F308 The Structure and Genetic Organization of the Linear Mitochondrial Plasmid mlp1 from *Pleurotus ostreatus* NFFA2

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The structure of plasmid mlp1, a linear mitochondrial plasmid of *Pleurotus ostreatus* NFFA2 was determined by restriction enzyme mapping and complete sequencing. The plasmid encodes two proteins; a putative RNA polymerase showing homology to yeast mitochondrial RNA polymerase and viral-encoded RNA polymerases, and a putative DNA polymerase showing significant homology to the family B type DNA polymerases. In addition, mlp1 contains at least three smaller open reading frame (ORF)s whose functions cannot be predicted. The linear mlp1 DNA is 9,879 bp long and contains terminal inverted repeat (TIR) sequences of 381 bp at both ends. The cleavage by proteinase K and exonuclease digestion experiments indicate that proteins are covalently bound at the 5' termini of the plasmid. Parts of the putative polymerase ORFs and minor ORF1 among three smaller ORFs were overexpressed in *E. coli* and used to prepare antibody. In Western experiments with the mitochondria extract, the polypeptides of about 110 kDa, 130 kDa, and 30 kDa were detected with the antibodies against RNA polymerase, DNA polymerase, and minor ORF1, respectively.

F309 Cloning and Characterization of the Manganese Superoxide Dismutase Gene, *psd2*$^+$, of the Fission Yeast *Schizosaccharomyces pombe*

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We have isolated the manganese superoxide dismutase (MnSOD) gene, *psd2*$^+$, from *S. pombe*. The MnSOD of *S. pombe* showed extremely high homology with that of other organisms, from human to bacteria. The *psd2*$^+$ contained an intron of 123 nucleotides long and the precursor form of MnSOD had an N-terminal mitochondrial targeting sequence as in other case. From the S1 mapping analysis, the transcription start site was located around 250 nucleotide upstream from the initiating Met codon. The expression of *psd2*$^+$ was increased with growth and induced by heat and osmotic stress but not by any oxidant. In order to find the role of MnSOD, we constructed a disruption strain. The *psd2*$^+$ was not an essential gene for growth and mating of *S. pombe*. MnSOD was required for the survival at the stationary phase and the disruptant showed sensitivity to oxidative stresses. Surprisingly the oxidant-sensitive phenotype of Δ*psd2* was not overcome by overexpressing CuZnSOD (encoded by *psd1*$^+$), suggesting that Mn- and CuZnSOD have distinctly different roles in *S. pombe*.