



# ANSWER KEY

So... Why did Gil really Leave CSI?



Questions regarding the test can be directed to:  
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Recently, the Las Vegas Crime Lab was rocked by a scandal from within. Warlock Brown, a LVCSI employee, was found dead at the scene, shot in the chest with a small caliber gun on the way to his car, after finishing a double shift. Of course, there was the obligatory note the said *“Paybacks are hell, Ain’t They?”* His car was parked in the same lot that the other entire CSIs park in, which is a secured private lot, located a few hundred yards south of the office. His body was found face down the following morning, but time of death was determined as between 1:30 AM and 2:00 AM Tuesday morning based on liver temperature taken by the acting Coroner. Unfortunately, the body was found by a family of Coyotes several hours earlier, which were obviously quite hungry.

In recent weeks, Warlock had alienated the majority of his co-workers due to several personal problems involving gambling, drugs, and substantial debts to local loan-sharks. Several suspects have been detained for questioning:

**Gil Gruesome** – Gil heads up the second shift that typically starts at 4:30 PM, and ends at 1:30 AM; the busiest of the three shifts. He’s been upset with Warlock’s recent performance as both the quantity of work and quality of work has been suffering. Gil spent most of Monday in the office, reviewing evidence collected from a 477 at a local Casino Restaurant. Being the unique individual that he is, it only would make sense that he would have type AB- blood. When interrogated late Wednesday, Gil was wearing a puce colored cotton shirt.

**Katherine Billows** – Prior to working for the LVPD, Katherine worked in a local club as a dancer. She has worked for Gil for the past 8 years. She has had several “run-ins” with Warlock, the most recent involved a large sum of money that he borrowed from Katherine’s Father, who also happens to own a Casino on Fremont Street. Katherine has type A+ blood. When Katherine was interrogated prior to starting her shift Tuesday afternoon, she was wearing a white silk blouse with a stunning multicolor polyester shawl.

**Greg Slanders-** After receiving his degree, Greg spent 4 years in the Lab, analyzing evidence. After spending 4 years in a lab, he can honestly say that he has seen it all! About a month ago, Warlock was involved in a civilian shooting. Greg felt that he was forced to pick between loyalty and truth. He stood behind Warlock, allowing loyalty to take precedence, but has not had a good night’s sleep since. He has become increasingly agitated with his decision, especially since Warlock had obviously not changed his ways. Greg has type O+ blood. Greg was interrogated Wednesday morning, wearing a dapper looking wool tweed sport coat over a white polyester shirt.

**Nick Soaks-** Nick attended the Police Academy, and then attended UNLV majoring in forensic science. During his time at the police academy, Nick achieved the level of Expert Marksman, but lost interest in competitive shooting when his Roommate was found shot to death in an apparent suicide, supposedly due to guilt from pawning Nick’s sound system. Nick has type B+ blood. Nick was interrogated early Wednesday afternoon wearing a nylon windbreaker over a linen shirt.

**David Hedges-** David is the newest member of the Forensic Team, replacing Greg in the lab. After less than a month, there was a concern that the lab would need to be enlarged to house his oversized ego. In his own mind, David can do no wrong, and represents all the knowledge needed for a crime lab. If Hedges does not know the answer, then it’s not worth knowing. Hedges also holds his peers to the same high standards that he perceives himself to be at, which has caused him tremendous frustration when dealing with Warlock. Holding true to form, Hedges has type O- blood; the “perfect” donor. Hedges was the last to be interrogated on Thursday morning and immediately cracked, babbling on and on about how Warlock

had found out about his life in spandex as a transvestite. At the time of his interrogation, he was wearing a polyester shirt, as he shares an allergic reaction with Nick to cotton.

Crime Scene:



<b>SECOND SHIFT WORK RECORD BY CASE NUMBER /CALL CODE</b>	<b>4:30 to 5:30</b>	<b>5:30 to 6:30</b>	<b>6:30 to 7:30</b>	<b>7:30 to 8:30</b>	<b>8:30 to 9:30</b>	<b>9:30 to 10:30</b>	<b>10:30 to 11:30</b>	<b>11:30 to 12:30</b>	<b>12:30 to 1:30</b>
G. Guresome	09-12457	09-12457	09-12457	09-12457	Dinner	09-12457	09-12457	09-12463	09-12463
K. Billows	In Office	09-12458	09-12460	09-12460	Dinner	09-12457	09-12457	09-12464	09-12464
G. Slanders	09-12459	09-12459	09-12460	09-12460	Dinner	09-12462	09-12462	09-12465	09-12465
N. Soaks	09-12459	09-12459	09-12461	09-12461	Dinner	09-12461	09-12461	09-12465	09-12465
W. Brown	Late	09-12458	09-12461	09-12461	Dinner	09-12462	09-12462	09-12464	09-12464
D. Hedges	09-12457	09-12457	09-12457	09-12457	Dinner	09-12461	09-12461	09-12463	09-12463

