

Project 1.13 Role of unconventional myosin VI in development of cardiomyopathy: New insights into understanding of function and dysfunction of cardiac muscle

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www: <https://www.nencki.edu.pl/laboratories/laboratory-of-molecular-basis-of-cell-motility/>

Background:

Cardiomyopathies (CM) are one of the main causes of human death worldwide. Despite intensive research on understanding the mechanisms behind CM development, the etiopathology of this severe, life-threatening illness has not been yet fully understood. In the course of worldwide studies new players that could be involved with heart dysfunction are being identified, and such a novel player could be a unique actin-based motor, unconventional myosin VI (MVI). First indication about MVI involvement in heart function came from the study showing that a mutation within a gene encoding MVI was associated with mild symptoms of hypertrophic cardiomyopathy. Also, we observed enlargement of the hearts of mice lacking MVI (Snell's waltzer, MVI-KO), already seen in E14.5 embryos, and continued throughout the animal life.

Aim:

To understand the mechanisms behind the observed MVI-associated heart enlargement, we are going to perform studies on MVI-KO mice and heart explants from patients diagnosed with hypertrophic (HCM) and dilated (DCM) cardiomyopathies; the latter will be performed in collaboration with State Research Institute Centre for Innovative Medicine in Vilnius, Lithuania, where a 6-month stay is scheduled. The experiments will be performed on hearts retrieved from mouse at different age, from embryos E14.5 till adult 12-month old male mice with respect to control heterozygous littermates. The studies will be performed at the molecular, cellular, tissue and whole organism level, with the use a broad range of modern experimental techniques, including functional echocardiographic studies.

Requirements:

- We are looking for highly motivated candidates who are ready to actively participate in the scientific challenge to address those emerging questions,
- the candidate should have a master degree in biology, biotechnology or related biomedical studies,
- experience in laboratory work in the area of cellular/molecular biology and/or animal physiology is required,
- experience in work with heart tissue and mouse models would be an important advantage,
- the candidate should be able to collaborate and work in the team, have the high motivation and dedication to science as well as determination to solve scientific problems,
- good command of English skills is required.