CONCEPT: REGULATION OF TRANSPOSON MOVEMENT

● Regulation of transposon movement is not well understood

□ But, scientists have found that _____ RNAs can silence and stop transposon movement

□ The Tc1 transposon in *C. elegans* is present in somatic and germ cells, but only expressed in somatic cells

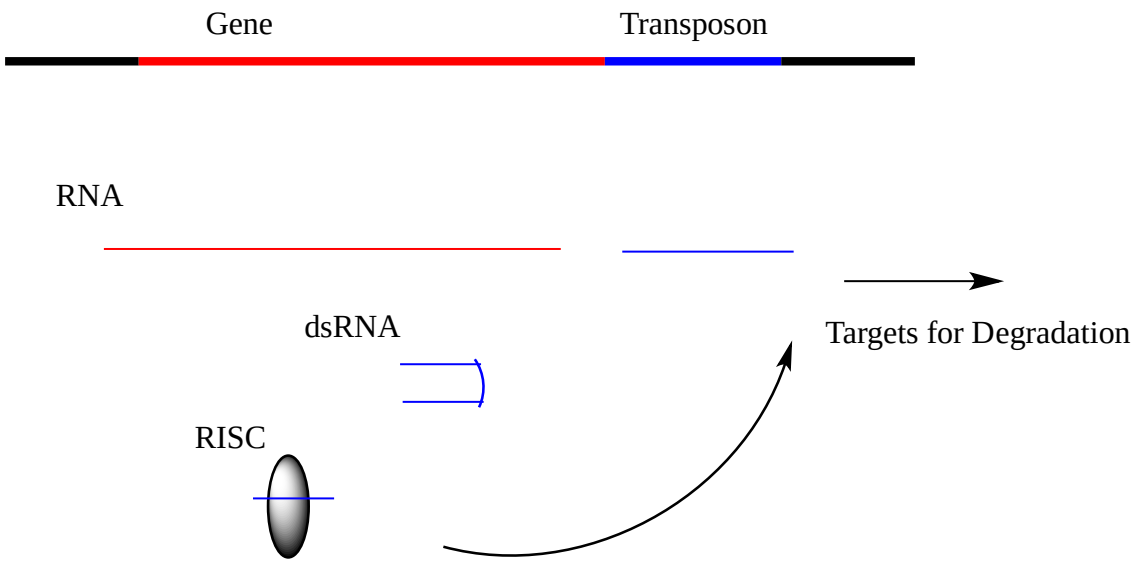
- Tc1 is transcribed as part of other genes

- Tc1 RNA contains repeated sequences that cause it to fold upon itself

- The cell recognizes dsRNA and causes DICER and RISC to process it (From RNA interference)

- When RISC binds the Tc1 processed RNA it targets it to degrade other Tc1 transcripts

EXAMPLE:



□ **piRNA** helps regulate transposons in _____

- **Pi-clusters** are >100kb of DNA that contain transposons that are transcribed

- These long RNA transcripts are processed and complexed with *argonaute*

- This complex travels around the cell degrading other transposons

□ **crRNA** helps regulate transposons and viral DNA in bacteria

- RNA from transposons or viruses are captured by **CRISPR**, which targets them for degradation

PRACTICE:

1. Which of the following molecules are known to be able to regulate transposon movement?
    a. DNA
    b. RNA
    c. Protein

2. Which type of RNA is known to regulate transposon movement in *C. elegans*?
    a. Tc1 RNA
    b. piRNA
    c. miRNA
    d. crRNA