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IDENTIFICAÇÃO E CARACTERIZAÇÃO DE "TRANSCRITOS IMUNES A RNAI": O PAPEL DAS CARACTERÍSTICAS TERMODINÂMICAS

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RNA interference (RNAi) is a natural post-transcriptional gene silencing process that mediates antiviral defense, control of transposon mobilisation, heterochromatin formation and regulation of gene expression. RNAi is triggered by long double-stranded RNA molecules (dsRNAs), which are recognised by an enzyme named DICER and processed into small interfering RNAs (siRNAs). These short RNA duplexes are transferred into a complex named RISC, where one strand is destroyed (referred as to the passenger strand) while the other is kept (referred as to the guide strand). Loaded RISC then patrols the cytoplasm searching for perfect complementary sequences, which are then cleaved (i.e., silenced). Using computational simulations and thermodynamic analyses we found that "RNAi-immune transcripts", i.e., sequences not amenable for RNAi silencing, are restricted to 10 nucleotides in length. This finding shows that no naturally occurring viral or transposon-derived sequence can systematically evade RNAi system through thermodynamic modifications. Characterisation of such "immune sequences" are presented and their probable roles within naturally occurring transcripts are discussed.

RNAi - Defesa antiviral - Silenciamento genico