CASE NUMBERS

09-12457	Code 477 -Evidence Review - Lab
09-12458	Code 62 - Fat Freddy's Bakery - Corner of Fremont and Main
09-12459	Code 64(g) - First National Bank
09-12460	Code 30(s) Right Aid Discount Drug Store- Henderson
09-12461	Code 51(b) "Salt of the Earth" Chloride Manufacturers
09-12462	Code 242 "Everything Plastic" Polymer Distributer
09-12463	Code 273 -Drive Through Wedding Chaple on the Strip
09-12464	Code 487 - Effervescent Ecstasy- Purveyors of Fine Carbonates
09-12465	Code 594 - Stan's Custom Statuary

## COMON POLICE CODES (As Furnished to all Rookie CSI Officers)

14 Ambulance in route	60 Aggravated burglary	243 Assault on Police Officer	537 Defrauding Innkeeper
15 Citizens holding suspect	62 Alarms	245 Assault with a Deadly Weapon	586 Illegal parking
17f Fugitive attachment	62b Simple burglary	261 Rape	586e Vehicle blocking Driveway
17m Municipal court attachment	62c Auto burglary	273 Assault on Person	594 Malicious mischief
17t Traffic attachment	62r Residential burglary	288 Lewd Conduct / Felony sex offense	602 Trespassing
18 Traffic incident	62s Safe burglary	314 Indecent exposure	602.5 Entry without consent
19 Drunk	63 Criminal Trespass	330 Gambling	603 Unlawful entry
20 Auto accident	63s Sit-in	311 Loud and Obscene	647 Vagrant
20a Airplane crash	64 Armed robbery	314 Indecent Exposure	647a Vagrant loitering in Public Place
20f Fatal accident	64g Armed robbery/gun	390 Drunk	647b Prostitution
20i Injury accident	64k Armed robbery/knife	390c Drunk in Vehicle	647c Begging
21 Complaint	65 Simple robbery	390d Drunk Unconscious	647d Loitering in Restroom
23 Traffic congestion	65p Purse snatching	404 Riot	647e Loitering Place to Place
24 Medical emergency	66 Extortion threats	407 Unlawful Assembly	647f Drunk
25 Call dispatcher	68 Unauthorized use of movable	415 Disturbing the Peace	647ff Drunk - enroute to Detox
26 Police officer	69 Possession of stolen goods	415b Investigate the Trouble	647g Prowler
27 Attempted crime	71 Issuing worthless checks	415c Disturbance - Children involved	647h Illegal Lodging
28 Inciting a felony	72 Forgery	415d Disturbance - Drunk involved	901 Ambulance Call
29 Death	80 Carnal knowledge of juvenile	415e Loud Music or Party	901a Ambulance Call - Attempted Suicide
30 Homicide	81 Indecent behavior with juvenile	415f Disturbance - Family	901b Ambulance Call - Drowning
30c Homicide by cutting	82 Prostitution	415g Disturbance - Gang	901c Ambulance Call - Cutting
30s Homicide by shooting	84 Pandering	417 Brandishing / Man with Gun	901d Ambulance Call - Drunk
34 Aggravated battery	87 Abortion	447 Arson	901g Ambulance Call - Gas
34s Shooting	89 Crime against nature	459 Burglary	901h Ambulance Call - Dead Body
35 Simple battery	90 Gambling	459a Burglar Alarm ringing	901k Ambulance has been dispatched
37 Aggravated assault	90c Gambling by cards	459s Burglar Alarm - Silent	901n Ambulance requested
38 Simple assault	90d Gambling by dice	464 Burglary with Explosives	901s Ambulance Call - Shooting
39 Negligent injury	91 Unlawful sale to minor	477a Arson	901t Ambulance Call - Traffic Accident
42 Aggravated rape	93 Cruelty to juvenile	480 Hit and Run - Felony	901y Request Ambulance if needed
43 Simple rape	94 Illegal use of weapon	481 Hit and Run - Misdemeanor	902 Accident
44 Aggravated kidnapping	95 Illegal carrying of gun	484 Petty theft	902h Enroute to Hospital
45 Simple kidnapping	95k Illegal carrying of knife	484f Fraudulent use of Credit Card(s)	902m Medical Aid needed
51 Aggravated arson	98 D.W.I.	484ps Purse Snatch	902t Traffic Accident
51b Bomb threat	99 Reckless operation	487 Grand theft	903 Aircraft Crash
52 Simple arson	100 Hit and run	487.2 Theft from Person or Purse snatch	904 Fire
52e Explosives	148 Resisting Arrest	488 Petty theft	910 Can handle detail
52f Fire	187 Homicide	496 Recieving stolen property	952 Report on conditions
54 Combustible materials	207 Kidnapping	502 Drunk driving - Misdemeanor	955 Detail under control
56 Criminal damage	211 Armed Robery	503 Auto theft	956 Detail incomplete, but available
58 Contaminated water	240 Assalt - Misdemeanor	505 Reckless driving	
59 Criminal Mischief	242 Battery	507 Public Nuisance	
957 Delayed response of ___ minutes			

