Stanford

Muhannad Seyam, MD

Clinical Instructor, Adult Neurology

CLINICAL OFFICE (PRIMARY)

- **Neurology**

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Bio

BIO

Muhannad Seyam, MD, is a neuromuscular neurologist and clinical electrophysiologist in the Division of Neuromuscular Medicine, with subspecialty focus on immune-mediated neuromuscular disease, motor neuron disease, and muscle disease. He performs nerve conduction studies and electromyography, is completing dedicated training in single-fiber electromyography and neuromuscular ultrasound, and cares for patients receiving novel cell-based and gene-directed therapies, including CAR T-cell therapy for autoimmune neuromuscular disease. His practice interfaces routinely with neuroimmunology, rheumatology, neurogenetics, and pulmonology.

His research develops phenotyping, biomarker, and computational methods for measuring disease activity and predicting treatment response. He is lead investigator on a multicenter study risk stratifying patients with immune-mediated necrotizing myopathy, and developed a respiratory phenotyping framework for predicting progression and survival in ALS. With the Day Lab, he is developing a deep phenotyping protocol in FSHD. He also develops artificial intelligence applications across the neuromuscular diagnostic workflow and in translational research.

The American Association of Neuromuscular and Electrodiagnostic Medicine and the American Neuromuscular Foundation have recognized this work in consecutive years and in two distinct disease areas: the Golseth Young Investigator Award in 2025 for respiratory phenotyping in ALS, and the Best Abstract Award in 2026 for risk stratification in immune-mediated necrotizing myopathy. The ALS work has also been recognized by the Motor Neuron Disease Association and was selected for platform presentation at the American Academy of Neurology Annual Meeting.

Dr. Seyam serves on the European Academy of Neurology scientific panels for ALS/FTD and for muscle and neuromuscular junction disorders, and co-created the EAN eCampus foundational ALS course delivered to neurology trainees across Europe. He was invited to author a chapter on radiculopathy and plexopathy for a neurologic differential diagnosis textbook, and teaches residents and medical students in the neuromuscular clinic and electrodiagnostic laboratory.

He earned his medical degree summa cum laude from Semmelweis University in Budapest, with a diploma thesis on the diagnosis and management of multiple sclerosis, and completed a second doctorate at the University of Basel in Switzerland for research in AI-based neuroimaging. He is completing a PhD at Utrecht University in the Netherlands on clinical and biochemical markers of disease progression and survival in ALS. He completed neurology residency at the University of Vermont, where he served as academic chief resident, and fellowship in neuromuscular medicine at Stanford. He is board certified in neurology by the American Board of Psychiatry and Neurology and holds medical licensure in Germany and Switzerland.

Dr. Seyam can be reached at mseyam@stanford.edu with inquiries regarding collaboration in academia or industry.

CLINICAL FOCUS

- Neurology
- Neuromuscular Medicine
- Myasthenia Gravis
- Inflammatory Myopathy
- Immune-Mediated Necrotizing Myopathy
- Peripheral Neuropathy
- Inflammatory Neuropathy
- Amyotrophic Lateral Sclerosis (ALS)
- Facioscapulohumeral Muscular Dystrophy (FSHD)

ACADEMIC APPOINTMENTS

- Clinical Instructor, Adult Neurology

HONORS AND AWARDS

- Best Abstract Award, American Neuromuscular Foundation (2026)
- Golseth Young Investigator Award, American Neuromuscular Foundation (2025)
- Residency and Fellowship Awards (4x), American Neuromuscular Foundation (2025)
- Nominee, Dean's Award for Professionalism, University of Vermont (2025)
- Clinical Poster Prize, Runner-Up, Motor Neuron Disease Association (2024)
- Finalist, Alpha Omega Alpha Housestaff Award, University of Vermont (2024)
- Resident Teaching Award, University of Vermont (2024)

BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- Scientific Panel, ALS and FTD, European Academy of Neurology (2026 - present)
- Scientific Panel, Muscle and Neuromuscular Junction Disorders, European Academy of Neurology (2026 - present)
- Curriculum Reviewer and Course Co-Creator, European Academy of Neurology (2026 - present)
- Member, European Academy of Neurology (2025 - present)
- Member, American Association of Neuromuscular & Electrodiagnostic Medicine (2022 - present)
- Member, American Academy of Neurology (2017 - present)

