

Rationale and design of PREDICTOM advanced MRI protocol

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Introduction

- The **PREDICTOM** project (www.predictom.eu) is an EU-funded initiative aimed at validating established multimodal biomarkers and developed novel biomarkers to identify individuals at high risk of Alzheimer's disease (AD)¹.
- PREDICTOM** prospective study will acquire a **harmonized state-of-the-art MRI protocol**²:
 - 615 participants (80% high risk/20% low risk)
 - Healthy and aged ≥ 50 years.
 - 7 European centers equipped with 3T MRI scanners from 2 vendors and 5 models.

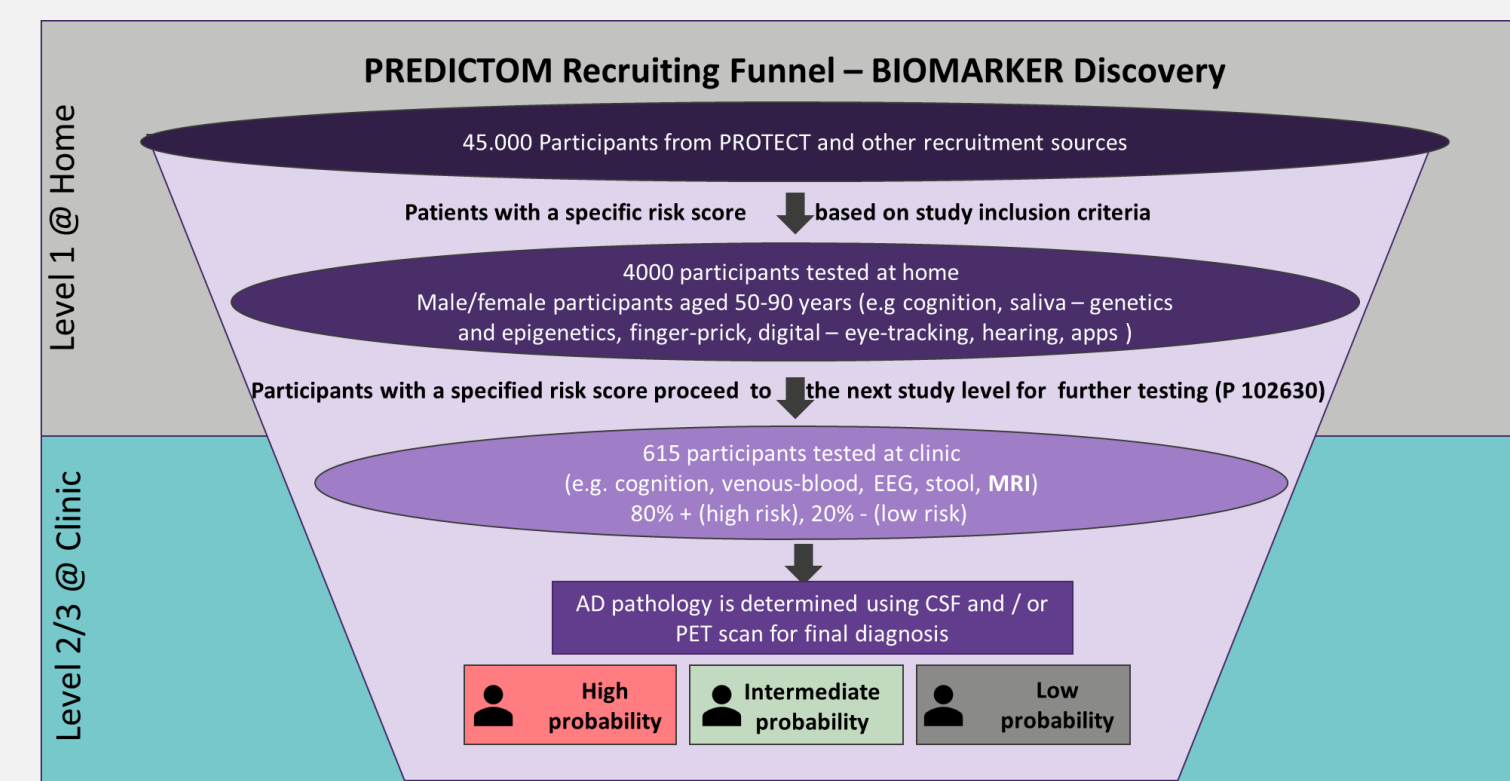


Figure 1 illustrates PREDICTOM prospective study design

- This work describes the rationale and design of an advanced MRI protocol implemented at four of seven PREDICTOM clinical centers.

Methods

- Advanced MRI protocol will be acquired at 4 out of 7 PREDICTOM centers using GE HealthCare 3T systems.
- Aiming for faster, multiparametric, quantitative & more specific:**
 - Highly accelerated T1/T2/T2-FLAIR³
 - Improved SWI/T2* via 3DEPI⁴
 - Multi-echo resting-state fMRI⁵
 - Multi-Post Labelling Delay ASL⁶
 - Multi-contrast quantitative mapping⁷
 - Novel Water-Wxchange contrast⁸.
- Existing and novel imaging biomarkers**, such as volumetry, cortical thickness, white-matter hyperintensity, microbleeds and connectivity measures will be derived from these faster, higher-SNR, and more accurate sequences and **compared against standard protocol outputs**.
- Additionally, the value of **quantitative maps and novel biomarkers** in early detection of AD will be also evaluated in the PREDICTOM multi-center cohort.

Conclusion

- The advanced PREDICTOM MRI protocol will enable validation of **next-generation imaging techniques** to extract both established and novel biomarkers, supporting **early identification of individuals at high risk for AD**

