

Arizona Department of Public Safety

DNA Evidence

Collection for Agencies

Chemically, DNA consists of repeating polymers of single units called nucleotides. Each nucleotide is composed of a phosphate group, a five-carbon sugar, and a nitrogenous base. The phosphate groups and sugars are linked together and are therefore not genetically informative. The nitrogenous base is one of four types of molecules called bases. The sequence of these four bases in the backbone that encodes information. This information is read using the genetic code. It is a specific sequence of the amino acids within proteins. The process of copying strands of DNA into the related messenger RNA, in a process called transcription.

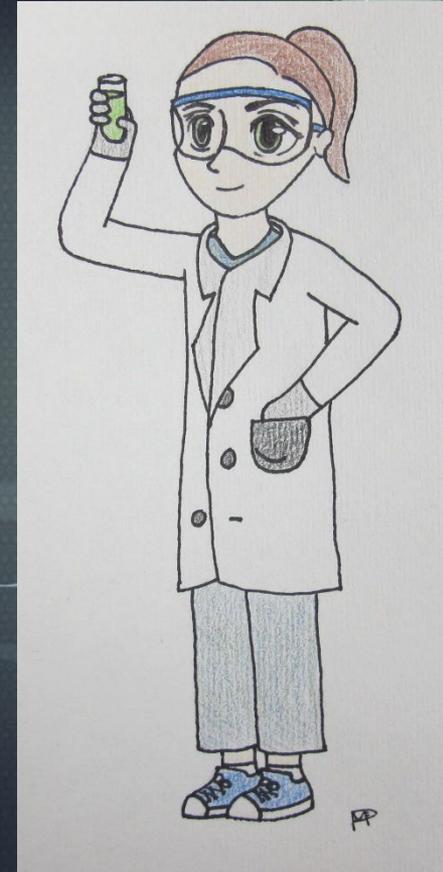
Within cells, DNA is organized into long strands called chromosomes. These chromosomes are replicated before cells divide, in a process called mitosis. Eukaryotic organisms, animals, plants, fungi, and protists store most of their DNA inside their cell nuclei and some of their DNA in organelles, such as mitochondria or chloroplasts. In contrast, bacteria and archaea store their DNA only as individual bacteria and archaea store their DNA only in the cytoplasm. Within the chromosomes, DNA segments that act as functional units and code for proteins such as functional compounds and enzymes are called genes. These complex units are genes, including related sequences of the DNA and associated proteins which parts of the DNA are transcribed.



Today's Presenters

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- Kim Kobojek
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Your friendly, neighborhood
Forensic Scientists



Evidence Collection and Submission



What can DNA do for you?

CSI Effect affecting you?

- We're here to help bridge the gap
- How to get your evidence processed instead of sent back
- What can/does the lab even do???

Chemically, DNA consists of repeating subunits of deoxyribose sugar, phosphate groups, and nitrogenous bases. The phosphate groups are attached to the 3' carbon of the deoxyribose sugar, and the nitrogenous bases are attached to the 1' carbon. The 2' carbon of the deoxyribose sugar is attached to a hydrogen atom, which is replaced by a hydroxyl group in RNA. The nitrogenous bases are attached to the 1' carbon of the deoxyribose sugar, and they are grouped into purines and pyrimidines. Purines are larger and have two rings, while pyrimidines are smaller and have one ring. The bases are connected to each other by hydrogen bonds, which hold the DNA double helix together. The sequence of the bases in a DNA molecule encodes the instructions for building a protein. The process of building a protein from a DNA template is called translation.

Chemically, DNA consists of repeating subunits of deoxyribose sugar, phosphate groups, and nitrogenous bases. The phosphate groups are attached to the 3' carbon of the deoxyribose sugar, and the nitrogenous bases are attached to the 1' carbon. The 2' carbon of the deoxyribose sugar is attached to a hydrogen atom, which is replaced by a hydroxyl group in RNA. The nitrogenous bases are attached to the 1' carbon of the deoxyribose sugar, and they are grouped into purines and pyrimidines. Purines are larger and have two rings, while pyrimidines are smaller and have one ring. The bases are connected to each other by hydrogen bonds, which hold the DNA double helix together. The sequence of the bases in a DNA molecule encodes the instructions for building a protein. The process of building a protein from a DNA template is called translation.

