

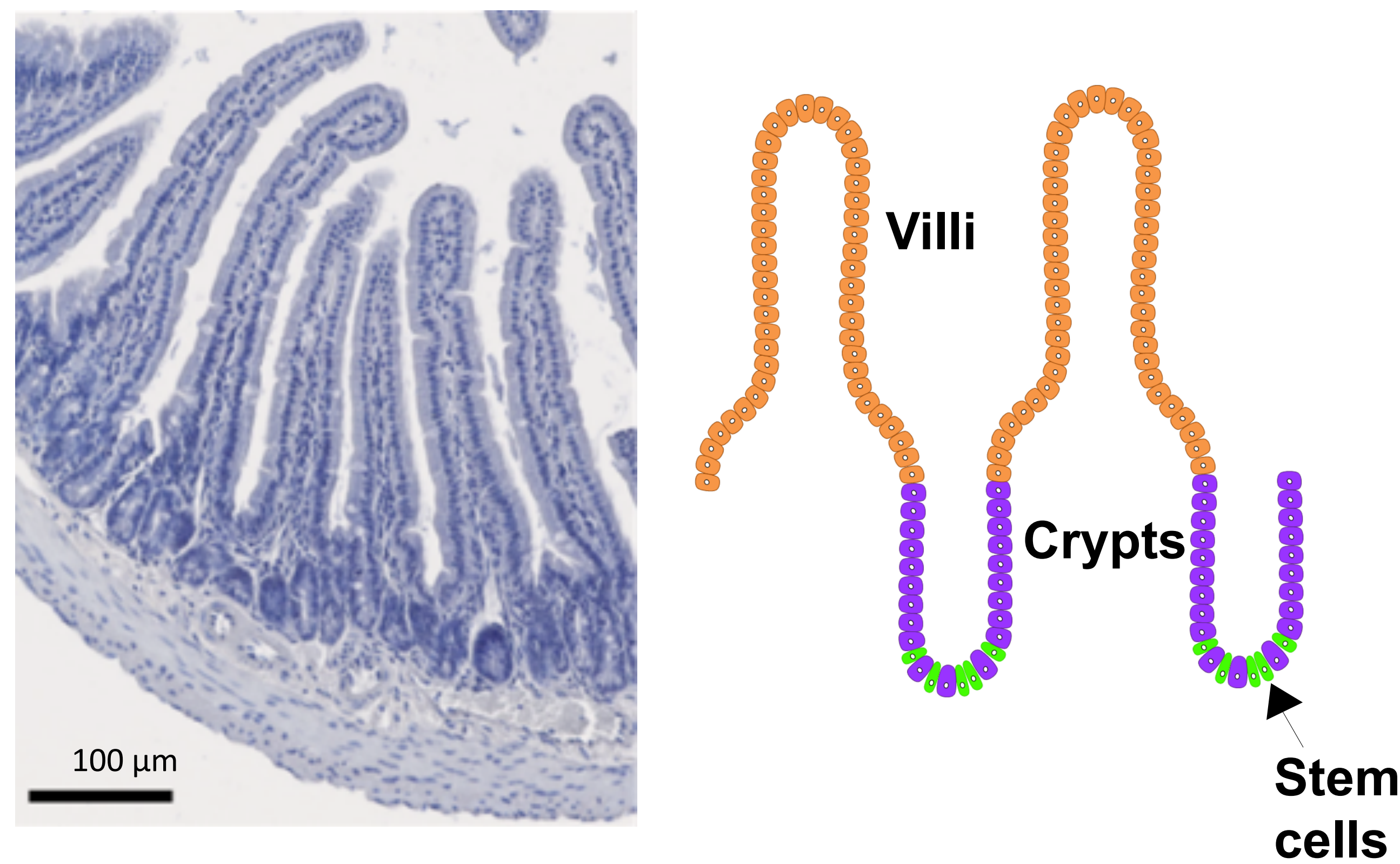
Sex Differences on the effect of obesity on morphology of the intestinal epithelium

