Development of Highly Sensitive MSD Assays for the Detection of anti-Aβ Antibodies Specific for Different Pathological Aβ-species and Aβ-peptide on the Liposomal Vaccine

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INTRODUCTION
In the field of Amyloid beta (Aβ) immunotherapy, robust and reliable methods are needed for the detection of antibodies specific for different pathological Aβ species. We have developed highly sensitive Meso Scale Discovery (MSD) assays for the detection of IgG antibodies binding to the monomeric or oligomeric Aβ1-42 in human serum or binding to the liposomal vaccine containing Aβ1-15 peptide as antigen in a pathological β-sheet conformation. Those assays aim to help better understanding of the nature of antibody response induced by anti-Aβ vaccination.

CONCLUSIONS
We have developed and optimized very sensitive and precise MSD methods with a high dynamic range and a low minimal required dilution. Those assays allow detection of the antibodies binding to different pathological Aβ species and for Aβ1-15 peptide present on the liposomal vaccine, which could be further used for the evaluation of the potential therapeutic effect of anti-Aβ immunotherapy in humans.

Setup 1: detection of IgG binding to enriched monomers of Aβ1-42

Minimal required dilution (MRD)

Assay precision

MRD set at 1/50
Assay shows a good intra/inter-assay and inter-operator precision
CV<30%

Setup 2: detection of IgG binding to enriched oligomers of Aβ1-42

Minimal required dilution (MRD)

Assay precision

MRD set at 1/50
Assay shows a good intra/inter-assay precision
CV<30%

Setup 3: detection of IgG binding to Aβ1-15 in a β-sheet conformation on the liposomal vaccine

Minimal required dilution (MRD)

Assay specificity

MRD set at 1/50
Assay shows a good specificity for anti-Aβ1-15 IgG