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Water cells. DNA is organized into long strands called chromosomes. These chromosomes are replicated before cells divide, in a process called mitosis. Eukaryotic organisms, animals, plants, fungi, and protists) store most of their DNA inside the cell nucleus and some of their DNA is organized in organelles such as mitochondria or chloroplasts. In contrast, prokaryotes (bacteria and archaea) store their DNA only in the cytoplasm. Within the chromosome, there are segments such as functional genes and regulatory elements. These compact DNA structures, including regions between DNA and other proteins, forming nucleosomes, which parts of the DNA are transcribed.

Communication

- We are here to start the conversation
 - Help us help you
- Please ask questions
 - Sticky notes

Chemical structure of DNA (Deoxyribonucleic acid) is a double helix. It is made up of two strands of DNA that are twisted around each other. The strands are held together by hydrogen bonds between the nitrogenous bases. The bases are attached to the sugar-phosphate backbone of the DNA molecule. The sequence of the bases along a strand of DNA encodes the genetic information. This information is used to synthesize proteins. The process of synthesizing proteins from the genetic code is called translation. The process of copying the DNA into the messenger RNA is called transcription.

Chemically, DNA consists of repeating polymers of single units called nucleotides. Each nucleotide is made up of a sugar and a phosphate group. The sugar and phosphate groups are linked together by phosphodiester bonds. The two strands run in opposite directions to each other and are therefore anti-parallel. Attached to each sugar is one of four types of nitrogenous bases. It is the sequence of these four bases along the backbone that encodes information. This information is read using the genetic code. It specifies the sequence of the amino acids within proteins. The order of the bases in the nucleotide sequence is what is used to copy the DNA into the messenger RNA, in a process called transcription.

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Within cells, DNA is organized into long structures called chromosomes. These chromosomes are replicated before cell division. In a process called mitosis, Eukaryotic organisms possess linear, double-stranded chromosomes. In contrast, prokaryotes have a single circular chromosome. In addition, many eukaryotes have small circular DNA molecules called plasmids. These plasmids are often used in genetic engineering. The process of copying the DNA into the messenger RNA is called transcription. The process of synthesizing proteins from the genetic code is called translation.

Housekeeping

- Bathroom location
- Class is broken into 3 parts
 - With breaks in between
- Class Materials Packet
 - Survey
 - Flow chart
 - Handouts

Chemical structure of DNA (Deoxyribonucleic acid) is a double helix. The DNA molecule is made up of two strands that are twisted around each other. The strands are made of a sugar-phosphate backbone and nitrogenous bases. The nitrogenous bases are attached to the sugar-phosphate backbone and are held together by hydrogen bonds. The sequence of the nitrogenous bases determines the genetic information. The DNA molecule is the blueprint for the synthesis of proteins. The DNA molecule is the master copy of the genetic information. The DNA molecule is the blueprint for the synthesis of proteins. The DNA molecule is the master copy of the genetic information.

Chemically, DNA consists of repeating polymers of single units called nucleotides. Each nucleotide is made up of a sugar, a phosphate group, and a nitrogenous base. The sugar and phosphate groups are attached to each other and are therefore called the sugar-phosphate backbone. The nitrogenous base is attached to the sugar. The sequence of the nitrogenous bases determines the genetic information. The DNA molecule is the blueprint for the synthesis of proteins. The DNA molecule is the master copy of the genetic information.

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Within cells, DNA is organized into long structures called chromosomes. These chromosomes are replicated before cell division. In a process called replication, Eukaryotic organisms have DNA inside the cell nucleus and some of their DNA is organized into mitochondria or chloroplasts. In prokaryotes, the DNA is organized into a single circular chromosome. The DNA molecule is the blueprint for the synthesis of proteins. The DNA molecule is the master copy of the genetic information.

Disclaimer

Please note: anyone from an agency that does not typically submit DNA evidence to the DPS laboratory system (i.e. Scottsdale PD, Phoenix PD, Mesa PD) be aware that this presentation will entail information that *is specific to the AZDPS crime lab submission guidelines and requirements.* *Your crime lab may have different requirements, recommendations and guidelines.*

Topics

- What is DNA?
- What can forensic DNA answer?
- Types of DNA samples
- Short Break-
- CODIS introduction
- Collection techniques
- Short Break-
- Packaging of evidence
- Request for Scientific Examination
- DNA lab workflow

Deoxyribonucleic acid (DNA) is a long molecule that carries the instructions for building and running an organism. It is made up of all known living organisms and is found in the nucleus of eukaryotic cells and in the main body of prokaryotic cells. DNA is often referred to as the blueprint of life because it contains the instructions needed to construct and control the cells, which in turn produce and RNA molecules. The cells or segments that carry this genetic information are called genes, but other DNA sequences have structural purposes, or are involved in regulating the use of a gene's information.