## **EVIDENCE:**

Upon further examination, several key pieces of evidence were found on, next to, and under the corpse and summarized as:

### **Evidence Found at the Scene:**

- Evidence 1 – Note found tucked under the Victim’s body
- Evidence 2 – Trace powder collect from under his upper arm
- Evidence 3 – Trace powder collected from location of left thigh
- Evidence 4 – Powder found 10 cm above the location of the left hand
- Evidence 5 - Powder found 1.25 meters above the location of the left hand
- Evidence 6 –A powder found near the location of the Victim’s left wrist
- Evidence 7 – A powder found near the location of the Victim’s left palm
- Evidence 8 – Polymer found approximately 1 meter from the head of the victim that melted at 260 degrees F in the lab.
- Evidence 9 –Polymer found 50 cm to the left of the Victim’s side that melted at 230 degrees F. in the lab.
- Evidence 10 –A hair found 50 cm above the Victim’s head
- Evidence 11 –Blood stained piece of fabric recovered next to evidence blood spatter.
- Evidence 12 – Blood spatter recovered from the sidewalk, 1 meter above Victim’s head
- Evidence 14 – Bullet from Victim

### **Evidence Developed or collected in the Lab:**

- Evidence 13 - Partial latent Fingerprint found on the note
- Evidence 15 – Sample bullet from G. Gruesome’s firearm
- Evidence 16 – Sample Bullet from K. Billow’s firearm
- Evidence 17 – Sample bullet from G. Slander’s firearm
- Evidence 18 – Sample bullet from N. Stoke’s firearm
- Evidence 19 – Sample bullet taken from D. Hedges’ firearm
- Evidence A –Ink sample taken Gil Gruesome’s pen
- Evidence B – Ink sample taken from Katherine Billow’s pen
- Evidence C – Ink sample taken from Greg Slander’s pen
- Evidence D – Ink sample taken from Nick Soak’s pen
- Evidence E – Ink sample taken from David Hedges’ pen

## Qualitative Analysis:

### PART 3.a- Chemical Analysis (10 Points Each – 60 possible)

Using the Bunsen Burners and Chemical Indicators, Identify the following Powders:

- Evidence 2    \_\_\_\_\_ *Sodium Chloride* \_\_\_\_\_
- Evidence 3    \_\_\_\_\_ *Potassium Chloride* \_\_\_\_\_
- Evidence 4    \_\_\_\_\_ *Sucrose* \_\_\_\_\_
- Evidence 5    \_\_\_\_\_ *Corn Starch* \_\_\_\_\_
- Evidence 6    \_\_\_\_\_ *Sodium Hydrogen Carbonate* \_\_\_\_\_
- Evidence 7    \_\_\_\_\_ *Calcium Sulfate* \_\_\_\_\_

### PART 3.b- Polymer / Fiber Analysis (5 Points Each – 20 Points Possible)

Using the communal density liquids located at the front of the room, identify the following Polymers:

- Evidence 8    \_\_\_\_\_ *PETE* \_\_\_\_\_
- Evidence 9    \_\_\_\_\_ *LDPE* \_\_\_\_\_

Identify the following Fiber as human, dog, or cat:

