

A)。

原位杂交结果显示,除6号染色体短臂外,在每条染色体的双臂两端都具有显著信号,大而明亮。此外,在臂上的某些位置还有小信号(见插页2图版,B)。洋葱的每条染色体都具有其特异的AC-SAT-DNA分布位点。1号、3号染色体在其长臂靠近着丝粒区域有两个相距很近的卫星DNA座位。与1号染色体相比,3号染色体的小信号更靠近着丝粒一些。4号染色体有3组小信号,其中一组位于染色体短臂偏端部处;另外两组分别位于染色体长臂中部和近端部处,距离着丝粒较远,很容易和3号染色体区分开来。7号染色体也有3组小信号,其中位于染色体短臂上的信号明显靠近着丝粒;位于染色体长臂上的2组信号均比4号染色体更靠近着丝粒。这样就很容易将二者区分开来。8号染色体的长短臂比明显大于7号染色体,并且前者在染色体短臂上没有信号。

将传统的核型分析方法所包括的着丝粒位置、全长、臂长、臂比(数据未提供)与FISH试验结果相结合,获得洋葱卫星DNA序列在洋葱染色体上分布的模式图(见插页2图版,C)。以卫星DNA序列为探针,应用FISH技术,可提供染色体间直观的、易于识别的差异。比纯数据上的差异能够更方便地满足目前育种工作的要求。

此工作最重要的意义在于找到了能够同时区分洋葱8对染色体的探针,并得到了这一探针在染色体上的分布图。实际育种工作中已获得了大量洋葱与油菜的体细胞杂种后代,其中只有洋葱的1对染色体是目标染色体,这对染色体携带有抗线虫的基因。应用荧光原位杂交技术,能够直接在显微镜下观察到插入染色体的情况,从而筛选出目标杂种株系,实现在当代的幼苗期即可淘汰非目的植株,提高育种的目地性,极大地减少人力和土地资源的消耗。

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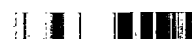
Karyotype Analysis of *Allium cepa* L. by Fluorescence in Situ Hybridization with Satellite DNA

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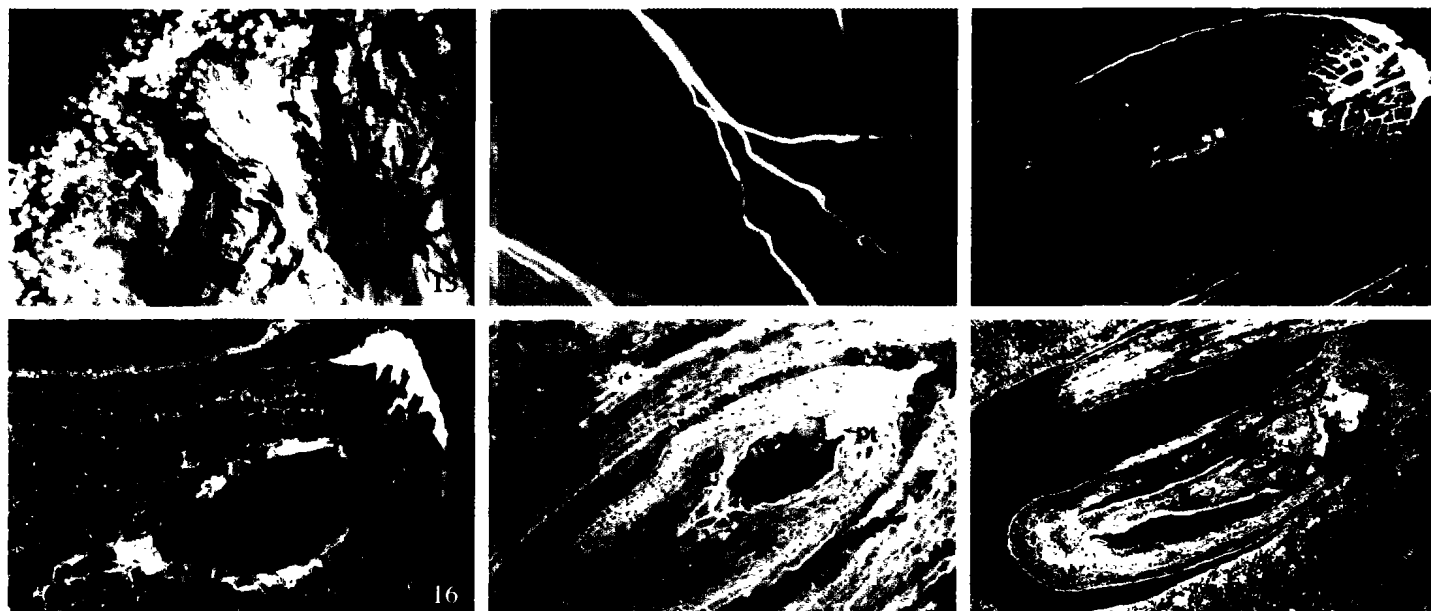
Abstract: In order to identify each pair chromosomes of *Allium cepa* L., We used a simplified fluorescence in situ hybridization technique to localize the satellite DNA loci in metaphase cells of *Allium cepa* L. The resulting hybridization patterns enabled all onion chromosome pairs to be identified. Chromosome 6-C is an acrocentric chromosome. Unlike the others, it has only one main locus at the end of its long arm. Every pair of the whole chromosomes has its own special spotting pattern, by which the 8 pairs of onion chromosomes can be evidently identified. Thus, we made karyotype analysis of the genome. AC-SAT-DNA is a good probe for *A. cepa* L. chromosome analysis.

