December 12, 2011 - TARCC researchers found that biomarkers in blood serum could be combined with clinical information to accurately classify patients with Alzheimer's disease. Sid E. O'Bryant, Ph.D., of the Texas Tech University Health Sciences Center, led the TARCC team that developed the test.

O'Bryant says the test refines a previous blood test and has shown to be effective when cross-validated against another sample group. "Basically we created a simpler version of a recent blood test," O'Bryant said. "We created a briefer screener in the TARCC cohort and then applied it to the Alzheimer's Disease Neuroimaging Initiative (ADNI) national cohort and found that we still accurately identify 88 percent of those with and without the disease."

ADNI is a research project to study the rate of change of cognition, function, brain structure and function, and biomarkers. The project was funded with $40 million from the National Institutes of Health (NIH), and $20 million from pharmaceutical companies.

The TARCC blood screener represents many firsts for the potential diagnosis of Alzheimer's, First, no other such test has ever been cross-validated in an independent group of subjects, all the more impressive in light of a recent Wall Street Journal article detailing the difficulties of reproducing study results. Second, this version of the screener works with different sorts of blood draws making it easier for clinics to implement. Third, to date, no prior work that has explicitly sought to find blood-biomarkers of AD across both serum and plasma and no previous attempts at identifying blood-based screening tools have utilized markers across blood fractions.

"There is clearly a need for reliable and valid diagnostic and prognostic biomarkers of Alzheimer's disease," O'Bryant said. "Identifying biomarkers in the blood has several advantages over other methods of classifying patients with Alzheimer's disease, including detecting biomarkers in the cerebrospinal fluid and neuroimaging. Blood can be collected at any clinic or in-home visit, whereas not all facilities can conduct lumbar punctures to obtain cerebrospinal fluid. Older patients may not consent to lumbar puncture and may not be able to undergo neuroimaging because of pacemakers or other health issues."

The team's analysis of serum biomarker proteins was conducted on 197 participants with Alzheimer's disease and 199 control participants of the TARCC cohort, with further analysis

conducted on plasma proteins from 112 individuals diagnosed with Alzheimer's disease and 52 control participants from the ADNI cohort.

A recent Boston Globe article highlighted the need to test potential Alzheimer's medicines on patients who have beta amyloid, an abnormal protein associated with the disease, but who have not yet manifested Alzheimer's. Much as patients with high cholesterol are given medication to ward of a heart attack or stroke, preventatively administering new medicines to patients with this protein may delay onset and slow progression of Alzheimer's disease. The TARCC test is potentially a critical tool in effectively identifying such individuals.

While a Food and Drug Administration (FDA) working group recently gave preliminary approval for a neuroimaging technique to detect beta amyloid as a biological marker, no blood-based biomarker-screening tool has received approval to date.

The purpose of the TARCC study was to generate a blood-based screener for Alzheimer's disease that can be incorporated into existing medical practice, with more detailed assessment then provided to confirm the disease in those who screen positive in the blood test.

"In the last several years, there have been significant advancements in the search for blood-based biomarkers for Alzheimer's disease," O'Bryant said. "Together, these studies suggest that a blood-based screening tool for Alzheimer's disease is on the horizon."

Investigators from TARCC include, Baylor College of Medicine: Susan Rountree, Christie Ballantyne, Eveleen Darby, Aline Hittle, Aisha Khaleeg; TTUHSC: Paula Grammas, Benjamin Williams, Andrew Dentino, Gregory Schrimsher, Parastoo Momeni, Larry Hill; University of North Texas Health Science Center: Janice Knebl, Lisa Alvarez, Douglas Mains, Thomas Fairchild, James Hall, Robert Barber; University of Texas Southwestern Medical Center: Perrie Adams, Roger Rosenberg, Ryan Huebinger, Janet Smith, Mechelle Murray, Tomequa Sears; and the University of Texas Health Science Center - San Antonio: Donald Royall, Raymond Palmer. To watch an interview with Dr. Sid O'Bryant , click here .