- Evidence 10    \_\_\_\_\_ *HUMAN* \_\_\_\_\_

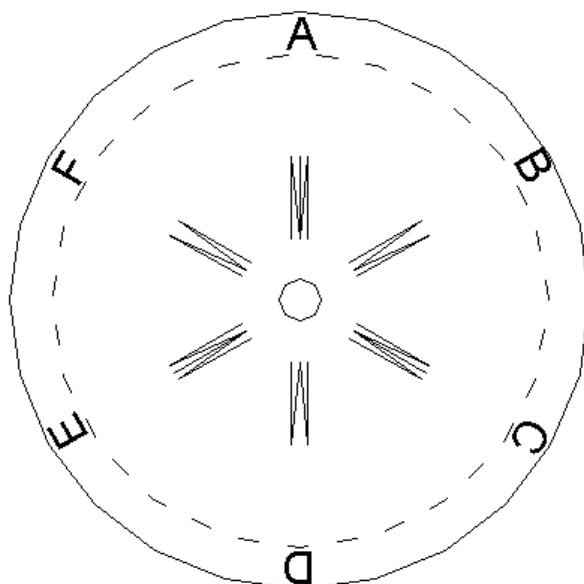
Identify the following fabric:

- Evidence 11    \_\_\_\_\_ *COTTON* \_\_\_\_\_

**PART 3.c- Chromatography (30 Points Possible)**

Using the chromatography disk provided, make your way around the room and request pens from each of the 5 suspects. Place the ink samples at approximately 60 degrees from each other, 1 cm from the center hole. Using an imaginary radial from the center hole through the ink sample to the outer edge, label the origins of the samples according to the following:

Note Sample	A
Gil Gruesome	B
Kathering Billows	C
Greg Sanders	D
Nick Soaks	E
David Hodges	F



Next, fill the container provided approximately  $\frac{3}{4}$  full with distilled water from your water bottle. Using the blank filter disk, roll it into a tube and insert it into the center hole to form a wick. Now place the lower end of the wick in the eluting solution, allowing the disk to lay flat across the rim of the container. The eluting solution will rise up the “wick” and move laterally into the disk, fractionalizing the samples. Do not allow the eluting solution to reach the labels for obvious reasons. Tape your completed chromatogram above.

Which pen was used to write the note?

*Greg Slanders*

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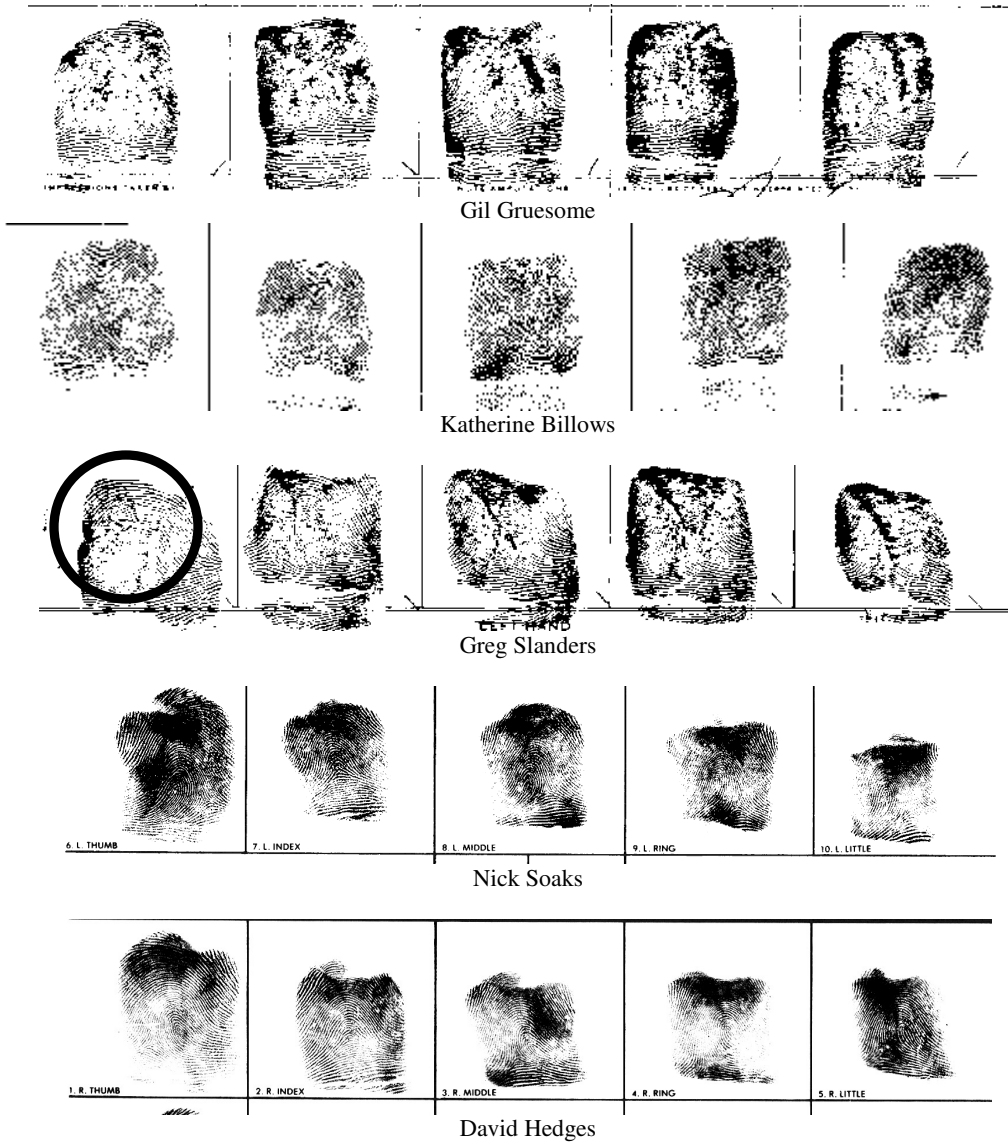
Explain why water tends to “wick” further and faster than alcohol

