

综述

lncRNAs参与基因表达调控机制的研究进展

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摘要:

长链非编码RNAs (long non-coding RNAs, lncRNAs)是一组内源性、长度超过200 nt、缺少特异完整的开放阅读框(open reading frame, ORF)、无或很少有蛋白编码功能的RNAs分子。近年来的研究发现, lncRNAs与许多重要的生物学过程相关, 如基因组印记、细胞分化、免疫反应等。lncRNAs在表观遗传水平、转录水平和转录后水平等多个

层面调节基因的表达, 通过介导染色质重塑和组蛋白修饰、干扰转录、调节选择性剪接模式、生成小RNAs、调节蛋白质活性、改变蛋白质定位等方式, 参与机体生长、发育、衰老及死亡等重要生命活动的调控。关于lncRNAs参与基因表达调控的机制有待进一步研究, 这将有助于深入理解疾病的发病机制, 为寻找疾病分子标记物、药物靶点提供新的方向。

关键词: lncRNAs 表观遗传调控 转录调控 转录后调控

Advances in regulation of gene expression mediated by lncRNAs

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Abstract:

Long non-coding RNAs (lncRNAs) are a group of endogenous RNA molecules which exceed 200 nt in length, lack complete specific open reading frame, and completely lack or possess very limited protein-coding capacity. Recent studies have revealed that lncRNAs participate in critical processes such as genomic imprinting, cell differentiation, and immune reaction, etc. lncRNAs regulate gene expression at the epigenetic, transcriptional and post-transcriptional levels by modulating chromatin remodeling and histone modifications, interfering the transcription, regulating patterns of alternative splicing, generating small RNAs, and modulating protein activation and localization. Through their numerous functions, lncRNAs play critical roles in the growth, development, senescence, death, and other important physiological and pathological processes. Further investigation into the regulation of gene expression mediated by lncRNAs will be of great value in the thorough understanding of pathogenesis and provide new molecular markers and drug targets of diseases.

Keywords: lncRNAs epigenetic regulation transcriptional regulation post-transcriptional regulation

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