**A Murder on Midway Street!**

***Research Guide***

 ***(ONLY ANSWER QUESTIONS RELATED TO YOUR SELECTED CAREER)***

**Entomology:**

1. What is Forensic Entomology?

2. What are the three areas that broad field Forensic Entomology is broken down into?

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3. The \_\_\_\_\_\_\_\_\_\_\_ area focuses on the criminal component of the legal system and deals with the necrophagous (or carrion) feeding insects that typically infest human remains.

4. The \_\_\_\_\_\_\_ area deals with the insects that affect man and his immediate environment. This area has both criminal and civil components as urban pests may feed on both the living and the dead.

5. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ insects are commonly found in foodstuffs and the forensic entomologist may serve as an expert witness during both criminal and civil proceedings involving food contamination.

6. It is theorized that the stings (or mere presence) of bees and wasps may be responsible for a large number of single occupant car accidents that seem to lack a definitive cause. Some accident studies have shown insects to be within the top \_\_\_ causes of automobile accidents.

7. Insects can affect the \_\_\_\_\_\_\_\_\_\_\_ of blood spatter pattern analysis. Roaches simply walking through pooled and splattered blood will produce \_\_\_\_\_\_\_\_ that may not be readily recognizable to the untrained observer.

8. Some insects have evolved a gradual or "\_\_\_\_\_\_\_\_\_\_\_\_" development in which there is an egg that hatches into an immature or "\_\_\_\_\_\_\_", which resembles the adult form, but is smaller and lacks wings.

9. Most forensically important insects undergo a complete or "\_\_\_\_\_\_\_\_\_\_" development. There is an \_\_\_\_\_ stage which hatches into a larval form and undergoes a stepwise or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ growth.

10. Why are Forensic Entomologists usually called in to homicide investigations?

11. How do Forensic Entomologists use insects to estimate time since death?

12. The \_\_\_\_\_ of human blood can be recovered from the \_\_\_\_\_\_ tract of an insect that has fed on an individual. How does the presence of this within an insect help in an investigation?

13. What should observations of the scene take note of?

14. What are the steps for collecting meteorological data from the scene?

15. What information should be recorded on Collection Labels for specimen vials?

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**Serology**:

1. How do you collect pools of blood?

2. In what ways can dried blood stains be collected as evidence?

3. List the types of body fluid given as examples that can be used as evidence.

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4. What common tools are used to collect body fluid samples as a part of a "blood collection kit"?

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5. How can blood spatter help in solving a crime?

6. What is the ABO System?

7. Who discovered the first antibody test for ABO blood groups?

 -When?

**Genetics:**

1. When was Forensic DNA analysis first used in U.S. courtrooms?

2. What are the steps in Forensic DNA analysis?

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3. In what types of evidence can you find DNA?

4. In the past, DNA analysis required an evidence sample at least the size of a \_\_\_\_\_\_. Today's techniques can multiply the DNA, producing millions of copies from tiny amounts of evidence, such as the \_\_\_\_\_\_\_ from a \_\_\_\_\_\_\_\_\_\_\_.

5. Will blood relatives have similar DNA? When will someone not have all unique base pairs of DNA?

6. What steps does The National Research Council recommend laboratories take to prevent human error?

7. What percentage of rape suspects are eliminated by DNA evidence?

8. If you have a DNA match, is it important to examine more types of evidence? Why?

9. What project aims to exonerate prisoners wrongfully convicted of crimes?

10. What steps does a prisoner have to go through to be exonerated?

11. How many prisoners have been exonerated by this project?

 -What were some of the special cases?

12. How many states restrict the time period for post-trial DNA submission?

 - What is the time limit?

13. What factors influence the success of DNA profiling in criminal cases?

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14. Do you think DNA evidence should continued to be used as evidence in criminal cases?

**Trace Evidence:**

 **Fingerprints:**

1. What are the three main types of fingerprint patterns?

 1.

 2.

 3.

2. Describe a loop pattern and list the two subtypes. What percentage of fingerprints are loops?

3. Describe a whorl pattern and list the four subtypes. What percentage of all fingerprints are whorls?

4. Describe an arch pattern and list the two subtypes. What percentage of all fingerprints are arches?

5. What is a delta?

6. What are the three ways that fingerprints are classified?

 1.

 2.

 3.

7. When are fingerprints formed?

 -Do they ever go away? What is the exception?

8. Have 2 fingerprints ever been found alike? What about on the same individual? How many years has this been tested?

 **Trace Evidence:**

1. What is trace evidence?

2. List four examples of types of trace evidence.

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3. What is lifting?

4. A vacuum cleaner equipped with a filter trap is used to recover trace evidence from an item or area describes a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

5. Trace evidence can be recovered from fingernails by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

6. What kind of microscope can magnify up to 100,000 times the original?

7. A \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is a professional chemist who analyzes any trace evidence brought in from crime scenes.

8. An understanding of what fields of science is important to work with trace evidence?

9. What type of courses should you take if you are interested in working with trace evidence?