

Name: \_\_\_\_\_

Dr. Reichler's Bio 325-uex Summer 2008 Quiz 7/7

- 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?
- 11) What ethical and/or legal considerations might apply when patenting the use of a plant, or part of a plant?

Answers:

1) What might cause the DNA from two people to give the same pattern in RFLP analysis?

*If the difference in their DNA is not in the sequence of the restriction enzyme used, or if they are identical twins.*

2) What are the four “ingredients” for doing PCR, and how does each “ingredient” allow DNA to be amplified?

*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) What technique would allow you to determine in a few hours if some corn had been genetically modified with the Round-up resistance gene?

*Successful amplification of the Round-up® resistance gene by PCR using primers specific for this gene.*

4) When preparing a eukaryotic gene for expression in bacteria, would you do PCR or reverse transcription first?

*RT first to make the cDNA then PCR to amplify the gene you want to clone.*

5) Would you be able to insert a gene cut with one restriction enzyme into a plasmid cut with a different restriction enzyme?

*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) 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?

*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) How are bacteria used in the transformation of plants?

*We can use Agrobacterium to transform the plants.*

8) What is one advantage to modifying an organism by genetic engineering versus artificial selection?

*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) Is the most common genetically modified crop used in the U.S. likely to lead to less chemicals being used in agriculture?

*No, herbicide resistant plants mean the farmers can apply more herbicides not less.*

10) What is different about the unintentional spreading of agricultural chemicals compared to genetically modified plants?

*Chemicals are only spread by human use, while genetically modified plants can be spread by their own reproduction.*

11) What ethical and/or legal considerations might apply when patenting the use of a plant, or part of a plant?

*Any of- Where did the information come from? Will this benefit the people who provided information? Is this already being used?*