

# 应用光学微操作技术分选单条水稻染色体

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报道了一种基于光镊技术的实用的单条染色体分选技术。具体介绍了用光镊与光刀结合，并辅以微吸管分选水稻单条染色体的过程。通过该方法得到的水稻单条染色体样品经过分子克隆，制备出了染色体特异的DNA片段并用于水稻基因组测序工作。还将光学微操作技术与现有的几种分选单条染色体的方法（如玻璃微针挑取、激光弹射以及流式细胞仪等）进行了比较。与这些方法相比，光学微操作方法具有液相环境中分离、操作简易、对染色体损伤小、选择性高、无污染等优点。

## OPTICAL TECHNIC OF ISOLATION A SINGLE CHROMOSOME

A new method based on the optical tweezers technology was reported for isolation of single chromosome. In this paper, we introduced the isolation of single rice chromosome with optical tweezers and optical scaple. A rice cell suspended in the liquid was first crushed by a short laser pulse. Then a released chromosome from the cell can be manipulated by optical tweezers and pulled away from other cells and oddments without any direct contact. Finally it was extracted individually into a glass capillary nearby. After molecular cloning, we can obtain some specific DNA segments from the individual chromosome. All these segments can be used for rice genomic sequencing. Different methods, by which we can extract single chromosome, were compared. The advantages of optical micromanipulation method were summarized.

### 关键词

光镊(Optical tweezers); 光刀(Optical scalpel); Chromosome(染色体); 基因组(Rice genome)