

URI CMB 190
Issues in Biotechnology
Lesson 6: Study Guide

Name _____ Date _____

1. Of the following techniques, which would be most unlikely to be used in a biotechnology laboratory?

- (A) gel electrophoresis
- (B) PCR
- (C) DNA cloning
- (D) use of the Hubble telescope
- (E) antibiotic resistant bacteria

2. Many of the molecular reactions used in biotechnology occur in volumes less than a milliliter. A Pipetman is:

- (A) the new biomedical device made by tissue engineering and now used to treat the damaged blood vessels of heart attack victims
- (B) a radical group of bioengineered superheroes in the Hollywood movie GATTACCA
- (C) a molecular biology tool used in the lab to measure small volumes of liquid
- (D) a new type of bio-engineered crop plants that are drought tolerant
- (E) a new surgical tool used in to extract cancer cells

3. Gel Electrophoresis is used for:

- (A) the separation of molecules, DNA, RNA and proteins by charge and size
- (B) separation of various cell types in blood samples
- (C) viewing cells at a high magnification
- (D) as a home pregnancy test
- (E) fusing cells during the process for cloning animals

4. Every time a cell divides it copies all of its DNA. A method used commonly in many applications of biotechnology today is called PCR. PCR:

- (A) is used to study life on other planets
- (B) stands for the PolyChromal Repercussions that occur in cell division
- (C) is a type of digital processing used in DNA sequencing
- (D) uses a heat stable DNA polymerase to copy DNA
- (E) is a dangerous prescription drug

5. Basic Forensic principles include:

- (A) each of us is genetically unique
- (B) if enough genetic variation is tested, each of us can be uniquely identified
- (C) DNA is found in nearly all cells (blood, semen, hair, etc.)
- (D) DNA from an evidentiary sample can be matched with DNA from a suspect to implicate or exonerate
- (E) all of the above

6. Given DNA samples from three suspects, the victims DNA and DNA evidence from a crime scene the possible conclusions are:

- (A) suspect 1's DNA was at the scene; or suspect 2's DNA was at the scene; or suspect 3's DNA was at the scene
- (B) none were at the scene
- (C) multiple suspects were at the scene
- (D) data are inconclusive
- (E) any of the above

7. A method used to copy small amounts of DNA many times over was invented by Dr. Kary Mullis in the 1980s and is called PCR. PCR stands for:

- (A) Protein Chromosomal Replication
- (B) Polymerase Chain Reaction
- (C) Pipetman California Reaction
- (D) Peptide Catalytic Reactors
- (E) Polysaccharide Catalyst Repair

8. STR stand for:

- (A) Separation of Trans Replicators
- (B) Scientists for True Religion
- (C) Short Tandem Repeats
- (D) Standard Test for Recidivism
- (E) Seek To Reach assay

9. The development of Biotechnology is directly linked with Industry. Which of the following is not true?

- (A) the application of the biological sciences has largely moved from academia to the private sector
- (B) the application of biotechnology is driven by profits and the promise of profits
- (C) the distinction between Basic and Applied Science is often blurred
- (D) Basic Science is nearly immediately applied in today's biotech fields
- (E) Basic Science has not yet applied in any of today's biotech fields

10. The development of Biotechnology is:

- (A) driven by application
- (B) has been banned in Europe by governments in the EU
- (C) has disproven the Theory of Evolution
- (D) destroying medicine as we know it
- (E) finally leveling off

11. The process of creating genetically modified organisms (GMOs):

- (A) has been applied to salmon
- (B) has been applied to crop plants
- (C) has not been commercialized for beef
- (D) has been not demonstrated in peer review journals to cause health issues
- (E) all of the answers shown are correct