**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.