***Polar molecular structures wick faster than non-polar solvents. Water is much more polar than is alcohol***

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**PHYSICAL EVIDENCE**  
**PART 3.d.i – Fingerprints (10 Points)**



**EVIDENCE 13**

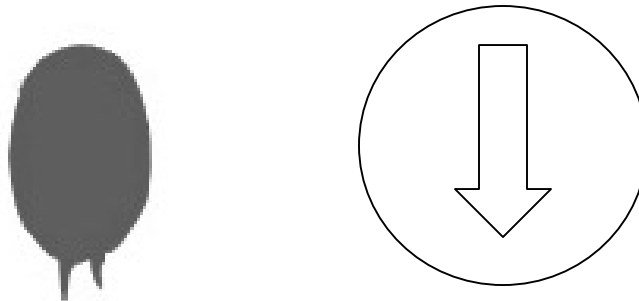


Partial Print recovered from obligatory note

Which Suspect matches the partial print? \_\_\_\_\_ Greg Slanders

**PART 3.d.viii – Serology (30 Points)**

At first glance, the knuckles on Warlock’s right hand were bloody, indicating that he may have gotten a punch or two in before he was shot, but after closer examination, the skin on his knuckles was not broken and the blood found on his knuckles was not his blood type, indicating that the suspect may have also been injured. Evidence 12 was blood spatter found near the Victim that Lab analysis indicates was not that of the Victim. Assuming it belonged to the Unsub, answer the following:



Indicate the direction the Unsub was traveling with a arrow in the circle next to spatter above  
Based on the pattern above, calculate the angle incidence assume the ground was level  
Show formulae used as well as all calculations:

$\text{Sin}^{-1}(\text{width}/\text{length}) = \text{AOI}$

Answer: \_\_\_\_\_40 Degrees\_\_\_\_\_

Assuming a linear trajectory, with no air friction, calculate the approximate velocity of the victim immediately after the shooting.

Show all calculations:

***The speed of the Victim would be “0”... he was dead on the ground... The suspect, on the other hand was bugging out FAST! But then, I didn’t ask for the Suspect Speed, did I?***

Answer: \_\_\_\_\_

What Blood type was the blood found on the sidewalk?

