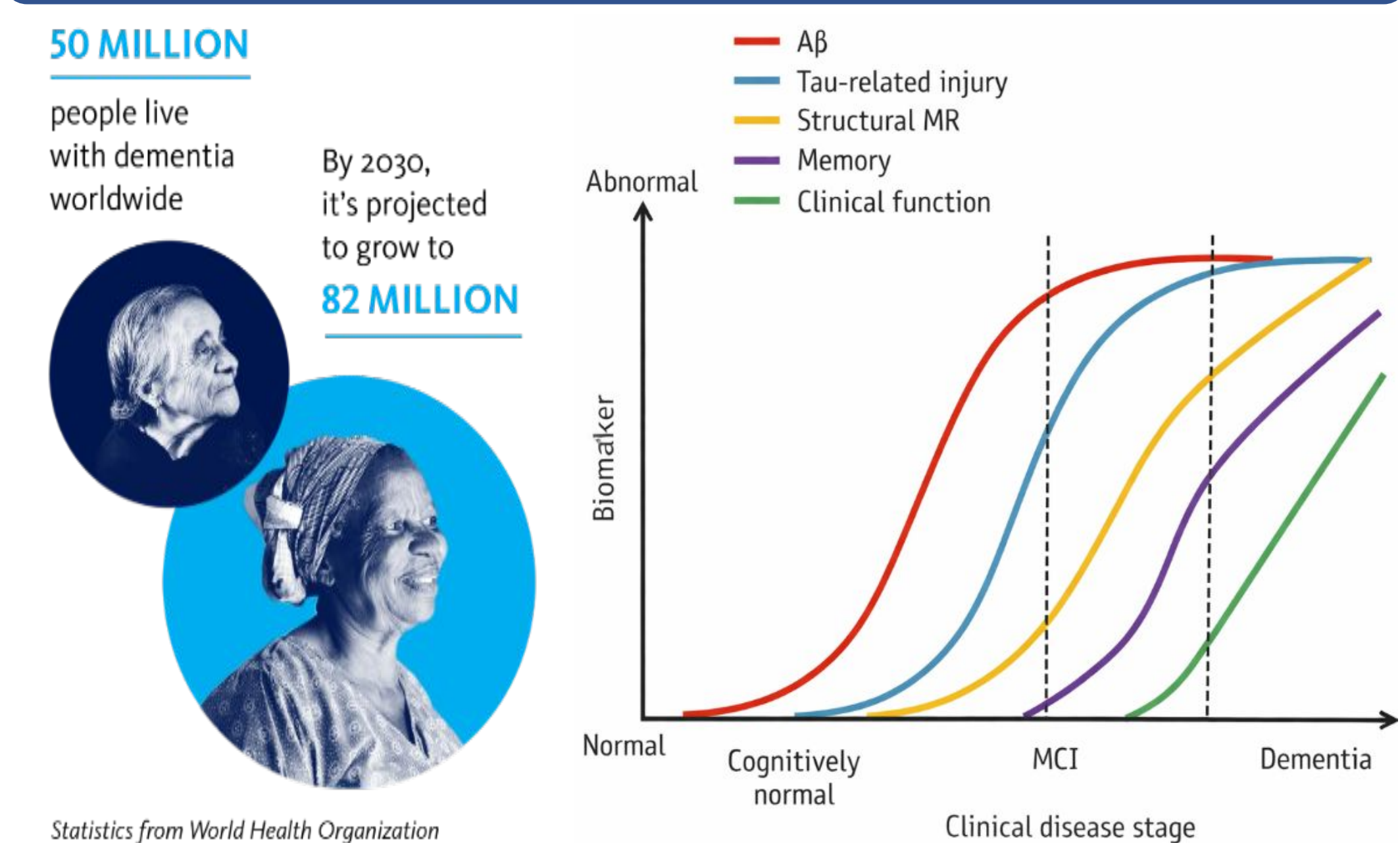
