

Expression analysis of PpSig1, PpSig2 and PpSig5 genes encoding putative plastid RNA polymerase sigma factors in the moss *Physcomitrella patens*.

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Expression of plastid genes is controlled at the transcriptional level in response to developmental and environmental signals. Transcription in plastids is accomplished by two distinct RNA polymerase enzymes, one of which resembles eubacterial RNA polymerases in both subunit structure and promoter recognition properties. The holoenzyme of this eubacteria-type RNA polymerase contains a catalytic core composed of plastid-encoded subunits, assembled with a nuclear-encoded promoter-specificity factor, sigma. Recently, families of sigma-like factor genes were identified from several higher plants. In our laboratory^{1,2}, we identified *PpSig1* and *PpSig2*, sigma-like factor genes in *Physcomitrella patens*, and demonstrated that the transcription of both genes was induced by light. We have recently succeeded in cloning a new sigma-like factor gene in *Physcomitrella patens*. By a phylogenetic analysis and a comparison of intron positions, this gene was classified into Sig5 group of higher plant sigma-like factors. Thus, we named this gene *PpSig5*. We are currently investigating the expression patterns of *PpSig1*, *PpSig2* and *PpSig5* genes under a light/dark cycle (12 hr light, 12 hr dark)

1. Hara, K., Sugita, M., Aoki, S. (2001) *Biochim. Biophys. Acta* 1517 (82), 302-306
2. Hara, K., Morita, M., Takahashi, R., Sugita, M., Kato, S., Aoki, S. (2001) *FEBS Letters* 499 (81-2) 87-91