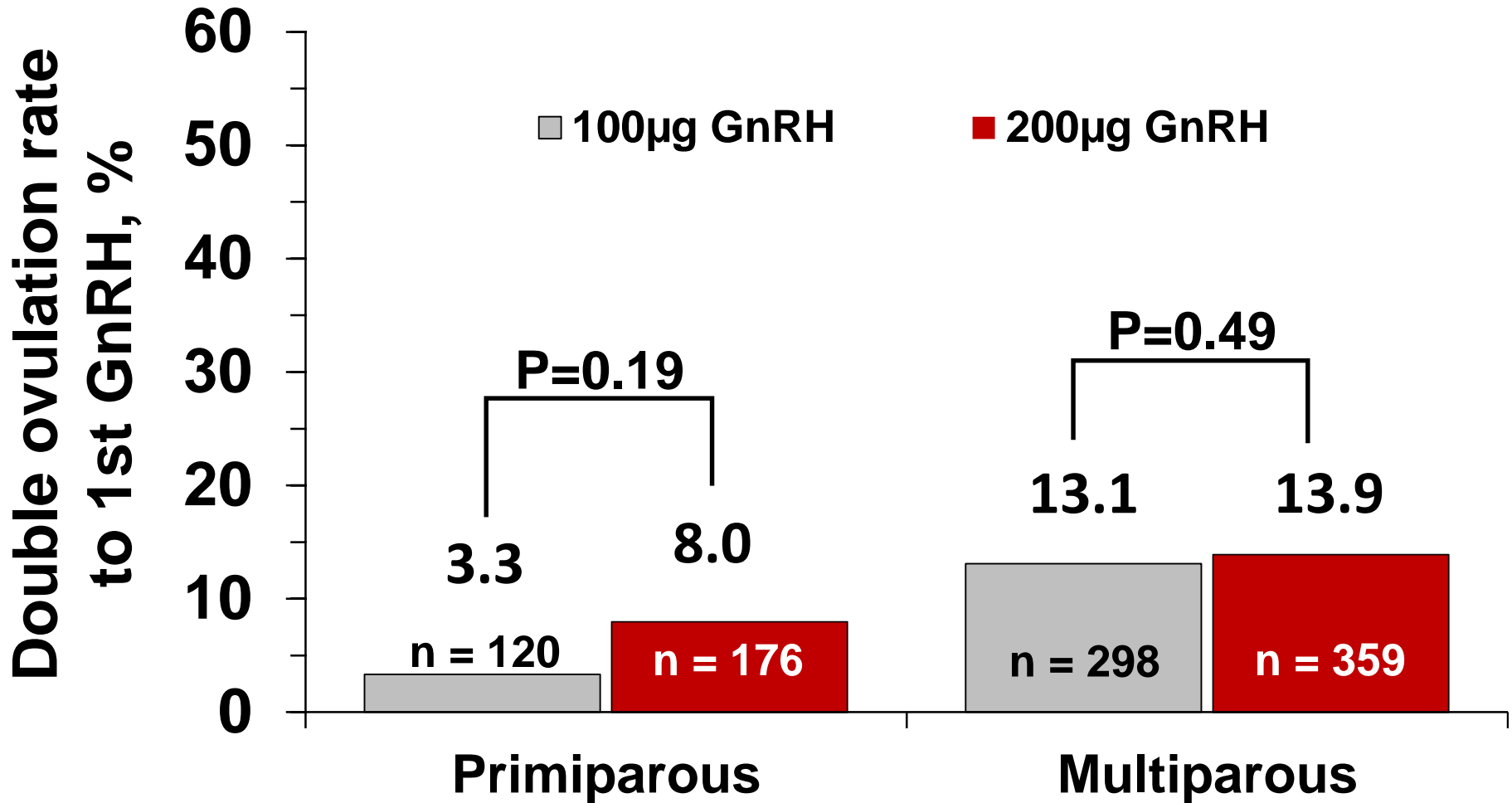
# Effect of treatment and total luteal area (quartiles) on ovulation to the 1<sup>st</sup> GnRH in primiparous cows



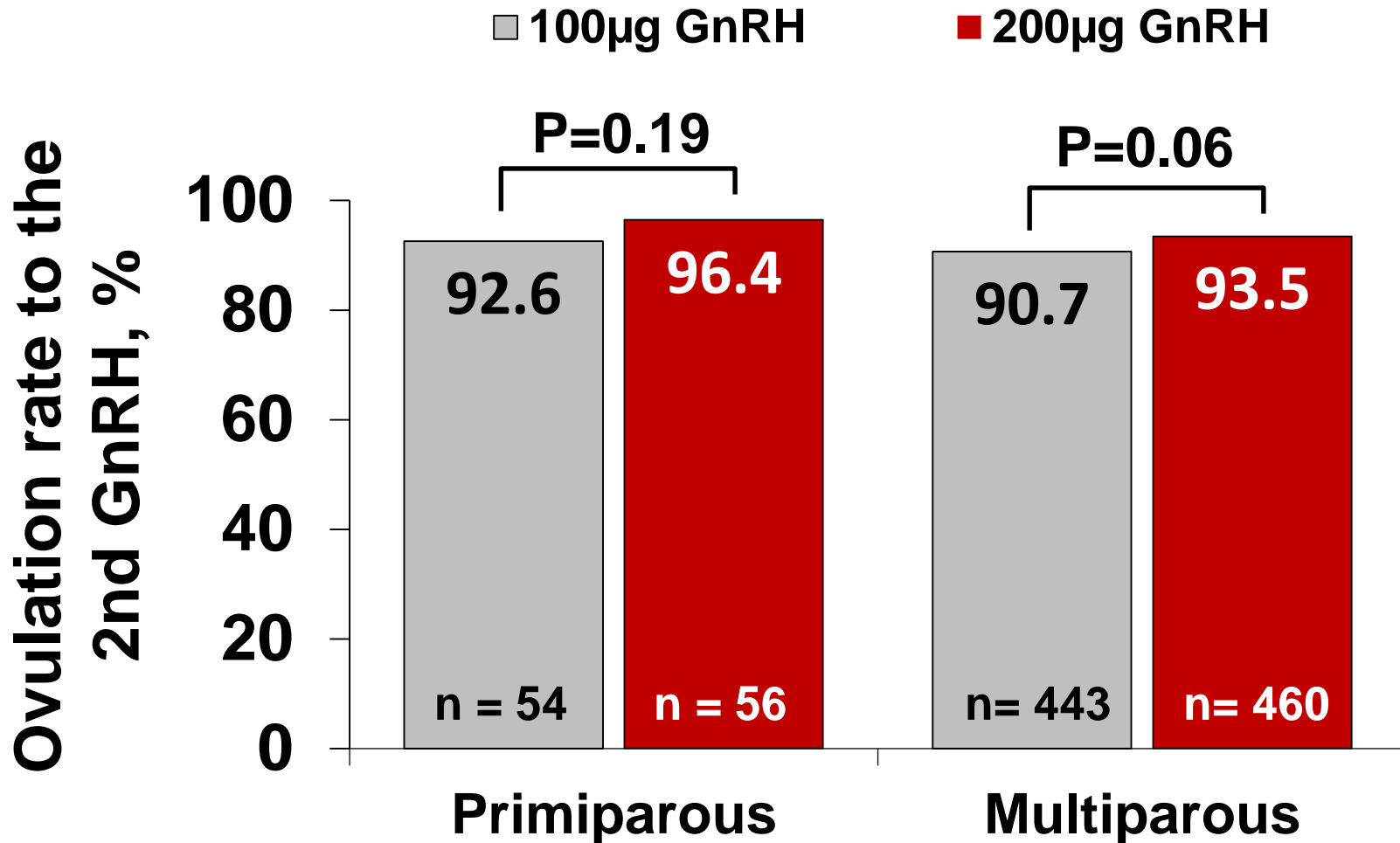
# Effect of treatment and total luteal