

Application of yeast display method in biotechnology and agriculture

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Yeast display (DD) is an efficient technology for exposure and fixation of target proteins on the surface of yeast cells by their fusion with cell wall proteins. The scope of application of DD is very wide. It can be used in the study of protein-protein interactions and antibody screening; for the processing of industrial waste, in the processes of bioadsorption of heavy and rare metals, in the production of chemical compounds and biofuels, and in the production of vaccines. DD has a number of advantages over other cell systems. This is due to the fact that yeast, being eukaryotes, unlike bacteria, can carry out various post-translational modifications, correct folding and secretion of eukaryotic proteins.

In our work, we compared the effectiveness of different cell wall proteins for exposing target proteins to the surface of *Komagataella phaffii* yeast cells. Two reporter systems were used, based on the eGFP and the beta-galactosidase genes.

The most efficient exposure to the surface was provided by the anchor protein ScAGa1p from the yeast *Saccharomyces cerevisiae*. The genetic constructs obtained in the work can be used for the production of whole-cell biocatalysts. A yeast strain *K. phaffii* was obtained, containing in its genome a construct for the excretion of the Gumboro disease virus antigen protein — VP2. This strain can be used for the production of a vaccine.

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Keywords: *Komagataella phaffii*; yeast display; whole-cell biocatalysts; Gumboro disease virus antigen.

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