The SimBio Study Story

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One of the most important advances in preventive medicine has been the use of the cholesterol-lowering statin drugs to reduce the risk of heart disease. These drugs are taken by millions of healthy middle-aged Americans to help prevent heart attack decades later. Recent studies suggest that too much cholesterol in healthy middle age may also increase the risk of Alzheimer's disease in later life. Building on these studies, UW ADRC investigator Gail Li, MD, PhD, and our group performed a preliminary pilot study of the cholesterol lowering statin called simvastatin ("Zocor") to see if it could slow "pre-Alzheimer's" processes in healthy adults years or decades before they might develop Alzheimer's disease. (We now know that early Alzheimer's changes often begin decades before any symptoms appear.)

Simvastatin was chosen because it easily enters the brain. Simvastatin is a safe and widely used medication for the treatment of high cholesterol. The only way to see if a statin slows the very early changes of Alzheimer's disease is to measure the "biomarker" indicators of the earliest Alzheimer's changes in cerebrospinal fluid (CSF). Dr. Li and colleagues gave simvastatin to a small number of volunteers for 14 weeks and measured its effects on (1) the Alzheimer's disease volunteers' tau and p-tau (the major chemicals in Alzheimer's neurofibrillary tangles) and (2) the brain protection factor BDNF.

As Dr. Li hoped, simvastatin decreased CSF tau and p-tau, and increased CSF BDNF. These findings suggest that simvastatin could decrease brain cell damage and improve brain cell survival.

Perhaps simvastatin in middle age can prevent Alzheimer's disease in later life. The National Institute on Aging was so impressed by Dr. Li's pilot study results that they awarded hera three year $1.2 million grant to perform a larger definitive study of the effects of simvastatin on Alzheimer's disease biomarkers in normal middle aged persons. Healthy middle aged volunteers will receive 12 months of simvastatin or placebo. The pressing need now is for volunteers to participate in Dr. Li's pioneering study.