



Kelly N. Brice<sup>2</sup>, Paige N. Braden-Kuhle<sup>2</sup>, Allison I. Regan<sup>2</sup>, Vivienne A. Lacy<sup>1</sup>, Chelsy K. Mani<sup>1</sup>, Gary W. Boehm<sup>2</sup>, and Michael J. Chumley<sup>1</sup>

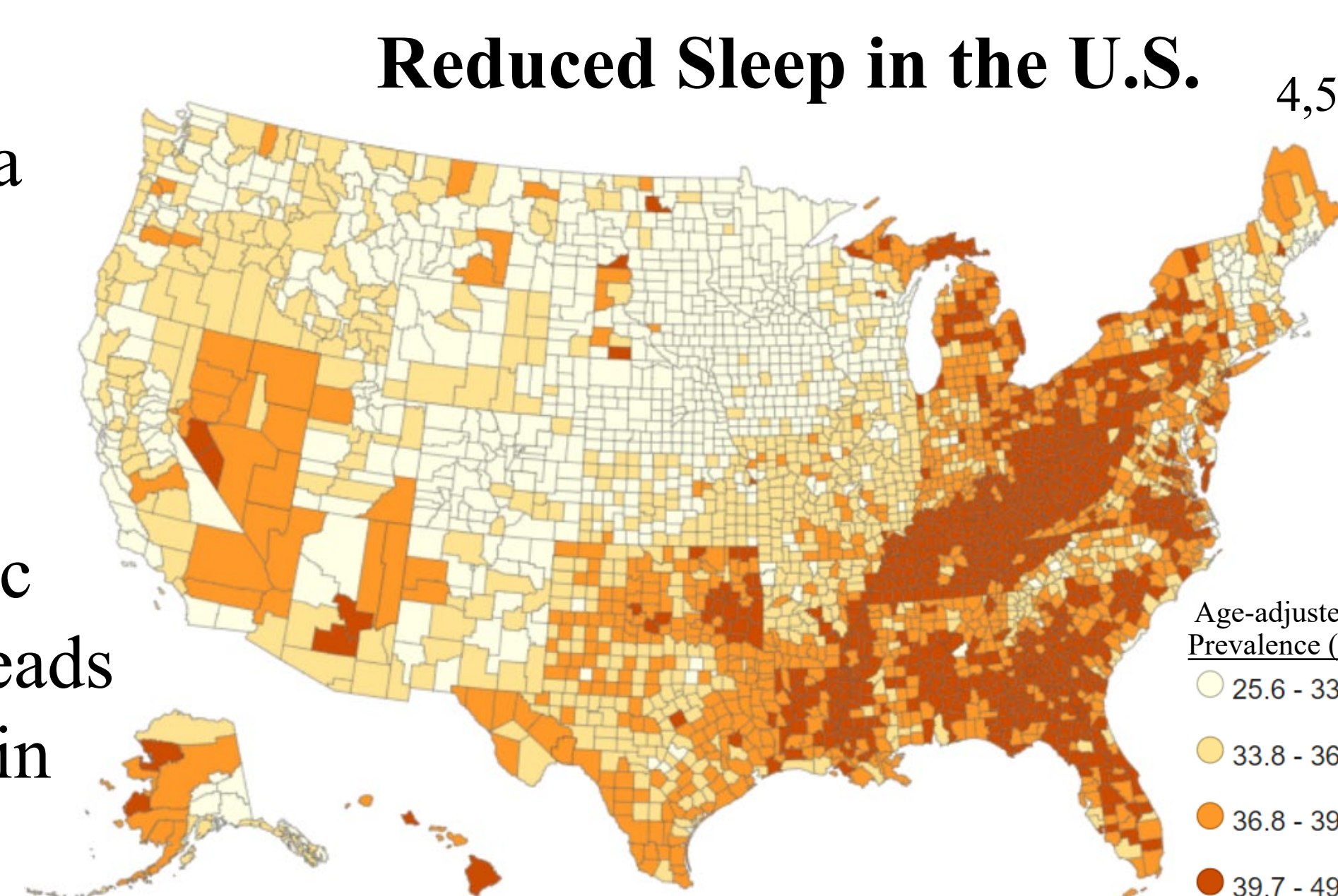
<sup>1</sup>Department of Biology and <sup>2</sup>Department of Psychology at Texas Christian University Fort Worth, TX 76129



