Technology Offer

Biomarkers enabling rapid and reliable diagnosis of neuro-immunological diseases and subtypes associated with distinct diseases trajectories

Ref.-No. M14/21

Introduction

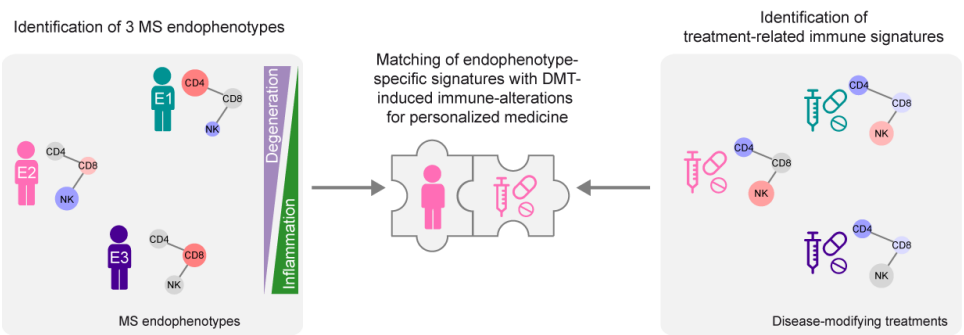
Discrete patients with neuroimmunological diseases display a wide spectrum of distinct symptoms, disease trajectories, and responses to therapeutic interventions. Differential diagnosis of neuro-immunological diseases is complex and requires a wide array of clinical and paraclinical tests – including lumbar puncture for cerebrospinal fluid analysis. Despite these thorough diagnostic methods, it is still difficult to predict how each patient's disease will progress or respond to treatment. New ways to quickly identify patient groups with different treatment responses are needed.

Invention

The present invention addresses this need by providing an effective approach to identify classifying parameters of neuroimmunological diseases, such as multiple sclerosis (MS) for stratification of patients into endophenotypes. These endophenotypes are characterized by distinct clinical feature and responses to different therapeutic modalities.
The inventors have identified and validated three discrete immunological endophenotypes of MS, each providing insight into unique pathophysiological mechanisms. Distinct endophenotypes display features skewed towards inflammatory or degenerative disease characteristics, and exhibit endophenotype-specific responses to disease-modifying treatments. Suitable parameters classifying each endophenotye in MS have been combined into a single flow cytometry panel; thus, providing a convenient clinical application. Resulting data are analyzed using computational biology, allowing stratification of individual patients based on blood-derived immune cells. This approach demonstrates the significant potential of individual endophenotyping for personalized treatment selection in MS.

Advantages of the invention

By utilizing these endophenotype classifying parameter as biomarkers, the present invention offers a groundbreaking solution for rapid and reliable diagnosis on neuro-immunological diseases and their subtypes – achievable through the simple use of easily obtainable and storable blood samples.



Areas of application
Diagnostics, Biomarker

Keywords
Neuro-inflammatory disease, Multiple Sclerosis

Development Status
Proof of concept

Commercial Opportunity
The technology is offered for in-licensing and co-development

Patent Status
Application filed in Europe and the USA

Publication
Gross et al., Sci Transl Med., 16(740), (2024), „Multiple sclerosis endophenotypes identified by high-dimensional blood signatures are associated with distinct disease trajectories", doi: 10.1126/scitranslmed.ade8560

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