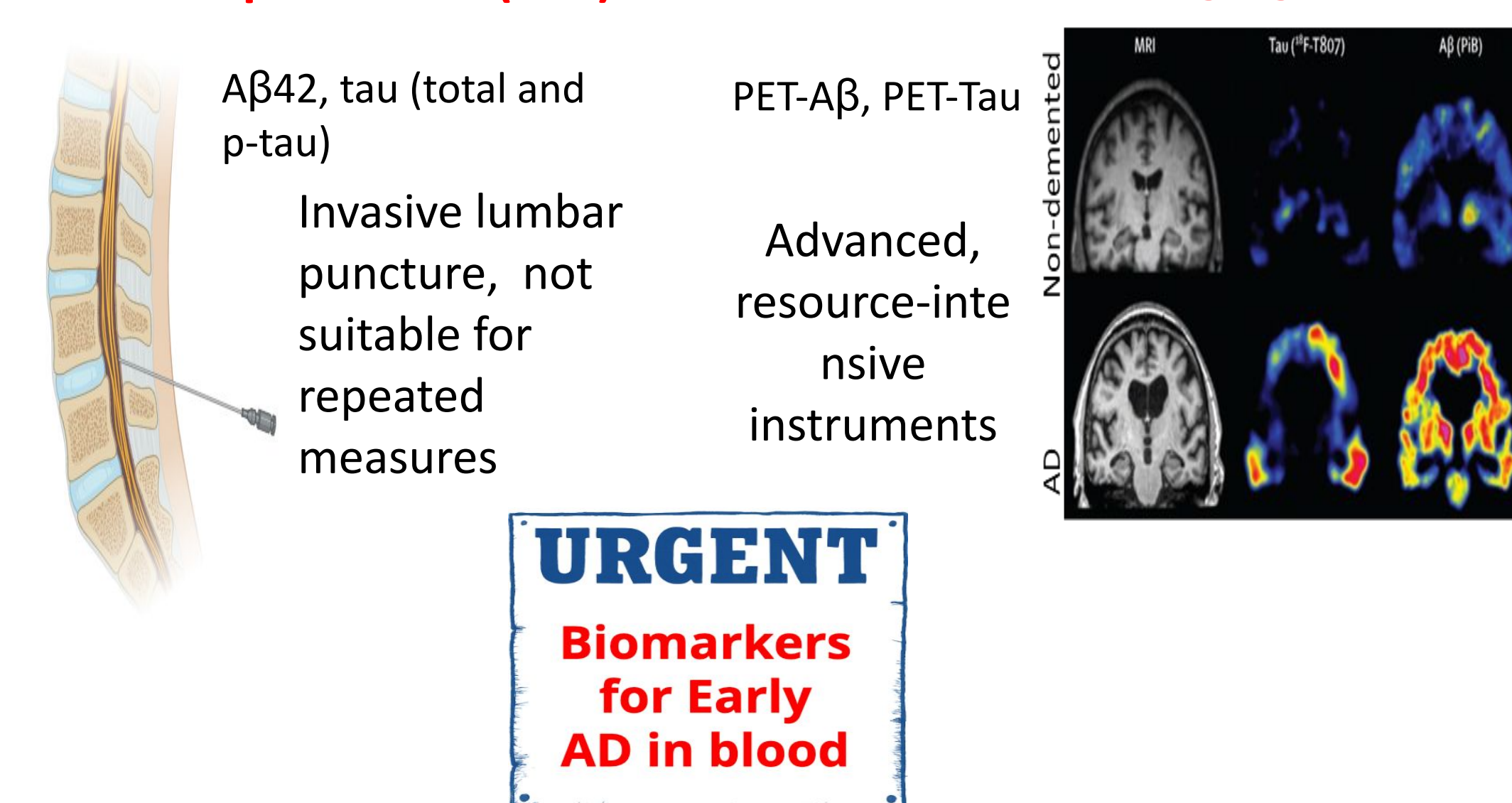


