

Additional File 1

Figures:

Figure S1: Distribution of total animals in each phase of the estrous cycle during SPS and behavioral tests.

Figure S2: Sex differences in the gut microbial predictive functionality before and after SPS.

Figure S3: Sex differences in the gut-brain module before and after SPS.

Figure S4: Sex differences in the gut-metabolic module before SPS.

Figure S5: Sex differences in the gut-metabolic module after SPS.

Figure S6: Sex differences in cecal weight and cecal short chain fatty acids.

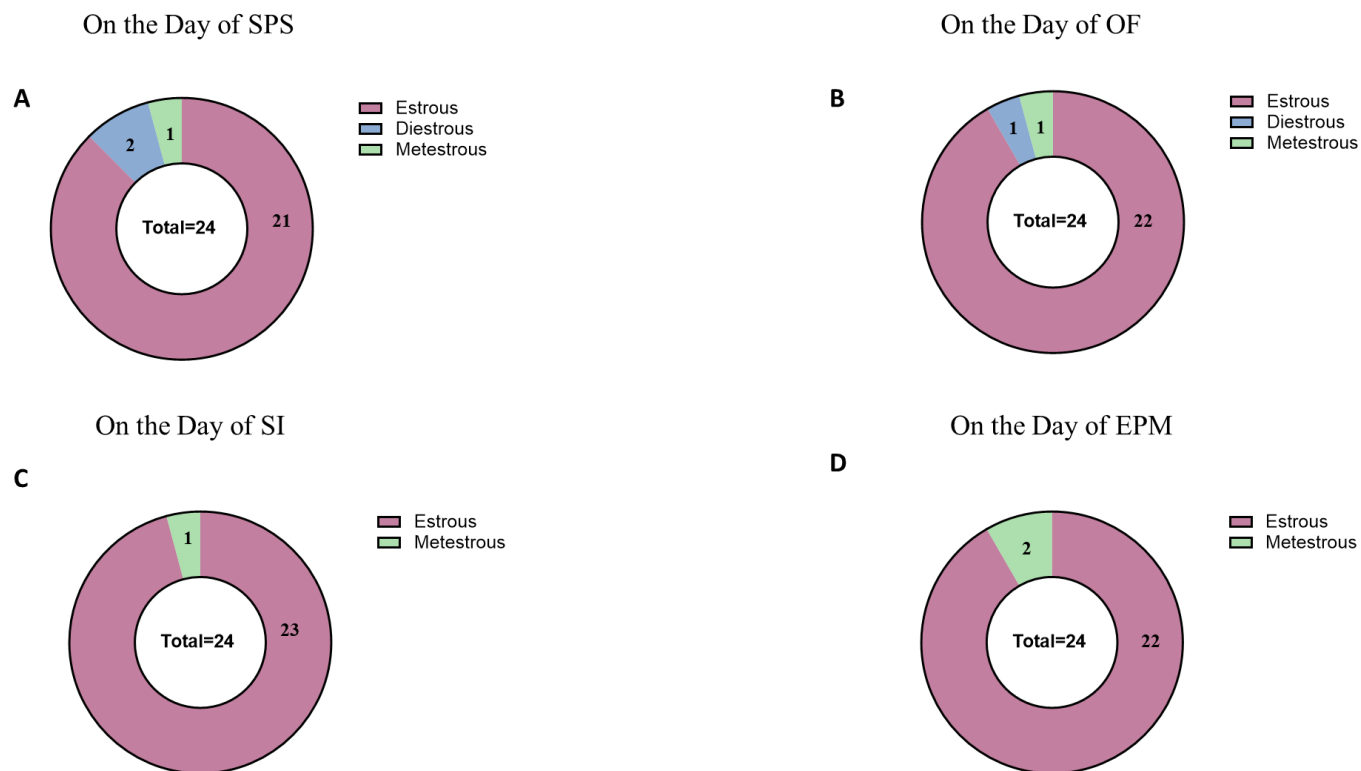


Figure S1: Distribution of total female rats in each phase of the estrous cycle during SPS and behavioral tests. **A:** On the days of SPS, **B:** On the day of OF, **C:** on the day of SI, **D:** On the day of EPM.