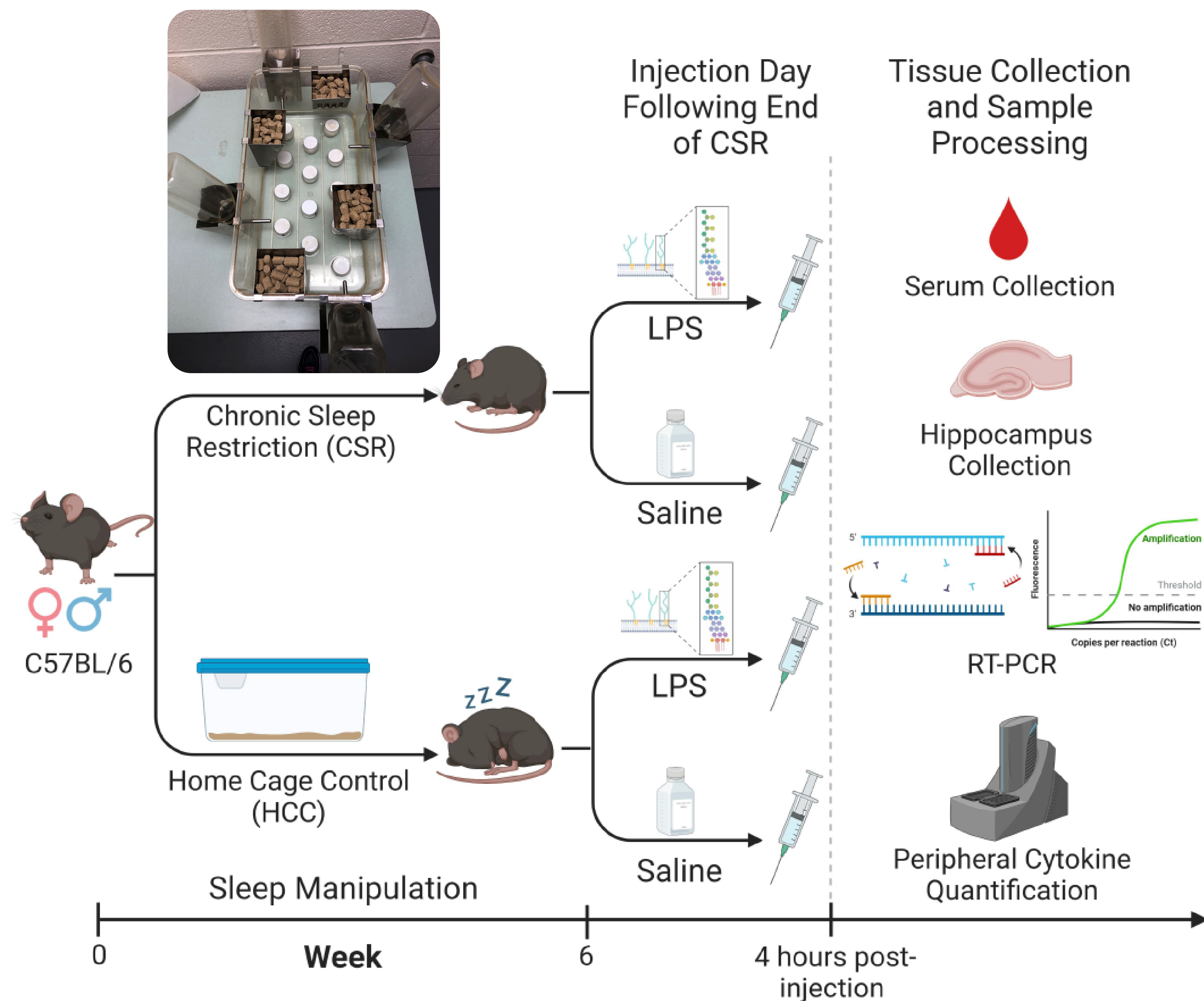
The present research investigated the impact of chronic sleep loss (CSR) on markers of inflammation and neural plasticity in response to an immune insult in adult C57BL/6 mice. Male and female mice underwent six weeks of CSR, followed by one intraperitoneal injection of lipopolysaccharide (LPS) or saline. Four hours post-injection, serum and hippocampal tissue were collected for brain-derived neurotrophic factor (BDNF) and cytokine analysis. Male mice that underwent CSR and received LPS had increased serum proinflammatory cytokines, while cytokine mRNA in the hippocampus was decreased compared to control mice that received LPS. Conversely, female mice that underwent CSR and received LPS had decreased proinflammatory cytokines in *both* the serum and hippocampus compared to control mice that received LPS. Additionally, CSR was associated with decreased hippocampal BDNF mRNA compared to controls in males, but not females. These patterns of findings suggest a complicated interaction between chronic sleep loss, immune function, and sex, underscoring the necessity to understand how sleep loss can influence immune and cognitive function in both men and women.

