

## **Abstract**

There is a very few papers to provide an overview of the characteristics of the estrous cycle, the relationship of the estrous cycle to physiological manifestations such as the pH of the vaginal environment, as well as the dynamics of the vaginal microbiota in wild mice. The aim of this thesis is to contribute to the understanding of the dynamic relationship between external influences and the physiology of the female reproductive system, to develop a reliable methodology for measuring the pH of the vaginal microenvironment in mice as well as to quantify the overall abundance of some bacterial taxons by comparing sequencing and qPCR methods. The results suggest that the physical presence of the male in the cage has the most significant effect on the prolongation of the estrus phase, in contrast to non-significant olfactory stimulation of the urine. Fluctuation in the pH of the vaginal environment have also been shown to be cyclic, and the qPCR method shows that the composition of the vaginal microbiota, during the estrus phase, differs significantly from other phases of the estrous cycle, as we confirmed by 16S rRNA sequencing. Thus, these results provide a comprehensive view of the variability of the estrous cycle with an emphasis on the variability of the vaginal microbiota and the change in the pH of the vaginal environment.

**Key words:** mouse, estrous cycle, estrus, pH, microbiota, qPCR