Biomarkers for Alzheimer Disease

Uppsala Bio 2013 Diagnostics Forum

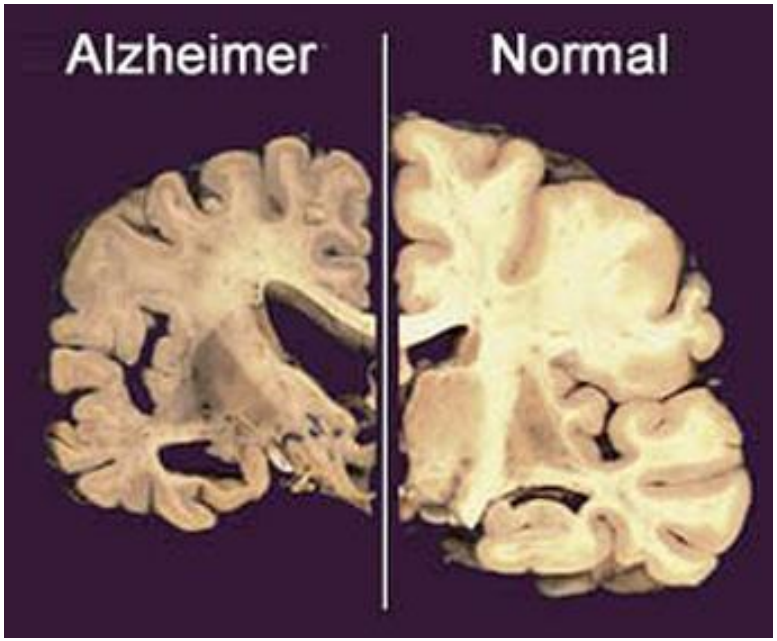
Andrea Armstrong

PhD Student

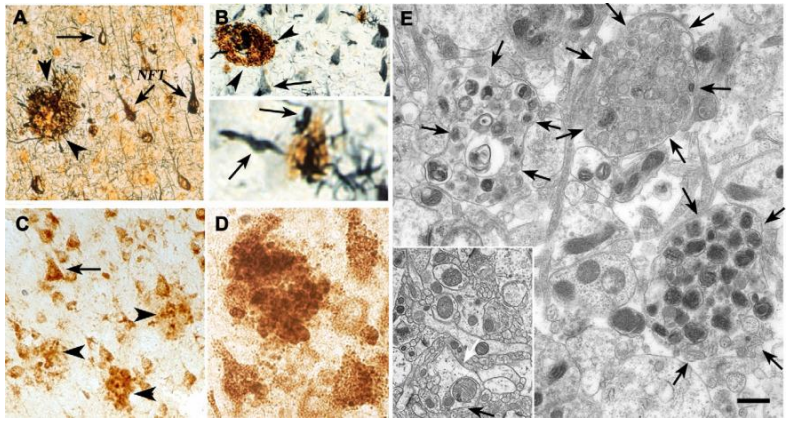
Linköping University

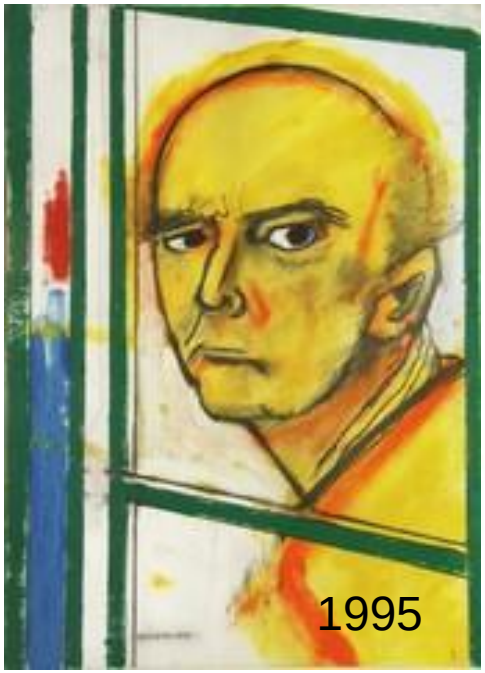
Alzheimer Disease (AD) Pathology

Macropathology



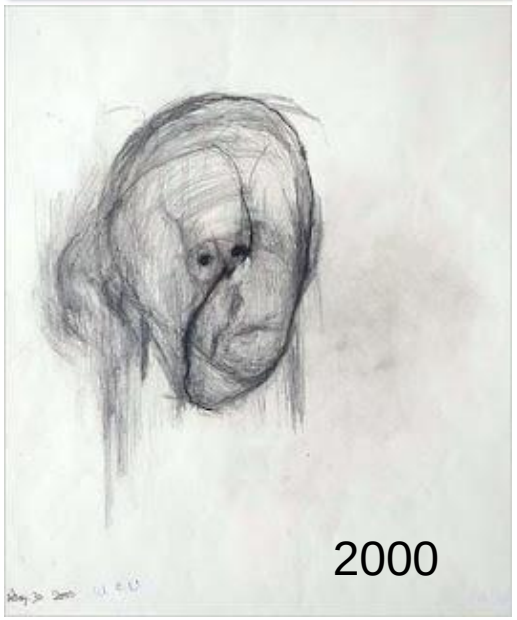
Micropathology





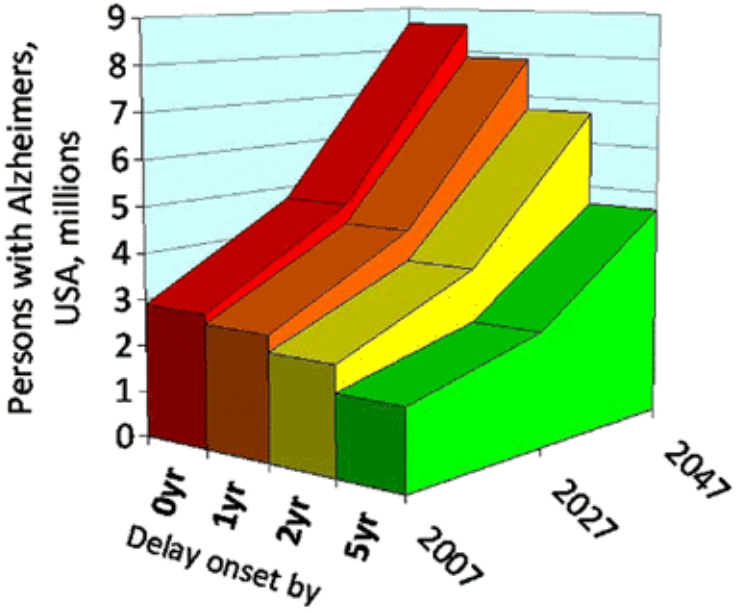






The artist William Utermohlen - diagnosed with AD