area (quartiles) on ovulation to the 1<sup>st</sup> GnRH in multiparous cows



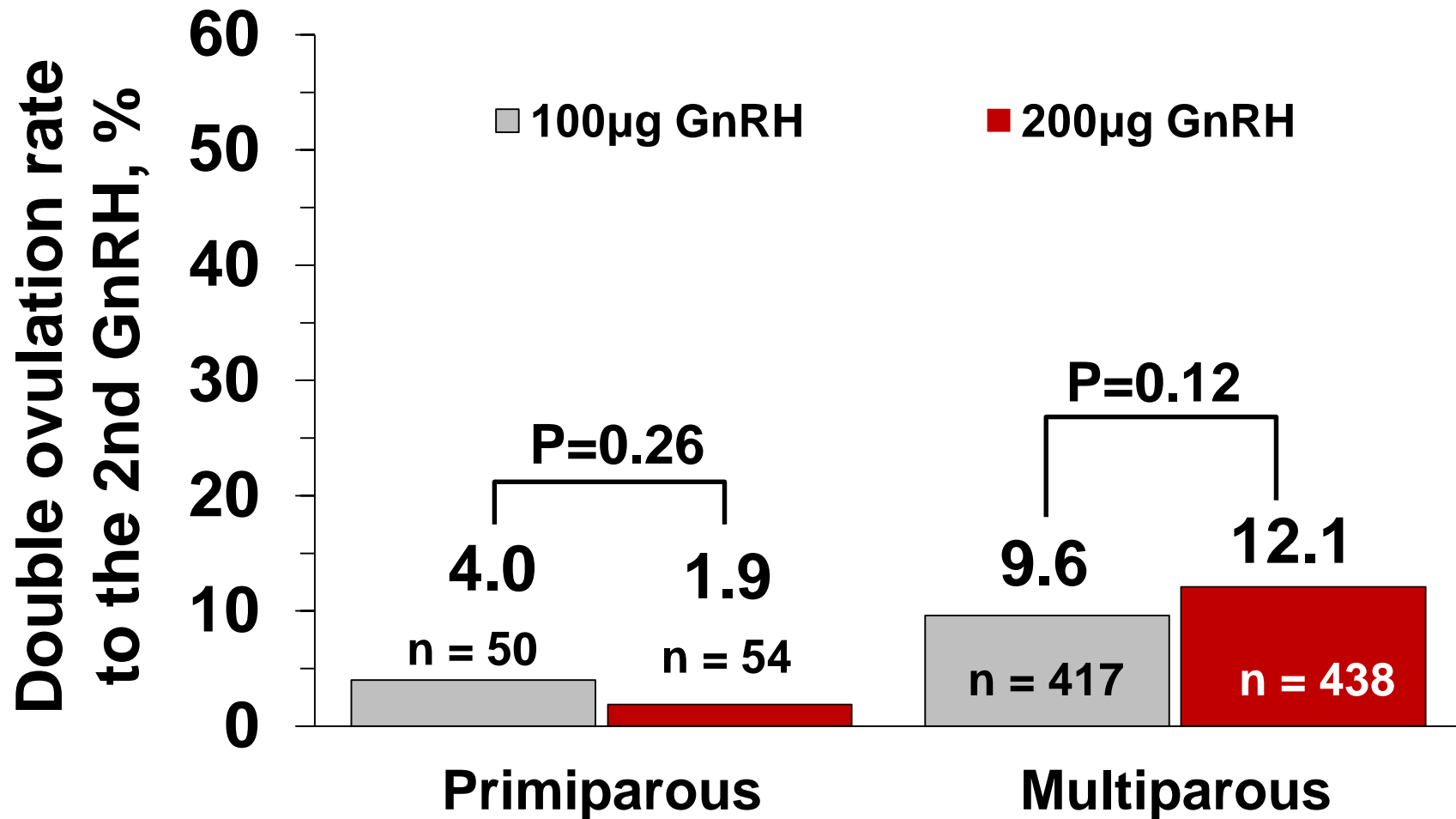
## Effect of treatment on double ovulation to the 1<sup>st</sup> GnRH of the breeding-Ovsynch by parity



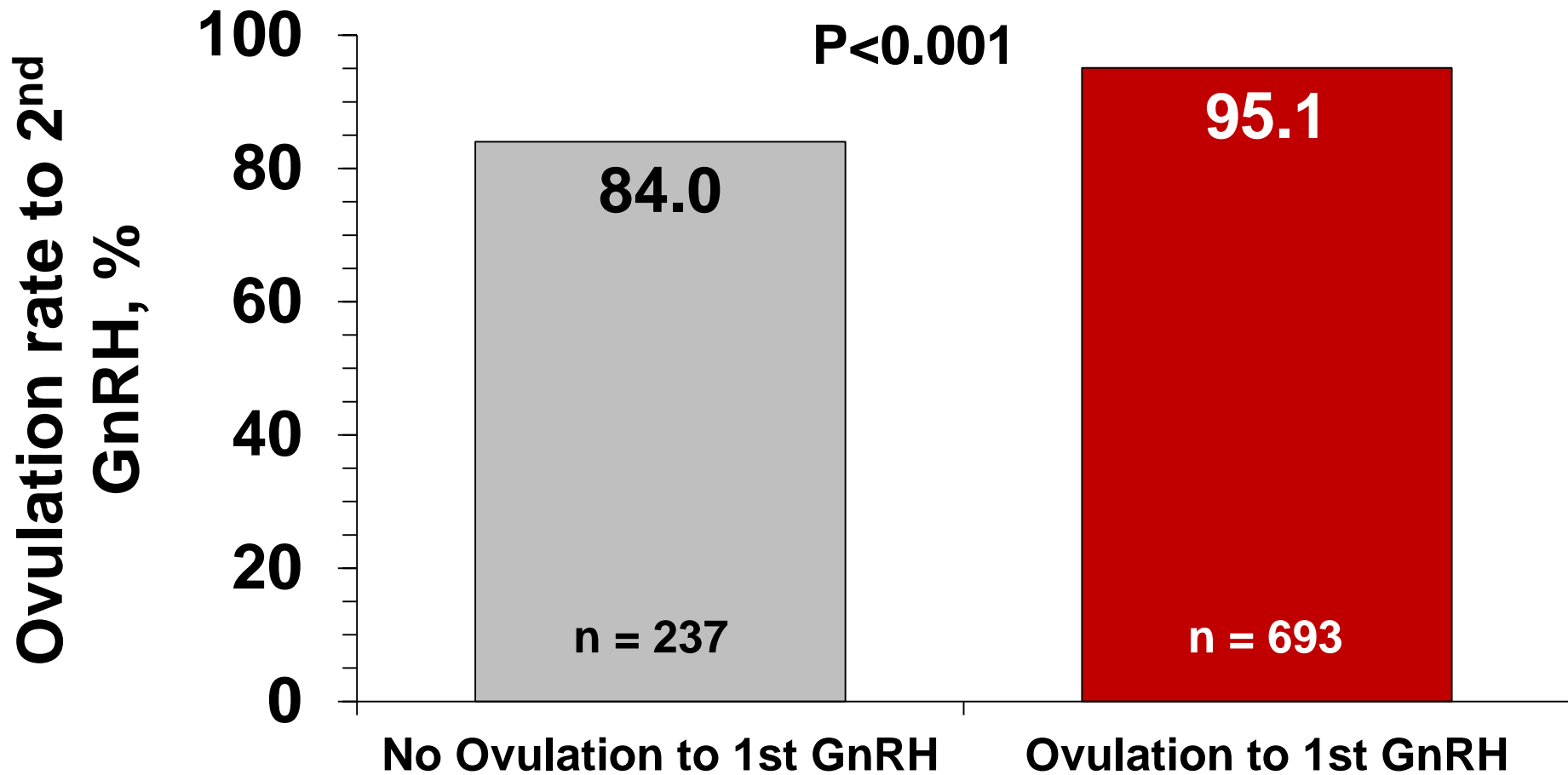
