

**THE EFFECT OF PROTEIN PHOSPHORYLLATION ON *IN VITRO*
CLASS III GENE TRANSCRIPTION**

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The first and basic level of gene expression is transcription. Control at this level is connected with the selection of the DNA sequence for this process. This concerns all ribonucleic acid synthesis. The process of DNA sequence selection for RNA synthesis is connected with the creation of complicated protein complexes, the individual components of which are very often modified. Frequent modification is the phosphorylation and dephosphorylation of particular proteins. The effect of phosphorylation on the transcriptional activity of RNA polymerase III *in vitro* transcription was studied in a homologous plant system.

RNA polymerase III from wheat embryos was isolated and purified by successive chromatography onto columns filled with DEAE-Sephadex and Mono Q.

Plasmids p27, p8, and p29, possessing a *Lupinus angustifolius* genome fragment with a length of 350 pb coding the 5S RNA gene in the plasmid pBR 322 were the matrix for transcription (the plasmid was received from Stanisław Karpiński, MSc.).

The source of transcription factors was the S-100 fraction from wheat embryos additionally purified onto DEAE-cellulose columns.

The preparation of protein kinases was derived from wheat embryo chromatin. The proteins, after dissociation from chromatin, were purified by chromatography on Amicon Red-Sepharose and Mono Q columns.

Transcription activity was measured in a standard incubation mixture containing 3UTP or γ -³²P-ATP (in the case of the preparation of the transcription product for electrophoresis and auto-radiography).

The effective transcription of class III genes through RNA polymerase III requires the presence of an additional phosphorylated transcription factor which influences both the persistency and efficiency of the transcription complex. The control of the activity of RNA polymerase III activity by transcription factor phosphorylation could be a result of the presence of an enzyme cascade, in which specific protein kinases are relayed on intracellular signals.