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Involvement of *CaKNS1* in *Candida albicans* Morphogenesis

Yun-Hee Park¹ and Hee-Moon Park

Department of Microbiology, School of Biosciences and Biotechnology, Chungnam National University

Previously we have reported the role of the dual-specificity LAMMER kinase in yeast morphogenesis by identifying that *Schizosaccharomyces pombe* LAMMER kinase homolog, Lkh1p, is a negative regulator of filamentous growth and flocculation. Recently we also found the requirement of Kns1p for the butanol-induced haploid filamentous growth in *Saccharomyces cerevisiae*. Based on these results, we tried to reveal the involvement of Kns1p in differentiation of the opportunistic human pathogen, *Candida albicans*. We cloned the *CaKNS1* and constructed the single- and double-disruptant of the *CaKNS1*. Interestingly, the *CaKNS1* disruption showed significant alterations in hyphae and colony morphology in gene-dosage dependent manner on various culture conditions. In addition, the disruptants showed higher flocculation activity but lower level of chlamyospore-production than the wild type. Our results demonstrate that the *CaKNS1* plays a role in *C. albicans* morphogenesis including filamentous growth like in other yeasts, *S. cerevisiae* and *S. pombe*.

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ppGpp is Responsible for Boosting SigB Transcription, Osmo-adaptation and Differentiation In *Streptomyces Coelicolor* A3(2)

Hyo-Sub Kim^{1*}, Eun-Jin Lee², and Jung-Hye Roe¹

¹*School of Biological Sciences, Seoul National University,*

²*Department of Molecular Microbiology, Howard Hughes Medical Institute, Washington University School of Medicine*

SigB, A sigma factor which is responsible for osmo-adaptation and erecting aerial hyphae is activated by alamone, ppGpp in *Streptomyces coelicolor*. We disrupted RelA, measured ppGpp level by HPLC and confirmed abolishing of ppGpp peaks in RelA mutant. We examined SigB transcription level via S1 mapping, the transcription level was lower than WT cell under osmotic stress condition. RelA deletion mutant showed osmo-sensitivity and can not sporulation, resulting in bold phenotype. These phenomena caused by insufficient SigB transcription and provide an important clue to understand the relationship between osmo-regulation and sigma competition role of ppGpp in actinomycetes.

F023

Stable Expression of GFP in the Phytopathogenic Fungus *Ustilago maydis* Isolated in Korea by REMI

Ji-Yeon Kim^{1*}, Su-Ye Sung, and Se Won Yie

Division of Life Sciences, College of Natural Sciences, Kangwon National University

Ustilago maydis was transformed unstably using recombinant plasmid containing a hygromycin B phosphotransferase gene (*hph*) under controlled *U. maydis* glyceraldehyde-3-phosphate dehydrogenase (*gap*) promoter and that the plasmid was integrated chromosomally in the transformant. Here we report a stable transformation of the fungus to hygromycin B resistance, using a recombinant green fluorescent protein (GFP) gene fused with *hph* gene. Transformants expressed GFP in culture and had the same general appearance as the wild type and GFP observed in all fungal structure. An increase in the transformation efficiency using restriction-enzyme-mediated-integration (REMI) was also demonstrated.

F024

Identification of *PRX1* of *Candida albicans*

Jung Min Ahn^{1*}, Wankee Kim², and Wonja Choi¹

¹*Department of Life Science, College of Natural Sciences, Ewha Womans University,* ²*Institute for Medical Sciences, School of Medicine, Ajou University*

In the opportunistic fungal pathogen *Candida albicans*, a thiol-specific antioxidant (TSA1) has recently been characterized to function as a thioredoxin peroxidase, which scavenges H₂O₂. We have discovered another putative antioxidant enzyme named PRX1 by Blast search through the Candida Genome Database (Stanford Genome Technology Center). Amino acid sequence alignments between *C. albicans* PRX1 and TSA1 showed 28% of homology. *C. albicans* PRX1 and *S. cerevisiae* PRX1 showed 31%. Peroxiredoxins (Prxs) have been classified in two groups depending on the presence of either one (1-Cys Prx) or two (2-Cys Prx) conserved cysteine residues. *C. albicans* PRX1 has only one cysteine residue at the 69th amino acid, which may be essential for the antioxidant activity as a thioredoxin peroxidase. Under reducing conditions when denatured with DTT, recombinant Prx1p showed two bands that corresponded to the molecular size of monomers while under nonreducing conditions Prx1p rendered one band, the molecular size of a dimer. The substrate of Prx1p was examined and turned out to be H₂O₂. To examine the localization of Prx1p, antibody against Prx1p is under construction.