HEREDITARY

Use Case 2: Next-Generation Diagnosis and Treatment Response for Neurodegenerative Diseases

Leveraging machine learning and multi-dimensional data, it aims to redefine patient stratification in neurodegenerative diseases, paving the way for precision medicine approaches.

Focus disease

Amyotrophic Lateral Sclerosis (ALS) and Multiple Sclerosis (MS), with potential application also to other neurodegenerative diseases.

Data modalities and providers

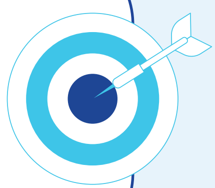
Clinical, imaging, genetic, biomarker, and environmental data from UNITO and open data (BRAINTEASER Consortium data).

Scientific approach

- Development of ontologies to integrate clinical, imaging, biomarker, genomic, and environmental data.
- Phenotypic subtyping of neurodegenerative diseases using multimodal data to refine molecular-based diagnoses.
- Unsupervised learning applied to ALS and MS data to assess disease progression based on environmental exposures.

Expected Outcomes

- Improved patient stratification in clinical trials for optimized therapeutic strategies.
- Support personalized treatment strategies based on disease progression.
- Understanding how environmental factors can affect ALS and MS progression.



Impacts

- Creating new strategies for precision-medicine drug development.
- New paradigms for integrating genomics and multimodal data.
- Increase public trust about the safety and efficacy of data sharing.

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