Chemically, DNA consists of two long polymers of single units called nucleotides. Each nucleotide is composed of three basic chemical building blocks: a phosphate group, a five-carbon sugar, and a nitrogenous base. The phosphate groups of one nucleotide are bonded to the sugars of the next nucleotide. These two strands run alongside each other and are therefore anti-parallel. Attached to each sugar is one of four types of nucleic acid bases: adenine, guanine, cytosine, and thymine. The bases pair with each other to form the genetic code. This code is read using the genetic code. It specifies the sequence of the amino acids within proteins. The order of the bases in the nucleotide sequence is what determines the order of the amino acids in the protein. This process is called transcription.

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Within cells, DNA is organized into long structures called chromosomes. These chromosomes are replicated before cells divide, in a process called replication. Eukaryotic organisms, animals, plants, fungi, and protists store most of their DNA inside the cell nucleus and some of their DNA in organelles such as mitochondria or chloroplasts. In contrast, bacteria and archaea store their DNA only in the cytoplasm. Within the chromosomes, chromatin proteins such as histones compact and organize DNA. These compact structures prevent the untangling and separation of individual chromosomes. These compact structures are also involved in the regulation of gene expression. The interaction between DNA and other proteins, including histones, which packs the DNA, is called chromatin.

Performance Objectives

1. Identify three sources of DNA
2. Identify CODIS eligible/not CODIS eligible evidence given scenarios
3. Demonstrate how to collect DNA from various types of evidence
4. Demonstrate how to properly fill out the AZDPS DNA Supplemental Form

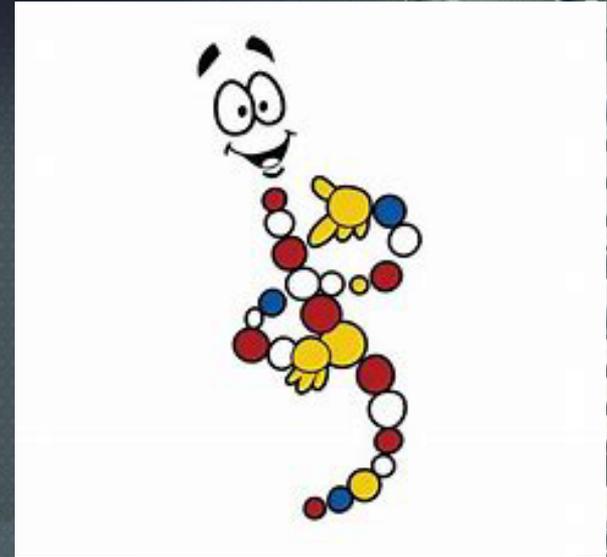
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Water cells. DNA is organized into long strands called chromosomes. These chromosomes are replicated before cell division, in a process called mitosis. Eukaryotic organisms, animals, plants, fungi, and protists store most of their DNA inside the cell nucleus and on chromosomes (X and Y chromosomes in humans). Prokaryotic organisms, such as bacteria, have a single circular chromosome. These compact structures package and organize the DNA. These compact structures package and organize the DNA. These compact structures package and organize the DNA. These compact structures package and organize the DNA.

What is DNA?

- DNA stands for Deoxyribonucleic Acid
- DNA is the genetic instructions inherited from mother and father



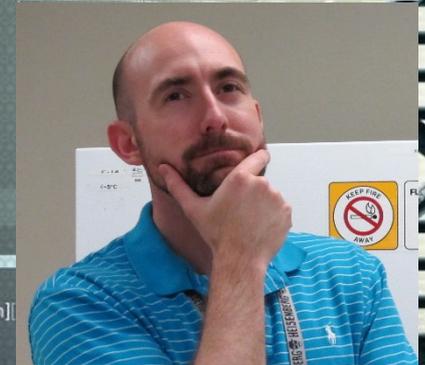
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that encodes information. This information is used using the genetic code, which specifies the sequence of the amino acids within proteins. The process of copying these bits of DNA into the messenger RNA, in a process called transcription.