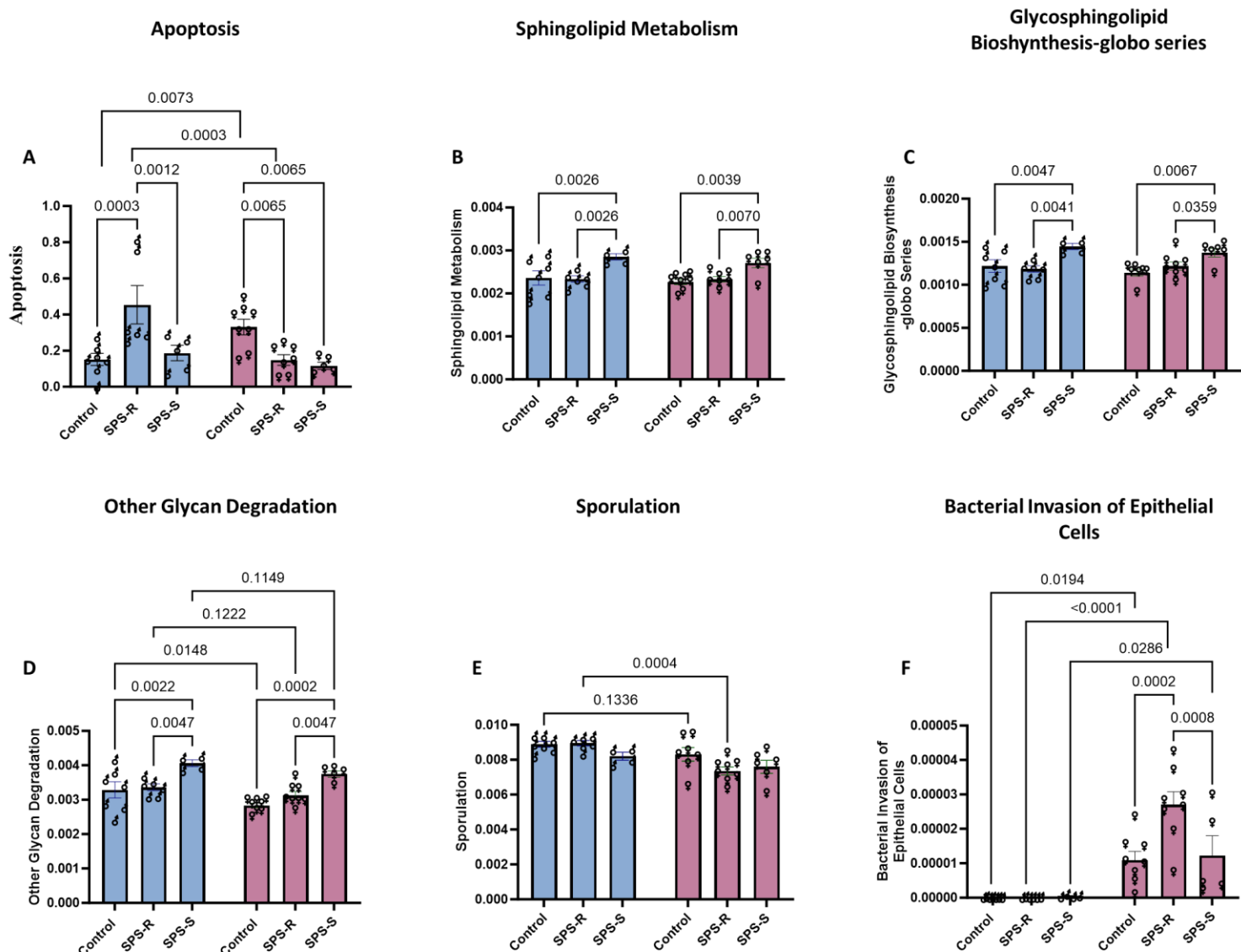


Figure S2: Sex differences in the gut microbial predictive functionality before and after SPS.

