

Sex-dependent metabolic programming of the offspring after induced labor with oxytocin

Arvind Palanisamy^{1,2}, Tusar Giri¹, Jonathan Brestoff³

¹Department of Anesthesiology, ²Department of Obstetrics and Gynecology, ³Department of Pathology and Immunology
Washington University School of Medicine, St. Louis, MO, USA

Introduction

- Oxytocin (OT) signaling is important for satiety and energy homeostasis.
- The impact of perinatal OT on metabolism of the offspring has not been well-investigated despite placental transfer.¹

Methods

- Pregnant mouse model for labor induction and augmentation with OT using iPRECIO SMP310-R pump implanted at E15, activated at E17, with delivery at E19.
- Weaned pups to normal or high-fat diet at P21.
- Metabolically characterized over 4 months: body weight, body fat composition, indirect calorimetry, plasma analytes.

Results

- Birth characteristics no different between groups (1A-C).
- OT-exposed females were resistant to diet-induced obesity and had better metabolic profile (center panel) due to increased energy expenditure EE (2).
- Thermogenic genes in white fat were upregulated.

Discussion

- OT has known anti-obesity effects.
- Here, we show perinatal OT exposure causes resistance to diet-induced obesity in OT-exposed female offspring.
- Activation of thermogenic genes in white adipose tissue and increased EE suggests beiging of white fat.

