

## 论文

### 3-磷酸甘油醛脱氢酶与酵母线粒体基因组维持蛋白Mgm101的相互作用

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摘要:

采用酵母双杂交方法, 以Mgm101p为诱饵, 筛选酵母cDNA文库. 分离鉴定15个与Mgm101p相互作用的蛋白因子, 其中5个阳性克隆均为GPD1编码的3-磷酸甘油醛脱氢酶(GAPDH). 克隆了GPD1在 *S. cerevisiae*的同系物ScTDH2基因, 进行绿色荧光蛋白GFP标记、亚细胞组分分离和蛋白质印迹分析, 结果表明, GAPDH除了在细胞质为糖酵解酶的主要作用外, 可能为多功能蛋白, 在酵母线粒体中与Mgm101p相互作用参与线粒体DNA维持的生物过程.

关键词: 3-磷酸甘油醛脱氢酶; 酵母线粒体DNA; 酵母双杂交; Mgm101蛋白

### Interaction of Glyceraldehyde-3-phosphate Dehydrogenase in *S.cerevisiae* with Mitochondrial Genome Maintenance Protein Mgm101

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Abstract:

MGM101 is involved in mitochondrial genome maintenance in yeast. Mgm101p is a protein required for the replication of mtDNA. By means of yeast two-hybrid, we screened a *Schizosaccharomyces pombe* cDNA library for clones encoding proteins that potentially interact with Mgm101p. We have isolated 15 mt-DNA-associated proteins in yeast. We had identified five individual clones with GPD1 coding for glyceraldehyde 3-phosphate dehydrogenase(GAPDH). The *S. cerevisiae* counterpart of the GPD1, TDH2 was cloned and examined for its possibility to be involved in mitochondrial genome maintenance. GFP tagging, subcellular fractionation followed by Western blotting analysis revealed that GAPDH, besides having a cytoplasmic location, was imported into mitochondria and had potential to interact with Mgm101p. These results suggest that GAPDH is likely a multifunctional protein and interacts with Mgm101p in mitochondria, which is involved in the process mediated by mtDNA.

Keywords: Glyceraldehyde-3-phosphate dehydrogenase; mtDNA; Yeast two-hybrid; Mgm101 protein

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