O

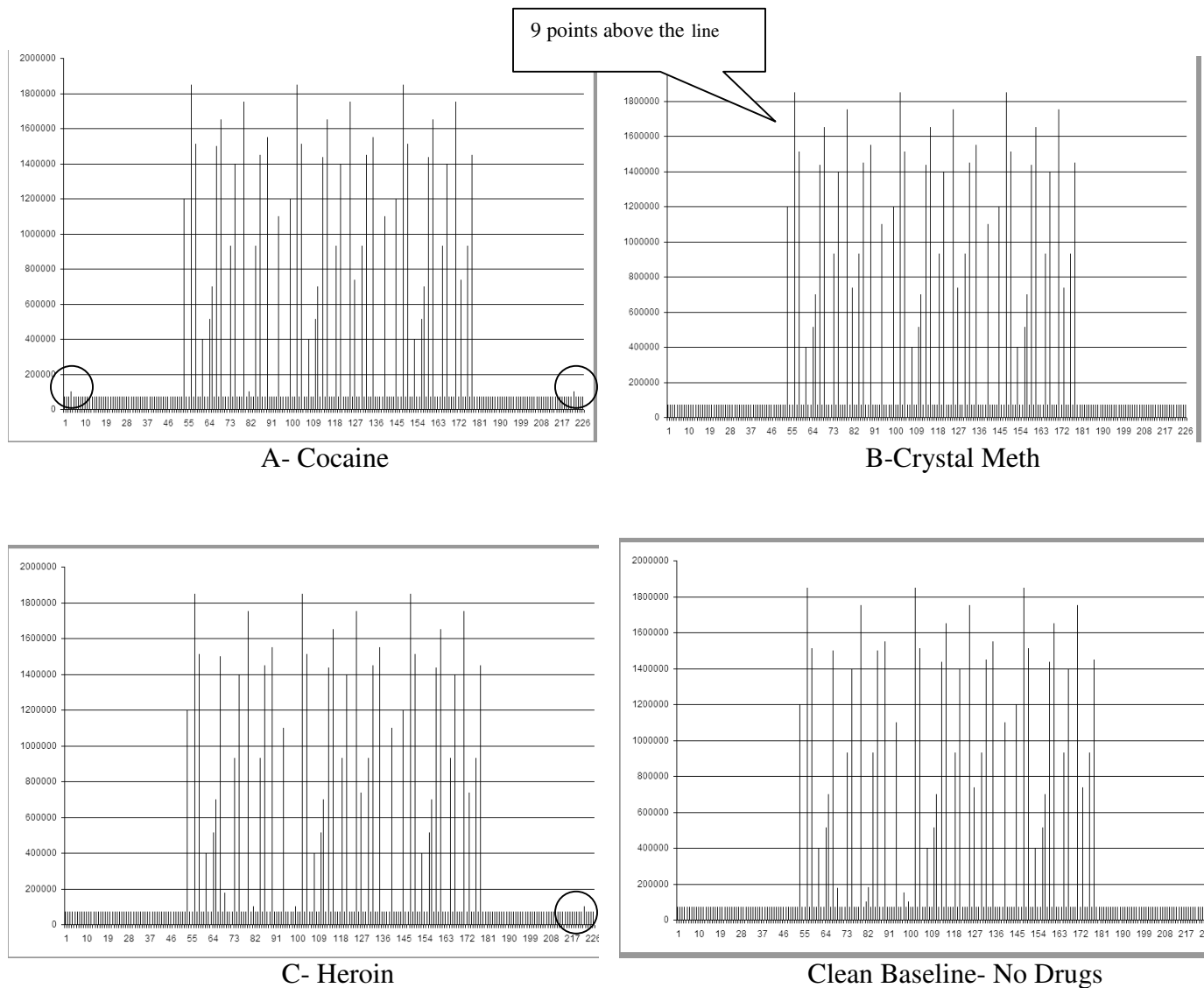
Which Suspects does the serology test exonerate?

Gill Gruesome, Katherine Billows, and Nick Soaks

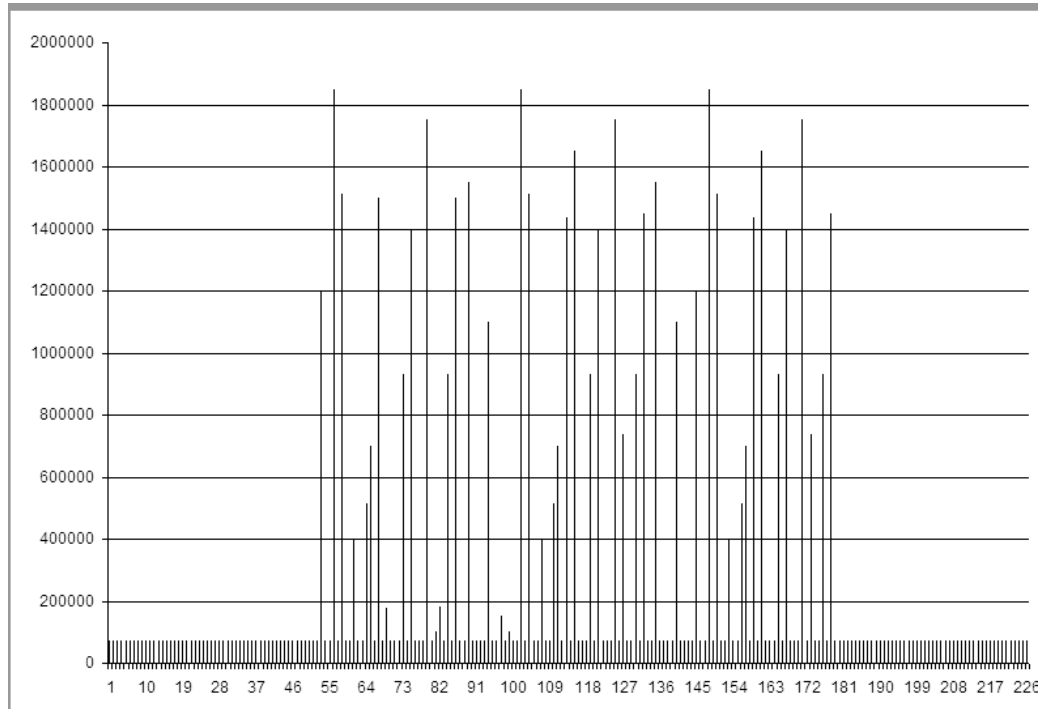
Which Suspects does the serology test implicate?