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INTRODUCTION

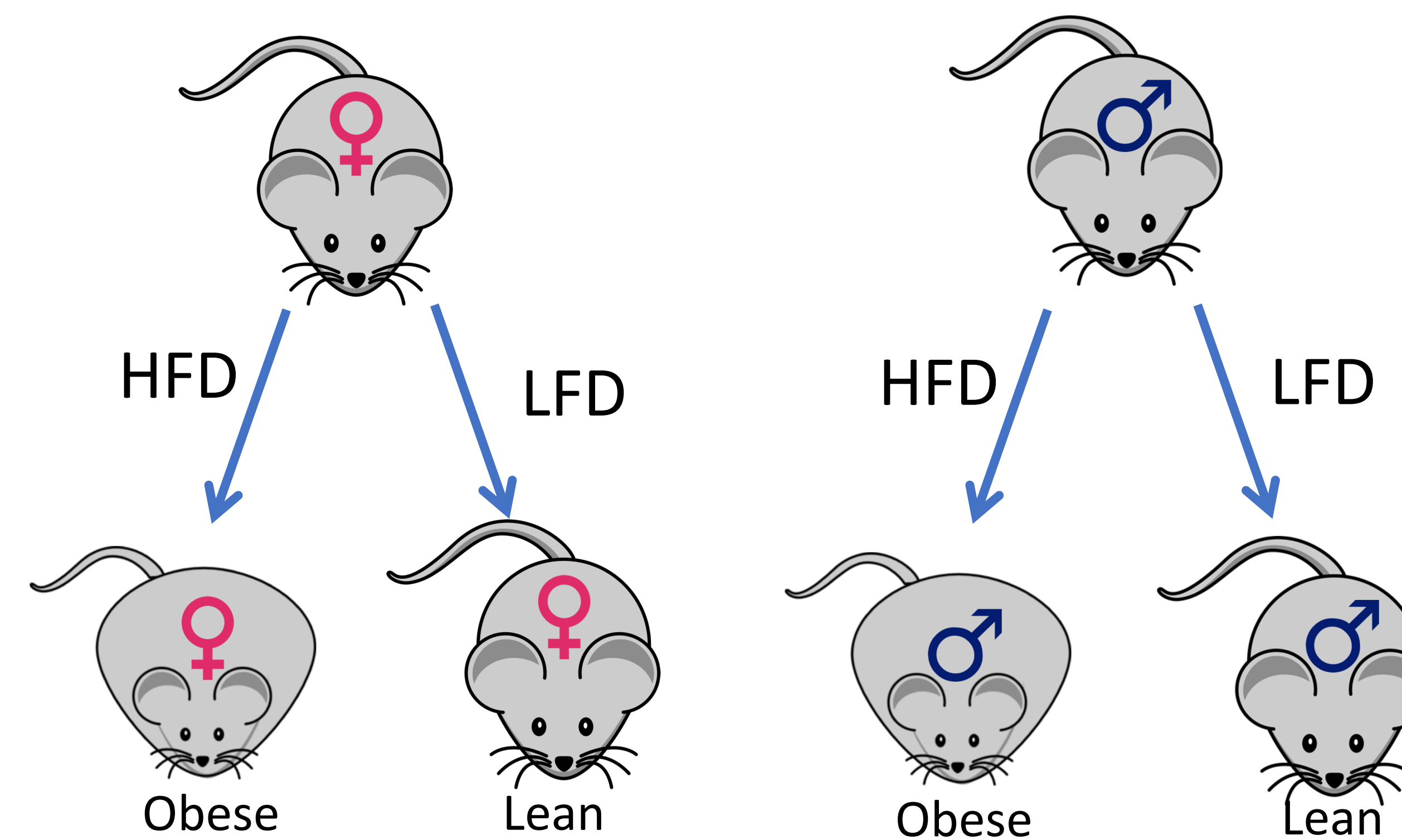
- The lining of the small intestine, or epithelium, is where nutrients from food are absorbed, hormones are released, and is an important immune barrier
- Lining the epithelium are:
 - Villi: Contains mature cells that play roles in nutrient absorption, hormone release, and immune function
 - Crypts: At the base of the crypts are the stem cells
- We know that obesity causes the villi to be longer and the crypts to be deeper in male mice¹
- We don't know if the effect of obesity on villus length and crypt depth in female mice



GOALS

Evaluate the differential effects of obesity on intestinal epithelial crypt depth and villus length in male & female mice

