**Supplementary information 1. Inclusion and exclusion criteria.**

**General Inclusion and exclusion criteria**

**(applicable to all diseases being studied)**

Inclusion:

Participants must meet each of the following criteria for enrolment into the study:

1. Written informed consent must be obtained and documented.
2. Participant must rate his/her level of proficiency in speaking and understanding English at 7 out of 10 or higher on the two LEAP-Q questions.
3. Participant must have ≥ 8 years education.
4. Participant with a minimum MoCA score of ≥18 (with the exception of FTD minimum score of ≥ 14)
5. Participant must have a reliable study partner. The study partner must:
   1. Interact regularly with the participant (i.e., have contact with the participant at least once a month over the phone, email, or face-to-face);
   2. Know the participant well enough to answer questions about the her/his cognitive abilities, communication skills, mood, and daily functioning (i.e., known the participant for at least 2 years);
   3. Provide written informed consent and complete study questionnaires;
   4. Be willing and able to assist in compliance with study procedures (if required).
6. Geographic accessibility to the study site.
7. Participant must be able to walk (assistive aids may be used, e.g., cane, walker, etc.).

Exclusion:

Participants who exhibit any of the following conditions are to be excluded from the study:

1. Serious underlying disease other than the disease being studied which in the opinion of the investigator may interfere with the participant’s ability to participate fully in the study.
2. Any disease that would/could lead to death over the next 3 to 5 years (i.e., cardiac/renal/liver cancer) with poor prognosis.
3. Participant has been diagnosed with more than one of the five diseases (AD/MCI, ALS, FTD, PD or VCI) being studied.
4. History of alcohol or drug abuse, which in the opinion of the investigator, may interfere with the participant’s ability to comply with the study procedures.
5. Presence of any of the following clinical conditions:

a. Substance abuse within the past year.

b. Unstable cardiac, pulmonary, renal, hepatic, endocrine, hematologic, or active malignancy or infectious disease.

c. AIDS or AIDS-related complex.

d. Unstable psychiatric illness defined as psychosis (hallucinations or delusions) or untreated major depression within 90 days of the screening visit.

1. Participant is currently enrolled in a disease modifying therapeutic (drug or interventional) trial or observational study that the Executive Committee feels would compromise study results. General Exclusion 7-12 applicable to London, Toronto and Ottawa only.
2. Participant has a known clinical diagnosis of glaucoma defined as taking eyedrops for glaucoma, or having had surgery for glaucoma in one or both eyes. Note: laser trabeculoplasty is an exclusion; however, yag laser iridotomy is permitted (i.e., not an exclusion).
3. Participant has any other known serious eye disease (e.g., wet/exudative age-related macular degeneration (ARMD)) or treatment or eye surgery including any history of intra-vitreal injections. Depending on the eye disease, the participant may be excluded if the condition is present in one or both eyes. The ocular part B platform lead should be consulted.
4. Participant has a known diagnosis of multiple sclerosis.
5. Participant has a known history of optic neuritis or other optic neuropathy in one or both eyes.
6. Participant has poorly controlled diabetes, defined by an hemoglobin A1c of 7.5% or higher obtained from the screening bloodwork.
7. Participant who has had known retinal laser therapy (either pan-retinal, or grid/focal) for diabetic retinopathy in one or both eyes.

**DISEASE SPECIFIC INCLUSION AND EXCLUSION CRITERIA**

**VCI INCLUSION AND EXCLUSION CRITERIA**

Inclusion:

* + 1. 55-85 years of age.
    2. Participants with ischemic stroke event documented on MRI or CT and meet the following:

a. ≥ 3 months since stroke.

b. Mild-moderate stroke (modified Rankin Scale (mRS) must be 0-3).

c. Without history of baseline dementia before stroke (pre-stroke mRS ≤ 2).

d. Previous silent stroke (seen on CT or MRI but without clinical history of focal neurological deficits) allowed.

Exclusion:

* + 1. Participant with no vascular cause of symptoms (e.g. migraine, isolated vertigo etc.).
    2. Participant with large cortical strokes (>1/3 middle Cerebral Artery (MCA)).
    3. Participant with severe cognitive impairment, aphasia, inability to write and/or severe functional disability limiting ability to perform assessments.

**AD/MCI INCLUSION AND EXCLUSION CRITERIA**

Inclusion:

* + 1. 45-90 years of age.
    2. Participant meets the National Institute on Aging-Alzheimer’s Association (NIA-AA) core clinical criteria for probable AD dementia or amnestic single or multiple domain Mild Cognitive Impairment.
    3. Non-AD causes of dementia ruled out by standardized work up for dementia including brain imaging and blood work screen.

Exclusion:

* + 1. Participant with untreated major depression within 90 days of the screening visit, substance abuse, or other significant psychiatric disorder.
    2. Participant with a nonamnestic presentation (e.g., language, visuospatial, or executive function) of AD or MCI.

**PD INCLUSION AND EXCLUSION CRITERIA**

Inclusion:

1. 55-85 years of age.
2. Participant has been diagnosed with Idiopathic Parkinson’s disease based on United Kingdom Parkinson’s Disease Society Brain Bank (UKBB) criteria with the exclusion of the criteria that excludes more than one affected relative), including acceptable and sustained response to dopaminergic drug.
3. Time since diagnosis of PD is 3-8 years.
4. Participant will have a Hoehn & Yahr (H&Y) stage of 2&3.

Exclusion:

N/A

**FTD INCLUSION AND EXCLUSION CRITERIA**

Inclusion:

1. 40-85 years of age.
2. Participant meets the FTD subtype criteria for Primary Progressive Aphasia (PPA) or possible or probable behavioural variant of Frontotemporal Degeneration (bvFTD) or corticobasal syndrome, or Progressive Supranuclear Palsy (PSP).

