

*Pseudomonas aeruginosa* is common human pathogen that causes deadly infections in patients with compromised immune systems, those sufferings from burns or with skin infections. Most of the bacterial strains that are isolated from patients are resistant to a wide spectrum of antibiotics in use today. Thus, it is currently not possible to treat or effectively eradicate this pathogen.

A group of active chemical compounds that pose great expectations to counter antibiotic resistance is ionic liquids (ILs). ILs have been shown to have antibacterial properties based on their chemical structure that interfere directly with bacterial membrane integrity. ILs are present, e.g. in plants, serving as a class of natural antibiotics that are still not in common use. These compounds seem to inhibit growth of pathogens and could further influence their viability and metabolism. Additionally, ionic liquids might influence bacteria's ability to stick to surfaces, which is a critical step of infections in humans. Furthermore, it was reported that some of those chemicals are able to influence on bacteria surviving by activating stress response. Thus, ILs might have positive influence during antibiotics therapy and support their action.

The aim of this project is to investigate if the selected ionic liquids will inhibit growth and viability of *P. aeruginosa* as a single cell and bacterial community refers as biofilm. Furthermore, synergistic mode of action between ILs and antibiotics will be tested to examine if it will be possible to reduce the active dose of antibiotics.