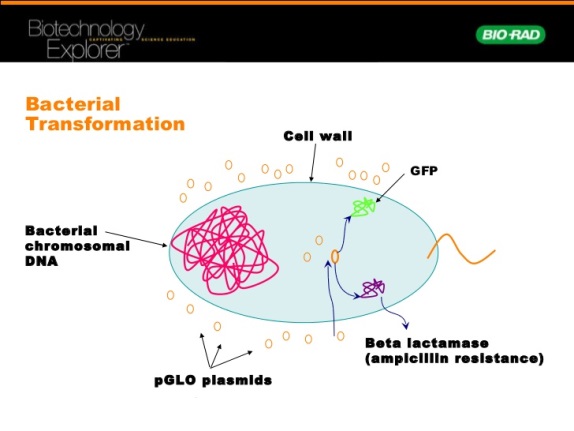
**MCB2010L –Microbiology Lab**

**Exercise 13: The effects of Temperature on Growth**

* + Physical and chemical environment have effects on growth of bacteria.
  + The effect of temperature on growth of bacteria is most commonly linked to the effect of temperature on enzyme structure and activity within bacterial cells.
  + Optimum temperature is a temperature at which the enzyme functions at its highest rate. The permanent alteration of enzyme structure with loss of function is called denaturation.
  + Psychrophiles: -5°C up to 20°C.
  + Mesophiles: 20°C up to around 45°C
    - Room temperature mesophiles
    - Body temperature mesophiles
  + Thermophiles: 45° or higher
  + Work in group of 4; procedure – page 82
    - Obtain 4 TSA plates per group.
    - Mark the bottom of the plate with permanent marker to divide the plate into four quadrants. Label four quadrants for *B. stearothermophilus*, *E. coli*, *Ps. fragi*, and *S. marcescens.*
    - Straight streak each organism in corresponding quadrants (Figure 13-2).
    - Incubate 4 plates at different temperature (5°, 25°, 37°, and 55°).

**Exercise 14: Transformation in Bacteria**

* + Genetic recombination in bacteria; conjugation, transduction, and transformation.
  + Transformation: direct uptake and incorporation of exogenous DNA from the environment.
  + Plasmid: extrachromosomal small circular DNA found in bacteria.
  + Plasmids often contain genes that are helpful to bacteria.
  + Plasmids can be used in biotechnology as a vector in recombinant DNA technology.
  + Work in group of 6; procedure – page 88-89.

[](http://www.google.com/url?sa=i&rct=j&q=&esrc=s&source=images&cd=&cad=rja&uact=8&ved=0CAcQjRxqFQoTCJejk-3J98cCFUHWHgod1_8K_Q&url=http://www.slideshare.net/MillsCbst/pglo-tutorial-english&psig=AFQjCNEjx2VxvxbAUKCm2AxFe2NkFpFgFg&ust=1442356167749028)