PROFESSIONAL EDUCATION

- Ph.D. (anticipated 2027), Utrecht University , Netherlands
- Fellowship, Stanford University Neuromuscular Medicine Fellowship , CA (2025)

- Board Certification: Neurology, American Board of Psychiatry and Neurology (2025)
- Residency, University of Vermont Neurology Residency , VT (2025)
- Doctorate (Dr. med.), University of Basel , Switzerland (2024)
- M.D., Semmelweis University , Budapest (2019)

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

My research asks one question across several diseases: how to measure disease activity and treatment response where existing measures cannot yet tell us who is declining, who will respond, and whether treatment is working. I approach this through phenotyping, biomarker correlation, and computational methods, in multicenter and international collaborations.

Immune-mediated neuromuscular disease. This is my area of subspecialization. I am lead investigator on a multicenter study phenotyping and risk-stratifying immune-mediated necrotizing myopathy, in an effort to identify at presentation the patients likely to follow a severe course and warrant early escalation of therapy. Related work examines the use of novel immunotherapies in myasthenia gravis and immune-mediated neuropathies, including cell-based therapies such as CAR T-cell therapy. Alongside this, standardized outcome instruments in myasthenia gravis have been developed and disseminated nationally from within the Stanford Neuromuscular Division, and I am working toward their systematic capture in routine practice.

Motor neuron disease. Phenotypic heterogeneity in ALS obstructs stratification and prognostication and is little accounted for in practice or in trial design. I developed respiratory phenotyping as a framework that predicts disease progression and survival and provides a basis for biomarker correlation across distinct patterns of decline. Validation in international multicenter cohorts is underway. This clinical work is paired with translational research through a continuing collaboration with the University of Vermont, where we use stem cell-derived motor neurons to examine the molecular correlates of these phenotypes and potential therapeutic targets. I also study energy balance, body composition, and hydration status as determinants of progression.

Muscle disease. With the Day Lab, we are developing a deep phenotyping protocol in facioscapulohumeral muscular dystrophy pairing quantitative muscle imaging with molecular characterization of biopsy tissue, to capture disease activity in a way current methods cannot.

Artificial intelligence and computational methods. My doctoral work at the University of Basel evaluated the implementation of an AI tool in the radiology workflow, in a study since widely cited across radiology and informatics. That work assessed a deployed tool in routine practice and reported where it failed, and that orientation carries into my current program, which applies artificial intelligence along two tracks. In the diagnostic workflow, current directions include quantitative analysis of electrodiagnostic signals and speech- and video-based assessment of motor function, with the aim of producing objective, scalable measures of disease activity suitable for use as clinical trial endpoints and digital biomarkers. In translational research, I apply computational methods to multi-omic data, integrating transcriptomic and proteomic signatures with clinical phenotype to identify biological correlates of the phenotypes defined in the clinical work above.

Publications

PUBLICATIONS

- **Predicting Disease Progression and Survival in Amyotrophic Lateral Sclerosis.** *Muscle & nerve*
  Seyam, M., Morelli, K. H., Waheed, W., van den Berg, L. H., Tandan, R.
  2026
- **Physiological and pathological roles of the thymus and value of thymectomy in myasthenia gravis: a narrative review.** *Mediastinum (Hong Kong, China)*

Waheed, W., Bacopulos, A., Seyam, M., Kooperkamp, H., Moin, M., Malik, T., Tandan, R.
2024; 8: 31

- **Utilization of Artificial Intelligence-based Intracranial Hemorrhage Detection on Emergent Noncontrast CT Images in Clinical Workflow.** *Radiology. Artificial intelligence*
  Seyam, M., Weikert, T., Sauter, A., Brehm, A., Psychogios, M. N., Blackham, K. A.
  2022; 4 (2): e210168

- **Case of Heterozygous VWA1 Pathogenic Variant in Patient With Distal Motor Neuropathy**
  Greene, M., Seyam, M., Siskind, C.
  WILEY.2026: 38