Before SPS exposure **A:** Pathways in Apoptosis, *Following SPS exposure* **B:** Sphingolipid metabolism, **C:** Glycosphingolipid Biosynthesis-globo series, **D:** Other glycan degradation, **E:** Sporulation, **F:** Bacterial invasion of epithelial cells. Due to technical difficulties stool samples were not collected from every single animal. Each symbol represents the value for an individual animal.

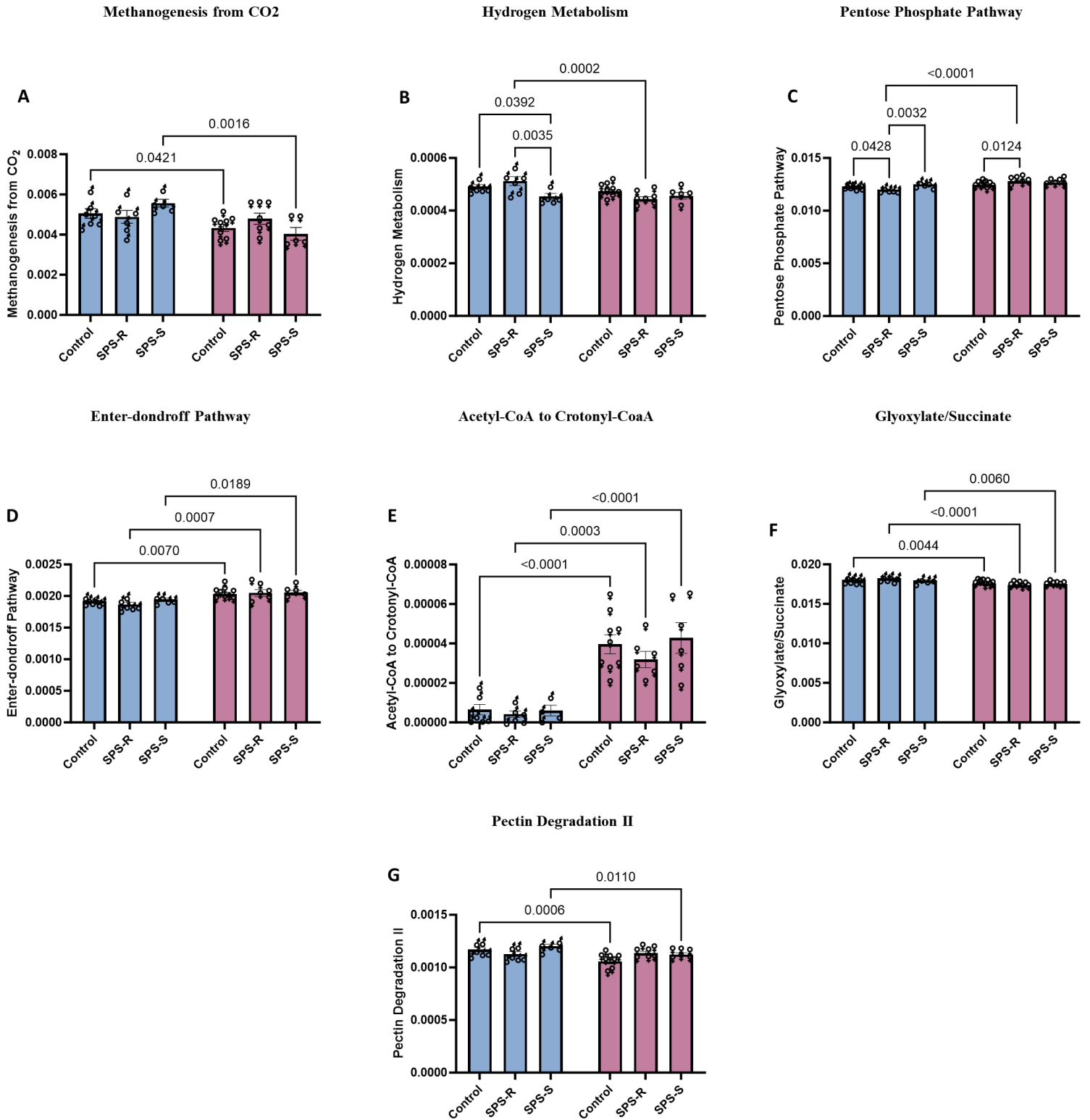


Figure S4: Sex differences in the gut-metabolic module before SPS

Before SPS exposure **A:** Methanogenesis from CO₂, **B:** Hydrogen metabolism, **C:** Pentose phosphate pathway, **D:** Enter-dondroff pathway, **E:** Acetyl-CoA to Crotonyl-CoA, **F:** Glyoxylate/Succinate, **G:** Pectin Degradation II. Due to technical difficulties stool samples were not collected from every single animal. Each symbol represents the value for an individual animal.

