

## SII-1-4

### MOLECULAR AND BIOCHEMICAL ANALYSIS OF *p*-NITROPHENOL DEGRADATION BY *PSEUDOMONAS* SP. ENV2030

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The structural and regulatory genes of *Pseudomonas* sp. ENV2030 responsible for PNP degradation were cloned and their nucleotide sequences were determined. The genes are organized in two operons: an upper operon responsible for initial monooxygenation of PNP and production of HQ, *pnpA* operon; and a lower operon responsible for an aromatic ring-cleavage and subsequent conversion to  $\beta$ -keto adipate, *pnpCDE* operon. The PNP 4-monooxygenase gene (*pnpA*) of 1,254 bp encodes a single polypeptide of 418 amino acids. Its amino acid sequence exhibits relatively low levels of homology to other flavoproteins. Evolutionary and signature sequence analyses indicate that PnpC falls into a new group of intradiol dioxygenases. PnpD,  $\gamma$ -hydroxymuconic semialdehyde dehydrogenase, is a 472 amino acid protein exhibiting characteristic active site sequences, and PnpE, maleylacetate reductase, is a 348 amino acid polypeptide exhibiting a significant homology to *Burkholderia cepacia* AC1100 maleylacetate reductase (TftE). All three genes (*pnpC*, *pnpD*, *pnpE*) are expressed in same direction under the control of a promoter distinct from that controlling expression of *pnpA*.

## SII-2-1

### SRG3, A REGULATOR OF THYMOCYTE APOPTOSIS AND DIFFERENTIATION

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We isolated a new mouse gene which is highly expressed in thymocytes, testis and brain. This gene, SRG3, showed a significant sequence homology to SWI3, a yeast transcriptional activator, and its human homolog BAF155. SRG3 encodes 1100 amino acids and has 33 to 47% identity with SWI3 protein over three regions. The SRG3 protein contains an acidic N-terminus, a myb-like DNA binding domain, a leucine-zipper motif, and a proline- and glutamine-rich region at its C-terminus. Rabbit antiserum raised against a C-terminal polypeptide of the SRG3 recognized a protein with an apparent molecular weight of 155 kDa. Immunoprecipitation of cell extract with the antiserum against the mouse SRG3 also brought down a 195 kDa protein which could be recognized by an antiserum raised against human SWI2 protein. The SRG3 protein is expressed about 3 times higher in thymocytes than in peripheral lymphocytes. The expression of anti-sense RNA to SRG3 mRNA in a thymoma cell line, S49.1, reduced the expression level of the SRG3 protein, and decreased the apoptotic cell death induced by glucocorticoids. These results suggest that the SRG3 protein is involved in the glucocorticoid-induced apoptosis in the thymoma cell line. This implicates that the SRG3 may play an important regulatory role during T cell development in thymus.