

**Master Studies position at the Institute of Biochemistry and Molecular
Biology I
Heinrich Heine Universität Düsseldorf**

The Research Group on mtDNA, Quality Control, and Aging is seeking highly motivated master students to pursue their theses. Join our recently established vibrant and dynamic team.

Title: Mitochondrial membrane adaptations mediated by GDAP1

Charcot-Marie-Tooth (CMT) is the most common peripheral neuropathy, affecting approximately 1 person per 2500 in the population. CMT encompasses a group of diseases where either the myelin bands of Schwann cells or motor and sensory neurons degenerate, resulting in distal muscle atrophy and movement impairment. Among the various types of CMT, we are interested in understanding the pathological mechanisms associated with GDAP1. Mutations in the GDAP1 gene lead to one of the most aggressive forms of CMT, causing carriers to require a wheelchair within the first decade of life.

GDAP1 is a mitochondrial membrane protein that belongs to the Glutathione-S transferase family, expressed exclusively in nervous tissues. The cellular function of GDAP1 is not entirely clear, although it has been linked to Ca⁺ control and mitochondrial dynamics. Recently, it has been observed that GDAP1 regulates mitochondria-lysosome contact, suggesting a role in mitochondrial clearance. Generally, GDAP1 acts as a redox sensor to uphold mitochondrial function, morphology, and turnover, depending on energy availability.

We aim to comprehend at the molecular-level, alterations in the mitochondrial membrane resulting from GDAP1 deficiency. For this project, we aim to examine the dynamics of the mitochondrial membrane following GDAP1 deficiency, utilizing a neuronal cell model. We will employ cutting-edge techniques for protein isolation and identification, analysis of membrane composition, and both electron and light microscopy. The successful execution of this project could yield insights into the dynamic behavior of mitochondria and how its disruption leads to the onset of this severe human disease, thereby offering potential avenues for long-term treatment strategies.

REQUISITS: Degree on Biology or similar. Besides a basic knowledge of cell culture, no particular skills are required. Experience in any of the fields involved in the development of the project (e.g, microscopy, molecular biology and biochemistry will be valued). Fluency in English is mandatory.

CONTACT: If you are interested, send an email to plamartin@hhu.de including CV and a brief motivation letter.