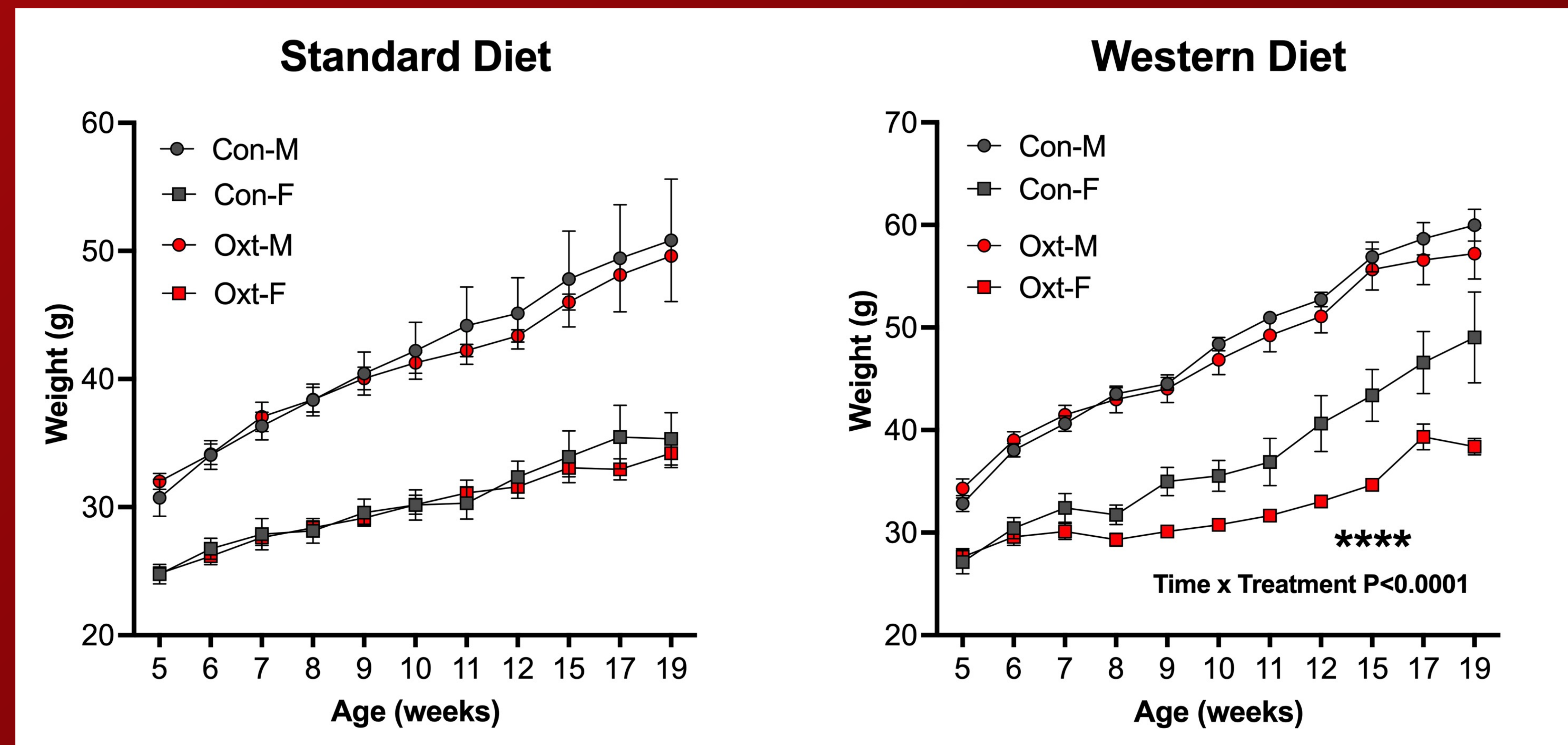
References

- 1. Malek et al., J Matern Fetal Med, 1996

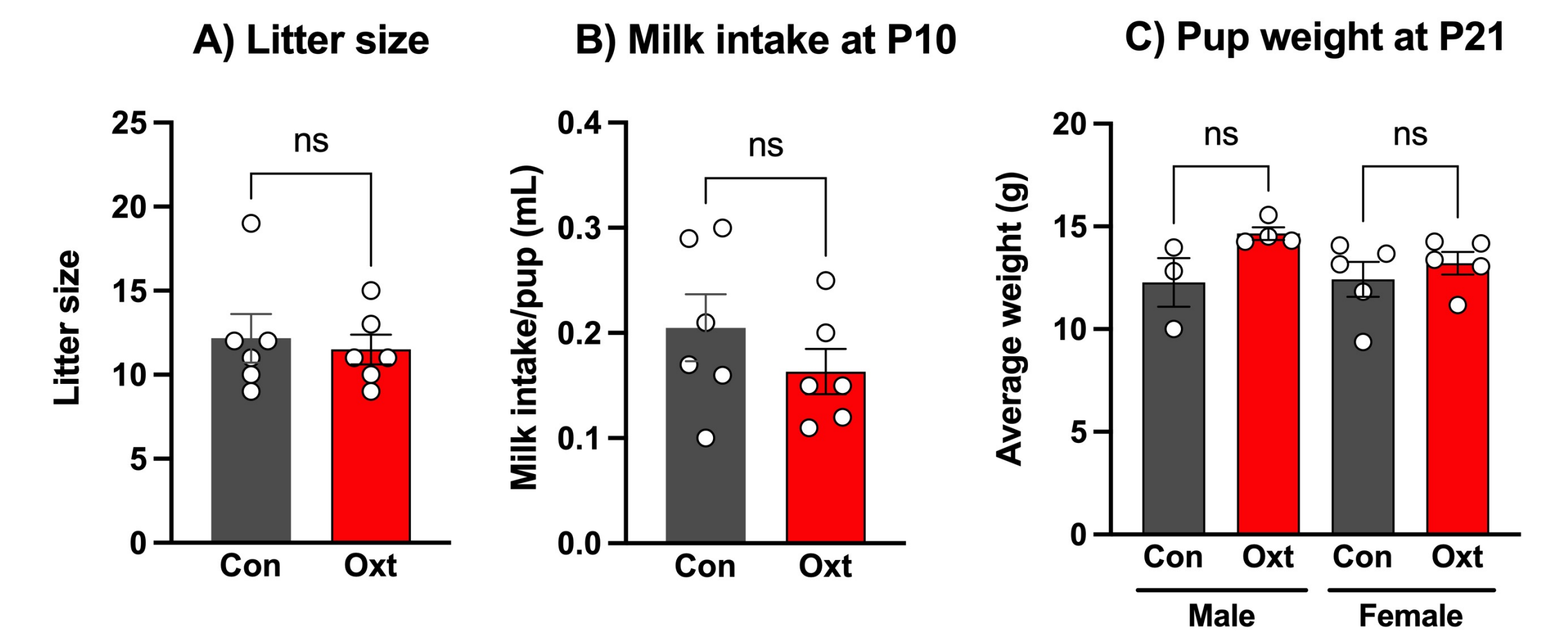
Acknowledgements

- Funded by Pilot and Feasibility Award from the Nutrition Obesity Research Center, Washington University in St. Louis

