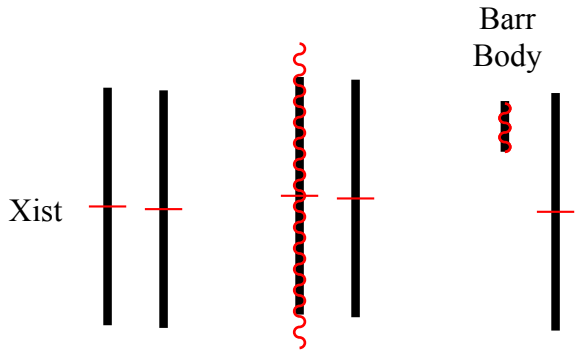
CONCEPT: X INACTIVATION

- **Dosage compensation** is a phenomenon where the gene expression of sex chromosomes is similar in both sexes
  - □ Dosage compensation makes up for the fact that different sexes have _____ chromosomal numbers
  - □ **X-inactivation** is the shut-down of on x chromosome (forms *barr body)*
    - **X-inactivation center (Xic)** on x chromosome that is required for inactivation
    - **Xist** gene produces an RNA molecule that coats the X chromosome and inactivates it
      - **Tsix** gene prevents X inactivation
    - *Xist* RNA molecule helps to recruit proteins to the X chromosome which form a Barr body

EXAMPLE:



PRACTICE:

1. Why must one of the X chromosomes in human females undergo X-inactivation?
    a. Because all X chromosome alleles are dominant
    b. Because of dosage compensation
    c. Because all X chromosome alleles are recessive
    d. Because the X chromosome is not needed for normal development

2. What is NOT a region on the X chromosome required for X-inactivation?
    a. Xic
    b. Xist
    c. Tsix