

**ABSTRACT**

Despite advances in perinatal and neonatal care over the last thirty years in the United States, the prevalence of cerebral palsy (CP) has not decreased. While the effects of cerebral palsy on the person's quality of life and social interaction cannot be measured, the economic impact of treatment is staggering. The CDC estimates lifetime costs to care for one person with cerebral palsy to be nine hundred thousand dollars. While the etiology of cerebral palsy is not fully understood, both a preterm delivery and the presence of inflammation at delivery are significant risk factors. Animal models have been developed to investigate the mechanisms by which intrauterine inflammation induces brain injury. These models, including one from the PI's laboratory, have demonstrated that exposure to intrauterine inflammation results in an inflammatory response in the fetal brain as well as abnormal glia development. Despite research using these models, the precise mechanisms by which intrauterine inflammation adversely affects the developing fetal brain and leads to brain injury in the neonate are not well understood. Our novel hypothesis is that intrauterine inflammation results in adverse neurological outcome by disrupting normal neuronal development. Preliminary work from our laboratory suggests that intrauterine inflammation can produce dysmorphic neurons, up-regulate excitatory receptor expression and alter biochemical metabolism. Funding for this project will allow us to address critical questions about neuronal function in both the fetal and neonatal brain after exposure to intrauterine inflammation. Inflammation. If our work demonstrates that abnormal neuronal function is a mechanism by which intrauterine inflammation causes adverse neurological outcome, then exciting and novel therapeutic regimes becomes feasible.