Plastic production is one of the fastest growing areas of the global industry. Over the past decade its size has increased by 8 times, exceeding the threshold of 300 mln tones per year. A success of plastic is explained by advantages in terms of their usability, such as lightness, functionality and above all durability. Unfortunately, these features, especially durability, become a disadvantage when plastic transforms into waste after its role has been fulfilled. Due to still insufficient methods of recycling of plastic waste, a huge percentage of it goes into the natural environment in the uncontrolled way. Plastic waste is present in the nature for short time, thus natural mechanisms have not adapted during evolution to this compound. Being not degradable, plastic accumulates and remains in the environment for a long years.

The main alternative in solution of this ecological issue, is replacing the synthetic plastic (made from fossil sources) by the biodegradable bioplastic. Despite the fact that the ability to decompose bioplastic was shown by many microorganisms, the achievement a satisfactory biodegradation extent is still too time-consuming process. Fortunately, the alternative way exists. Having an elementary knowledge about enzymes taking the role in biodegradation process and using molecular biology techniques, there is a possibility to made an unique microorganism which might be able to produce enzymes decomposing plastic at large scale. An excellent host for this modification is yeast *Yarrowia lipolytica*. This microorganism with unique features has been successfully used in many industrial processes. This yeast might be properly modified by inserting artificial genes encoding enzymes, whose biodegradable ability was proved and characterized in other microorganisms, resulting in an efficient producer for biodegradation of plastic.

The project besides the basic research has an application potential. In the era of plastic, it might play a crucial role in the environmental protection.