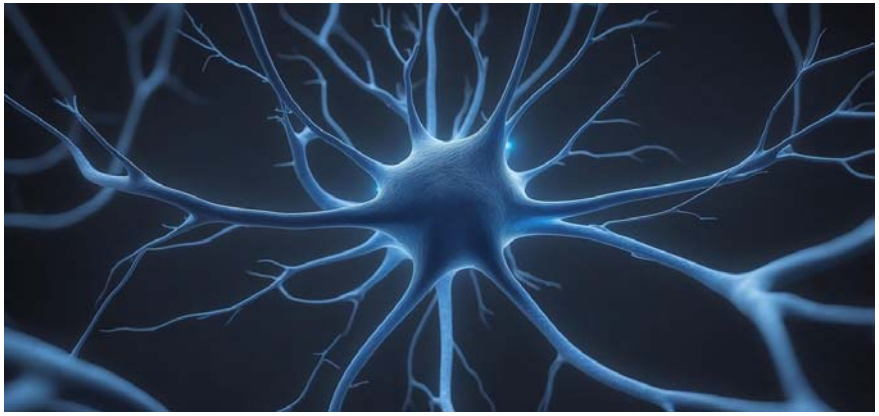
Technology Offer CSIC/AH/047

Early diagnosis of Amyotrophic Lateral Sclerosis (ALS) and other neurodegenerative disorders



An in vitro fluorescent method for early detection of Amyotrophic Lateral Sclerosis (ALS) and other TDP-43 related proteinopathies, such as Fronto Temporal Lobar Degeneration (FTLD), based on detection of pathological aggregates of TDP-43 present in cerebrospinal fluid.

Intellectual Property

PCT application filed

Stage of development

Efficacy proved in clinical samples

Intended Collaboration

Licensing and/or co-development

Contact

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Market need

Early detection of Amyotrophic Lateral Sclerosis (ALS) is crucial for improving patient outcomes and enabling timely interventions. Currently, diagnosing ALS remains challenging due to the lack of specific biomarkers and the overlap of symptoms with other neurological conditions. Early diagnosis is often delayed, leading to the progression of the disease before effective treatments can be implemented. Therefore, there is a growing need for innovative methods that can detect ALS at its earliest stages. before irreversible motor neuron damage occurs, ultimately offering patients a better chance for personalized treatment and improved quality of life.

CSIC solution

Prion-like spreading of TDP-43 aggregates plays a key role in Amyotrophic Lateral Sclerosis (ALS) and other neurodegenerative diseases.

This method is based in the interaction and amplification of pathological TDP-43 aggregates in biological fluids by chemically modified TDP-43 polypeptides oxidized by methionine sulfoxidation. It has been shown that a threefold increase in fluorescence intensity and/or a reduction of at least three hours in the time to reach half of the maximum intensity indicates the presence of pre-formed TDP-43 aggregates in the sample, suggesting TDP-43 proteinopathy.

Competitive advantages

- The oxidized TD-43 polypeptides used are easy to produce and exhibit higher homogeneity, stability and selectivity than non-modified TDP-43 peptides.
- It can be used for the detection of ALS and also other neurodegenerative disorders characterized by the prion-like spreading of TDP-43 aggregates such as FTLD, ALS-FTLD, Alzheimer's disease or Parkinson's diseases.
- The method has also demonstrated its utility in the screening of compounds for treating or preventing a TDP-43 proteinopathy.