Pore-forming toxins are proteins that punch holes into biological membranes. They are used by organisms to attack or defend against other organisms.

They have recently attracted a lot of attention due to their use in DNA sequencing and their high potential in medical applications. We study the mechanism of pore formation at the molecular level and potential biotechnological applications of different families of pore-forming toxins, such as listeriolysin O from a human pathogen Listeria monocytogenes or lysenin from the earthworm. These toxins could be used for detection of environmental pH, delivery of molecules to living cells and sensing of various molecules.