Immunohistochemistry with Iba-1 staining can be used to stain for microglia, which are the innate immune cells of the central nervous system. Using the regions of the dentate gyrus with the primary motor cortex, comparisons can be made between inflammatory microglial responses to peripheral immune challenges, such as lipopolysaccharide (LPS).

The microglial response of transgenic mice that are carriers of the MMTV-PyMT oncogene has not been studied.

Activated microglia tend to have retracted processes and increased somatic area.

We hypothesized that the primary motor cortex would elicit a stronger and more active microglial response, when compared to the dentate gyrus, due to its role in sickness behavior and reduced locomotion.

Materials and Methods

- **Subjects**: 8 transgenic male mice, MMTV-PyMT carriers are genetically prone to develop breast cancer.
- **Condition**: 0.5 mg/kg of LPS (mice 1-4) or saline (mice 5-8) solution
- **Antibodies**: Primary antibody of Iba-1, Secondary antibody of AlexaFluor 568 Streptavidin

**Results**

**Figure 1.** Cell body area of Primary Motor Cortex (M1) and Dentate Gyrus (DG). Significant data: p-value of 0.0373 indicating larger microglia cell body area in LPS-injected mice.

**Figure 2.** Cell count analysis for the control and LPS groups in the Primary Motor Cortex (M1) and Dentate Gyrus (DG). p-value of 0.0051 indicates significant value for M1 samples.

**Figure 3.** Proportional Area of Iba-1 in the primary motor cortex (M1). No significant data (p>0.05)

**Figure 4.** Iba-1 proportional area in the dentate gyrus (DG). No significant data (p>0.05)

**Figure 5.** Mean Area of IBA-1 in the M1 region. No significant data was found (p>0.05)

**Figure 6.** The measured branch length of control vs. LPS injected mice in the Dentate Gyrus (DG) and the Primary Motor Cortex (M1).

**Conclusion**

- Some evidence supports our hypothesis and shows that LPS (compared to control) led to a stronger microglial response in M1. No such differences were found in the DG.

- More research on the effects of peripheral inflammation on MMTV-PyMT carrier mice is warranted, potentially focusing on different immune challenges.

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**References**