

Collected GEN interp answers

Spring 2005

## GEN Day 2 Interpretation Questions and Answers

1. Interpret your data. This includes:
  - a. Day 1 plates – did all of the strains match your predictions from GEN Day 1?  
**Hopefully, their answers will match their predictions from Day 1 Interps. If not, possible reasons could be: a specific chemical in the plate went bad/wasn't working (i.e. Cm plates!) or that they didn't predict correctly, in which case hopefully their results made them consider why this might be.**
  - a. growth curves using OD<sub>550</sub> and CFU/mL for both types of media  
**Obviously the M9 curve from their own data won't be spectacular, but make sure that the LB one and the M9 one from the sample data is done correctly.**
  - a. comparison of the data obtained from the two kinds of media  
**They should compare the doubling times of the cells in each media and how many CFU correlate to 1 unit of OD<sub>550</sub>. The doubling time in LB should be faster than the doubling time in M9.**
  - a. how many CFU is equivalent to 1 unit of OD<sub>550</sub>  
**This will depend on their data.**
1. If a transposon inserted into a gene for necessary for arabinose metabolism in one bacterium during your mutagenesis, a resulting white colony would grow on your Mac Ara Kan mutagenesis plates.
  - a. What would result on your Mac Ara Kan mutagenesis plates if a transposon inserted into a gene for necessary for mannose metabolism? Explain your answer briefly.  
**If the transposon inserted into a gene for mannose metabolism, a red colony would grow on the Mac Ara Kan plate, because the genes for arabinose metabolism are still fully functional and the cell could use the arabinose in the plate as a carbon source.**
  - b. What would result on your Mac Ara Kan mutagenesis plates if a transposon inserted into a gene for necessary for DNA replication? Explain your answer briefly.  
**If the transposon inserted into a gene for DNA replication, a colony would not form and you would see nothing on the plate, because DNA replication is an essential process.**
1. How can a strain of bacteria be phenotypically Lac<sup>-</sup>, but genotypically lacZ<sup>+</sup>?  
**A strain could be Lac<sup>-</sup> but lacZ<sup>+</sup> if the strain contained a functional *lacZ* gene, but contained mutations in other genes required for lactose metabolism, such as *lacY* or *lacA*. In this case, the bacteria would not be able to metabolize lactose because the entire *lac* operon was not functional.**