Key words: *Allium cepa* L.; Chromosome; Satellite DNA; FISH; Karyotype



孟玉平等：两种疏花剂对苹果授粉受精过程的影响

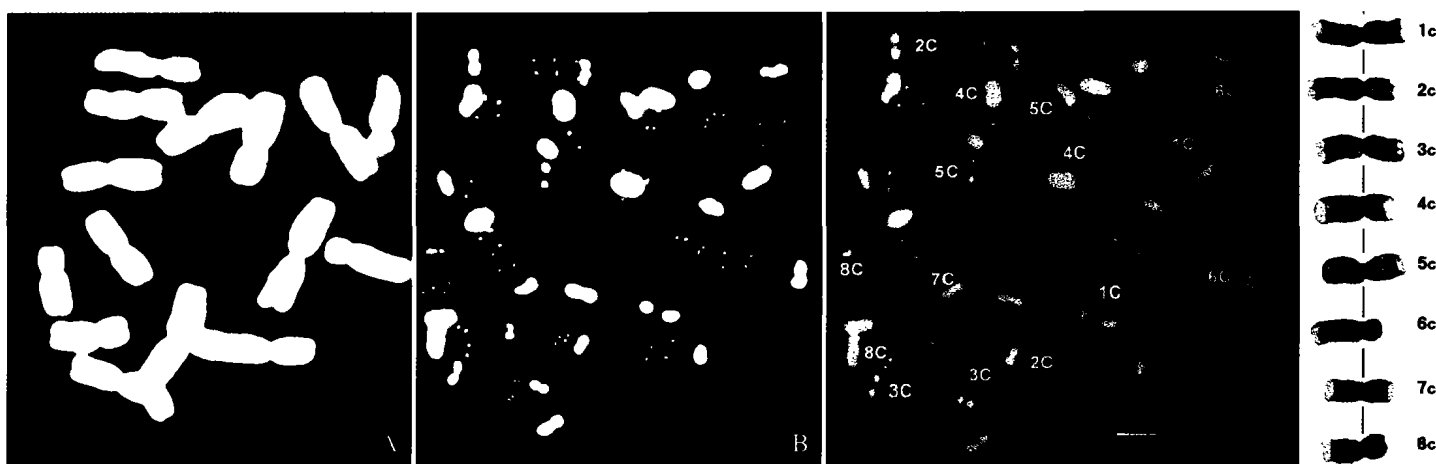
Meng Yuping, et al. Effect of Two Flower Thinners on Pollination and Fertilization of Apple



图版说明：13.授粉后48 h CFA (5g/L)处理被灼伤的柱头和花粉管(8x4);14.授粉后4 d CFA (5g/L)处理花粉管到达子房(8x10);15.对照授粉后9 d胚珠发育(8x20);16.对照授粉后2周胚珠发育(8x20);17.授粉后9 d MCPB处理胚珠发育(8x20);18.授粉后2周MCPB处理胚珠发育(8x10)。c:胼胝质栓;es:胚囊;n:珠心;i:珠皮;en:胚乳核。

Explanation of plates: 13.The stigma and pollen tubes injured by CFA (5g/L) treatment 48 h after pollination(8x4); 14. The pollen tubes elongating in ovary 4 d after pollination by CFA 5g/L treatment(8x10); 15.The development of ovule(control) 9 d after pollination (8x20); 16.The development of ovule (control) 2 weeks after pollination (8x20); 17.The development of ovule 9 d after pollination by MCPB treatment(8x20); 18.The development of ovule 2 weeks after pollination by MCPB treatment (8x10). c:callose plug; es:embryoac; n:nucellus; i:integument; en:endosperm nucleus.

赵泓等：洋葱染色体核型的FISH分析

Zhao Hong, et al. Karyotype Analysis of *Allium cepa* L. by Fluorescence in Situ Hybridization with Satellite DNA

图版说明：洋葱染色体

A.中期染色体; B.卫星DNA序列在洋葱各染色体上的分布; C.卫星DNA序列在洋葱染色体上分布的模式图(bar=10μm)。

Explanation of plates: Genome of *Allium cepa* L.(2n=2x=16,one of chromosome-7 was absent)

A. A metaphase cell comprising 15 chromosomes of one genome; B. FISH result shows the chromosomal localization of AC-SAT-DNA; C. The model pattern of AC-SAT-DNA loci on *Allium cepa* genome.