Alzheimer's disease (AD) is the major cause of Dementia



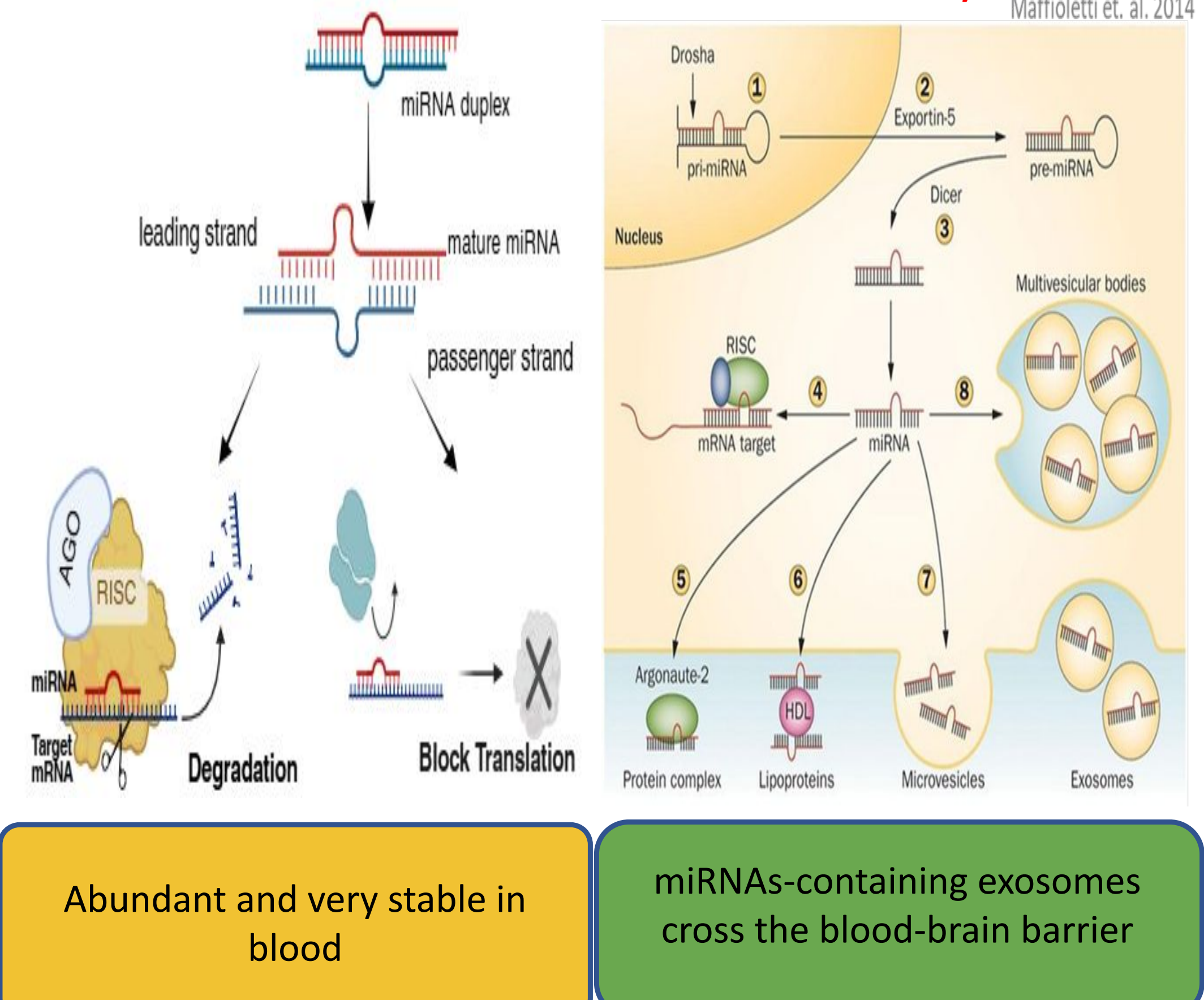
Challenges in Current Diagnostic Approaches

