

专论与综述

人类人工染色体作为转基因载体的应用前景

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收稿日期 2004-11-16 修回日期 2005-3-1 网络版发布日期 接受日期

摘要 自1997年首次成功构建人类人工染色体(human artificial chromosome, HAC)以来, 对其理论、方法学问题的研究一直就是人们关注的焦点, 并引起了科学家们的极大兴趣, 目前已能采用不同的方法获得多种类型的HAC。与酵母人工染色体(YAC)、细菌人工染色体(BAC)等相比, HAC不整合到细胞的基因组中, 以一个独立的功能性染色体单位而存在, 并在细胞中进行正常的有丝分裂和减数分裂。迄今的研究表明: HAC可以携带大片段基因组DNA, 是研究人类基因表达和调控、染色体功能基本单元的重要工具, 也是建立HAC动物模型的重要手段。在未来的基因治疗方面有着广阔的应用前景。

关键词 [人类人工染色体](#); [基因载体](#); [基因表达](#); [基因治疗](#)

分类号 [Q782](#)

Research Progress in Human Artificial Chromosomes(HACs) and the Potentials in Application

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Abstract

Since the first report of the establishment of human artificial chromosome(HAC) was published in 1997, several types of HAC have been created by different strategies. Compared to other artificial chromosomes, such as yeast artificial chromosome (YAC) and bacterial artificial chromosome(BAC), HAC exists in a cell independently, in other words, HAC does not integrated into the cellular genome, and can undergo normal mitosis and meiosis from generation to generation in vitro and in vivo. Recent results proved that HAC, as a DNA carrier, is able to host a large fragment of DNA or mini-chromosome, thus it could be a very important tool in the study of human gene expression and regulation, human chromosome function and minimum functional elements and animal models for human diseases. In the near future, HAC can also be used in gene therapy for human genetic diseases.

Key words [human artificial chromosomes \(HACs\)](#) [transgenic vector](#) [gene expression](#) [gene therapy](#)

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