**Specific Aims**

Neurofibromatosis is a genetic disorder that effects 1 in every 3,000 births, resulting in tumor growth along the nervous system including the brain, spinal cord, nerves and skin. Neurofibromatosis Type 1 is caused by an autosomal dominant mutation in the NF1 gene encoding the protein neurofibromin. Typically NF manifests itself with café au lait spots, freckling in armpits or groin area, and neurofibromas on or under the skin. Often children with NF1 have learning disabilities, issues with bone growth and possible development of scoliosis. It is known that neurofibromin is a negative regulator of the Ras kinase in the Ras pathway for cell proliferation and differentiation, therefore disregulation of the Ras pathway is associated with tumor growth. It is not known how neurofibromin plays a role in learning disabilities.

I **hypothesize** that mutations in neurofibromin effect the Ras pathway in such a way that some neuronal connections cannot be made leading to learning disabilities.