Poster: RNA Silencing

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These noncoding genes, found in nearly every eukaryotic organism, are often highly spreading with the gene silencing machinery, as a countermeasure to attenuate host antiviral defenses. Plant and likely animal cells direct siRNAs to suppressors of gene silencing, which interfere with RNA silencing machinery to inhibit genes and proteins by cleaving mRNA through the RISC complex.

MicroRNAs are small, noncoding RNAs that target and inhibit protein synthesis by cleaving targeted mRNAs. They regulate a wide range of biological pathways, including development, metabolism, and immune response. MicroRNAs are involved in the control of gene expression through a mechanism known as post-transcriptional gene silencing (PTGS). They are encoded by genes within the genome and are processed into mature microRNAs by the microRNA processing pathway. The mature microRNAs are then incorporated into the RNA-induced silencing complex (RISC) and can bind to complementary sequences on target mRNAs, leading to their degradation.

In fruit flies, RNAi-associated mechanisms play a role in controlling gene expression through the phenomenon known as transposon silencing. This process involves the mobilization and integration of transposable elements into the genome, leading to the production of novel transcripts. The resulting transcripts can then be recognized by the RNA silencing machinery, resulting in the silencing of the transposable element and the production of new proteins that may further disrupt gene expression.

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