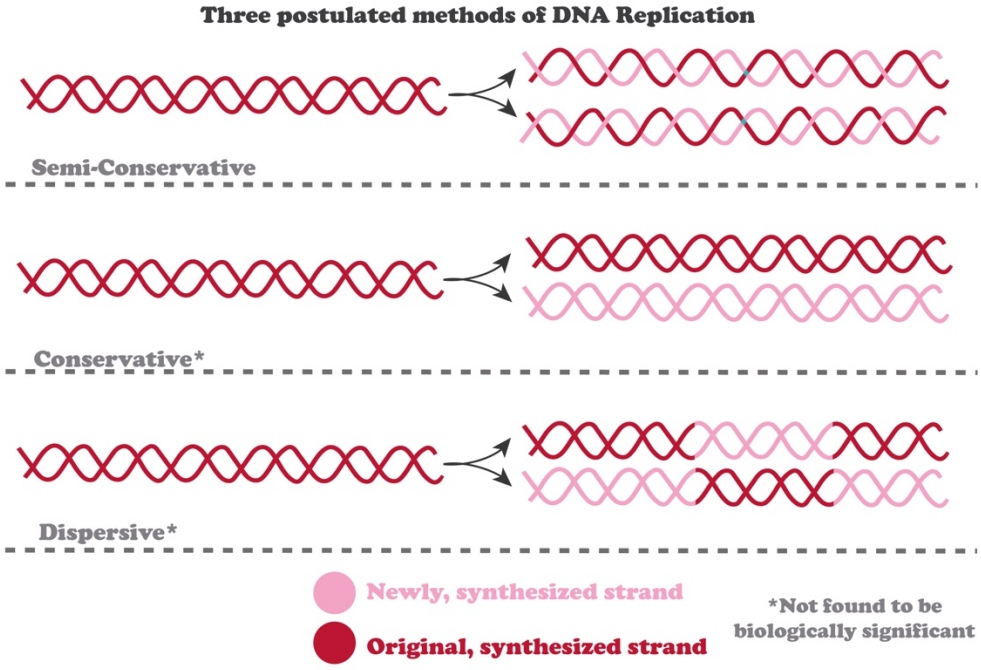
CONCEPT: SEMICONSERVATIVE REPLICATION

- Before replication was understood, there were three _____ of how DNA is replicated
  - □ **Conservative replication** states that after replication, there is one old strand and one new strand
    - The double helix separates, replicates, and the old helix reforms
  - □ **Dispersive replication** states that after replication the strands have some old sections and some new sections
  - □ **Semiconservative replication** states that each strand serves as a template for a new strand
    - After replication, each strand has one old strand and one new strand

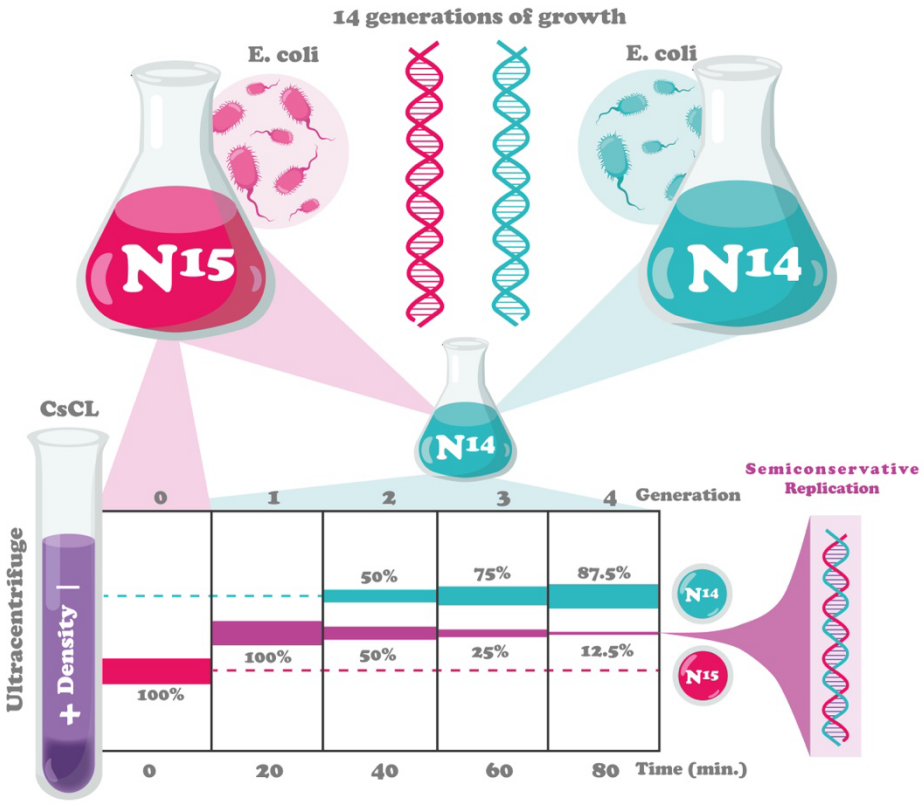
EXAMPLE:



- The **Meselson-Stahl** experiment showed that DNA replicates via _____ replication
  - □ Grew *E.coli* with heavy nitrogen (^{15}N)
    - All Nitrogen incorporated into the DNA was heavy nitrogen
  - □ Moved this *E.coli* into plate with normal nitrogen (^{14}N)
    - New DNA strands will have normal nitrogen and old DNA strand will have heavy nitrogen
  - □ After one round of replication there was only one band of a single, mixed weight
  - □ After two rounds of replication there were two bands: one band of mixed weight and one band of light weight
    - Suggested semiconservative replication
    - Conservative replication would have one heavy band, and one light band after one round of replication

- Dispersive replication would have one band of mixed weight after each round of replication

EXAMPLE:



PRACTICE

1. DNA is replicated through which method?
    a. Conservative replication
    b. Nonconservative replication
    c. Dispersive replication
    d. Semiconservative replication

2. Which of the following experiments showed that DNA replicated via semiconservative replication?

    a. Hershey/Chase

    b. Francis/Crick

    c. Meselson-Stahl

    d. T.H. Morgan