

# DIGGING DEEPER! A FORENSIC STUDY GUIDE ON DNA TESTING

1. DNA is an acronym for what?  
A. DEOXYNUCLEIC ACID  
B. DERIBONUCLEIC ACID  
C. DEOXYRIBONUCLEIC ACID  
D. DEOXYRIBONUCLEIC ACTION  
ANSWER:   C
2. Occasionally, DNA is shown as a matrix of 4 letters: A, C, G, and T. These are abbreviations for the 4 basic building blocks that make up DNA. What is the "A" an abbreviation for?  
A. ADENINE  
B. AGLUTININE  
C. ASPARTAME  
D. ASCORBIC ACID  
ANSWER   A
3. What is the "C" an abbreviation for?  
A. CYTOPLASM  
B. CHLOROFORM  
C. CYTOSINE  
D. CORTIZONE  
ANSWER:   C
4. What is the "G" an abbreviation for?  
A. GLIBUROL  
B. GLOBURINE  
C. GUANINE  
D. GATANNA  
ANSWER:   C
5. What is the "T" an abbreviation for?  
A. THIAMINE  
B. THIAZINE  
C. THYMINE  
D. THIGH  
ANSWER:   C
6. Repeating units within the DNA strand are called what?  
A. Similar Duplicate Strands (SDS)  
B. Variable Number Tandem Repeats (VNTR)  
C. Redundant Unit Number Strands (RUNS)  
D. Partial Chain Characteristic Similarities (PCCS)  
ANSWER:   B
7. Forensic DNA profiling was first developed in what year?  
A. 1974  
B. 1984  
C. 1994  
D. 2004  
ANSWER:   B
8. Who first developed Forensic DNA profiling?  
A. Sir Walter Raleigh  
B. Sir William Love  
C. Sir Thomas Moore  
D. Sir Alec Jeffreys  
ANSWER:   D
9. Individual markers used to distinguish between various samples are called what?  
A. Alleles  
B. Chromosomes  
C. Genes  
D. X-Factors  
ANSWER:   A
10. The United Stated DNA Database is known as what:  
A. AFIS  
B. NRA  
C. CODIS  
D. DNABase  
ANSWER:   C
11. What does the Acronym selected in 10 stand for?  
Combined DNA Index System
- 
12. In the United States, how many core loci are used to distinguish genetic differences?  
A. 10  
B. 13  
C. 16  
D. 21  
ANSWER:   B
13. According to the FBI, what are the approximate odds of 2 random people having the same DNA?  
A: 1 in 3 Million  
B: 1 in 3 Billion  
C: 1 in 3 Trillion  
D: 1 in 3 Quadrillion  
ANSWER   C
14. Which of the following are NOT acronyms for various types of DNA testing:  
A: RFLP  
B: PCR  
C: Y-STR  
D: X-STR  
E AmpFLP  
F: mtDNA  
ANSWER:   D
- 15: What method of DNA testing is used for extremely degraded samples?  
A: Ninhydrin  
B: Mitochondrial  
C.: Metformin  
D: Amstar Grid Analysis  
ANSWER:   B
- 16 Individuals with 2 complete sets of genes may provide false exclusion in Forensic DNA profiling. These types of people are known as:  
A: Albinos  
B: Chimeras  
C: Mutants  
D: Dwarfs  
ANSWER:   B

# DIGGING DEEPER! A FORENSIC STUDY GUIDE ON SEROLOGY

1. Antigens involved in the typing of blood are located where?
 

A. Inside the Red Blood Cells	C. Within the Blood Serum	ANSWER: <u>  B  </u>
B. On the Surface of the Red Blood Cells	D. In the Platelets	
  
2. Antibodies, on the other hand, are found where?
 

A. Inside the Red Blood Cells	C. Within the Blood Serum	ANSWER: <u>  C  </u>
B. On the Surface of the Red Blood Cells	D. In the Platelets	
  
3. Regarding Blood Type AB individuals, which of the following Statements are True?
 

A. Possess both A and B Antigens	D. Possess neither A or B Antibodies	ANSWER: <u>  E  </u>
B. Possess neither A or B Antigens	E. A & D above	
C. Possesses both A & B Antibodies	F. B & C above	
  
4. TRUE or FALSE: An individual with Type AB Blood can receive Blood from any Blood group without ill effects.
 

ANSWER :   T
  
5. Which of the following is / are true regarding Individuals with Type O Blood:
 

A. Have both A & B Antigens	D. Can receive blood from anyone without rejection	ANSWER: <u>  F  </u>
B. Have both A and B antibodies	E. A & D Above	
C. Can donate Blood to anyone without rejection	F. B & C Above	
  
