**Read the introductory material in the pGLO transformation lab and answer the questions that follow. This is considered your pre-lab and must be done before you can start lab on Wednesday!**

* 1. Why is gene regulation important for increased fitness in groups of organisms? (provide several examples)
  2. What is arabinose and why do bacteria need it?
  3. What is an operon (details please!)?
  4. What is the arabinose operon?
  5. What is PBAD?
  6. What is the function of araD?
  7. What is the function of araC?
  8. Describe exactly what happens when arabinose is present in the environment of *E. coli*.
  9. What is the pGLO plasmid?
  10. What is GFP?
  11. Describe/draw the structure of the pGLO plasmid.
  12. How does the structure of the plasmid ensure that the GFP protein is able to be produced in the correct environment?
  13. What is the bla gene?
  14. Draw a diagram/sequence of pictures that show the structure and function of the arabinose operon.
  15. What is transformation?
  16. Describe several examples of how transformation is used in biotechnology.
  17. What is the main objective of this lab?
  18. What are plasmids?
  19. How do plasmids help bacterial populations adapt to new environments?
  20. Describe how the terms “cloning” and “cloning vectors” are used in transformation technology.
  21. What is LB?
  22. Why is it important for bacteria to be spread out on an agar plate when they are beginning to grow?
  23. Answer questions 1-4 in pGLO lesson 1 in your lab.
  24. What are the three main steps of transformation? (see lab)
  25. Outline exactly what you will be doing in Lesson 2 in the lab.
  26. What is the purpose of the tube marked –pGLO?
  27. List how you will label the 4 agar plates in your lab. Explain the purpose of each.
  28. Answer the lesson 2 questions of the lab.