



المختبر المرجعي الوطني
National Reference Laboratory
Brought to you by M42

Revolutionizing Alzheimer's Disease Diagnosis



UNDERSTANDING ALZHEIMER'S DISEASE

Alzheimer's Disease (AD) is a progressive neurodegenerative disorder characterized by amyloid-beta ($A\beta$) plaques and neurofibrillary tangles of hyperphosphorylated tau (p-tau), leading to progressive neuronal dysfunction and cell loss.

AD Neuropathologies can remain undetected for years due to the high cost and limited accessibility of traditional diagnostic tools.

These limitations delay diagnosis and intervention, adversely affecting patient outcomes.



"The disease might hide the person underneath, but there's still a person in there who needs your love and attention."

CHANGING THE DIAGNOSTIC LANDSCAPE THROUGH CUTTING-EDGE BIOMARKERS

Fluid biomarkers are emerging as powerful tools for diagnosing AD.

The CSF A β 40/42 ratio test was the first FDA-approved diagnostic test and serves as evidence of amyloid pathology, supporting eligibility for amyloid-lowering therapy. Blood-based tests provide a further breakthrough in diagnostics by significantly increasing accessibility, while reducing costs and procedural distress compared to CSF or imaging methods.

Among blood-based biomarkers, p-Tau 217 stands out as a transformative diagnostic tool, offering:



01

Earlier and
more accurate
AD diagnosis



02

Better patient care
and treatment
outcomes



03

Improved patient
stratification for inclusion
in clinical trials



04

Greater specificity
and sensitivity than other
blood-based biomarkers

NRL's p-Tau 217 assay demonstrates high accuracy in predicting AD pathology, as confirmed by PET imaging.

Dementia patients are people with a normal past, but their condition causes them to forget part of themselves. It is our job to remember who they were.



COMPREHENSIVE TESTING SOLUTIONS

Test Name	Order Code	CPT Code	Specimen	Methodology	Turnaround Time
ATN Profile (NRL) - Plasma Tests included: • Amyloid-beta 42/40 Ratio • Phosphorylated Tau 217 (p-Tau 217) • Neurofilament Light Chain (NfL)	2925056	83520 (x4)	K2-EDTA plasma (Lavender Top)	Lumipulse® (CLEIA) Sysmex (HiSCL)	Up to 7 days
p-Tau217 (Plasma)	2925029	83520			
p-Tau 217/Amyloid-beta 42 Ratio (Plasma)	2925042	83520 (x2)			
NfL (Plasma)	2925034	83520			
Glial Fibrillary Acidic Protein (GFAP; Plasma)	2925035	83520			
Comprehensive Alzheimer Disease Evaluation - CSF Tests included: • Neurofilament Light Chain (NfL) • Amyloid-beta 42/40 Ratio (Aβ42/40) • Total Tau (T-Tau) • Phosphorylated Tau 181 (p-Tau 181) • p-Tau 181/Amyloid-beta 42 Ratio	29260113	83520 (x5)	CSF	Lumipulse® (CLEIA)	
Amyloid-beta 42/40 Ratio (CSF)	2925064	83520 (x2)			
p-Tau 181 (CSF)	2925041	83520			
p-Tau 181/Amyloid-beta 42 Ratio (CSF)	29260114	83520 (x2)			
Total tau (t-Tau; CSF)	2925040	83520			
NfL (CSF)	2925038	83520			
APOE genotyping	1724305	81401	Peripheral blood (EDTA; Lavender Top)	qPCR	7 days
Alzheimer NGS, 41-gene panel: <i>A2M, ABCA7, ACE, ADAMTS13, ALOX5AP, APOE, APP, BIN1, CD2AP, CHCHD10, CHMP2B, CSF1R, C9orf72, CST3, DNMT1, FTL, FUS, GBA1, GCDH, GRN, HFE, HNRNPA2B1, HSD17B10, ITM2B, MAPT, mLYCD, MPO, NOS3, PLA2, PRNP, PSEN1, PSEN2, SNCA, SNCB, SPG21, SQSTM1, TARDBP, TREM2, TYROBP, UBQLN2, VCP</i>	17243134	81401, 81406	Peripheral blood (EDTA; Lavender Top)	Next-generation sequencing (NGS)	21 days

