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Expression, purification and characterization of the GpC methyltransferase M.CviPI

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ABSTRACT

Methylation footprinting can be used to map protein-DNA contacts at the resolution of individual DNA molecules[1]. Enzymes with various nucleotide specificities have been successfully used to footprint genomes including GpC, CpG and A methyltransferases[2–7]. Among these M.CviPI methylate DNA in GpC context, that is distinct from CpGs that are endogenously methylated in mammals. This feature has been leveraged to profile nucleosome occupancy[8,9]; the binding of General Transcription Factors and RNA Pol II[6]; the co-occupancy of Transcription Factors (TFs)[10] and the relation between TF binding and endogenous DNA methylation[11]. Here, we present a protocol for the production and purification of M.CviPI in *E. coli*. Our protocol routinely yields milligrams of protein at a quality and a concentration compatible with DNA footprinting applications. We characterize the purity and the activity of the purified enzyme, providing a benchmark for future production.

ATTACHMENTS

pBAD_HisMBP3C-McviPI.dna

Protocol_McviPI_purification.pdf