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Sense vs antisense rna

Messenger RNA (mRNA) is single-stranded. Its sequence of nucleotides is called sense because it results in a gene product (protein). Normally, its unpaired nucleotides are read by transmitting RNA anticodons as the ribosome continues to translate the message. Figure 11.9.1 Sense Strand Dock, RNA can form duplexes just like DNA does. All that is needed is a second part of RNA whose sequence of bases is a complement to the first string. Example 5' C A U G 3' mRNA 3' G U A C 5' Antisense RNA The second string is called the antisense string because its sequence of nucleotides is complemented by message feeling. Figure 11.9.2 Antisense RNA When mRNA forms a duplex with an additional antisense RNA sequence, the translation is blocked. This can happen because the ribosome cannot access nucleotides in mRNA or because duplex RNA is rapidly broken down by ribonukleaser in the cell. Using recombinant DNA methods, synthetic genes (DNA) that encode antisense RNA molecules can be introduced into the organism. Most tomatoes that need to be delivered to the market are harvested before they are ripe. Otherwise, eten synthesized by the tomato causes them to mature and destroy before they reach the customer. Transgenic tomatoes have been designed which in its genome carries an artificial gene (DNA) that is transcribed into an antisense RNA that complements mRNA for an enzyme involved in ethean production. These tomatoes make only 10% of the normal amount of the enzyme. The goal of this work was to provide supermarket tomatoes with slightly closer appearance and flavor of tomatoes harvested when ripe. However, these tomatoes were often damaged during transport and handling and have been removed from the market. Fig.11.9.3 Tobacco Flower Flower of a tobacco plant carrying a transgenic whose transcript is antisense to one of the mRNAs needed for normal flower pigmentation. Figure 11.9.4 Transgenic flower Flower of another transgenic plant that has not had its normal pigmentation altered. There are several methods for inserting genes into plants, including infecting plant cells with plasmid vectors that carry the desired gene that shoots microscopic pellets containing the gene directly into the cell Unlike animals, there is no real difference between somatic cells and settcells. Somatic tissues of plants, e.g. If all goes well, the transgene will be incorporated into pollen and eggs and passed on to the next generation. In this regard, it is easier to produce transgenic plants than transgenic animals. Do cells contain genes that are naturally translated into antisense RNA molecules that can block the translation of other genes in the cell? The answer is yes, and these seem to represent another regulation of gene expression. In both mice and humans, the gene for the insulin-like growth factor 2 receptor (Igf2r) inherited from the father synthesizes an antisense RNA that appears to block the synthesis of mRNA for Igf2r. An inherited difference in the expression of a gene depending on whether it is inherited from the mother or father is called genomic or parental imprinting. In testing effects of antisense RNA, one should use sense RNA of the same coding region as a control. Surprisingly, preparation of emotion RNA often proves to be as effective an inhibitor as antisense RNA. Why? It seems that the preparation of feeling RNA is often contaminated with

