NIH Award from the National Institute of Neurological Disorders and Stroke

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- **Project:** The role of Kainate receptors in oligodendrocyte toxicity and autoimmune encephalomyelitis (EAE)
- **Start Date:** May 15, 2009
- **Total Award Amount:** $190,625

**How the results of this project will benefit society:**
Multiple sclerosis (MS) is a chronic, often disabling disease that attacks the central nervous system, which is made up of the brain, spinal cord, and optic nerves. Symptoms may be mild, such as numbness in the limbs, or severe, such as paralysis or loss of vision. Approximately 400,000 Americans have MS, and every week about 200 people are diagnosed. Worldwide, MS affects about 2.5 million people. Our research has shown that inhibition of kainate receptors represents a viable strategy for slowing disease progression in an animal model of multiple sclerosis.

**The problem the project is trying to solve:**
Kainate receptors are a family of proteins responding to the excitatory neurotransmitter L-glutamate; these receptors in part mediate the damage and death of oligodendrocytes, which are glial cells in the brain required for normal neuronal function. To test our hypothesis we will utilize newly developed selective pharmacological agents and gene-targeted mice lacking kainate receptor subunits.

**How this project will work:**
In this exploratory study, we will test our central hypothesis first by defining the contribution of specific receptor subunits to spinal oligodendrocyte excitotoxicity using gene-targeted mice and selective pharmacological tools. Secondly, we will test if progression of experimental autoimmune encephalomyelitis (EAE), a mouse model of MS, is slowed by kainate receptor antagonists or in kainate receptor knockout mice. These experiments will enable us to definitively assess whether targeting of kainate receptors represents an approach with therapeutic potential in treatment of MS.

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