Cerebrospinal fluid (CSF) biomarkers Brain imaging biomarkers



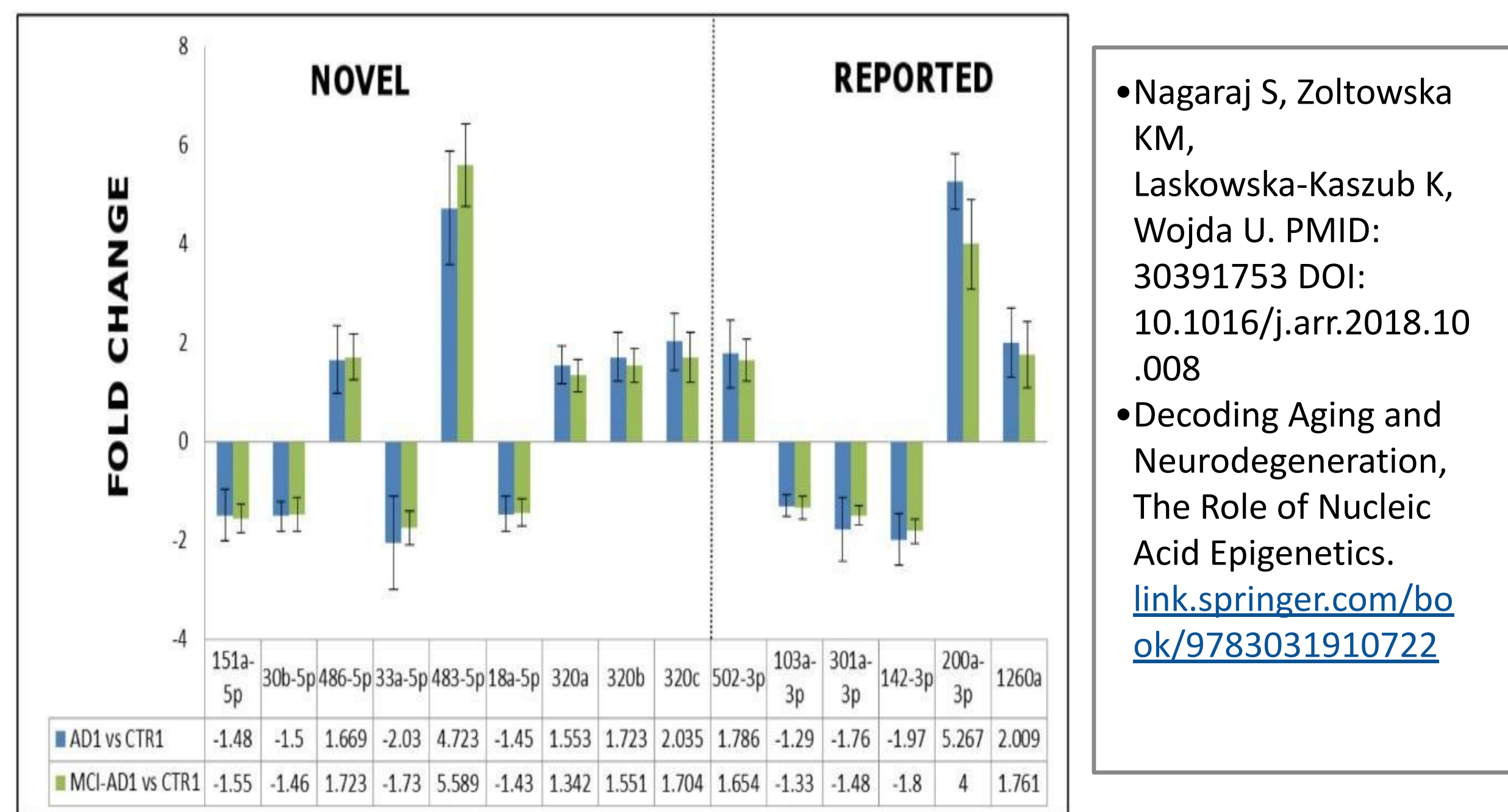
Aim: Search for microRNAs as potential AD biomarkers in blood

Regulate gene expression post transcriptionally Carried by vehicles in blood plasma (exosomes, microvesicles, apoptotic bodies)



