

## **Ecologic Assessment of Pesticide Occurrence and Prevalence of Parkinson Disease**

We propose to conduct an ecologic pilot study that characterizes prevalence rates for Parkinson Disease (PD) in the state of Colorado. We will ascertain patient level data from the Colorado Medicare Service for the year 2007 along with population estimates from the US Census Bureau to calculate county level PD prevalence rates. We will utilize Empirical Bayesian methods to estimate “smoothed” prevalence rates based on conditional probability distributions approximated from county specific calculated prevalence rates and rates from the defined set of geographic neighbors for each county. Prevalence rates will be displayed in a Geographic Information System (GIS) to identify area with higher rates. Lastly, we will present data representing pesticide levels in water in the GIS to characterize the spatial distribution of pesticide occurrence in water systems in Colorado and the potential associated spatial pattern with PD prevalence rates.