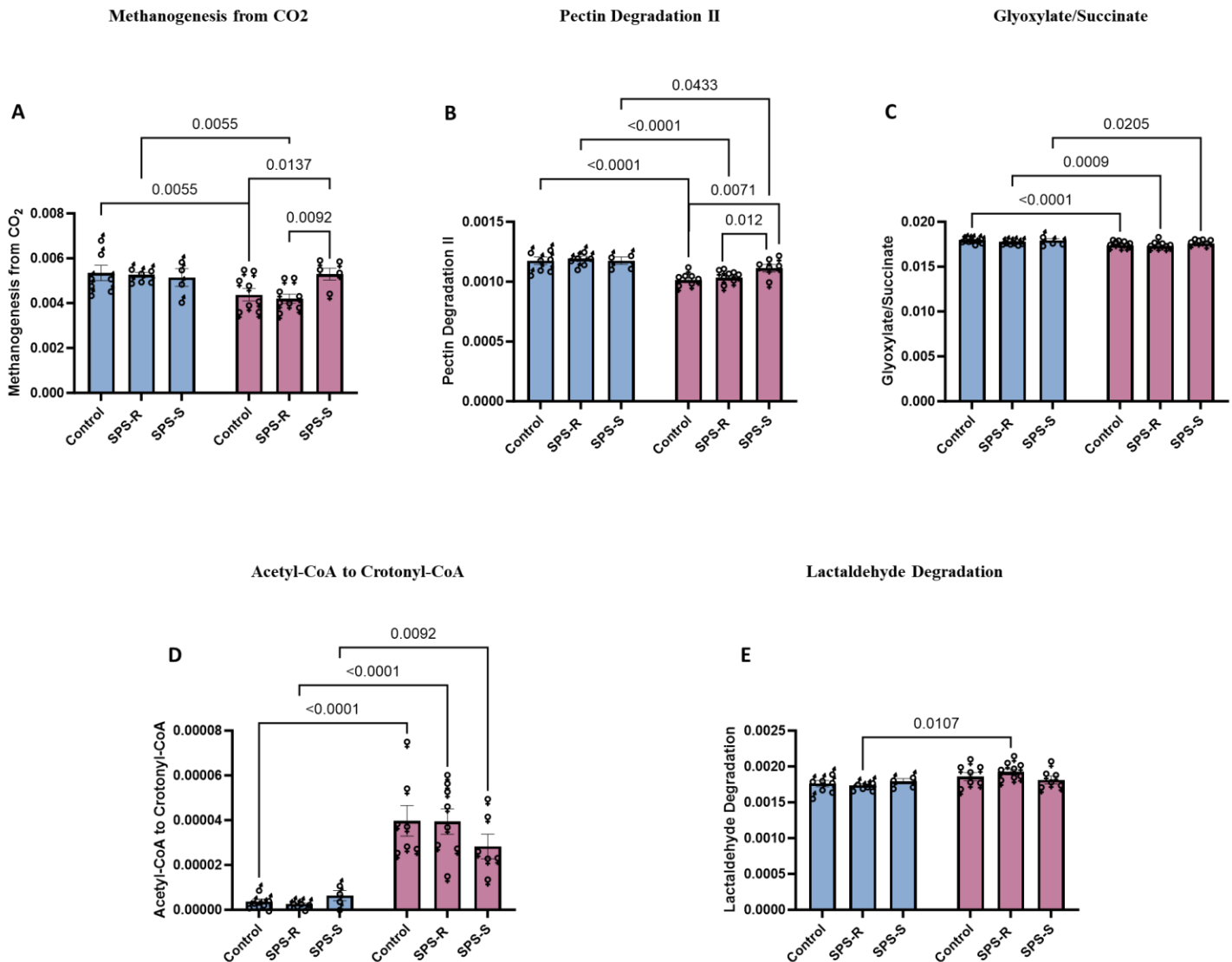


Figure S5: Sex differences in the gut-metabolic module after SPS

A: Methanogenesis from CO₂, **B:** Pectin Degradation II, **C:** Glyoxylate/Succinate, **D:** Acetyl-CoA to Crotonyl-CoA, **E:** Lactaldehyde degradation. Due to technical difficulties stool samples

