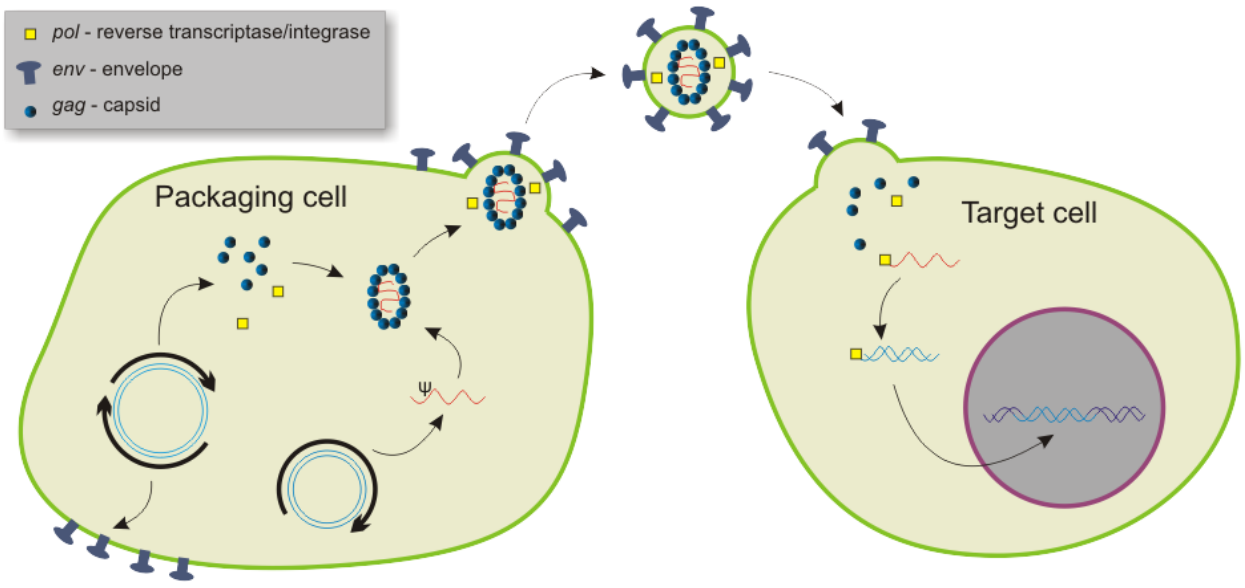
CONCEPT: DNA TRANSFER INTO CELLS

- Often, scientists need to be able to transfer DNA _____ cells
  - □ **Transfection** is the process of transferring DNA molecules into cultured cells
    - Process can use chemicals, electricity (electroporation), or microinjection
  - □ **Transduction** is viral-mediate gene transfer of DNA into cells
    - Use retrovirus that has been genetically engineered to contain the DNA of interest
    - Infection of the virus causes the DNA to enter the cell
    - **Stable transformation** occurs when the DNA is integrated into the host cell genome
  - □ **Transgenic organisms** are organisms that have been genetically altered in some way
    - Includes addition of **transgenes** (foreign or modified genes)
    - Includes **knockouts**, which is when a gene has been inactivated or deleted

EXAMPLE: Transduction and stable transformations



PRACTICE:

1. Which of the following methods uses electricity to get DNA into cells?
    a. Transfection
    b. Transduction
    c. Stable Transformation
    d. Transgenic Organism Creation

2. Which of the following methods can allow for foreign DNA to integrate into the host cell genome and remain there for extended periods of time?
    a. Transfection
    b. Transduction