CONCEPT: DNA LIBRARIES

● **DNA libraries** are collections of DNA _____

□ A **genomic library** is a collection of genomic DNA fragments

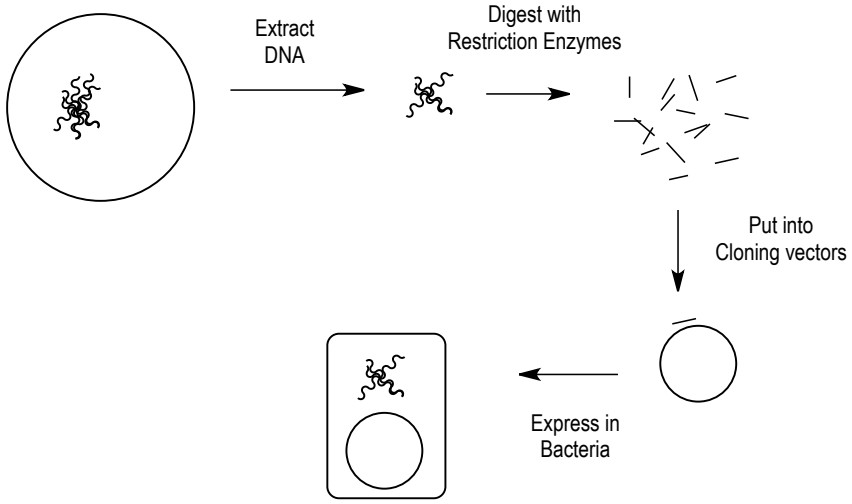
- Cut an organisms genome with restriction enzymes into many fragments

- Put these fragments into **yeast artificial chromosomes** which can accommodate large DNA fragments

  - Up to 1 million base pairs

- Then you can sequence these fragments, express them in bacteria or other organisms, etc…

EXAMPLE:



□ A **cDNA library** is a collection of DNA fragments that represent the mRNA transcribed in the cell

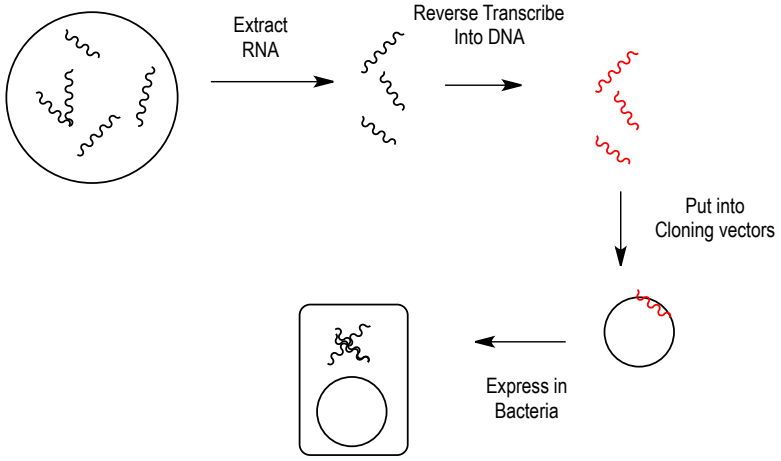
- Start by isolating _____ of an organism (represents the genes being expressed)

- Reverse transcribe into DNA (all exons are gone)

- Put this DNA into bacteria

- Sequence to determine what genes are being expressed (constantly changing under different conditions)

EXAMPLE:



PRACTICE:

1. Which of the following libraries consists of DNA that represents the mRNA in the cell?
    a. Genomic library
    b. cDNA library
    c. RNA library
    d. Protein library