

Name: _____

Dr. Reichler's Bio 325-uex Spring 2009 Quiz 3/12

- 1) What might cause the DNA from two people to give the same pattern in RFLP analysis?
- 2) What are the four "ingredients" for doing PCR, and how does each "ingredient" allow DNA to be amplified?
- 3) What technique would allow you to determine in a few hours if some corn had been genetically modified with the Round-up resistance gene?
- 4) When preparing a eukaryotic gene for expression in bacteria, would you do PCR or reverse transcription first?
- 5) Would you be able to insert a gene cut with one restriction enzyme into a plasmid cut with a different restriction enzyme?
- 6) If you grew some transformed bacteria on X-gal, but forgot to put antibiotic, what color would you expect most of the bacteria to be?
- 7) How are bacteria used in the transformation of plants?
- 8) What is one advantage to modifying an organism by genetic engineering versus artificial selection?
- 9) Is the most common genetically modified crop used in the U.S. likely to lead to less chemicals being used in agriculture?
- 10) What is different about the unintentional spreading of agricultural chemicals compared to genetically modified plants?

Answers on next page:

Answers:

- 1) If the difference in their DNA is not in the sequence of the restriction enzyme used, or if they are identical twins.
- 2) Template DNA- will be copied. DNA polymerase- will do the copying. Nucleotides- raw material for making DNA. Primers- will direct the DNA polymerase where to begin copying.
- 3) Successful amplification of the Round-up® resistance gene by PCR using primers specific for this gene.
- 4) RT first to make the cDNA then PCR to amplify the gene you want to clone.
- 5) Not if the sticky ends do not match. Non-complementary sticky ends will keep the gene of interest and the plasmid from coming together for ligase to make covalent bonds.
- 6) White. Even the bacteria without the plasmid will survive, and no plasmid means no lacZ to make the blue color. There may be a few blue colonies representing transformed bacteria with the plasmid containing the intact lacZ gene.
- 7) We can use Agrobacterium to transform the plants.
- 8) Genetic engineering can occur rapidly while artificial selection takes several generations. Genetic engineering can introduce traits that do not already exist in the population.
- 9) No, herbicide resistant plants mean the farmers can apply more herbicides not less.
- 10) Chemicals are only spread by human use, while genetically modified plants can be spread by their own reproduction.