6. Which of the following is / are true regarding Type B blood?
 

A. Have type A antigen	C. Can Donate Blood to Type B or AB Blood	ANSWER: <u>  C  </u>
B. Have antibodies against Type B antigen	D. Can Receive Blood from Type B or Type AB	
  
7. TRUE or FALSE: Blood Type can also be identified using saliva or semen samples.
 

ANSWER:   T
  
8. The reaction that defines the Blood Type is called:
 

A. Coagulation	C. Solidification	ANSWER: <u>  B  </u>
B. Agglutination	D. Sublimation	
  
9. ABO blood types are further stratified by adding either a + or a – behind the Blood type. This symbol is known as the Rh factor. What does the abbreviation “Rh” stand for?
 

A. Really Hot	C. Rhesus Factor	ANSWER: <u>  C  </u>
B. Relatively High	D. Rhetorical Value	
  
10. The Rh antigen, if present, is located in which chromosome?
 

A. 1 <sup>st</sup>	C. 11 <sup>th</sup>	ANSWER <u>  A  </u>
B. 7 <sup>th</sup>	D. 16 <sup>th</sup>	
  
11. The Rh Factor becomes critically important in which of the following processes
 

A. Unborn Fetus	C. Blood Transfusion – Recipient	ANSWER <u>  A  </u>
B. Pregnant Mother	D. Organ Transplant – Donor	
  
12. In the case of Rh incompatibility, which symptom(s) might the patient present with?
 

A. Anemia	D. Dyspnea	ANSWER: <u>  E  </u>
B. Jaundice	E. All of the Above	
C. Edema	F. None of the Above	
  
13. Which of the following cannot be identified through blood spatter analysis?
 

A. Direction and speed of Victim before the injury	C. Direction and speed of the Victim after the injury	ANSWER: <u>  A&amp;D  </u>
B. Direction and speed of the Victim at the time of the injury	D. Direction and speed of the Assailant	
  
14. TRUE or FALSE: The larger the gun, the larger the blood droplets.
 

ANSWER:   F
  
15. Which of the following are NOT accepted acronyms in classifying blood spatter?
 

A. LVIS	C. MISS	ANSWER <u>  C  </u>
B. MVIS	D. HVIS	
  
16. Another name for Red Blood Cells is:
 

A. Leukocytes	C. Erythrocytes	ANSWER <u>  C  </u>
B. Platelets	D. Agglutinant	

## DIGGING DEEPER! A FORENSIC STUDY GUIDE ON ENTOMOLOGY

1. Typically, the first type of insect to arrive at a death scene would be:  
A. Beetle  
B. Maggot  
C. Fly  
D. Moth  
ANSWER:   C
2. Blow Flies have been known to "smell" expired victims from:  
A. 100 yards away  
B. 1000 yards away  
C. 1 mile away  
D. 10 miles away  
ANSWER:   D
3. Match the common name with the Order:  
A. Lepidoptera  
B. Hymenoptera  
C. Coleptera  
D. Diptera  
E. Psychodidae  
F. Acari  
ANSWERS: Fly:   D   Beetle:   C   Moth:   A   Wasp, Ant, and Bees   B
4. Nearly every Forensic report that deals with Entomology will use the acronym "PMI." What does this mean?  
A. Pre Meditated Interval  
B. Post Mortem Indicator  
C. Post Mortem Interval  
D. Pre Mature Investigation  
ANSWER:   C
5. Stages within the life cycle of various insects are called:  
A. Morphisms  
B. Cocoonia  
C. Instars  
D. Bollists  
ANSWER   C
6. Which of the following is / are NOT primary stage(s) of decomp?  
A. Fresh Bloated mummification  
B. Bloated mummification  
C. Putrefaction  
D. Black putrefaction  
E. Butyric fermentation  
F. Dry decay  
ANSWER:   B
7. TRUE or FALSE: The decomposition process is sped up on victims that perished with cocaine in their system  
ANSWER:   T
8. TRUE or FALSE: The decomposition process is suppressed on victims that perished due to Arsenic poisoning.  
ANSWER:   T
9. Excessive fat content has what effect on decomposition?  
A. Speeds it up  
B. Slows it down  
C. Has no effect  
D. Increases odor  
ANSWER:   A

