



Accessing biological fluids from the DIAN Biomarker Core

Evaluation will be based on defined criteria including scientific merit, feasibility, issues of conflicts of interest, internal review board (IRB)/internal ethics committee (IEC) compliance, PI qualifications, burden on samples and/or staff, and appropriateness to DIAN goals and themes. Upon committee(s) approval, sample selection then requires interactions with the Clinical, Biomarker, Biostatistics, and Informatics Cores for ascertainment of specified clinical and biomarker selection criteria.

PROCEDURES FOR BIOLOGICAL FLUIDS

Fasting Cerebrospinal Fluid and Blood To Be Collected

Polypropylene tubes are utilized for CSF and blood collection and storage since some key analytes, such as A β , are known to stick to glass and other plastics. All blood and CSF samples are collected in the morning (as close to 8:00AM as possible) before breakfast and after an overnight fast. Only water (and any medications that can be taken without food) is permitted until the blood draws and the LP procedure are completed. Blood (separated into plasma and serum) and CSF are collected so as to accommodate assaying the broadest range of the best antecedent biomarkers/analytes. CSF total tau, ptau181 and A β 1-42, and plasma A β 1-40, A β x-40, A β 1-42 and A β x-42 are analyzed by xMAP bead-based ELISA. CSF A β 1-42 is also analyzed by INNOTEST plate-based ELISA.

Fasting Sample Collection

Blood for plasma is collected into two 10 mL EDTA vials, mixed thoroughly, then centrifuged for 15 minutes at 2000g. The plasma sample is transferred to one labeled polypropylene tube and flash frozen on dry ice. Serum is obtained by collecting two 10 mL vials of blood and allowing them to clot for 30 minutes at room temperature. The tubes are spun for 15 minutes at 2000g. Serum is then transferred to one labeled polypropylene tube and flash frozen on dry ice. LPs for CSF collection are performed using a small caliber atraumatic needle (e.g. 22 or 24 gauge Sprotte needle). CSF is typically obtained via gravity flow from participants in a sitting position unless otherwise stated. Use of 24 gauge needles requires collection by aspiration. The first 2 mL of clear CSF is sent to a local lab for cell counts, glucose, and total protein determination. The remaining 15-20 mL CSF for biomarker analysis is transferred to two labeled polypropylene tubes and flash frozen on dry ice.

Fasting Sample Aliquot, Storage, Inventory and Tracking When frozen samples are received by the Biomarker Core they are assigned an encoded accession number and logged into a database. Consistent with ADNI protocols, the samples of frozen plasma, serum, and CSF are thawed on ice and then aliquoted (0.5 mL each) into sterile polypropylene vials. Sample vials are then flash frozen on dry ice prior to being placed in designated locations in -80°C freezers (outfitted with both power and liquid CO₂ back-up systems). As such, all DIAN fluid samples will have undergone two freeze-thaw cycles prior to analyte measurement, consistent with the ADNI protocol.