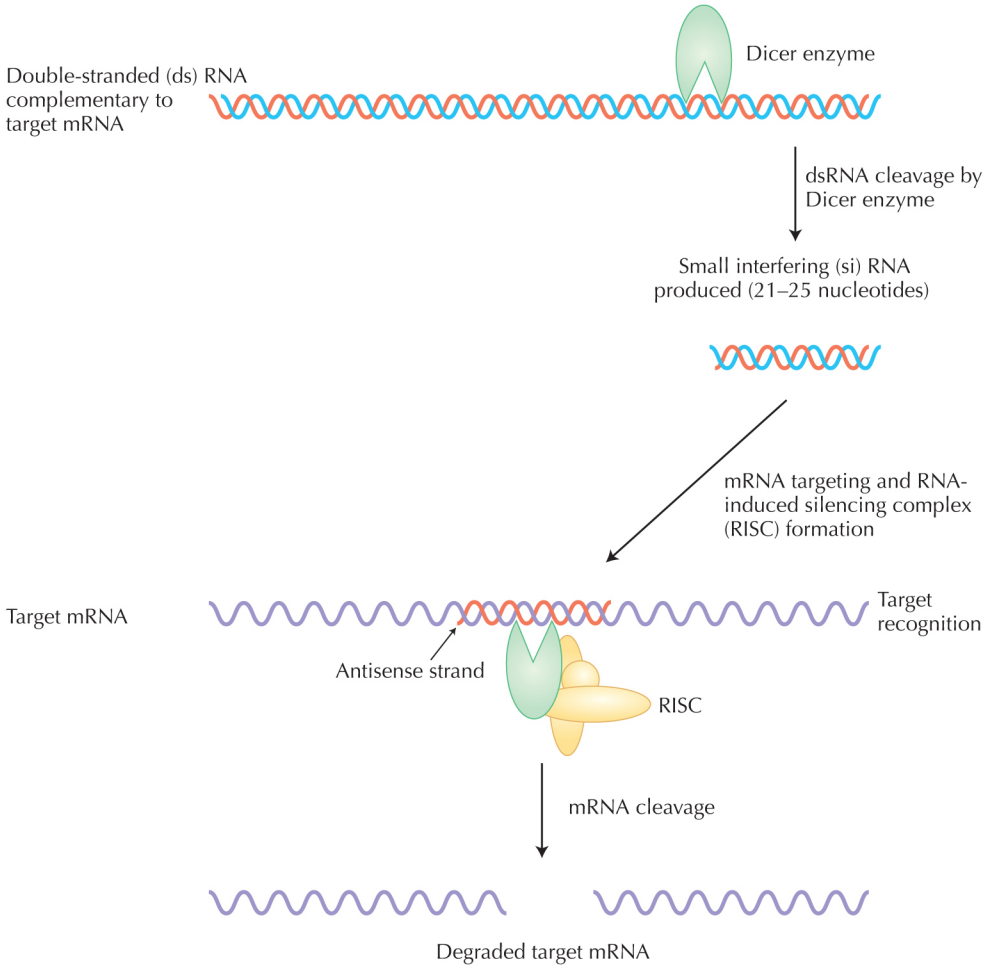

FIGURE 9.25. In many organisms, the introduction of double-stranded RNA complementary to a target mRNA is an efficient way to test the function of a gene. The double-stranded RNA can be introduced into an organism by any of several means, including injection, soaking, or even feeding. Once inside the cell, the double-stranded RNA is cleaved by the Dicer enzyme into 21–25-nucleotide fragments called small interfering RNAs (siRNAs). The antisense strand of the siRNA complexes to the target mRNA sequence along with the RNA-induced silencing complex (RISC) protein complex. The target mRNA is then cleaved and degraded. In this way, gene function can be "knocked down" and the effect on the organism observed. Using this technique, it is possible to screen through thousands of genes for developmental phenotypes and to begin to carry out genetic analyses in animals and plants not amenable to standard forward genetic approaches.

9.25, modified from McManus M.T. et al., *Nat. Rev. Genet.* **3:** 737– 747, © 2002 Macmillan, www.nature.com