Social and Economical Impact of AD



Data from Brookmeyer et al., 1998

- Patient suffering
- Societal costs
- A 5 year delay in clinical onset of AD would decrease AD patient numbers by 50%

To develop a diagnostic tool for AD

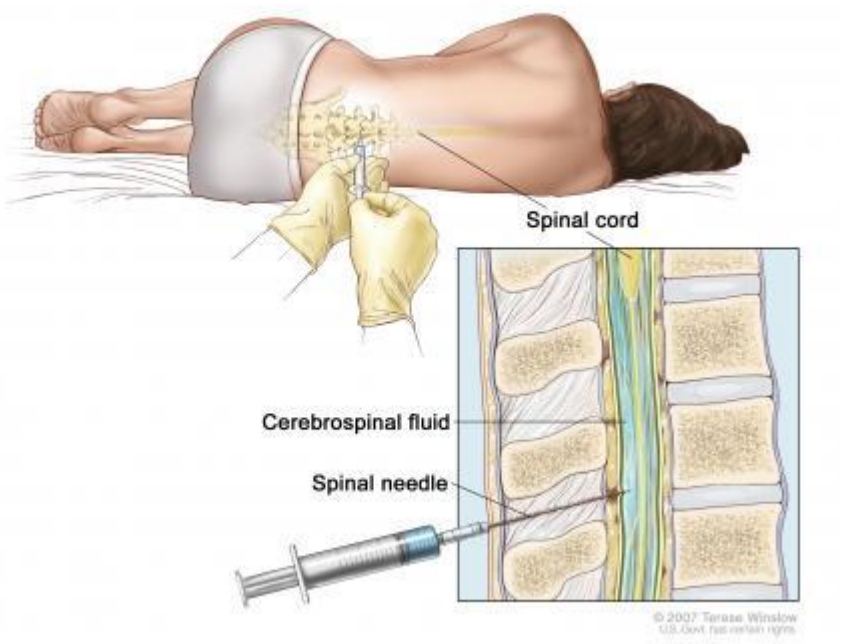
Patient need

- Currently no accurate diagnostics
- Currently no treatment for Alzheimer's disease

How can a diagnostic tool change the therapy of the patient?