were not collected from every single animal. Each symbol represents the value for an individual animal.

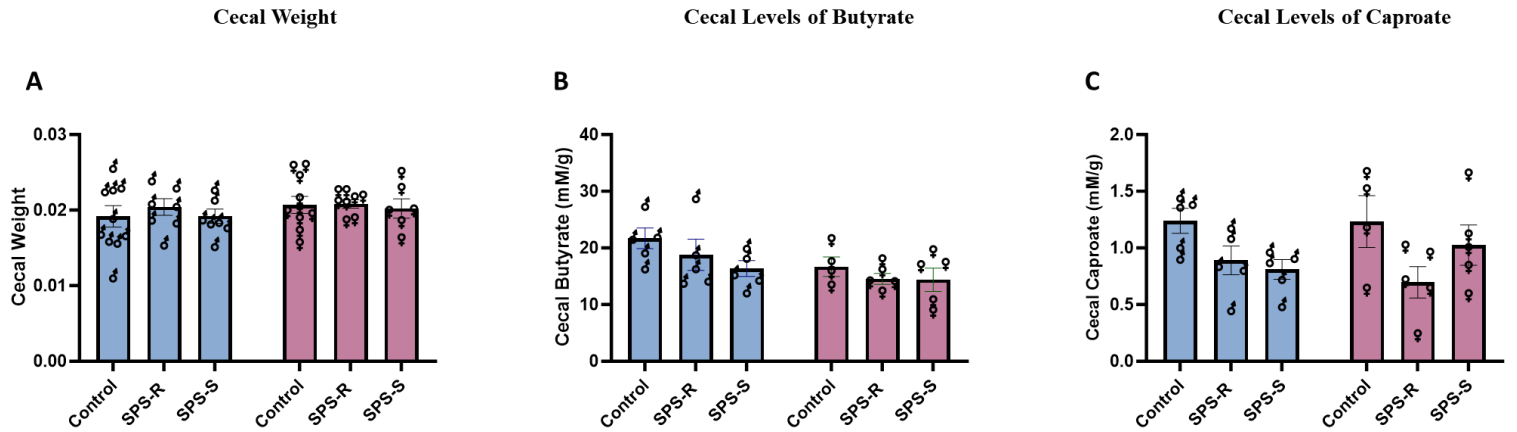


Figure S6: Sex differences in cecal weight and cecal short chain fatty acids.

A: Cecal weight normalized to body weight on the day of dissection, **B:** Levels of cecal butyrate, **C:** Levels of cecal caproate.