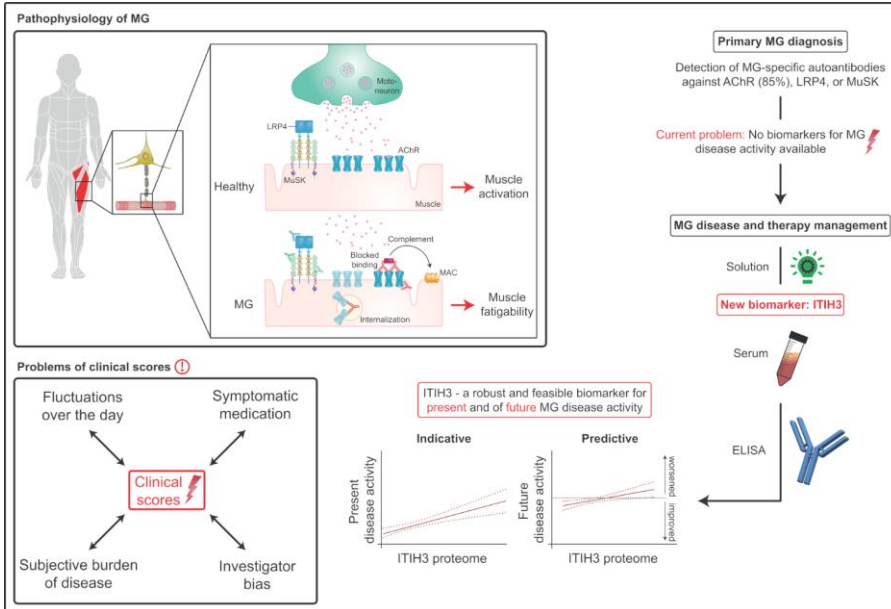


ITIH3 - a biomarker for *Myasthenia gravis* activity

A novel ELISA-based approach

Invention



Myasthenia gravis (MG) is a chronic autoimmune disease affecting muscles function. Within neuromuscular junctions, the immune system attacks the nicotinic acetylcholine receptors of muscle cells, leading to impaired synaptic transmission and, consequently, a reduced muscle activation. In contrast to primary MG diagnosis, reliable tools for assessment of MG disease activity in clinical routine, e.g. for therapy adjustments, are still an unmet and urging medical need.

The invention aims at monitoring inter-alpha-trypsin inhibitor heavy chain H3 (ITIH3) levels from serum of MG patients. ITIH3 is a robust biomarker allowing a reliable prediction of MG's disease activity feasible in daily clinical routine. Monitoring can easily be made by quantitative ELISA in routine blood collection. This approach provides objective results, excluding time-of-day dynamics and subjective symptom burden of patients or examiners. Especially with the very recent advent of the development of new therapeutic strategies, ITIH3 as biomarker indicating MG disease activity and identifying patients at risk for disease deterioration represents a meaningful invention in the field.

Commercial Opportunities

On behalf of the Heinrich-Heine University, PROVendis offers an access to rights for product development and commercial use of this invention with ITIH3.

Current Status

Validation of biomarker across cohorts and techniques has been completed successfully. Currently, we are investigating the mechanistic pathways underlying ITIH3 upregulation in active disease. Further validation of results in larger clinical cohorts is ongoing.

Relevant Publications

- *Eculizumab versus rituximab in generalised myasthenia gravis*. PMID: [35246490](#)
- *Independent risk factors for myasthenic crisis and disease exacerbation in a retrospective cohort of myasthenia gravis patients*. PMID: 35413850
- *Eculizumab treatment alters the proteometabolome beyond the inhibition of complement*. PMID: 37227781
- European patent application (EP 22195296.3), filed on September 13th, 2022.

An invention of the Heinrich-Heine University.

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Competitive Advantages

- Determination of ITIH3 levels by ELISA in serum samples.
- Objective parameter, not influenced by fluctuations over the day, investigator bias, symptomatic medication or subjective burden of disease.
- ITIH3 is a robust and feasible parameter for therapy control in daily clinical routine.
- Predictive value for disease activity within the next 12 months.

Technology Readiness Level

123456789

Experimental proof of concept

Industries

- Diagnostics
- Therapy control
- Medical instruments, Apheresis

Ref. No.

6544

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