

## **Bacterial Genetics and Physiology**

### **Plasmid biology and genetics**

**What is expected of you for the unit on plasmids.**

1. What is a plasmid?
2. How do plasmids replicate? (understand the 2 basic models of [RNA vs. protein regulators])
3. What is host range and how is it determined?
4. What is partitioning and how is it carried out?
5. What is incompatibility and how is it determined?
6. Conjugation -
  - a. What is conjugation?
  - b. What are the possibilities for ability to be conjugated?
  - c. What are the essential functions/steps?
  - d. Understand the three states of the F plasmid (F+, Hfr, F')?
  - e. Usefulness of conjugation in the lab.
7. Transformation
  - a. Definition
  - b. Natural vs. artificial transformation
  - c. Competence - definition, functions
  - d. Transfection - definition
  - e. Electroporation
  - f. Usefulness and limitations of transformation in the lab.
8. Principles of useful plasmid vectors, e.g., pBluescript, pUC, pGEX, pET, pCVD442