Ross, G.W., Sharp, D.S., O'Callaghan, J.P., Petrovitch, H., Miller, D.B., Nelson, J., Launer, L.J., White, L.R.: Quantification of GFAP levels in neocortical regions of elderly Japanese-American men with Alzheimer's disease. World Alzheimer's Disease Conference, Washington, D.C. 2000.

Astrogliosis, characterized by the cytoskeletal intermediate filament, glial fibrillary acidic protein (GFAP), is a nonspecific response to brain injury that may play a role in development of Alzheimer's disease (AD). Neuritic plaques (NP)in human brain have been shown by immunohistochemical staining for GFAP to be associated with astrogliosis. Levels of GFAP mRNA are correlated with senile plaque density in temporal (not frontal)lobe and may increase with age. Quantification of GFAP levels using an ELISA procecedure has been developed and performed in animal brains. This study utilizes the ELISA procedure to quantify GFAP in frozen brain tissue from four areas of neocortex in brains of 10 AD cases, 10 age-matched controls, and 10 younger controls from the Honolulu Heart Program autopsy archive. Median age was 83.5 years for cases and age-matched controls, and 77 for younger controls. Maximum neurofibrillary tangle count (MNT) ranged from 0-99 (median 44.4) and maximum neuritic plaque (MNP) count ranged from 5.2-17 (median 9.7) in AD cases (NP counts are capped at 17). In younger controls MNT counts ranged from 0-2.7 (median 1.2) and in age-matched controls 0-13.5 (median 0.4). None of the younger conrols had NP and the MNP range was 0-1.5 (median 0) for age-matched controls. Median postmortem interval (time from death to freezing of brain tissue) was shortest in the AD group, however ranges of the interval were indistinguishable between the three groups. Levels of GFAP in ug/mg measured in frontal lobe were similar for all groups. However in occipital, pariatal, and temporal lobes GFAP levels were significantly higher in the AD cases. Median values in ug/mg for younger controls, age-matched controls, and AD cases respectively were: occipital (5.8, 3.6, 11.9 $p<0.01$), parietal (8.4, 8.8, 14.6 $p<0.05$) and temporal (12.4, 11.2, 39.6 $p<0.005$) For all four lobes, GFAP level were indistinguishable between the two control groups. Highest levels of GFAP in controls were found in frontal and temporal lobes. In AD cases lowest levels were found in frontal lobe and highest levels were found in temoral lobe where the largest differences in GFAP levels between AD cases and controls were seen.