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Preliminary Genetic Study and Regulation of the *cel* Genes in *Erwinia chrysanthemi* *

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Two strains of *Erwinia chrysanthemi*, 3937 and 3665, were studied. In both, two *cel* genes have been found: *celZ* encoding an accounting for almost all the cellulase activity found in the growth medium and *celY* the product of which was not detected by its activity. All four genes have been cloned in *E. coli* on pBR322 derivatives and transduced by phage Mu into *Erwinia* 3937: introduction of *celY* genes does not lead to any increase of the activity; introduction of $celZ_{3937}$ leads to a slight increase whereas that of $celZ_{3665}$ leads to a 2.5 times augmentation. In all cases, the cellulase activity was recovered in the growth medium.

Plasmid carrying the $celZ_{3937}$ gene was mutagenized with phage MudII1734 (Km*R*, *lac*) whereas plasmid carrying $celY_{3937}$ gene was mutated by phage MudIIPR13 (Cm^R, *lac*). Precise location of the *cel* genes was obtained by restriction patterns of the various resulting plasmids. The direction of transcription was determined using Lac^+ clones, in which the *lacZ* gene is fused to the *cel* promoter. These plasmids were then introduced into *Errwinia* 3937 by transduction by Mu and the mutated alleles inserted on the chromosome by homologous recombination. As expected, the resulting *celZ*::MudII1734 *Erwinia* strain is Cel^- Lac^+ while the *celY*::MudIIPR13 strain is still Cel^+ and barely Lac^+. These strains are now used for genetic and regulation studies.

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