Candida albicans is an opportunistic pathogen that resides on human skin and mucous membranes. As the immune system declines, the yeast begins invading deep into the host's tissues, causing difficult-to-treat and highly dangerous systemic infections called candidiasis. *C. albicans* utilizes several mechanisms, called virulence factors, to facilitate spread throughout the host. These factors, such as the ability to change its morphological form from cellular to filamentous, the production of proteolytic proteins (Sap) or the ability to form compact structures - biofilms, as well as the release of extracellular vesicles (EVs), on the one hand, facilitate colonization, but on the other hand constitute a strong pro-inflammatory factor, activating a response from the host immune system.

The immune system response is multistep, but the most important cells involved in the fight against candida are neutrophils. These short-lived cells are equipped with many mechanisms adapted to fight pathogenic microorganisms. Among the most important are the ability to engulf intruder cells by phagocytosis, which leads to killing inside neutrophils, as well as the release of extracellular neutrophil traps (NETs), which are structures made of DNA and proteins possessing biocidal properties. NETs, due to their structure, effectively catch intruder cells in the extracellular space and limit their spread. The mechanism for selecting the specific pathway of neutrophil response to the threat is still unknown, making it impossible to indicate the conditions under which microorganisms will be phagocytosed and NETs will be released. The activation pathway of neutrophil response mechanisms to contact with the yeast *C. albicans* is very complex and has not been fully understood. Under various conditions, phagocytosis of yeast cells or the release of NETs occurs. Interestingly, as the infection and yeast biofilm grows, the neutrophil response weakens until it stops altogether. Studies in the preparatory stage of the project have shown that neutrophils actively uptake Sap6 protease released by yeast, resulting in an increase in its concentration within the cell, leading to proteolytic damage of neutrophil response mechanisms, including the production of reactive oxygen species, as well as the netosis pathway. In addition, the action of the protease leads to the activation of programmed cell death - apoptosis. This mechanism termed the "Trojan horse mechanism," appears to be one of *C. albicans'* defense strategies against the immune system. Therefore, this project aims to analyze in detail the mechanism of internalization of the Sap6 protease, the involvement of neutrophil surface receptors, its storage, and translocation inside the cell, as well as to identify potential intracellular targets that, as a result of proteolytic activity, can be degraded and thus impair defense mechanisms. In addition, the role of yeast extracellular vesicles in Sap6 transport will be considered. Previous studies have shown the presence of Sap6 and other yeast proteins inside or on the surface of EVs, as well as chemoattractive properties toward neutrophils, so it remains a legitimate question whether the fusion of vesicles and neutrophils may result in the accumulation of Sap6, and vesicles may constitute a kind of "molecular syringe." The last issue considered in the project concerns the universality of the "Trojan horse mechanism." At this stage, an answer will be obtained to the question whether the discovered mechanism of neutrophil deactivation is reserved only for Sap6, or whether other yeast proteases (Sap Yps), but also from other organisms, can use internalization to deactivate defense cells.

The results will help to understand the newly discovered defense mechanism of yeast, as well as identify potential therapeutic targets to enhance the effectiveness of *C. albicans* infection therapy.