- **Polyneuropathy, Organomegaly, Endocrinopathy, M-Protein, and Skin Changes (POEMS) Syndrome With Characteristic Muscle Biopsy Findings and Without M-Protein.** *The neurologist*
  Yalovitser, J., Seyam, M., DeWitt, J., Tandan, R., Waheed, W.
  2026

- **Case Report: Atypical Focal Axial Presentation of Facioscapulohumeral Muscular Dystrophy Type 1.** *Journal of clinical neuromuscular disease*
  Zweber, C., Grewal, A. S., Seyam, M., Tandan, R., Waheed, W.
  2026; 27 (4): 140-144

- **Treatment response in anti-HMGCR and anti-SRP immune-mediated necrotizing myopathy: impact of demographic and racioethnic factors.**
  Seyam, M., et al
  2026

- **Case of heterozygous VWA1 pathogenic variant in patient with distal motor neuropathy.** *PNS Annual Meeting*
  Greene, M., Seyam, M., et al
  2026

- **Impact of demographic and racioethnic factors on treatment response in anti-HMGCR myopathy: a multicenter cohort.**
  Seyam, M., et al
  2026

- **Exploring demographic and racioethnic determinants of phenotype and treatment response in anti-HMGCR myopathy**
  Seyam, M., et al
  2026

- **Efficacy and tolerability of nipocalimab in patients with generalized myasthenia gravis: real-world experience from an academic center**
  Greenberg, J., Seyam, M., et al
  2026

- **Validation of bioelectrical impedance spectroscopy to estimate body composition and hydration status in amyotrophic lateral sclerosis.**
  Luo, J., Seyam, M., et al
  2025

- **Multifactorial axial abnormalities in a patient with known Parkinson's disease including anti-Ku myositis, pramipexole exposure, pyridoxine deficiency, and hyperparathyroidism.**
  Seyam, M., et al
  2025

- **Atypical features of POEMS syndrome: diaphragmatic paralysis, papilledema, thrombotic complications, endomysial edema, and increased endomysial vessels but no M-protein.**
  Seyam, M., et al
  2025

- **Atypical focal presentation of facioscapulohumeral muscular dystrophy type 1.**
  Seyam, M., et al
  2025

- **Respiratory phenotypes for stratifying and predicting survival in amyotrophic lateral sclerosis.**

Seyam, M., et al
2025

- **Effect of caloric balance on disease progression in ALS.**
  Thompson, R., Seyam, M., et al
  2024
- **Contrast extravasation in a patient with right MCA stroke mimicking cerebral edema.**
  Nayar, C., Seyam, M., et al
  2024
- **Value of FVC and its rate of decline for predicting survival in ALS.**
  Seyam, M., et al
  2024
- **Respiratory phenotypes in ALS: their impact on disease progression and mortality.**
  Seyam, M., et al
  2024
- **49-year-old woman • headache and neck pain radiating to ears and eyes • severe hypertension • Dx?** *The Journal of family practice*
  Saleh, C., Seyam, M., Blackham, K. A., Walter, A., Lyrer, P.
  2023; 72 (7): E26-E29
- **Bilateral limb shaking TIA secondary to severe bilateral carotid stenosis.**
  Seyam, M., Hehir, M., Sobhani, F.
  2023
- **All that enhances is not cancer: cerebral amyloid angiopathy mimicking leptomeningeal enhancement in two patients with advanced cancer.**
  Waheed, S., Seyam, M., Thomas, A.
  2023
- **West Nile virus encephalitis in a patient with frontotemporal dementia.** *American College of Physicians (ACP) Vermont Chapter Meeting*
  Jensen, C., Seyam, M., et al
  2022
- **SMART Syndrome (Stroke-like migraine attacks after radiation therapy): When to suspect it?** *Surgical neurology international*
  Angelidis, P., Saleh, C., Jaszczuk, P., Seyam, M., Ebner, K. A., Hund-Georgiadis, M.
  2021; 12: 561
- **New Horizons for Diagnostic Pitfalls of Cerebral Venous Thrombosis: Clinical Utility of a Newly Developed Cerebral Venous Thrombosis Diagnostic Score: A Case Report and Literature Review.** *The American journal of case reports*
  Khan, F., Seyam, M., Sharma, N., Ud Din, M., Bansal, V.
  2021; 22: e932123