## Effect of treatment on ovulation rate to the 2<sup>nd</sup> GnRH of the breeding-Ovsynch by parity



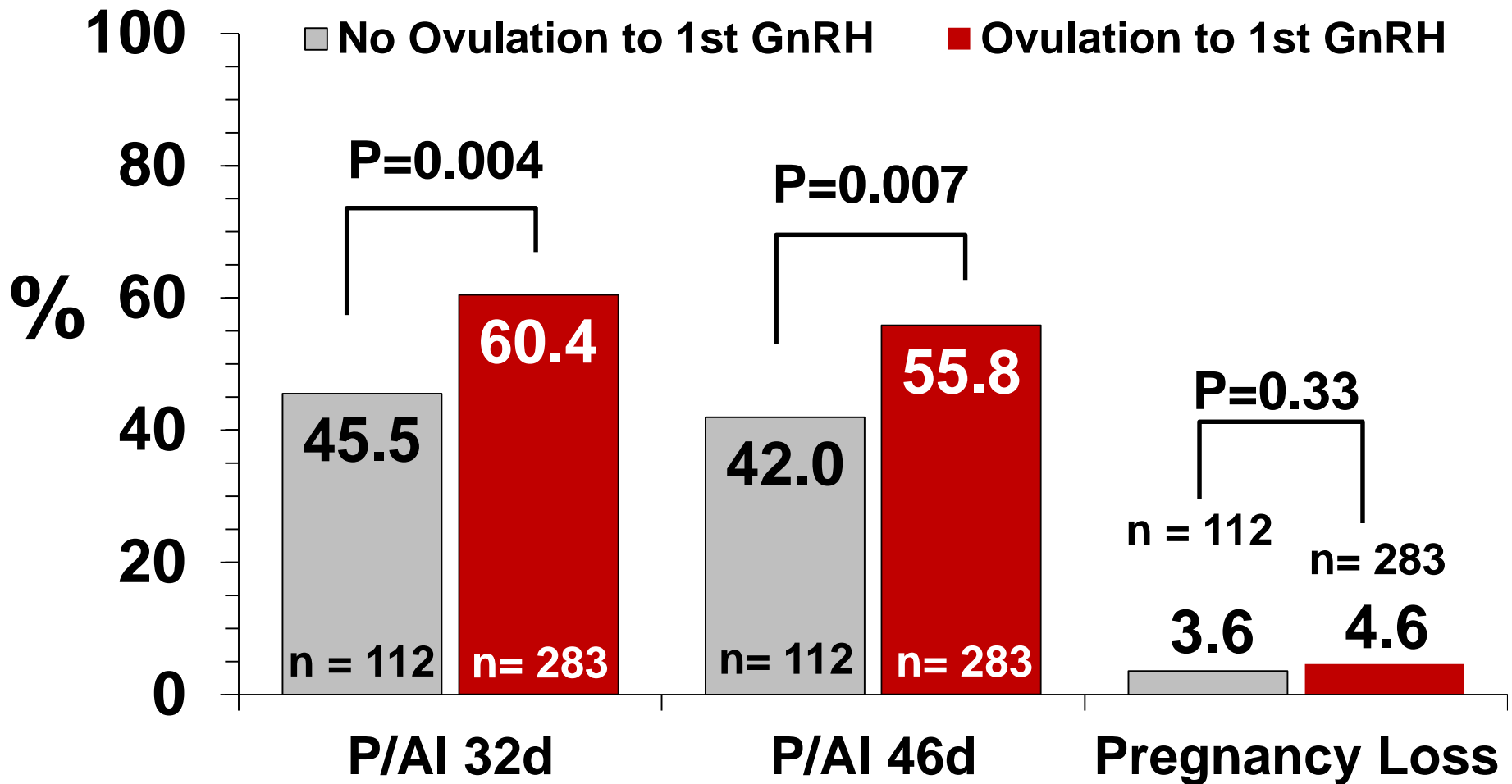
## Effect of treatment on double ovulation to 2<sup>nd</sup> GnRH