

**University of Antwerp** Faculty of Medicine and Health Sciences

University of Antwerp Faculty of Pharmaceutical, Biomedical and Veterinary Sciences



Instituut BORN-BUNGE Universiteit Antwerpen



# A Nerve ending story: from genetics to cell biology models

**Translational Neurosciences and Peripheral Neuropathy Research Group** 

University of Antwerp, CDE, Building V

## **Research questions**

We aim to understand the delicate balance between peripheral nerve homeostasis and degeneration by:

1) investigating the genetic etiology inducing peripheral nerve and muscle degeneration starting from patient-derived materials

2) exploring specific disease mechanisms inducing hereditary neuropathies and neuromuscular disorders

3) developing and characterizing in vitro stem cell models as research tools for neuronal and muscle diseases

Genetic screening	Unraveling disease mechanisms		Therapy development
	Nerve and muscle (patho)physiology		
	MITOCHONDRIA	CYTOSKELETON	
	HSPB	Actin	



#### **Research tools**

#### **Animal models**



Neuromuscular junctions (NMJs) in Drosophila at a larval stage



## Cells and stem cell models



#### Induced pluripotent stem cells





Technologies









The Rotarod test assesses the motor coordination and balance of mice





Staining of muscle biopsies can give insights into the consequence of mutations on muscle structures



Immunology-based biochemistry allows investigation of stress responses on specific proteins

**Microscopy allows visualisation of neurite networks (left)** and autophagsomes moving across neurites (right)



Transmission electron microscopy can give detailed information on different mechanisms such as autophagy



Markers can be added during imaging to visualise different processes or organelles such as mitochondria

#### **Contact and information**



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