## DIGGING DEEPER! A FORENSIC STUDY GUIDE ON BALLISTICS

1. Bullets are measured by "Caliber". The definition of a 'caliber' is:  
A. Portion of a Centimeter  
B. Number of Millimeters  
C. Portion of an Inch  
D. None of the Above  
ANSWER   C
2. Which is the larger diameter projectile?  
A. .45 Caliber  
B. .38 Caliber  
C. .22 Caliber  
D. .357 Caliber  
ANSWER   A
3. Unique distinguishing features left on a projectile as it leaves the barrel are called:  
A. Ridges and Valleys  
B. Lands and Grooves  
C. Bifurcations  
D. Friction Ridges  
ANSWER   B
4. These unique features are left on the projectile by spiral ribs within the barrel called:  
A. Knurlings  
B. Twists  
C. Friction Ridges  
D. Riflings  
ANSWER   D
5. Spent brass casings are generally not found at the scene from which of the following types of guns?  
A. Automatics  
B. Semi-Automatics  
C. Revolvers  
D. Pump Guns  
ANSWER   C
6. Most projectiles are made from:  
A. Iron  
B. Copper  
C. Brass  
D. Lead  
ANSWER   D
7. A projectile that has been covered with another material is called:  
A. Jacketed  
B. Coated  
C. Hydro-shock  
D. Insulated  
ANSWER   A

# DIGGING DEEPER! A FORENSIC STUDY GUIDE ON FINGERPRINTS

1. What is the name given to the 10 to 16 points of a fingerprint used to compare to a database?  
A. Bifurcations  
B. Minutiae  
C. Dots  
D. Improvisations  
ANSWER:   B
2. The unpredictable array of fine detail found on pads of the hands and feet are called what?  
A. Friction Ridge  
B. Bifurcation  
C. Trifurcation  
D. Undulation  
ANSWER:   A
3. The first person to classify and document fingerprints in 1892 was:  
A. Rollie Fingers  
B. The Fresh Prints of Bellaire  
C. Sir Francis Galton  
D. Sir Walter Raleigh  
ANSWER:   C
4. A single ridge splitting into two ridges is call a:  
A. Fork  
B. Bifurcation  
C. Twinning  
D. Convergence  
ANSWER:   B
5. Fingerprints not visible to the naked eye are called:  
A. Latex  
B. Latent  
C. Lament  
D. Invisible  
ANSWER:   B
6. Prints on a porous surface such as paper were treated by turning them purple. The process used was probably:  
A. Cyano Acrylate Fuming  
B. Silver Nitrate Misting  
C. Iodine Fuming  
D. Ninhydrin Saturation  
ANSWER:   D
7. Which of the following tests require heat to develop the print?  
A. Cyano Acrylate Fuming  
B. Silver Nitrate Misting  
C. Iodine Fuming  
D. Ninhydrin Saturation  
E. A & B  
F. B & C  
G. A & C  
H. A & D  
ANSWER:   H
8. Which of the following is NOT a recognized fingerprint pattern?  
A. Loop  
B. Whorl  
C. Delta  
D. Arch  
ANSWER:   C
9. TRUE or FALSE: It is impossible for an individual to have more than two different types of fingerprints  
ANSWER:   F
10. The common database used throughout the United States to identify fingerprints is called:  
A. CODIS  
B. AFIS  
C. APIS  
D. COFIS  
ANSWER:   B
11. The 10-print card system developed in the early 1900s to classify fingerprints is called:  
A. The Henry System  
B. The George System  
C. The Alexander System  
D. The Fingerprint Classification System  
ANSWER:   A
12. A fingerprint pattern that opens to the inside of the arm is called:  
A. Radial  
B. Posterior  
C. Anterior  
D. Ulnar  
ANSWER:   A
13. Rigor Mortise is the temporary stiffening of the joints. The typical duration of the process is:  
A. 12 hours to 24 hors after death  
B. 6 hours to 36 hours after death  
C. 3 hours to 72 hours after death  
D. 1 hour to 96 hours after death  
ANSWER:   C
14. The science of Fingerprint Identification is also known as:  
A. Filangescopy  
B. Digitology  
C. Minutiaology  
D. Dactyloscopy  
ANSWER:   D
15. 3-D Fingerprints left in soft material such as wax or certain greases that identify ridge depths as well as width and length are called:  
A. Dimensional  
B. Plastic  
C. Latent  
D. Basal  
ANSWER:   B