## Introduction

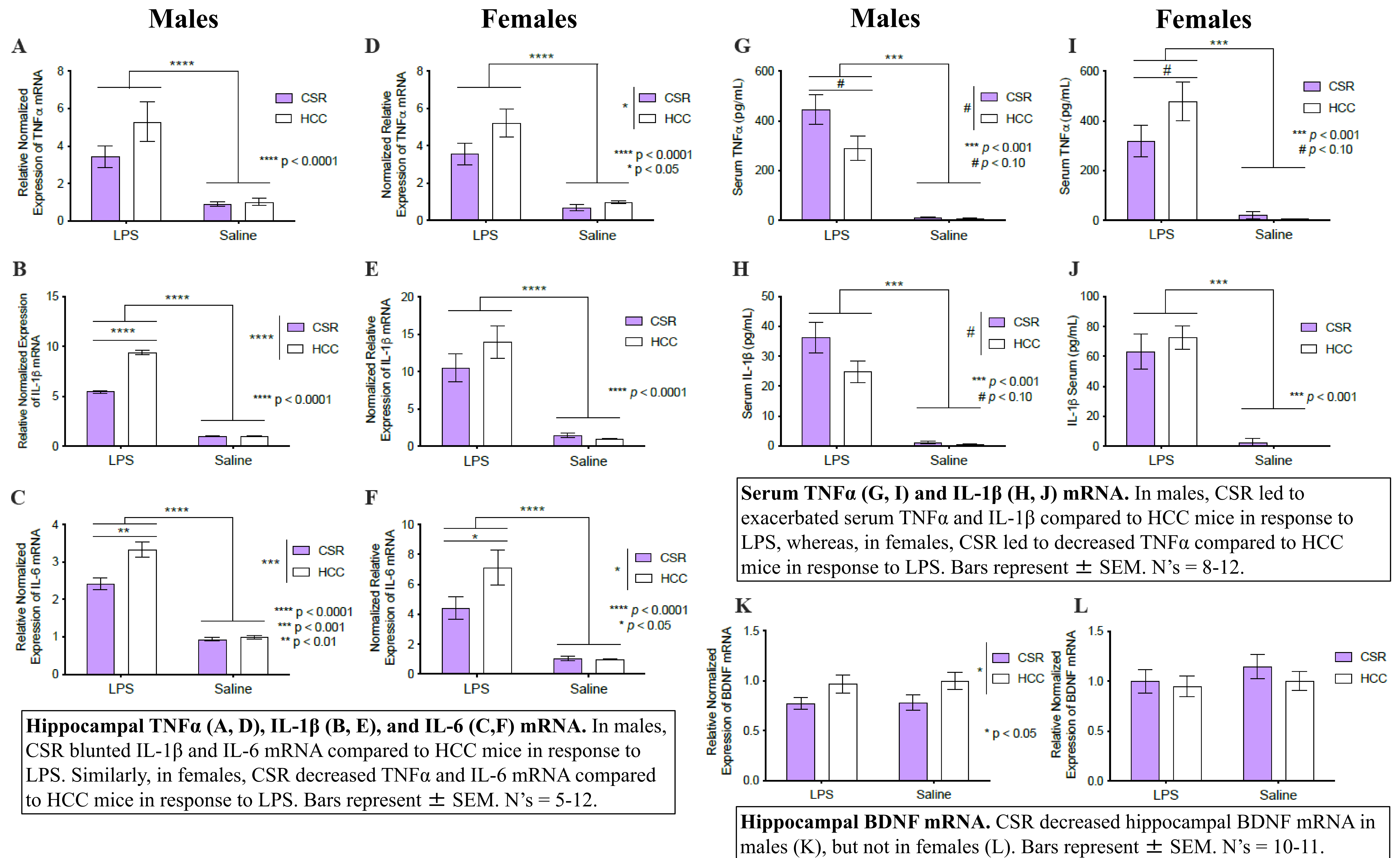
- Sleep loss is linked with impaired cognition, neural plasticity, and immune function.<sup>1,2,3</sup>
- Our lab previously demonstrated that chronic sleep restriction (CSR) leads to cognitive impairment in wild-type mice.<sup>6</sup>
- This study investigated hippocampal BDNF mRNA and the inflammatory response to LPS following CSR in wild-type mice.



## Methods



## Results



## Funding

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## Conclusions and Future Research

- CSR impacts inflammatory response to LPS differently in male and female mice.
- CSR leads to a decrease in BDNF mRNA in male mice, but not in female mice.
- Future research efforts could explore other aspects of immunological performance following CSR, such as NK cell activity, phagocytosis, and leukocyte proliferation.

## References

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