Exclusion:

1. Participant with probable AD (and only possible FTD) or history of multiple head traumas, lifelong schizophrenia, or chronic depression

**ALS INCLUSION AND EXCLUSION CRITERIA**

Inclusion:

1. 40-85 years of age.
2. Participant has been diagnosed with possible, probable or definite Familial or Sporadic ALS based on El Escorial Criteria.
3. Participant has a Forced Vital Capacity (FVC) ≥ 60% predicted.
4. The principal use of Non-Invasive Positive Pressure Ventilation (NIPPV) is nocturnally and the participant is able to tolerate an MRI.
5. Participant’s time from symptom onset ≤ 4 years.

Exclusion:

1. Participant uses permanent assisted ventilation (PAV).
2. Participant uses NIPPV greater than nocturnal requirements.

**PLATFORM SPECIFIC INCLUSION AND EXCLUSION CRITERIA**

**NEUROIMAGING**

Inclusion:

1. All participants eligible for inclusion based on clinical assessments.

Exclusion:

1. Any participant with contra-indication to an MRI procedure as listed in the site specific Magnetic Resonance Environment Screening Questionnaire (e.g., metal implant).
2. Any participant who may be unable to tolerate the MRI environment.

**NEUROPSYCHOLOGY**

Inclusion

1. Participant has sufficient vision and hearing to complete testing based on screening measures.

a. Vision – must have 20/70 visual acuity or better in at least one eye.

b. Hearing – must be able to detect a 25 dB HL signal bilaterally at 1000, 2000, and 4000 Hz. A personal amplification device will be provided to accommodate those with hearing impairments.

1. Participant must complete at least 75% of the test battery, which must include the hearing and vision screening measures.

a. An individual test will be considered “complete” when the Participant has been administered the task instructions and the participant has adequately attempted the measure. With this criteria, if a participant fails the practice item(s) and/or the task is discontinued for cognitive reasons, the test will still be considered “complete”.

b. Participants who are non-verbal or have severe dysarthria at screening would only be able to complete approximately 55% of the neuropsychological testing. As such, potential participants who are known to be non-verbal and/or have severe dysarthria at screening will not be eligible for the study.

Exclusion

1. Participant has moderate or severe cognitive impairment, defined as a MoCA score below 18 (with the exception of the FTD cohort, who can have a minimum MoCA score of ≥ 14).

**GENOMICS**

Inclusion:

1. Participant must have good venous access for phlebotomy to be performed.

Exclusion:

N/A

**OCULAR PART A (EYE TRACKING)**

Inclusion:

1. Participants must have relatively normal or corrected to normal vision in at least one eye so that they can identify symbols and stimuli presented on a computer screen in front of them.
2. Participant must be able to sit comfortably for a period of about 45 minutes.
3. Participant must be able to track stimuli on a computer screen.
   1. Calibration and Validation must be completed within ½ hour for the Anti-Pro Interleaved task
   2. Calibration and Validation must be completed within 15 minutes for FreeViewing.

Note: Those with disease pathology (e.g. PSP, dyskinesia in PD) that directly affects the oculomotor systems are exempt from the eye-tracking platform, if they cannot be calibrated/validated in the times above.

1. Participant must complete ½ of the assessments
   1. 120 trials for Anti-Pro Interleaved tasks\*
   2. 5 trials for FreeViewing

\*Note: If the participant cannot properly perform the Anti-Pro Interleaved task, such that they make 100% errors on the Anti-Saccade task but can still perform the Pro saccade task, this will still be considered ‘complete’ for the Anti-Pro Interleaved tasks.

Exemptions:

* + 1. Participants with a MoCA score of 20 or less who are unable to comprehend and adequately perform the Anti-Pro Interleaved task (i.e., the participant cannot attend to the task or remember the instructions such that they cannot adequately perform correct Pro Saccade trials), may skip this task and attempt the FreeViewing task for the allotted amount of time. NOTE: The participant must still attempt calibration and validation and performance of the Anti-Pro Interleaved task for the allotted amount of time before proceeding to the FreeViewing task.

Exclusion:

1. Participant has large visual field defects that obscure visual targets within ±10 degrees of central vision.
2. Participant cannot be calibrated/validated in the allotted amount of time and has no disease pathology allowing exemption (e.g. red/green colourblindness).
3. Participant cannot perform either the Anti-Pro Interleaved or FreeViewing tasks in the allotted amount of time and has no disease pathology allowing exemption.

**OCULAR -PART B (SD-OCT IMAGING)**

This platform is occurring in London, Ottawa and Toronto sites only.

The following criteria will be determined during the ocular SD-OCT assessment at baseline. If the participant does not meet the inclusion/exclusion stated below they will be allowed to continue in the study. These criteria are to be reassessed at visits 4, 6 and 8.

Inclusion:

N/A

Exclusion:

1. Participant has an intra-ocular pressure greater than 22mmHg in one or both eyes or a difference in intra-ocular pressure (Goldmann, Perkins, Tonopen or any form of clinically validated applanation tonometry) greater than 5mmHg between the two eyes.
2. Participant has cupping of the optic nerve head (ONH) consistent with a diagnosis of glaucoma, as clinically determined by expert ophthalmological assessment of digital colour fundus images centered on the ONH in one or both eyes. Specifically, one or more of the following:
3. a cup/disc ratio of 0.7 or greater in either eye
4. a cup/disc asymmetry of more than 0.2
5. disc hemorrhage in one or both eyes
6. notch in one or both eyes
7. Participant has wet / exudative age-related macular degeneration (ARMD in one or both eyes, as clinically determined by expert ophthalmological assessment of digital colour fundus images centered on the fovea.