## Abstract for the general public

Most living organisms are made of many cell types that constantly communicate with each other. During this communication, information may be exchanged in the form of nucleic acids as well as building materials in the form of proteins. One of the carriers of this type of material is the so-called extracellular vesicles. Extracellular vesicles are made of circular lipid membranes with biological material locked inside them. After breaking away from the parent cell and traveling sometimes considerable distances within the organism, they can be absorbed by another cell. In addition to the aforementioned function in intercellular communication, vesicles can also serve to remove harmful, malfunctioning proteins as well as defective cell organelles. Their proper functioning is of great importance in preventing neurodegenerative diseases (e.g. Alzheimer's disease) as well as in heart self-healing.

Relatively recently, a new type of extracellular vesicles was discovered that are much larger than those known to date. The secretion of these vesicles, called exophers, has been observed so far in the neurons and muscles of the model organism *Caenorhabditis elegans*, and the heart muscles of mice and humans. In our project, carried out on the nematode *Caenorhabditis elegans*, we will investigate how the ability to produce exophers is inherited. This will allow a better understanding of how the malfunction of extracellular vesicles and the diseases that may arise from it is passed down from generation to generation in humans. In addition, we will examine how the process of exophers' formation is regulated on an epigenetic level, one that is not written in the form of a DNA sequence but affects the reading of that sequence.