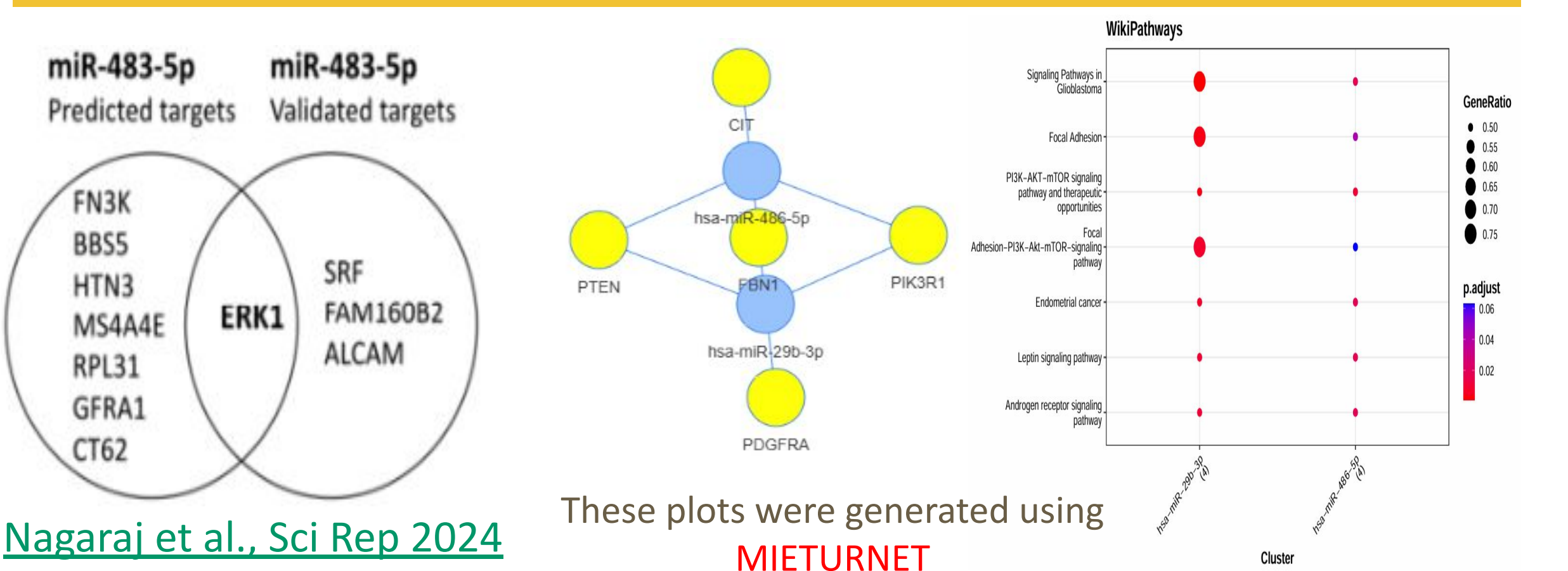
Result 1: Identification of a panel of differential miRNAs in blood plasma in patients with early AD EU PATENT EP3449009 doi: 10.18632/oncotarget.15109

