遗传 2007 29 (2): 131—136 ISSN: 0379-4172 CN: 11-5450/R

专论与综述

KAP-1: 转录调控中的一个桥梁分子

杨冬, 姜颖, 贺福初

军事医学科学院 放射与辐射医学研究所 北京蛋白质组研究中心, 北京 102206

收稿日期 2006-6-15 修回日期 2006-8-22 网络版发布日期 2007-2-1 接受日期

摘要

KAP-1(又称TIF1b, TRIM28等)是一种转录中介因子, 在诸多转录调控复合体中起桥梁作用。它通过其N端RBCC结构域与含KRAB结构域的锌指蛋白、MDM2、MM1、C/EBPb等相互作用; 通过C端的PHD及BrD结构域与SETDB1、Mi-2a等分子相互作用, 参与形成具有组蛋白甲基化酶或组蛋白去乙酰化酶活性的复合体; 通过中间的HP1BD区域与HP1蛋白相互作用, 进而与组蛋白相结合。大量研究表明, KAP-1作为一个桥梁分子, 主要以共抑制因子形式参与转录抑制复合体的形成, 在某些复合体中也可作为共激活因子发挥作用。KAP-1参与形成的复合体在精细胞发育、胚胎早期发育等生理过程中发挥重要的调控作用, 这种调控属于表观遗传调控范畴。

关键词 KAP-1 转录中介因子 基因表达调控 表观遗传学

分类号

KAP-1, a scaffold protein in transcription regulation

YANG Dong, JIANG Ying, HE Fu-Chu

Beijing Proteome Research Center, Beijing Institute of Radiation Medicine, Beijing 102206, *China*

Abstract

<P>KAP-1 (Alternative names: TIF1b or TRIM28) is one member of transcriptional intermediary factors, which acts as a scaffold in many transcription regulation complexes. The N-terminal RBCC domain of KAP-1 can interact with KRAB-ZFPs, MDM2, MM1, C/EBPb, etc. KAP-1's C-terminal PHD and Bromodomain is two integrated transcriptional repression domains, which interact with SETDB1, Mi-2a and other proteins to form complexes with histone deacetylase or methyltransferase activity. In addition, KAP-1 can interact with HP1s (heterochromatin protein 1) and then bind to histones via its HP1BD which is a small segment in the central region of KAP-1. It is indicated by many researches that KAP-1, a scaffold protein in transcription regulation, mainly acts as a corepressor in many repression complexes. Meanwhile, it also acts as a coactivator sometimes. It is reported that KAP-1 related transcription regulation complexes exert functions essen-tial for spermiogenesis and early embryo development. This regulation is one pattern of epigenetic regulations.</P>

Key words KAP-1 transcriptional intermediary factors gene expression regulation epigenetics.

DOI: 10.1360/yc-007-0131

通讯作者 贺福初 hefc@nic.bmi.ac.cn