Greg Slanders and David Hedges

Due to his recent job performance, Warlock's blood was also tested for drug use. Review the following Spectrograms and determine if there were any drugs in his system:



Spectrogram produced from Warlock's blood:



What, if any drug was in Warlock's system? \_\_\_\_\_ *None* \_\_\_\_\_

**PART 3.d.ix – Ballistics (10 Points)**

Review the projectile labeled as Evidence 14 that killed the victim. Match this to one of the suspect bullets if possible.

Which projectile matches Evidence 14? \_\_\_\_\_ *Evidence 17 – Greg Slanders* \_\_\_\_\_

### **PART 3.e – Analysis of the Crime (120 Points Possible)**

Now tie it all together with a written essay not to exceed this page, front only.

*Evidence 1 was the note left under the body. Chromatography identifies the pen as a match to evidence C, a pen taken from the locker of Greg Sanders*

*Evidence 2 was common table salt that Warlock may have picked up from a meal, from the burglary investigation at Fat Freddy's, from the bomb threat at Salt of the Earth, or it may have been transfer from the suspect. His partners on these cases were Katherine Billows and Nick Soaks.*

*Evidence 3 was Potassium Chloride, which he may have picked when investigating the Salt of the Earth chloride Factory with Nick Soaks, or it may be transfer from Nick Soaks.*

*Evidence 4 was Sucrose – plain table sugar, which he may have picked up when eating lunch, or when investigating the burglary at Fat Freddy's with Katherine Billows, or it may be transfer from Katherine Billows.*

*Evidence 5 was Cornstarch, which he may have picked up when investigating the burglary at Fat Freddy's with Katherine Billows, or it may be transfer from Katherine Billows.*

*Evidence 6 was Sodium Hydrogen Carbonate a.k.a. Sodium Bi-Carb, the primary component of many tooth pastes, laundry detergents, cleaning and deodorizing agents, and is also used in cooking. This evidence may also come from Warlock's instigation of Effervescent Ecstasy, the Carbonate Factory with Nick Soaks, or it could have been transfer from Nick.*

*Evidence 7 was Calcium Sulfate. Compared to the rest of the evidence, a rather rare chemical, used to cast statues and casts (a.k. Plaster of Paris). The only exposure to this chemical through work would have been the team's investigation of the Malicious Mischief call at Stan's Custom Statuary. By checking the log, case number 09-12465 was responded to by Soaks and Slanders, not Brown, so the only way this chemical could have been found at the crime scene is by transfer from one of these two suspects*

*Evidence 8 and 9 were both polymers that were either picked up during his investigation of the Battery that occurred at the House of Plastics, transfer from Greg Slanders, his partner on the case, or ordinary litter found in any parking lot.*

*Evidence 10 was human hair, likely removed by the coyotes during their feast.*

*Evidence 11 was a blood soaked piece or fabric determined to be cotton. Both David Hedges and Nick Soaks are allergic to cotton, which eliminates them as suspects. We know that Gil was wearing a cotton shirt when interrogated, but that was nearly 2 days after the murder. Neither Katherine and Greg were wearing cotton at the time of the interrogation, but both interviews were well over a day after the murder giving both ample time to change.*

*Evidence 12 was blood spatter found on the sidewalk, analyzed as type O. Rh factors were not analyzed, so both Greg Slanders and David Hedges could be considered as suspects, while eliminating Gil, Katherine, and Nick as suspects.*

*...and "No" Warlock was not on drugs when he was shot.*

*Evidence 13 was a partial print identified as belonging to Greg Slanders*

*Evidence 14 was the bullet recovered from the victim, which matches Evidence 17, a bullet fired from the gum of Greg Slanders.*

