Analysis of flocculins in Ashbya gossypii reveals FIG2 regulation by TEC1.

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Abstract

For 95% of the Ashbya gossypii protein-encoding genes there is a Saccharomyces cerevisiae homolog. Out of these 90% are arranged in a conserved, syntenic, gene order. Interestingly, A. gossypii adhesins, encoded by homologs of S. cerevisiae FLO-genes, are found in non-syntenic positions. A. gossypii contains only a small set of adhesins: two FLO5, a FLO11 and a FIG2 homolog, but no FLO1, FLO9, or FLO10 homolog. Here we present the functional analysis of the A. gossypii adhesins and their potential transcriptional regulators SFL1, FLO8, and TEC1. Deletion of individual classes of FLO-genes did not reveal any phenotype. Lack of SFL1 or FLO8 showed reduced growth. The expression of adhesins in different strain backgrounds was tested using promoter-lacZ-fusions. We found that SFL1 acts as a suppressor of one of the FLO5 genes and FLO8 but particularly of FIG2. Interestingly, FIG2 expression was abolished in a tec1 mutant. We identified three potential Tec1-binding sites in the FIG2-promoter by similarity to S. cerevisiae Tec1-binding sites. The AgCHT2 promoter, which regulates a sporulation specific chitinase, also harbours potential Tec1-binding sites. Consequently, expression of CHT2 was not detected in a tec1 strain. This suggests that Tec1- binding sites are conserved between A. gossypii and S.

cerevisiae even though there are different Tec1 target genes in each of these organisms.

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