

论著

## POLK和POLH在N-甲基-N'-硝基-N-亚硝基胍引起的非定标突变中的作用

罗月球<sup>1\*</sup>, 余应年<sup>2</sup>

(浙江大学医学院 1. 附属第二医院病理科, 2. 病理生理学教研室, 浙江 杭州 310009)

收稿日期 2004-8-30 修回日期 网络版发布日期 2008-7-9 接受日期 2004-12-26

**摘要** 目的 研究DNA聚合酶kappa(POLK)和DNA聚合酶eta(POLH)的功能。方法 采用穿梭质粒pZ189介导的突变试验,对建立的阻断细胞系FL-POLK<sup>-</sup>和FL-POLH<sup>-</sup>进行非定标突变研究。结果 穿梭质粒pZ189在FL-POLK<sup>-</sup>和FL-POLH<sup>-</sup>细胞中复制后,其supF tRNA基因的自发突变频率分别为 $11.2 \times 10^{-4}$ 和 $13.5 \times 10^{-4}$ ,而对照细胞FL和FL-M分别为 $4.9 \times 10^{-4}$ 和 $3.7 \times 10^{-4}$ 。质粒在接触过N-甲基-N'-硝基-N-亚硝基胍的FL-POLK<sup>-</sup>和FL-POLH<sup>-</sup>细胞中复制,其supF tRNA基因的非定标突变频率下降。结论 POLK和POLH在维持哺乳类细胞的基因组稳定性中起重要作用,同时它们还参与了哺乳动物细胞非定标突变的形成,如同其同源基因编码的Pol IV和Pol V在*E. coli*的非定标突变形成中的作用。

**关键词** [基因](#) [聚合酶](#) [非定标突变](#)

**分类号** [Q75](#)

## Role of POLK and POLH in N-methyl-N'-nitro-N-nitrosoguanidine induced nontargeted mutagenesis

LUO Yue-Qiu<sup>1\*</sup>, YU Ying-Nian<sup>2</sup>

(1. Department of Pathology, the Second Affiliated Hospital, 2. Department of Pathophysiology, School of Medicine, Zhejiang University, Hangzhou 310031, China)

### Abstract

**AIM** To study the function of polymerase kappa(POLK) and polymerase eta(POLH) in N-methyl-N'-nitro-N-nitrosoguanidine(MNNG) induced nontargeted mutagenesis. **METHODS** Based on the shuttle-plasmid pZ189, the mutation assay was made in the FL-POLK<sup>-</sup> and FL-POLH<sup>-</sup> cells. **RESULTS** The spontaneous mutation frequency of *SupF* tRNA gene in the plasmid replicated in the FL-POLK<sup>-</sup> and FL-POLH<sup>-</sup> cells was  $11.2 \times 10^{-4}$  and  $13.5 \times 10^{-4}$ , respectively, while it was  $4.9 \times 10^{-4}$  and  $3.7 \times 10^{-4}$  in the control cells FL and FL-M, respectively. The nontargeted mutation frequency of *SupF* tRNA gene decreased in the plasmid replicated in these cell lines pretreated with MNNG. **CONCLUSION** POLK and POLH take an important role in maintenance of genetic stability. POLK and POLH also take part in the genesis of nontargeted mutation, just as the role played by their homologous polymerases, Pol IV and Pol V of umuC superfamily in the nontargeted mutagenesis in *Escherichia coli*.

**Key words** [gene](#) [polymerase](#) [nontargeted mutagenesis](#)

DOI:

通讯作者 罗月球 [luoyueq@yahoo.com.cn](mailto:luoyueq@yahoo.com.cn)

### 扩展功能

#### 本文信息

- ▶ [Supporting info](#)
- ▶ [PDF\(274KB\)](#)
- ▶ [\[HTML全文\]\(0KB\)](#)
- ▶ [参考文献](#)

#### 服务与反馈

- ▶ [把本文推荐给朋友](#)
- ▶ [加入我的书架](#)
- ▶ [加入引用管理器](#)
- ▶ [复制索引](#)
- ▶ [Email Alert](#)
- ▶ [文章反馈](#)
- ▶ [浏览反馈信息](#)

#### 相关信息

- ▶ [本刊中 包含“基因”的 相关文章](#)
- ▶ 本文作者相关文章
- [罗月球](#)
- [余应年](#)