of the breeding-Ovsynch by parity



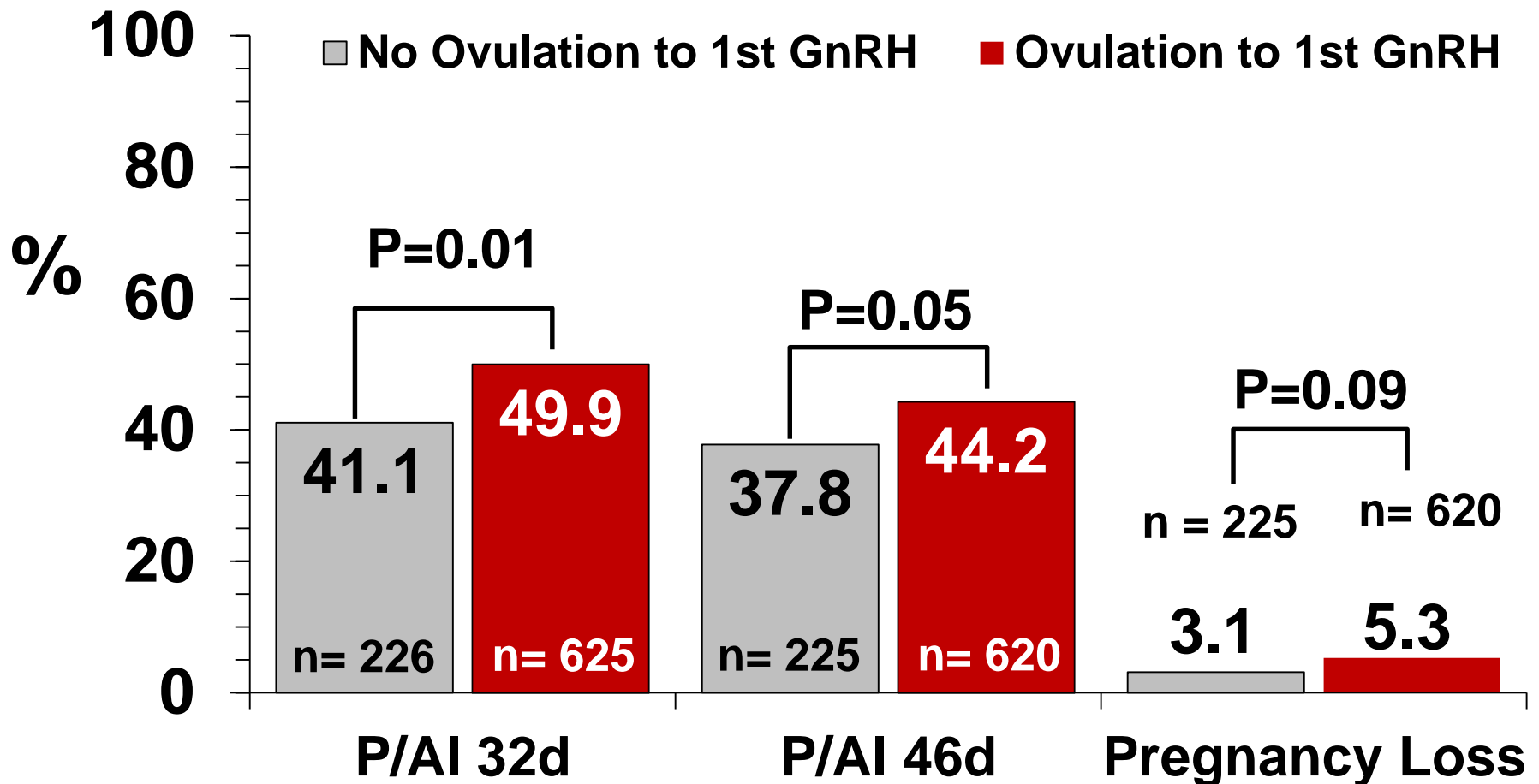
# Effect of ovulation to the 1<sup>st</sup> GnRH on ovulatory response to the 2<sup>nd</sup> GnRH of the breeding-Ovsynch



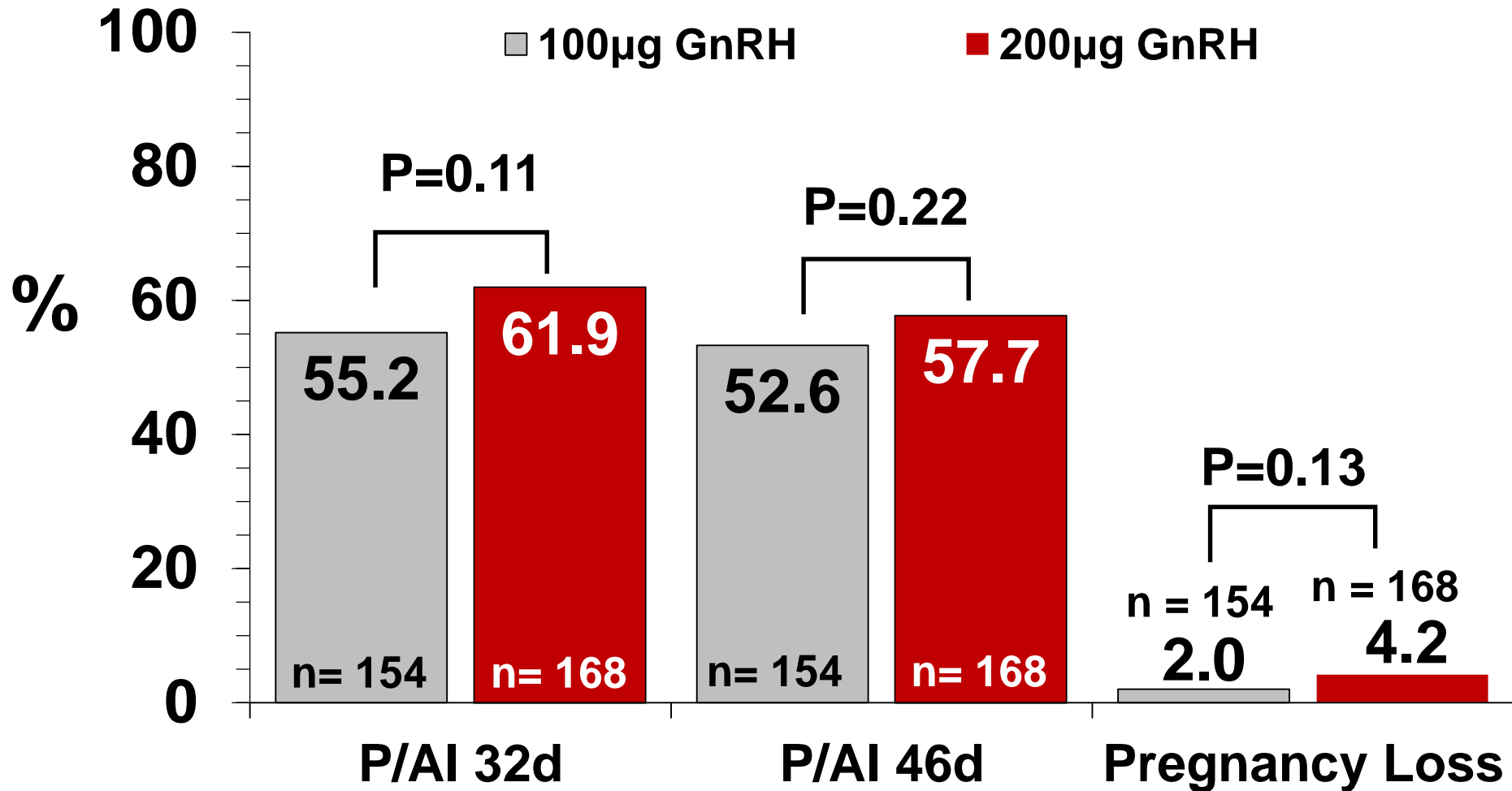
