# 'Multiple Systems Atrophy (MSA)

## *The disease, biomarkers and implications for other diseases such as Alzheimer's*

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# 'Multiple Systems Atrophy (MSA)

## *The disease, biomarkers and implications for other diseases such as Alzheimer's*

- Disease biochemistry relevant to blood biomarkers
- The assay technology for oligomeric biomarker detection in the blood
- Results – detection of oligomeric biomarkers in AD and MSA patients
- Summary, what have we achieved and what is the clinical utility?

# Data slides

*Data presented is confidential to attendees of the November 2017 Manx Biomed meeting*

*Attendees are invited to contact christopher.stanley@cynapsedx.com to receive the full presentation on a confidential basis*

# Multiple System Atrophy

Rare, adult-onset neurodegenerative disease, with Lewy Bodies composed of alpha synuclein (ASN) present in glial cells

Possible protein biomarkers in CSF of diagnostic value (Laurens *et al*. Neurobiology of Disease 80 2015, 29–41):

- *Neurofilament light chain (NFL)*
- *Alpha synuclein*
- *Park7/DJ-1*
- *Tau*

# Alzheimer's Disease

Late-onset (>65 y) neurodegenerative disease, with plaques composed of aggregated beta amyloid (Abeta) in the cerebral cortex, 50% AD patients exhibit Lewy body pathology

- The 'amyloid hypothesis' – oligomeric Abeta is neurotoxic, therapeutic interventions seek to reduce Abeta levels in the brain with anti-amyloid antibodies or beta secretase inhibitors
- Currently tests for protein biomarkers in CSF (Abeta 1-42, total tau, phospho tau) are being 'worked up' to provide definitive biochemical diagnosis
- Literature concerning levels of protein biomarkers in blood is "controversial" (Paraskevaidia et al, 2017, www.pnas.org/cgi/doi/10.1073/pnas.1701517114)

CSF = cerebrospinal fluid obtained by lumbar puncture

# The CynapseDx Assay technology

Step 1: Immunoaffinity purification - robust scavenging of target biomarkers: any conformation from any location in blood

Step 2: Detection of oligomeric and aggregated proteins using the Seprion™ assay technology

# Clinical utility?

- *Could we stratify AD patients in the MCI group?*
- *Can we replace CSF with blood as the preferred sample?*
- *Does this give us any insight into new therapeutic approaches for MSA and AD?*

# Clinical utility?

*Biogen conference call 28/7/17*

“There is a sore need for a biological marker of neurodegenerative diseases.  A biomarker that could be interrogated in peripheral tissue and fluid and accurately reflect the disease status occurring within the CNS would be a boon for identifying patients for clinical studies and at many stages of the disease state (diagnosis/progression) to examine the potential benefit of disease-modifying therapies.”

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