METHODS



- A group of male mice were fed a High Fat Diet (60% HFD) to get them obese and another group of male mice were fed a Low Fat Diet (10% LFD) to get them lean. Groups of female mice were also fed HFD and LFD to get the same effects.
- After 3 months, the mice were sacrificed and their small intestines were harvested.
- The small intestine was formalin fixed and stored in 70% ethanol before embedded in paraffin wax blocks.
- 5 µm cross-sections of the small intestine were cut using the microtome and mounted on charged glass slides.
- The cross-sections were then counterstained with hematoxylin and dehydrated in a series of graded ethanol and xylenes.
- The samples were visualized with the Nanozoomer and 9 crypts/villi per section were measured

RESULTS

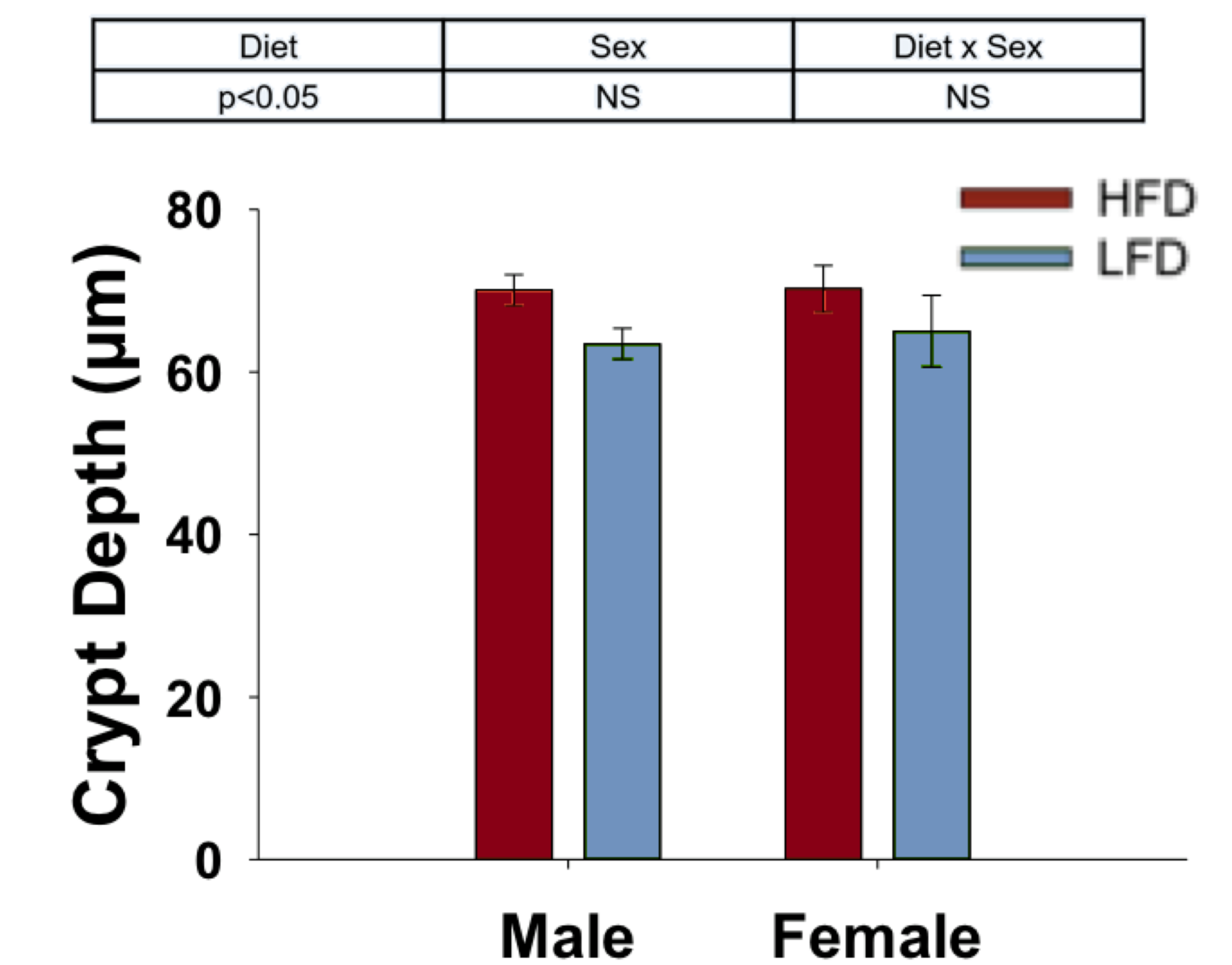


Fig. 2 Quantification of crypt depth in jejunum collected from mice fed with HFD or LFD

