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恶性肿瘤的癌变原理研究专栏

EB病毒潜伏感染基因组在上皮肿瘤细胞克隆扩增中的保留

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摘要：

目的：探讨EBV感染的上皮细胞在克隆扩增过程中细胞中EBV基因组保留或丢失的实质。方法：使用EBV潜伏感染的上皮肿瘤细胞系293-EBV，其中的EBV基因组通过绿色荧光蛋白(green fluorescent protein, GFP)示踪，经过多次传代使细胞的GFP表达强度有强弱差异，且部分细胞完全丢失EBV基因组，然后通过显微共聚焦连续观察细胞的生长。将细胞分散至极低密度，观察单个细胞形成克隆过程中细胞的分裂及GFP表达强度的变化。结果：细胞在生长过程中由于黏性和运动性而移动，但GFP阳性的细胞在未分裂时荧光强度不变。细胞形成的克隆其形状有紧凑型和松散型。EBV阳性的细胞在紧凑型生长时易保留EBV基因组。随着细胞数增加，EBV阳性细胞在松散型生长时GFP表达逐渐变弱；而GFP表达弱的细胞易完全失去EBV基因组。结论：EBV阳性上皮细胞具有保留EBV基因组进行克隆扩增的能力，EBV保留的实质是EBV基因组能随着细胞增殖而复制和传代, 这与细胞密度有关，还可能受上皮细胞环境的影响。

关键词： EB病毒基因组；潜伏感染；上皮肿瘤细胞；克隆扩增；保留

Maintenance of Epstein-Barr virus latent genome in epithelial tumor cells during the cellular clonal expansion

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Abstract:

Objective To determine the maintenance and loss of Epstein-Barr virus (EBV) genome during the clonal expansion of the EBV-infected epithelial cells. MethodsThe epithelial tumor cell line, 293-EBV, in which the EBV genome was observed with green fluorescent protein (GFP) readout. After a dozen of passages, it contained cells with strong or weak GFP expression, and some with complete loss of EBV genome. The cell growth was then continuously observed under a confocal microscope. The cell dividing and GFP expression were also observed during the clonal expansion by being made into very low density. ResultsThe cells moved around due to adherence and mobility, while the GFP expression remained unchanged in the undivided cells. The cells could form compact or loosen clones. The EBV genome easily persisted in those clones when cells were growing compactly. As the cell number increased, the GFP expression became weak or even died away at the sites of low density in the loosen clones. ConclusionEBV-positive epithelial cells are able to sustain the EBV genome during its clonal expansion. The cells maintain EBV genomes by passing them to the daughter cells after replication. When the cells unsuccessfully inherit the EBV genome, the daughter cells may lose them which is related to the low cell density as well as the epithelial environment.

Keywords: Epstein-Barr virus genome;latent infection;epithelial tumor cell;clonal expansion;maintenance

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