Pilot and verification study Top 15 from 179 profiled plasma miRNAs



6 miRNA as top potential biomarkers of early AD: functions in AD

483-5p, 486-5p, 30b-5p, 200a-3p, 502-3p, 142-3p



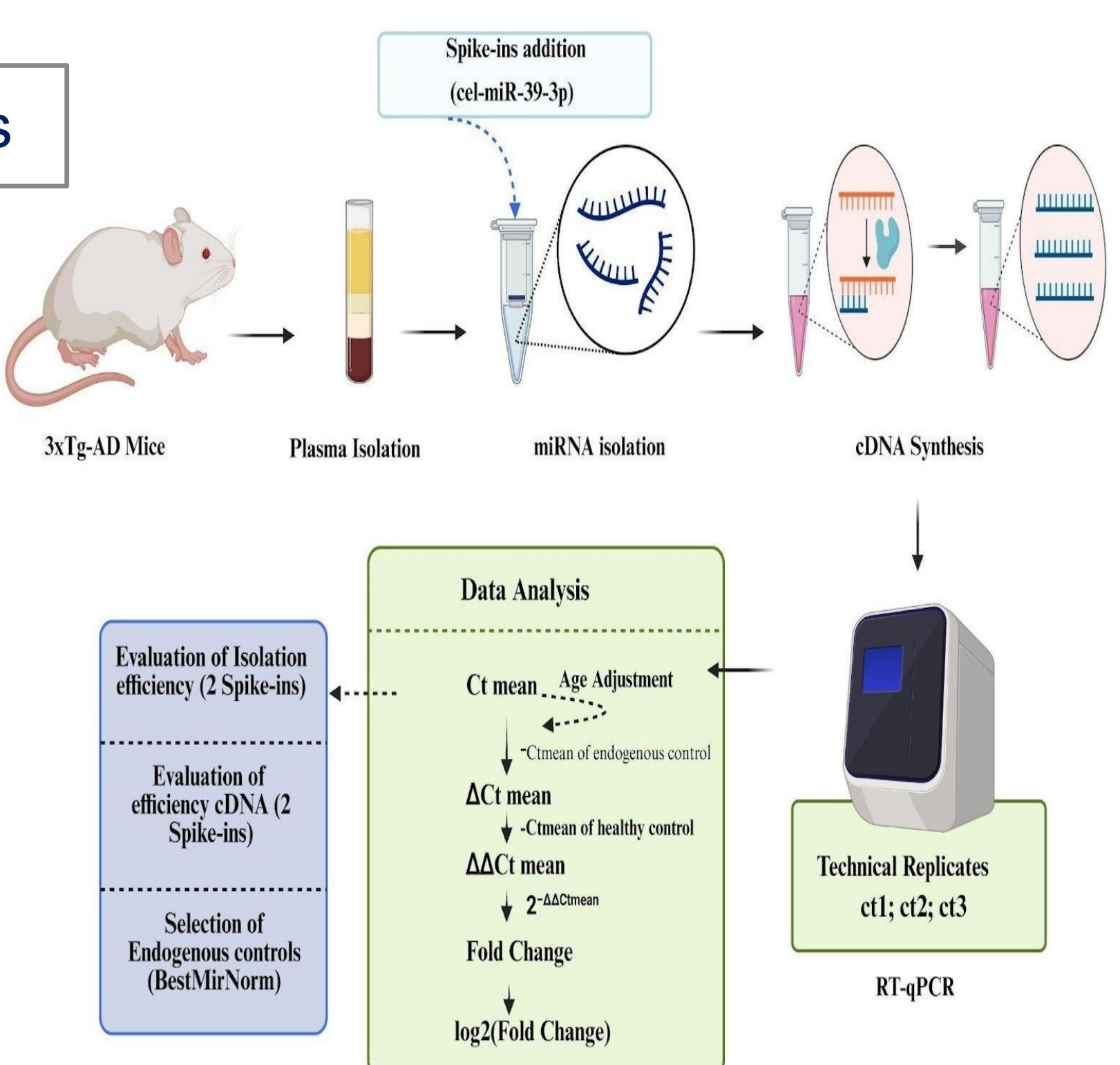
Nagaraj et al., Sci Rep 2024

Result 2: Validation of human plasma AD miRNA biomarkers in 3xTg-AD mice

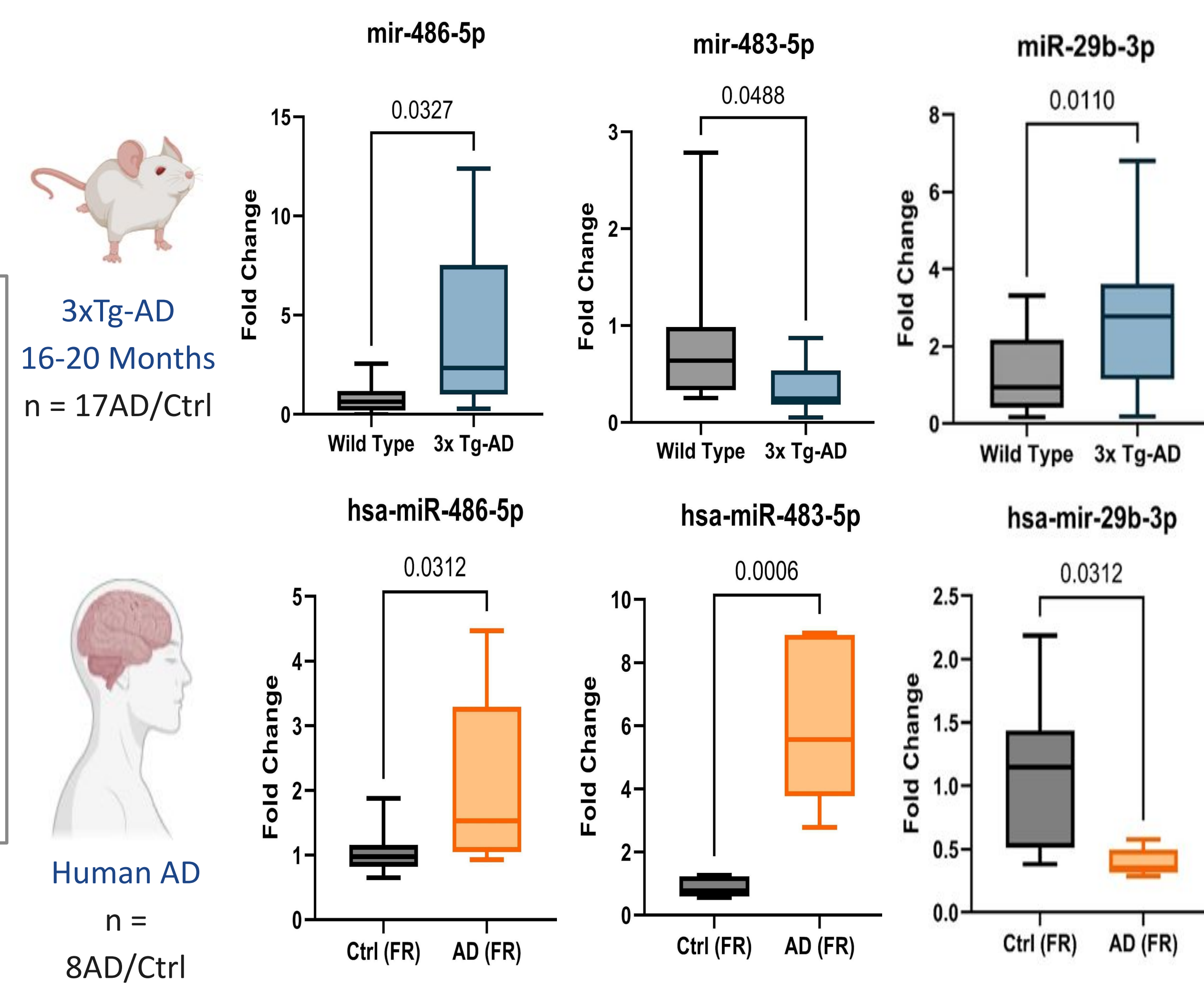
Model and methods

The **3xTg-AD mouse model** carries human APP, PS1, and tau mutations, reproducing both **amyloid plaques** and **tau pathology** seen in AD

Its progressive cognitive decline and biomarker changes closely **mirror human AD**



Result 2



Comparative Analysis of Plasma miRNA Expression in 3xTg-AD Mice 16-20 months (n=17AD/Ctrl) and Human (n=8 AD/Ctrl) Patients

miRNA	3xTg-AD (p-value)	Human AD (p-value)	Comparison
hsa-miR-29b-3p	0.011 ↓	0.0312 ↓	Similar sig.
hsa-miR-483-5p	0.0488 ↓	0.0006 ↓↓↓	Human > Mouse sig.
hsa-miR-486-5p	0.0327 ↓	0.0312 ↓	Similar sig.

Summary

- miR-486-5p demonstrates consistent regulation highlighting robustness
- miR-483-5p displayed a stronger effect in humans, suggesting human-specific relevance
- miR-29b-3p demonstrated species-specific regulation

Conclusion

- Circulating miRNAs are promising as an early, non-invasive biomarkers for AD
- 3xTg-AD is a good platform for miRNA validation and functional studies