Important Considerations

Alzheimer's biomarkers, especially Amyloid-beta 42 (Aβ-42), are unstable and **care must be taken during the pre-analytical phase (collection, labelling, preparation, storage, transport)** to avoid risks to sample integrity and result accuracy:

For plasma biomarkers:

- Ideally, patients will have fasted (8 hours) at the time of blood collection.
- Samples collected in K2-EDTA Plasma (Lavender Top) tubes - no other sample type is acceptable.
- Samples centrifuged in a refrigerated centrifuge and the plasma separated within 6 hours of collection.
- Aliquots must be frozen immediately and transported at - 20°C.

Note: Aliquot tubes must be polypropylene.

PATIENT REFERRAL PATHWAY WITH SUSPECTED COGNITIVE IMPAIRMENT DUE TO ALZHEIMER'S DISEASE

BRAIN HEALTH REFERRAL PATHWAY

HCPs involved

- **Primary Care doctor**
- **Internal Medicine doctor**
- **Geriatrician**
- **Psychiatrist**
- **Specialized Nurse or any other Advanced Physician Assistant**

Pathway

Initial presentation

Initial workup

Methodology and Biomarkers involved

First consultation due to concern for cognitive and/or behavioral symptoms:

- Loss of short-term memory
- Difficulties in concentration/attention
- Difficulties in recall of names/words
- Difficulties managing finances/paying bills
- Difficulties in orientation in time / spatial orientation
- Confusion with time or place
- Etc...

Blood screening tests to identify common reversible causes

- Complete blood count (Anemia, infection, hematologic malignancy) [NRL Test Code: 21001]
- Comprehensive metabolic panel [NRL Test Codes:16213 (Conventional units); 11023 (SI units)]
- Fasting glucose [NRL Test Code: 6110013 (Conv) 11062 (SI)]
- HbA1c [NRL Test Code: 1101030]
- Thyroid function tests [NRL Test Code: 16293 (Conv) 1103502 (SI)]
- Vitamin B12 and Folate [NRL Test Code: 16435]

Cognitive assessment (any of the below)

- MMSE - AD8 - MiniCog - MoCA - DAS
- MiniACE - RUDAS - 5WT - ADAS Cog - Etc.

If all investigations are normal

- p-Tau 217 in plasma [NRL Test Code: 2925029]
- p-Tau 217/Aβ42 ratio in plasma [NRL Test Code: 2925042]
- ATN Profile in plasma [NRL Test Code: 2925056]

- **Neurologist**
- **Dementia Specialist**

Specialist Evaluation

Amyloid pathology investigation tests

- p-Tau 217 in plasma [NRL Test Code: 2925029]
- p-Tau 217/Aβ42 ratio in plasma [NRL Test Code: 2925042]
- ATN Profile in plasma [NRL Test Code: 2925056]

AD pathology exclusion test

- p-Tau 181 in CSF [NRL Test Code: 2925041]

If AD-BBB are positive

- Amyloid-beta 42/40 Ratio, CSF [NRL Test Code: 2925064]
- Total Tau, CSF [NRL Test Code: 2925040]
- P Tau 181, CSF [NRL Test Code: 2925041]
- Neurofilament Light Chain, CSF [NRL Test Code: 2925038]
- MRI
- Amyloid PET

- **Neurologist**
- **Radiologist**
- **Genetic Counselor**

Treatment Decision

AAT eligibility

- APOE genotype [NRL id:1724305]
- MRI
- Amyloid PET

- **Neurologist**
- **Radiologist**

Treatment management and monitoring

AAT monitoring

- MRI
- Amyloid PET

HCP: Health Care Provider
AAT: Anti-Amyloid Treatment
AD-BBB: Alzheimer's Disease Blood Based Biomarkers

