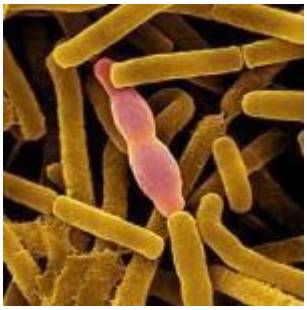
Stasis of CD8+ T Cells in the brain is a Signature of Cerebral Malaria



In the November 12th edition of PloS Pathogens, Shaw et al explored the role of CD8+ T cells in an experimental model of cerebral malaria (ECM). CD8+ T cells are cytotoxic killing cells that recognize peptide fragments in association with class I MHC and these authors sought to find a link between these cells and the development of cerebral pathology during murine malaria infection.

In humans, malaria is a significant global health problem with over 200 million cases and up to one million deaths annually. Cerebral malaria is the most severe manifestation of *Plasmodium falciparum* and is a result of neuropathology resultring in coma and death. In this paper, the authors sought how $CD8^+$ T cells cause cerebral pathology during malaria infection and performed two photon imaging of $CD8^+$ T cells within the brains of mice infected with strains of malaria parasites that cause or do not cause ECM. They found that $CD8^+$ T cells group together within the perivascular spaces of brains of mice infected with parasites, some causing ECM and other not. However, in ECM, the accumulated CD8+ T cells show different characteristic movements, where they were shown to interact with myeloid cells within the brain during infection. They also showed that the $CD8^+$ T cells did not cause ECM

through killing of brain microvessel cells.

The authors conclude that the arrest of T cells in the perivascular compartments of the brain is a unique signature of ECM-inducing malaria infection and “implies an important role for this event in the development of the ECM-syndrome”. How this can be translated to potential therapy in alleviating CM in humans remains to be seen.

Shaw, T. et al. 2015. Perivascular Arrest of CD8+ T Cells Is a Signature of Experimental Cerebral Malaria. *PLOS*.