SII-3-1

YDR1, A GENE ENCODING GLOBAL TRANSCRIPTION REPRESSOR IN YEAST

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A general repressor extensively studied *in vitro* is the human Drl/DRAP1 heterodimeric complex. To elucidate the function of Drl/DRAP1 *in vivo*, the yeast *Saccharomyces cerevisiae* Drl/DRAP1 repressor complex was identified. The repressor complex is encoded by two essential genes, designated *YDR1* and *BUR6*. The inviability associated with deletion of the yeast genes can be overcome by expressing the human genes. However, the human corepressor DRAP1 functions in yeast only when human Drl is coexpressed. The yDrl/Bur6 complex represses transcription *in vitro* in a reconstituted RNA polymerase transcription. Repression of transcription could be overcome by increasing the concentration of TATA-element binding protein (TBP). Consistent with the *in vitro* results, overexpression of YDR1 *in vivo* resulted in decreased mRNA accumulation. YDR1 overexpression impaired cell growth, an effect that could be rescued by overexpression of TBP. These results demonstrate that Drl functions as a repressor of transcription *in vivo* and directly targets TBP, a global regulator of transcription.

SII-3-2

ISOLATION AND CHARACTERIZATION OF A PHOSPHOINO SITIDE-SPECIFIC PHOSPHOLIPASE C GENE HOMOLOG IN *ASPERGILLUS NIDULANS*

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This study was undertaken to isolate and characterize the in vivo function of phosphoinositide-specific phospholipase C (PLC) gene in filamentous fungi. In *Aspergillus nidulans*, by using polymerase chain reaction, a 120 bp fragment was obtained, which was used to isolate PLC clones from a genomic cosmid library. By Southern hybridization of chromosome-specific genomic libraries, the PLC gene was found to be on the chromosome 8. Also, the gene was located between *trp*C and *ribo*B genes, at about 40 kb and 10 kb from respective genes. The determination of nucleotide sequence and analysis of the gene revealed a putative polypeptide of which amino acid sequence was highly homologous to catalytic core domain sequence of PLC from mammals and yeasts. A knockout mutant was produced, in which the PLC gene was replaced with *arg*B^{+} gene. The mutant showed slow growth, which becomes more apparent at lower temperatures. Microscopic observations showed that the stage of germ tube outgrowth is severely inhibited at lower temperatures. Detailed characterization of the mutant is under way to find a clue to the in vivo role of PLC in the filamentous fungus.