

SEED Academy, Spring 2009
Synthetic Biology Module

Pre-Lab #3
Due March 7, 2009

- 1) Watch this video about PCR (<http://www.sumanasinc.com/webcontent/animations/content/pcr.html>). Note that if you press the “Back” button at the bottom of the page, you will see a list of other animated tutorials. I think these give great introductions to each of these topics. If you watch the one on plasmid cloning (<http://www.sumanasinc.com/webcontent/animations/content/plasmidcloning.html>), you should feel pretty comfortable with the material by now (some terms may still feel a bit distant, but the concepts should be there). If not, let us know and we will help get you there.
- 2) List the three phases of a PCR cycle, what happens in each phase, and the relative temperature at which this occurs.
- 3) Indicate the complete recipe for the PCR reaction if you wish to add 1 Unit of Polymerase which is 2 Units/ μL . Your primer stocks are 50 μM and you desire 0.5 μM final concentration. The buffer is 10X concentration, the dNTPs stock solution is 10 mM and you want a final concentration of 100 μM :

Template	_____ μL
Buffer	_____ μL
Polymerase	_____ μL
dNTPs	_____ μL
Primers	_____ μL
Water	_____ μL
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Total	<u> 50 </u> μL

- 4) You will be PCR amplifying the part BBA_E0050. Go to the registry (<http://parts.mit.edu>) and find part BBA_E0050. What is this? What part (pun somewhat intended) will it play in your laboratory project?
- 5) Watch *this* video about PCR (<http://www.youtube.com/watch?v=x5yPkxCLads&feature=related>). This may actually help you with Number 2...