Results

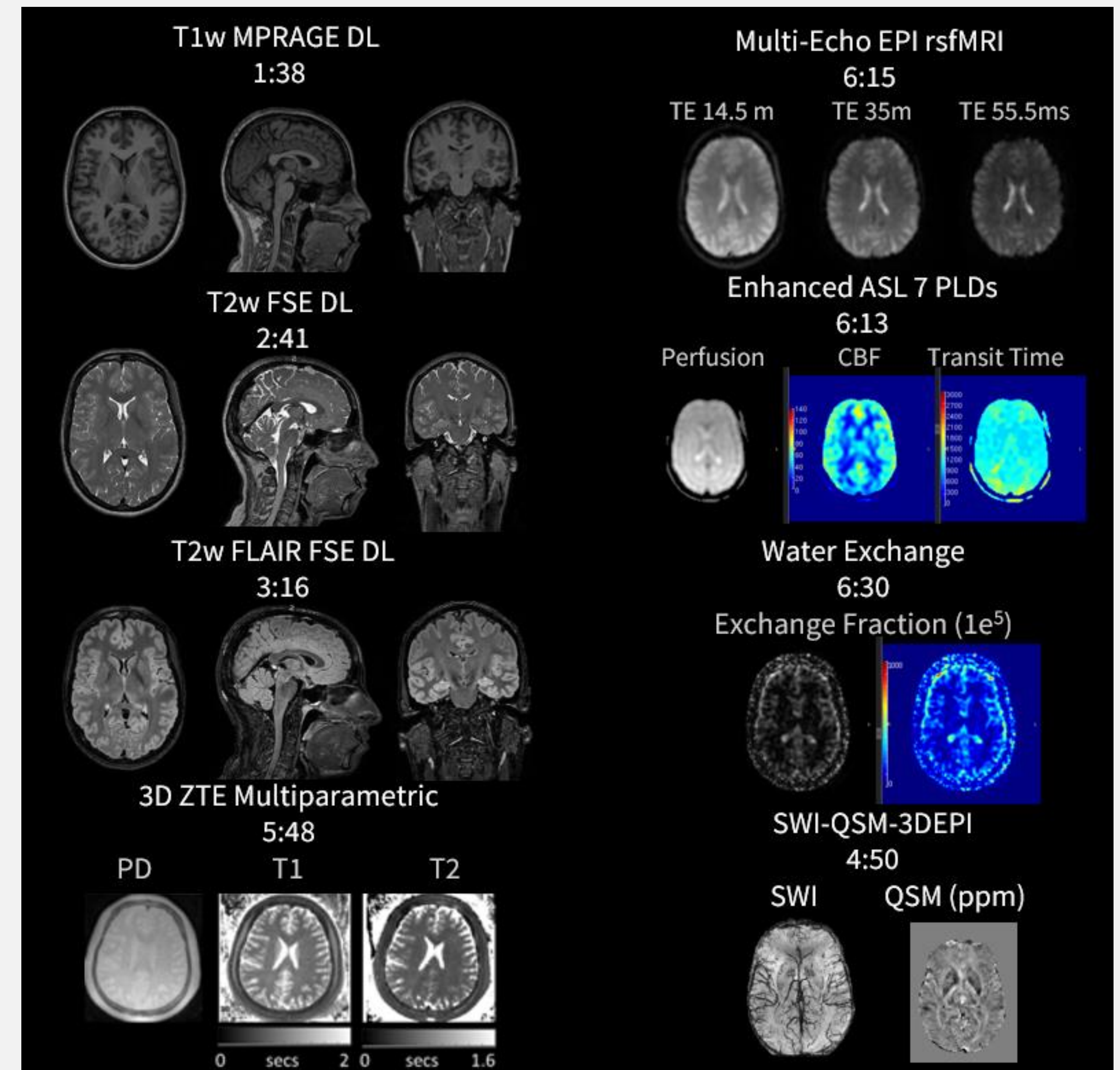
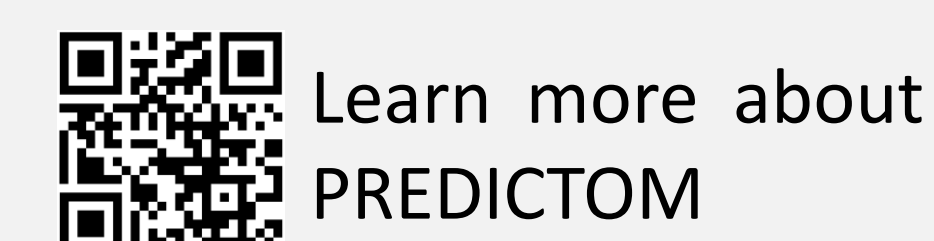


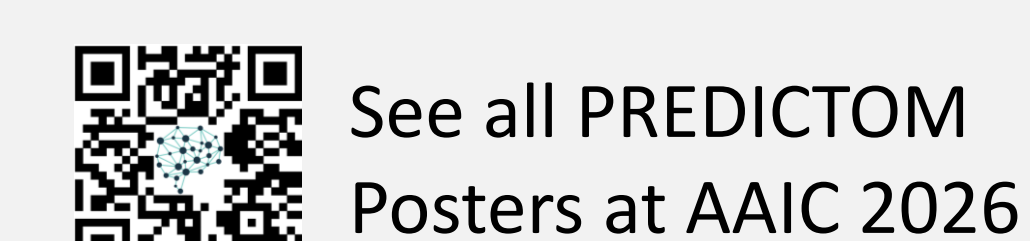
Figure 2 illustrates representative images and acquisition times from a healthy volunteer scanned at one PREDICTOM site.

References

(1) Brem, JPAD2026, (2) Fernandez, OHBM2025, (3) Ahn, ISMRM2023, (4) Huang, MRM2024, (5) Fernandez, Neuroimage2017 (6) van der Thiel, AJNR2018, (7) Ljungberg E, PNMRS2021, (8) Taso, MRM2025



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