

## Nutrition Research – Year in Review

2009 continued to be a busy and exciting year for the USApple nutrition research program. Several studies were published and promoted across numerous media outlets. In addition, new studies began. Funding for the studies comes from state assessments contributions and membership dues.

### Cancer

Dr. Rui Hai Liu of Cornell University published breakthrough breast cancer research in the January 2009 issue of the *Journal of Agricultural and Food Chemistry*. His research found that apples – and specifically apple peel – contain powerful substances that can help inhibit the deadliest and highly malignant type of cancer from forming in the breast. The researchers at Cornell believe special phytochemicals in the apples interrupted and turned off the chemical pathway of human breast cancer cells.



### Brain Health

Dr. Thomas Shea of University of Massachusetts-Lowell continues to be widely regarded for his studies on the efficacy of apple juice in human cognitive behavior. In 2009, he produced two research papers on the topic and is working on additional research looking into the effectiveness of apple products in fighting Alzheimer's disease for publication in 2010. A portion of the research published in the January 2009 issue of the *Journal of Alzheimer's Disease* provided more evidence to suggest that regular consumption of apple juice can not only help to keep one's mind functioning at its best,

but may also be able to delay key aspects of Alzheimer's disease and augment therapeutic approaches. The study demonstrated that mice receiving the human equivalent of two glasses of apple juice per day for 1 month produced less of a small protein fragment, called "beta-amyloid," that are commonly found in brains of individuals suffering from Alzheimer's disease.

The second study from Shea helped uncover a wide range of brain-protective effects in apples and apple juice that accompany aging and contribute to Alzheimer's disease. The research was discussed in the November/December, 2009 issue of *AgroFOOD Industry High-Tech*. For this research, Shea reviewed nine previously published studies and demonstrated that eating apples or drinking apple juice may improve cognition (the ability to know or understand), reduce hallmarks of Alzheimer's disease, and improve mood and behavior in persons with Alzheimer's disease<sup>3</sup>. Shea has also submitted a research study to *The American Journal of Alzheimer's Disease and Other Dementias*, with publication expected in 2010.

Among 21 individuals with moderate to severe Alzheimer's disease, the researchers report that consumption of two, 4 oz glasses of apple juice daily for one month reduced behavioral and psychotic symptoms associated with dementia by 27 percent. The largest changes were seen in reducing anxiety levels, agitation and delusion. The findings suggest that apple juice may be a useful adjunct therapy for reducing the decline in mood that typically accompanies the progression of Alzheimer's disease and dementia. 🍏