# DIGGING DEEPER! A FORENSIC STUDY GUIDE ON CHEMISTRY

1. Resultant Chemical from mixing vinegar and baking soda  
A. Calcium Carbonate  
B. Sodium Hydrogen Carbonate  
C. Sodium Acetate  
D. Sodium Carbonate  
ANSWER:   C
2. If ingested, can cause high blood pressure:  
A. Lithium Chloride  
B. Sodium Chloride  
C. Potassium Chloride  
D. Calcium Nitrate  
ANSWER:   B
3. Primary chemical used in hand warmers and heat packs  
A. Calcium Carbonate  
B. Sodium Hydrogen Carbonate  
C. Sodium Acetate  
D. Sodium Carbonate  
ANSWER:   C
4. Primary chemical used in State sanctioned lethal injections  
A. Potassium Chloride  
B. Calcium Nitrate  
C. Lithium Chloride  
D. Sodium Acetate  
ANSWER:   A
5. One of the primary chemicals in the Oklahoma City bombing of 1995  
A. Lithium Chloride  
B. Calcium Sulfate  
C. Calcium Carbonate  
D. Calcium Nitrate  
ANSWER:   D
6. May be found in antiseptics, athlete's foot medicines, insecticides, and jewelry cleaners  
A. Boric Acid  
B. Ammonium Chloride  
C. Magnesium Sulfate  
D. Potassium Chloride  
ANSWER:   A
7. When mixed with water, this substance makes a non-newtonian paste called Oobleck  
A. Glucose  
B. Sucrose  
C. Cornstarch  
D. Calcium Carbonate  
ANSWER:   C
8. Which of the following Chemicals are NOT used in the production of fertilizer?  
A. Potassium Chloride  
B. Magnesium Sulfate  
C. Ammonium Chloride  
D. Calcium Nitrate  
ANSWER:   C
- Which of the following is soluble in water?  
A. Calcium Carbonate  
B. Calcium Nitrate  
C. Calcium Sulfate  
D. Cornstarch  
ANSWER:   B
- Used in the manufacturing of flux for aluminum brazing  
A. Lithium Chloride  
B. Potassium Chloride  
C. Sodium Chloride  
D. Ammonium Chloride  
ANSWER:   A
- Used in Peanut Butter jars and Salad Dressing bottles  
A. PMMA  
B. PETE  
C. HDPE  
D. PS  
ANSWER:   B
- Used in Grocery Store meat trays and football game hot chocolate cups  
A. PC  
B. PS  
C. PVC  
D. PP  
ANSWER:   B
- Used to make plexiglass such as ice rink walls  
A. PC  
B. HDPE  
C. PETE  
D. PMMA  
ANSWER:   D
- Used to make CDs, DVDs, and some optic lenses  
A. PC  
B. PS  
C. PVC  
D. PP  
ANSWER:   A
- Used to make plastic grocery bags and sandwich bags  
A. HDPE  
B. PP  
C. PS  
D. LDPE  
ANSWER:   D

# DIGGING DEEPER! A FORENSIC STUDY GUIDE ON REFRACTION

- The Physics Law that states " $\sin(\theta_1) / \sin(\theta_2) = \text{constant} = n_{\text{glass}}$ " is known as:  
A. Snell's Law  
B. Smell's Law  
C. Shell's Law  
D. Spell's Law  
ANSWER:   A
- The angle between the light striking the glass and the perpendicular plane to the glass is called:  
A. Occipital Angle  
B. Angle of Incidence  
C. Angle of Refraction  
D. Angle of Reflection  
ANSWER:   B
- The angle between the light as it passes through the glass and the perpendicular plane to the glass is called:  
A. Occipital Angle  
B. Angle of Incidence  
C. Angle of Refraction  
D. Angle of Reflection  
ANSWER:   C
- The perpendicular plane to the glass that the above angles are measured from is known as:  
A. Angular Baseline  
B. Perpendicular Baseline  
C. Refractory Baseline  
D. Normal Plane  
ANSWER:   D
- TRUE or FALSE: The Refraction Index of water is always less than the Refraction Index of Glass  
ANSWER:   T
- Which of the following types of glass would have the higher Index of Refraction?  
A. Albite Glass  
B. Crown Glass  
C. Lanthanum Glass  
D. Flint Glass  
ANSWER:   C
- Eyeglasses use the refractory principle to adjust the focal lengths within the eye to correct focal irregularities, although blue light will still have a shorter focal length than red light. This is known as:  
A. Spectrum Occlusion  
B. Chromatic Aberration  
C. Ultraviolet Variation  
D. Visible Light Adjustment  
ANSWER:   B
- In order to understand the concept of refraction, one must know the speed of light in air is:  
A. 186,000 feet / second  
B. 186,000 miles / hour  
C. 186,000 Km / minute  
D. 186,000 miles / second  
ANSWER:   D
- Light that is refracted through a prism can be separated into the various colors within the spectrum. This process is called:  
A. Dispersion  
B. Fractionalization  
C. Spectral Separation  
D. Rainbowism  
ANSWER:   A
- If light passed through a transparent media and the entrance angle does not equal the exit angle, which of the following statements must be true?  
A. The Media must not be totally transparent  
B. The Media must have the same Refractive Index as the air surrounding it  
C. The media must be thicker on one edge than the other  
D. The Light must not be full spectrum  
ANSWER:   C