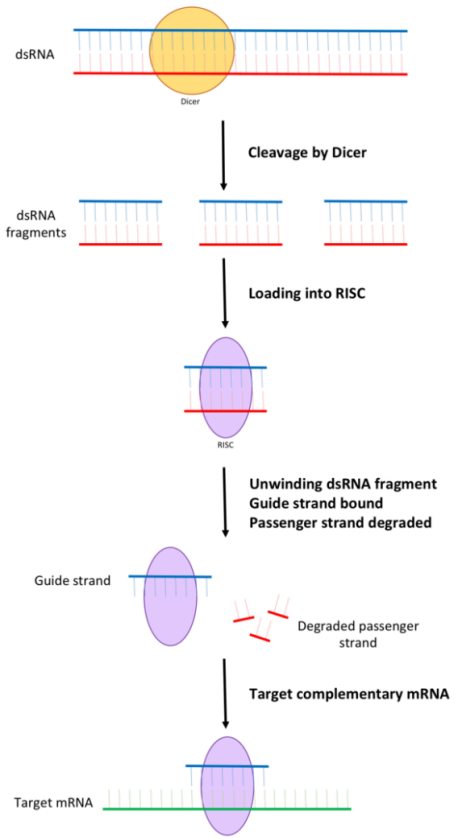
CONCEPT: RNA INTERFERENCE

- **RNA Interference (RNAi)** is a type of posttranscriptional regulation _____ through RNA
  - □ **miRNAs** are a single stranded RNA that targets the degradation of many different RNA transcripts
    - Initially, it is transcribed by RNA pol II as a part of a longer RNA
    - **Dicer** is an enzyme that cleaves pre-miRNA into a ~22 nucleotide miRNA
    - **RISC** complex binds the miRNA, which targets it to destroy a transcript
  - □ **siRNAs** are a double stranded RNA that targets the degradation of a specific transcript
    - Initially, it is transcribed within the gene it regulates
    - Dicer cleaves the pre-siRNA into the siRNA
    - RISC unwinds and binds the ds-siRNA, which targets it to destroy a specific transcript

EXAMPLE:



PRACTICE:

1. True or False: siRNAs target a variety of different RNA transcripts for degradation.
    a. True
    b. False

2. Which of the following enzymes are responsible for cleaving and processing miRNAs and siRNAs?
    a. DICER
    b. RISC
    c. Guide RNA enzymes
    d. RNA polymerase II

3. MiRNAs and siRNAs target degradation of RNA transcripts by binding to what?
    a. RNA polymerase II
    b. The gene promoter
    c. A gene transcript
    d. The spliceosome