

Analysis of the role of cytoplasmic polyadenylation in the regulation of the innate immune response

The innate immune system is an ancient mechanism of defense against pathogens present essentially in all multicellular organisms. Depending on the organism or tissue, the mechanisms of defense are different, but they are several common features. One of them is the secretion of proteins which have various defense properties, for instance, lysozymes or antimicrobial peptides kill bacteria. Production of such proteins is tightly regulated on multiple levels in multicellular organisms.

In our work, we have discovered another layer of regulation of the expression of antimicrobial secreted proteins, which takes place post-transcriptionally. It is based on so-called cytoplasmic polyadenylation, a process which was previously studied mostly in the context of gametogenesis or in neuronal processes.

Our preliminary data indicate that the role of cytoplasmic polyadenylation in the regulation of the innate immune system is conserved between simple animal a worm *Caenorhabditis elegans* and mammals.

In this project, we plan to decipher at the molecular level how cytoplasmic polyadenylation regulates the innate immune system. We will take advantage of the genetic tractability of worm *Caenorhabditis elegans* as well as multiple transgenic mouse models generated in our laboratory. We will also use contemporary genomic approaches to gain deep insight into the process we plan to study.