

NEW TECHNIQUE FOR GENETIC MANIPULATION OF INDUSTRIAL MICROORGANISMS

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Natural mechanisms for recombination in micro-organisms have long been understood. These include sexual and parasexual processes in fungi and more specialized mechanisms in prokaryotes. However, strain improvement programmes for industrially important micro-organisms have rarely involved these approaches, relying extensively on mutagenesis and selection.

In the past decade microbial genetics has been revolutionized with the discovery and development of other mechanisms for genetic recombination. The most dramatic involve recombinant DNA technology which allows the manipulation of single genes and the possibility of expression of foreign genes in prokaryotes. Increasingly, these techniques are being developed and exploited in eukaryotes with undoubted advantages for industrial processes in the future.

The second major aspect of this revolution is the utilization of protoplast fusion as a tool for polygenic recombination. This technique is becoming increasingly useful in the development of recombination systems in several prokaryotic and eukaryotic species as well as opening up prospects for interspecies hybridizations.