*Clearly, Greg Slanders was the guilty party and apparently acted alone.*

**This is a "Bonus" Section that you can use as a Study Guide for Future Competitions- 1 Point Each**

**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 States' 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**

17. Antigens involved in the typing of blood are located where?  
 A. Inside the Red Blood Cells  
 B. On the Surface of the Red Blood Cells  
 C. Within the Blood Serum  
 D. In the Platelets  
 ANSWER:   B
18. Antibodies, on the other hand, are found where?  
 A. Inside the Red Blood Cells  
 B. On the Surface of the Red Blood Cells  
 C. Within the Blood Serum  
 D. In the Platelets  
 ANSWER:   C
19. Regarding Blood Type AB individuals, which of the following Statements are True?  
 A. Possess both A and B Antigens  
 B. Possess neither A or B Antigens  
 C. Possesses both A & B Antibodies  
 D. Possess neither A or B Antibodies  
 E. A & D above  
 F. B & C above  
 ANSWER:   E
20. TRUE or FALSE: An individual with Type AB Blood can receive Blood from any Blood group without ill effects.  
 ANSWER :   T
21. Which of the following is / are true regarding Individuals with Type O Blood:  
 A. Have both A & B Antigens  
 B. Have both A and B antibodies  
 C. Can donate Blood to anyone without rejection  
 D. Can receive blood from anyone without rejection  
 E. A & D Above  
 F. B & C Above  
 ANSWER:   F
22. Which of the following is / are true regarding Type B blood?  
 A. Have type A antigen  
 B. Have antibodies against Type B antigen  
 C. Can Donate Blood to Type B or AB Blood  
 D. Can Receive Blood from Type B or Type AB  
 ANSWER:   C
23. TRUE or FALSE: Blood Type can also be identified using saliva or semen samples.  
 ANSWER:   T
24. The reaction that defines the Blood Type is called:  
 A. Coagulation  
 B. Agglutination  
 C. Solidification  
 D. Sublimation  
 ANSWER:   B
25. 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  
 B. Relatively High  
 C. Rhesus Factor  
 D. Rhetorical Value  
 ANSWER:   C
26. The Rh antigen, if present, is located in which chromosome?  
 A. 1<sup>st</sup>  
 B. 7<sup>th</sup>  
 C. 11<sup>th</sup>  
 D. 16<sup>th</sup>  
 ANSWER   A
27. The Rh Factor is becomes critically important in which of the following processes  
 A. Unborn Fetus  
 B. Pregnant Mother  
 C. Blood Transfusion – Recipient  
 D. Organ Transplant – Donor  
 ANSWER   A
28. In the case of Rh incompatibility, which symptom(s) might the patient present with?  
 A. Anemia  
 B. Jaundice  
 C. Edema  
 D. Dyspnea  
 E. All of the Above  
 F. None of the Above  
 ANSWER:   E
29. Which of the following cannot be identified through blood spatter analysis?  
 A. Direction and speed of Victim before the injury  
 B. Direction and speed of the Victim at the time of the injury  
 C. Direction and speed of the Victim after the injury  
 D. Direction and speed of the Assailant  
 ANSWER:   A&D
30. TRUE or FALSE: The larger the gun, the larger the blood droplets.  
 ANSWER:   F
31. Which of the following are NOT accepted acronyms in classifying blood spatter?  
 A. LVIS  
 B. MVIS  
 C. MISS  
 D. HVIS  
 ANSWER   C
32. Another name for Red Blood Cells is:  
 A. Leukocytes  
 B. Platelets  
 C. Erythrocytes  
 D. Agglutinant  
 ANSWER   C

## DIGGING DEEPER! A FORENSIC STUDY GUIDE ON ENTOMOLOGY

33. Typically, the first type of insect to arrive at a death scene would be:  
A. Beetle  
B. Maggot  
C. Fly  
D. Moth  
ANSWER: C
34. 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
35. 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
36. 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
37. Stages within the life cycle of various insects are called:  
A. Morphisms  
B. Cocoonia  
C. Instars  
D. Bollists  
ANSWER C
38. Which of the following is / are NOT primary stage(s) of decomposition?  
A. Fresh Bloated mummification  
B. Bloated mummification  
C. Putrefaction  
D. Black putrefaction  
E. Butyric fermentation  
F. Dry decay  
ANSWER: B
39. TRUE or FALSE: The decomposition process is sped up on victims that perished with cocaine in their system  
ANSWER: T
40. TRUE or FALSE: The decomposition process is suppressed on victims that perished due to Arsenic poisoning.  
ANSWER: T
41. 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

42. 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
43. Which is the larger diameter projectile?  
A. .45 Caliber  
B. .38 Caliber  
C. .22 Caliber  
D. .357 Caliber  
ANSWER A
44. 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
45. 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
46. 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
47. Most projectiles are made from:  
A. Iron  
B. Copper  
C. Brass  
D. Lead  
ANSWER D
48. A projectile that has been covered with another material is called:  
A. Jacketed  
B. Coated  
C. Hydro-shock  
D. Insulated  
ANSWER A