Effects of LPS stimulation on Microglial Activation in the Hippocampus and Hypothalamus of MMTV-PyMT carrier mice.

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Microglia are the primary innate immune system cells of the CNS; it is vital to research their differentialized stress responses in distinct regions of the brain to understand and treat various cerebral and peripheral diseases. Little research has been conducted on the microglial response in MMTV-PyMT carrier mice. This project aims to understand variations in microglial response in breast cancer prone mice. Our research will compare microglia response profiles in the hippocampus and hypothalamus in MMTV-PyMT carrier mice that have experienced LPS peripheral immune challenge. These regions were selected because microglia play a reflexive and adaptive role to homeostatic changes sensed in the hypothalamus, and the hippocampus is a key region of neurogenesis and synaptogenesis. Immunohistochemistry with Iba-1 antibody and secondary antibody streptavidin will be implemented to visualize microglia to assess soma area, process length, cell count, and proportional microglia area on widefield and confocal images. Our findings suggest there are differences in microglial activation between control and LPS subjects, as well as distinctions between morphological changes in the hypothalamus and hippocampus after LPS exposure. The significance of the results allow us to draw conclusions regarding the various effects of LPS stimulation on microglia morphology in the respective brain regions.