

NON-TECHNICAL ABSTRACT: *(State in layman's terms the application's broad, long-term objectives and specific aims, making reference to the potential public benefits of the project.)*

The brain enjoys several metabolic, biochemical and immunological privileges, which is in part afforded by the presence of a barrier called the blood brain barrier, between the vascular system that transports blood and the central nervous system. Unfortunately, this barrier presents a major hurdle to delivering the therapeutic agents and drugs to the brain when it suffers from neurological disorders. This specific hurdle was identified as one of several areas that needs immediate and focused attention by the National Institutes of Health (NIH) when it challenged the scientists to manipulate the blood-brain-barrier to deliver therapies for mental/nervous system disorders as part of the American Recovery & Reinvestment Act in 2009. We have developed a 'nanovehicle', a nanosized lipoprotein particle bearing a bioflavonoid (a phytochemical or plant product) that has been shown by others to have the potential to treat Alzheimer's disease. The 'nanovehicle' has a homing device that will target and deliver the agent across the blood brain barrier. We have extensive experience in preparing this Nanoparticle and would like to test its role as a 'nanovehicle' in cell cultures to see if the cells take up this flavonoid through specific receptors found on the cell surface. Results from this study will aid in developing this project to apply to NIH with the proposal to test the use of the nanovehicle as a potential drug delivery system.