

Helena Pernice

Project title: *The genetics of complex Charcot-Marie-Tooth disease*

Duration	6 months
Short Bio	Charcot-Marie-Tooth disease (CMT) is an incurable hereditary neuropathy that first manifests in early adolescence and leads to progressive walking impairment and disability. While generally known as slowly progressive, length-dependent peripheral neuropathy, CMT phenotypes can also be diverse. Especially complex manifestations, such as central nervous system (CNS) involvement or atypical disease course in CMT can lead to misdiagnosis and -treatment. Therefore, specialized skills in phenotyping and genetic analysis are essential for adequate diagnosis, treatment, and research.
Home Institution	Department of Neurology, Charité – Universitätsmedizin Berlin, Germany
Host institution	National Hospital for Neurology and Neurosurgery and UCL Queen Square, Queen Square Centre for Neuromuscular Diseases
Project description	The goal of this project was to gain new insights into the phenotypes and genetics of complex CMT syndromes. To investigate this question, I identified patients with complex CMT phenotypes, such as CNS involvement, focusing on genetically undiagnosed patients. Second, I thoroughly phenotyped these patients using retrospective data to identify groups of common features, hints for genetic causes, as well as signs of (overlap syndromes with) acquired neuropathies. Third, I analyzed whole genome sequencing (WGS) data in order to identify causative genes in these patients.
Personal statement	During my stay at Queen Square I have acquired important knowledge about genetics as well as clinical experience with inherited neuropathies that allows me to better detect and distinguishing clinical features of patients with inherited neuropathies for diagnosis and treatment. Additionally, I have built a new network of extremely talented neuromuscular and

	genetics specialist that is of high value to me personally as well as my ERN.
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