- Early treatment is crucial - Early diagnostics is crucial
- Biomarkers that reflect disease process can direct new therapeutic strategies
- Enrichment of AD cases in clinical trials
- Heterogeneous disease - Patient stratification

Biomarkers in CSF



AD biomarkers:

- Low β-amyloid
- High T/Ptau

Exploring Novel AD Biomarkers in CSF

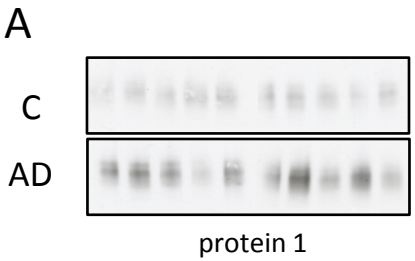
Plan

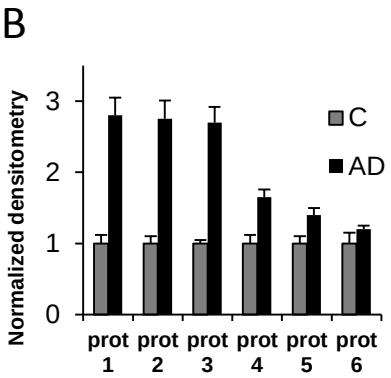
- Search for new biomarkers in human CSF
- Comparing control vs AD individuals

Results Till Date

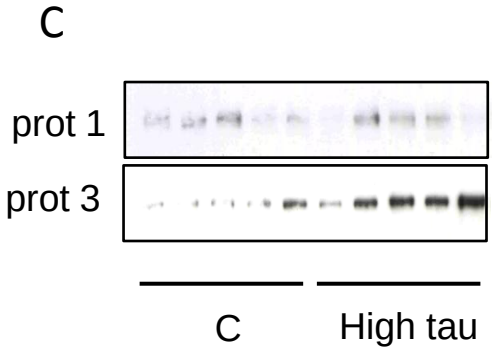
- Panel of 34 Candidate Proteins Tested
- 2 Matched Sets of 10 AD and 10 Ctr patients screened
- Preparing a high throughput screening platform

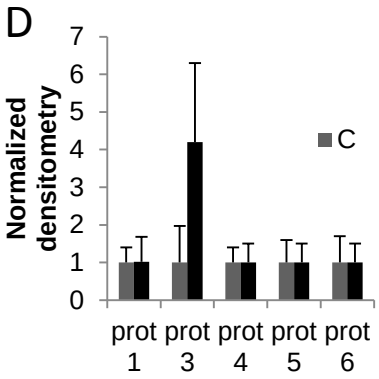
Results





Samples:
20 controls
20 AD





Samples:
5 controls
5 high tau

- Six new proteins identified
- Potential to differentiate AD patients from healthy people already at an early stage
- Aim is to develop an analysis platform with higher through put to confirm the findings

Analysis platform

Future Prospects

We wish to develop a diagnostic tool that can;

- Diagnose Alzheimer at an early stage
- Monitor progression of the disease
- Be used as a read-out for clinical trials
- Stratify Alzheimer patients
- Explore new pathological mechanisms
- Development of new treatment strategies

Collaboration Partners

- Sahlgrenska Academy
- Uppsala BIO
- Industrial partner

Linköping University

- Katarina Kågedal (Assoc. Professor)
- Samuel Svensson (Professor LiU, Alzecure)
- Hanna Appelqvist (PhD)
- Camilla Janefjord (PhD)
- Lotta Agholme (PhD)
- Linnea Sandin (PhD student)

Sahlgrenska Academy

- Kaj Blennow (Professor, MD)
- Henrik Zetterberg (Professor, MD)
- Niklas Mattsson (PhD, MD)