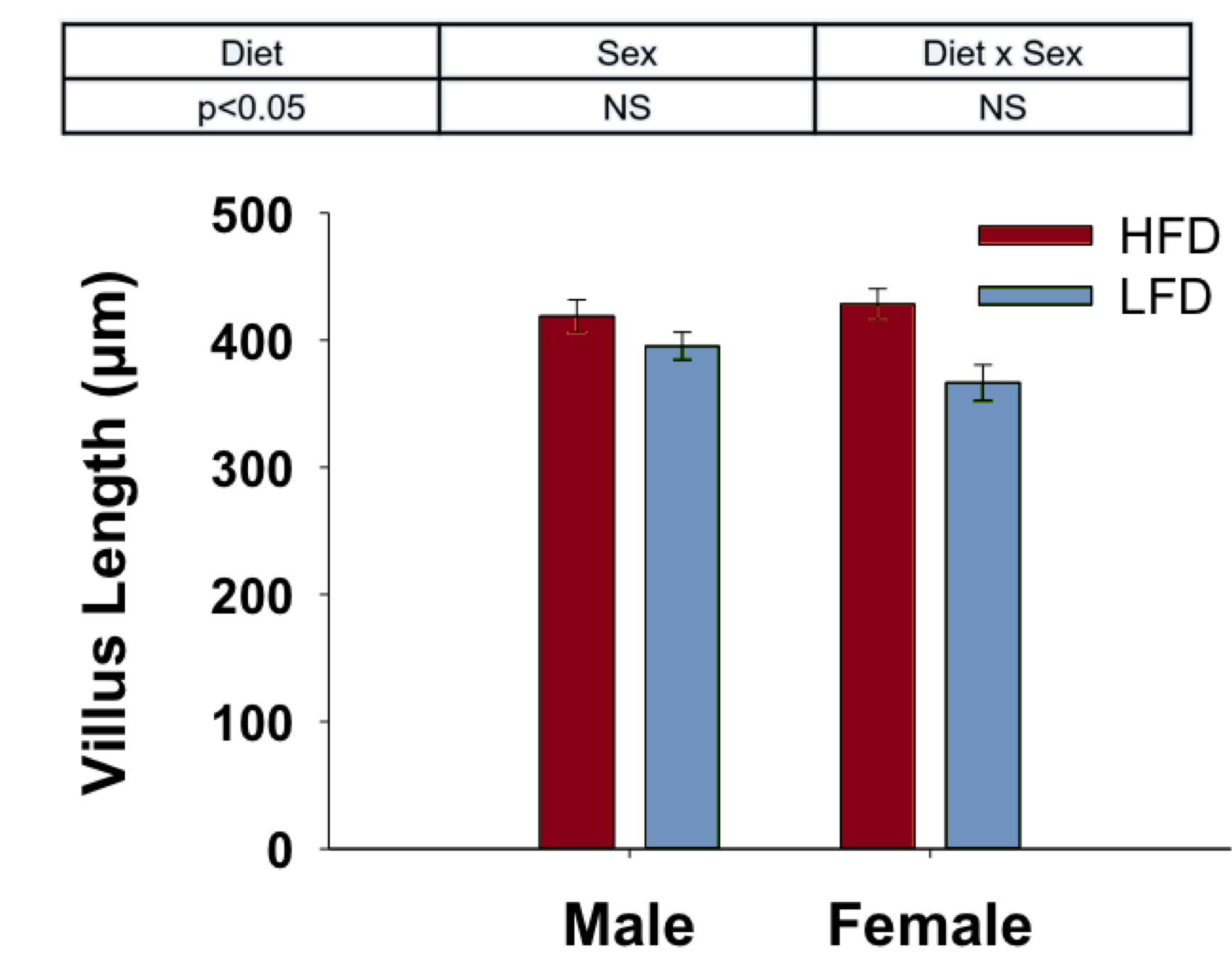


Fig. 3 Quantification of villus length in jejunum collected from mice fed with HFD or LFD

CONCLUSION

There were no sex differences in the morphology of the crypts and villi.

REFERENCES

1. Dailey MJ. Nutrient-induced intestinal adaption and its effect in obesity. *Physiol Behav* 136: 74-78, 2014.