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Red重组系统及在微生物基因敲除中的应用 The Red Recombination System and Its Application to Gene Knock-out in Microorganism

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摘要 在完成了对各种微生物基因组的测序以后，功能基因学的研究变得尤为重要。研究基因功能最直接的方法便是将待研究的基因失活。最初构建基因突变体是采用大肠杆菌的RecA系统，但是RecA重组系统操作复杂，重组效率低。最近建立了Red重组系统，该系统由3个蛋白组成：α蛋白(即λ核酸外切酶)，β蛋白，Gam蛋白。应用Red系统进行基因敲除，可以直接利用线性打靶DNA，两侧同源臂长度在35~60 bp即可发生同源重组，且重组效率高。

Abstract:Since many DNA-sequencing projects of varied microorganisms have been completed,studies on their functional genomics become more important.Inactivation of an interesting gene is a direct method to characterize its function.Though the Esherichia coli RecA recombination system can be used to produce gene mutants,it needs a complex manipulation process.Furthermore,its efficiency is very low.Recently a Red recombination system was developed.This recombination system consists of three proteins:α protein (λ exonuclease),β protein and Gam protein.In this system,the linear targeting DNA which contains a selectable marker flanked with a homologous region as short as only 35~60 bp can be directly targeted for gene knock-out with a higher efficiency.

关键词 Red重组系统 基因敲除 抗药性基因 Key words Red recombination system gene knock-out resistant gene

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