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cncRNAs : Bi-functional RNAs with protein coding and non-coding functions

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Abstract

For many decades, the major function of mRNA was thought to be to provide protein-coding information embedded in the genome. The advent of high-throughput sequencing has led to the discovery of pervasive transcription of eukaryotic genomes and opened the world of RNA-mediated gene regulation. Many regulatory RNAs have been found to be incapable of protein coding and are hence termed as non-coding RNAs (ncRNAs). However, studies in recent years have shown that several previously annotated non-coding RNAs have the potential to encode proteins, and conversely, some coding RNAs have regulatory functions independent of the protein they encode. Such bi-functional RNAs, with both protein coding and non-coding functions, which we term as '*cncRNAs*', have emerged as new players in cellular systems. Here, we describe the functions of some cncRNAs identified from bacteria to humans. Because the functions of many RNAs across genomes remains unclear, we propose that RNAs be classified as coding, non-coding or both only after careful analysis of their functions.

Contents