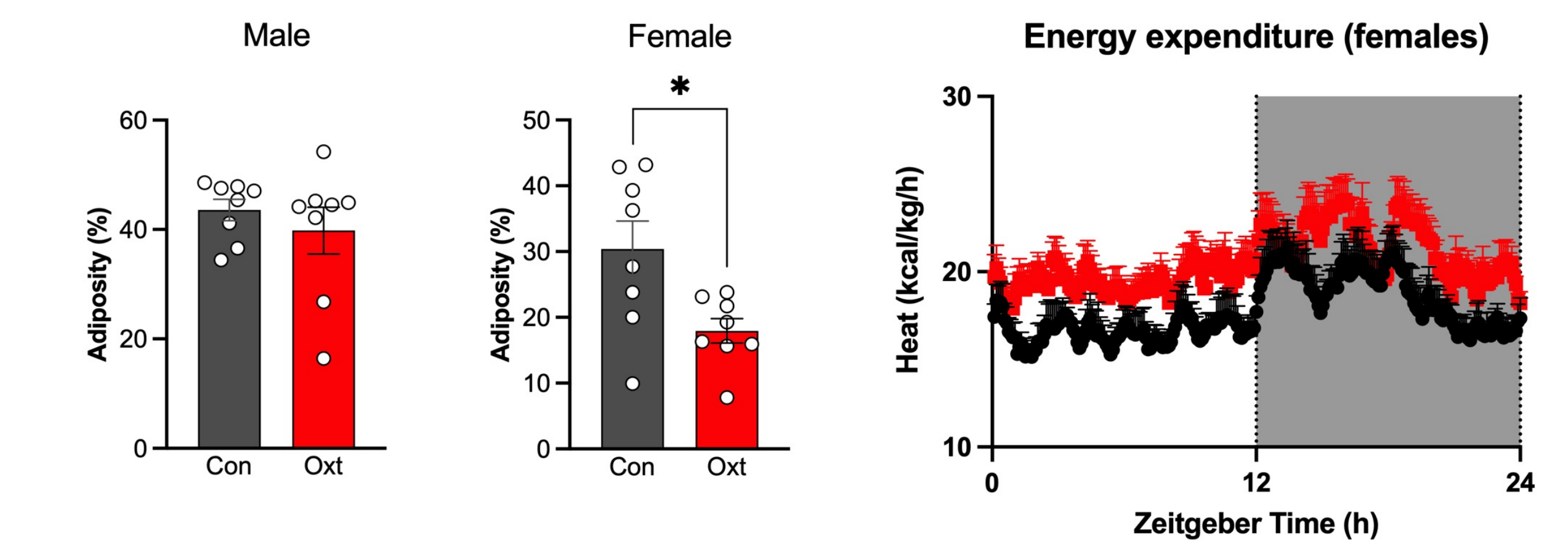
Female offspring are resistant to diet-induced obesity after perinatal exposure to oxytocin



1: Birth data and neonatal wellbeing



2: Adiposity and energy expenditure



3: Thermogenic gene activation

