

## Abstract

Natural strains of the *Saccharomyces cerevisiae* growing on solid medium form structured, biofilm-like colonies. This ability is depended on the surface adhesin Flo11p. The expression of the *FLO11* gene is upregulated by the RNA-binding protein Whi3p, which is likely to have a negative effect on the level of the transcription factor Yap6p. The aim of this study was to determine whether Yap6p affects colony morphology and *FLO11* expression. Analysis of *FLO11* expression using the fluorescent proteins pFlo11-GFP and Flo11p-DsRed in *WHI3-deletion* strains demonstrated a negative effect of Yap6p on *FLO11* expression and confirmed changes in the effect of Yap6p on *FLO11* expression in the presence of NaCl. In the strain overexpressing *YAP6*, the fluorescence values of pFlo11-GFP and Flo11p-DsRed were lower than in the strain with deletion of the *YAP6* and in the presence of NaCl there was observed the largest increase in fluorescence. Although Yap6 protein is thought to have a negative effect on *FLO11* expression under standard culture conditions, it seems to be responsible for a significant increase in *FLO11* expression in the presence of mild osmotic stress. In *WHI3-deletion* strains, there was observed a significant increase in structuredness of colonies growing in the presence of NaCl.

Analysis of structured colonies in *S. cerevisiae* as model organism can help to identify factors promoting virulence in pathogenic yeasts.

**Keywords:** colony morphology, filamentous growth pathway, osmotic stress, fluorescent proteins, *Saccharomyces cerevisiae*.