# Effect of ovulation to the 1<sup>st</sup> GnRH on P/AI and pregnancy loss in primiparous cows



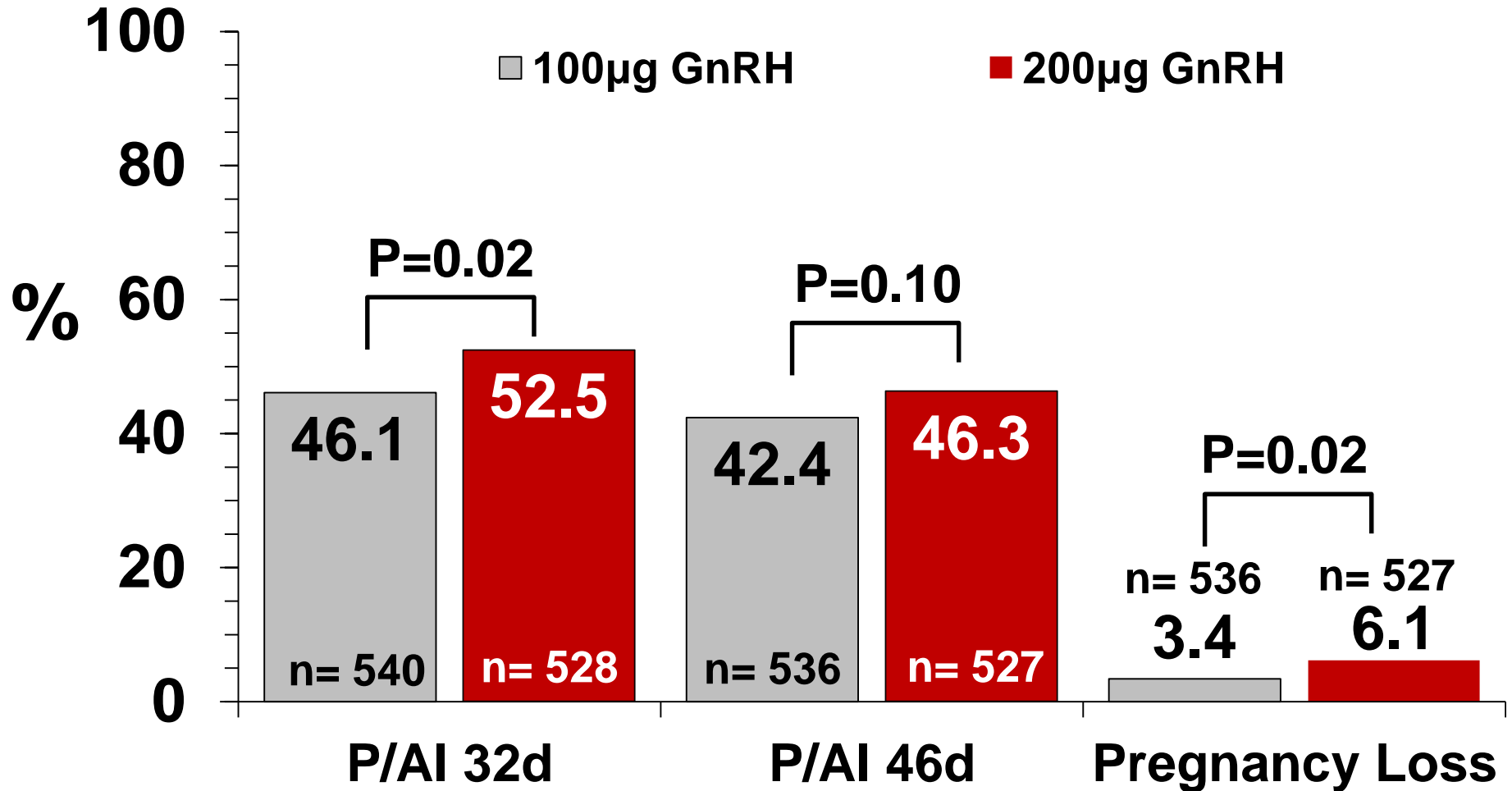
## Effect of ovulation to the 1<sup>st</sup> GnRH on P/AI and pregnancy loss in multiparous cows



# Effect of treatment on P/AI and pregnancy losses in primiparous cows



# Effect of treatment on P/AI and pregnancy losses in multiparous cows



# Summary

- ✓ 200 µg of GnRH increased ovulation rate to the 1<sup>st</sup> GnRH of the breeding Ovsynch compared with 100 µg of GnRH
- ✓ 200 µg of GnRH increased ovulation rate to the 1<sup>st</sup> GnRH of the breeding Ovsynch in cows with larger total luteal area.
- ✓ Multiparous cows treated with 200 µg of GnRH increased P/AI at 32. However, P/AI at d 46 was similar between treatments.
- ✗ Treatment did not have an effect on P/AI at days 32 and 46 post-AI in primiparous cows.

# Questions?



# Thank you!

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