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专论与综述

胚胎干细胞起源的探讨

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摘要 目前胚胎干细胞(ESCs)建系的取材来源包括桑椹胚的卵裂球、囊胚的内细胞团(ICM)、上胚层细胞和原始生殖细胞(PGCs)，甚至从新生鼠睾丸细胞也分离得到类ES样细胞系。这就提出了一个问题，什么是ESCs最接近的体内细胞来源。传统观念常常把ESCs等同于ICM细胞，也有学者认为ESCs更象上胚层细胞，而在已知的分子标记基因方面，ESCs所具有的特征更接近体内早期生殖细胞。不清楚ESCs最接近的体内细胞来源，可能是制约许多品系小鼠和大多哺乳类动物建系成功率提高的原因之一。ESCs系与EG细胞系的分离条件不同表明，加强对ESCs多能性维持基因调控研究具有重要意义。本文从ESCs的经典概念及其发展，早期胚胎细胞和生殖细胞发育规律，早期胚胎细胞、早期生殖细胞和ESCs的关系等方面进行综合分析，认为ESCs可能有多种接近的体内细胞来源。进一步应通过对ESCs建系不同的取材细胞和不同品系的ESCs间进行比较研究，以便弄清ESCs的来源和转化机制，为提高不同物种ESCs建系效率提供理论支持。

关键词 胚胎干细胞,胚胎生殖细胞,起源,早期胚胎细胞,早期生殖细胞

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The Origin of Embryonic Stem Cells

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Abstract

Inner cell mass(ICM), blastomeres, epiblasts and PGCs are usually provided as primary materials to establish embryonic stem cell(ESCs) lines. ES-like cell lines have even been isolated from neonatal mouse testis. ESCs are traditionally regarded as ICM cells, though some scholars believe they are more closely resemble cells from the epiblast. But recent evidence about cell molecular markers indicate that ES cell's characteristics resemble early germ cells. The unknown of ESCs origin may inhibit the successful establishment of ESCs lines from many different species. As the derivation condition between ESCs and EGCs is different, it is important to study the genetic regulation of pluripotent stem cells. Here we review the classical concept and development of ESCs, the early development rules of mouse embryo and germ cells, and the relationship among early embryonic cells, early germ cells and ESCs, and presume ESCs should have many cell origins. We expect to elucidate the origin of ESCs by comparing different ESCs lines and analyzing gene function so as to improve the efficiency of ESCs derivation.

Key words embryonic stem cells embryonic germ cells origin early embryo early germ cells

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