References:

- Atri A, Dickerson BC, Clevenger C, Karlawish J, Knopman D, Lin PJ, Norman M, Onyike C, Sano M, Scanland S, Carrillo M. Alzheimer's Association clinical practice guideline for the Diagnostic Evaluation, Testing, Counseling, and Disclosure of Suspected Alzheimer's Disease and Related Disorders (DETeCD-ADRD): Executive summary of recommendations for primary care. *Alzheimers Dement*. 2025 Jan;21(6):e14333. doi: 10.1002/alz.14333. Epub 2024 Dec 23. PMID: 39713942; PMCID: PMC12173843.
- Mielke MM, Anderson M, Ashford JW, Jeromin A, Lin PJ, Rosen A, Tyrone J, Vandevrede L, Willis DR, Hansson O, Khachaturian AS, Schindler SE, Weiss J, Batra R, Bozot S, Dwyer JR, Holszinger D, Jones DR, Murray JF, Patrick KA, Scholler E, Vradenburg G, Young D, Braunstein JB, Burnham SC, de Oliveira FF, Hu YH, Matke S, Merali Z, Monane M, Sabbagh MN, Shobin E, Weiner M, Udeh-Momoh CT. Recommendations for clinical implementation of blood-based biomarkers for Alzheimer's disease. *Alzheimers Dement*. 2024 Nov;20(11):8216-8224. doi: 10.1002/alz.14184. Epub 2024 Oct 1. PMID: 39351838; PMCID: PMC11567872.
- Gareri P, Cotroneo AM, Gelmini G, Mossello E, Massaia M; Touch Working Group. An algorithm for the early diagnosis and correct approach to dementia management: results of a multiprofessional team. *Aging Clin Exp Res*. 2024 May 3;36(1):102. doi: 10.1007/s40520-024-02749-z. PMID: 38702570; PMCID: PMC11068660.
- Sánchez-Juan Pascual, Iba Pablo, Arrieta Enrique, Novick Diego, Díaz-Cerezo Silvia, Cotton Sarah, Walker Chloe, Trueba Saiz Angel, Núñez Mercedes. The diagnostic pathway of Alzheimer's disease in real-world clinical practice in Spain: results from the Adelphi Dementia Disease Specific Programme. *Frontiers in Neurology*. Volume 16 - 2025. Doi:10.3389/fneur.2025.1702805
- Alsaadi T, Almadani A, AlRukn S, Hassan A, Sarathchandran P, Shatila A, Szolcs M, Benito D, Ince S, Krieger DW. Expert Guidance on Cognitive Impairment in Alzheimer's Disease: A Practical Seven-Step Approach from the United Arab Emirates. *Neurol Ther*. 2025 Dec;14(6):2507-2535. doi: 10.1007/s40120-025-00833-8. Epub 2025 Oct 4. PMID: 41045350; PMCID: PMC12623560.

ADVANCING ALZHEIMER'S DISEASE DIAGNOSIS

With a commitment to clinical excellence, NRL provides state-of-the-art laboratory testing for neurodegenerative diseases. Our validated assays, developed using extensive research and testing, offer industry-leading accuracy for AD diagnosis.



Contact us today to learn more about how NRL's advanced testing solutions can benefit your clinical practice or research.



 **800 675**

 **customer care@nrl.ae**

Now, early detection is possible.

The advanced Alzheimer's blood test is the first-of-its-kind in the UAE and wider MENA region.

Get tested to:

- **Detect Alzheimer's early & accurately**
- **Track neurological changes over time**
- **Receive insights that guide better care**



**Advanced
Alzheimer's
blood test**

**Now available
in the UAE.**

**Earlier answers.
Better care.
Better prospects.**

800 77



المختبر المرجعي الوطني
National Reference Laboratory
Brought to you by M42



800 675



customer@nrl.ae



www.nrl.ae