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## Cloning and Sequencing of *cel5C* Gene from Cow Rumen Metagenomic Library

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A novel carboxymethyl cellulase gene, *cel5C*, was cloned, sequenced, and expressed in *Escherichia coli*. A metagenomic library of cow rumen in pCC1FOS phage vector was screened in *E. coli* EPI300 for cellulase activity on a CMC agar plates. One clone of them was partially digested with *Sau3AI*, ligated into the *Bam*HI restrict site of pBluescript II SK+ vector, and transformed to *E. coli* DH5 $\alpha$ . We obtained 1.5 kb insert DNA, designated *cel5C*, which has the activity of hydrolyzation of carboxymethyl cellulose. The *cel5C* gene has an open reading frame (ORF) of 1,125 bp encoding 374 amino acids and had the conserved region, LIMEGFNEIN, it belongs to the glycosyl hydrolase family 5. The molecular mass of Cel5C protein induced from *E. coli* DH5 $\alpha$ , as analyzed by CMC-SDS-PAGE, appeared to be about 42 kDa. The optimal pH was 4.0, and the optimal temperature was about 50°C for its enzymatic activity. We examined whether the *cel5C* gene comes from the 49 identified cow rumen bacteria by using PCR. As a results, no PCR bands were identify, this result suggests that a *cel5C* gene came from the unidentified cow rumen bacteria.