

## **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.

Candidates should provide:

- letter of-intent
- CV with description of experience and activitie,
- contact information for at least two persons who can provide references
- at least two recommendation letters
- copy of MS diploma (the person who will receive the MS degree after the recruitment is finished should provide a statement that the diploma will be presented prior to the start of PhD studies)
- contact information, including e-mail address and phone number.