Dr. Yuan’s research focuses on the etiologic and protective roles of dietary and other environmental exposures, genetic factors, and their interaction in the development of cancers. Based on the original findings of a protective effect of dietary isothiocyanates (ITC) in cruciferous vegetables on risk of lung cancer, a team of investigators led by Dr. Yuan conducted a randomized clinical trial to evaluate whether 2-phenethyl isothiocyanate (PEITC), a natural product found as a conjugate in watercress and other cruciferous vegetables, inhibits the metabolic activation of tobacco lung carcinogen nicotine-derived nitrosamine ketone (NNK) in smokers. Eighty-two smokers completed the trial with a crossover study design that lasted for five weeks. Each subject was given 40 mg PEITC per day during the treatment period. Overall the NNK metabolic activation measure was reduced by 9% (P = 0.023) with a range of 14-18% in certain subgroups. This study provided the first direct evidence that supports the inhibitory role of PEITC in the activation of NNK, a required step for the lung carcinogenesis. The results of this trial, while modest in effect size, provide a basis for further investigation of PEITC as an inhibitor of lung carcinogenesis by NNK in smokers.