Within cells, DNA is organized into long structures called chromosomes. These chromosomes are replicated before cells divide, in a process called replication. Eukaryotic organisms, animals, plants, fungi, and protists all store their DNA inside the cell nucleus and some of their DNA is organized as mitochondria or chloroplasts. It is possible that prokaryotes (bacteria and archaea) store their DNA only in the cytoplasm. Within the chromosomes, structural proteins such as histones compact and organize DNA. These compact structures prevent the untangling and separation of DNA into individual genes. A complex between DNA and other proteins, forming nucleosomes, which packs the DNA, are transcribed.

What is DNA?

- Can be found in most cells in the body. Best sources of DNA are body fluids and tissues.
- DNA is unique to each individual (exception - identical siblings)



We look at STR's (short tandem repeats)
to assemble a DNA profile



What is a DNA profile?

- A list of numbers that represent the length of small areas of your DNA
- We look at 23 areas of your DNA
- There are 2 numbers for each of the 23 areas (one from each parent)
- The list of these numbers is unique to you

	Item # and Sample Description					
LOCUS	Crime Scene Evidence					
AMEL	X,Y					
D3S1358*	14,16					
D1S1656	11,11					
D2S441	11,12					
D10S1248	12,13					
D13S317*	8,9					
PENTA E	14,28					
D16S539*	9,12					
D18S51*	13,15					
D2S1338	24,24					
CSF1PO*	11,12					
PENTA D	11,13					
TH01*	8,9					
vWA*	14,18					
D21S11*	22,22					
D7S820*	11,12					
D5S818*	7,12					
TPOX*	8,12					
D8S1179*	13,14					
D12S391	28,28					
D19S433	13,13					
SE33	19,28.2					
D22S1045	15,15					
DYS391	9					
FGA*	21,23					
DYS576	19					
DYS570	29					
CODIS						
Comments						

Item # and Sample Description						
LOCUS	Crime Scene Evidence	Suspect 1				
AMEL	X,Y	X,Y				
D3S1358*	14,16	14,16				
D1S1656	11,11	11,12				
D2S441	11,12	8,9				
D10S1248	12,13	14,15				
D13S317*	8,9	8,9				
PENTA E	14,28	15,15				
D16S539*	9,12	8,11				
D18S51*	13,15	13,14				
D2S1338	24,24	23,24				
CSFIPO*	11,12	10,15				
PENTA D	11,13	8,18				
TH01*	8,9	7,9				
vWA*	14,18	8,11				
D21S11*	22,22	21,23				
D7S820*	11,12	10,16				
D5S818*	7,12	19,21				
TPOX*	8,12	12,12				
D8S1179*	13,14	15,16				
D12S391	28,28	21,23				
D19S433	13,13	5,11				
SE33	19,28.2	28.2,28.2				
D22S1045	15,15	13,13				
DYS391	9	10				
FGA*	21,23	22,23				
DYS576	19	15				
DYS570	29	21				
CODIS						
Comments						

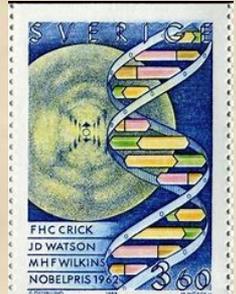
Is it a match?
NO

	Item # and Sample Description				
LOCUS	Crime Scene Evidence	Suspect 2			
AMEL	X,Y	X,Y			
D3S1358*	14,16	14,16			
D1S1656	11,11	11,11			
D2S441	11,12	11,12			
D10S1248	12,13	12,13			
D13S317*	8,9	8,9			
PENTA E	14,28	14,28			
D16S539*	9,12	9,12			
D18S51*	13,15	13,15			
D2S1338	24,24	24,24			
CSF1PO*	11,12	11,12			
PENTA D	11,13	11,13			
TH01*	8,9	8,9			
vWA*	14,18	14,18			
D21S11*	22,22	22,22			
D7S820*	11,12	11,12			
D5S818*	7,12	7,12			
TPOX*	8,12	8,12			
D8S1179*	13,14	13,14			
D12S391	28,28	28,28			
D19S433	13,13	13,13			
SE33	19,28.2	19,28.2			
D22S1045	15,15	15,15			
DYS391	9	9			
FGA*	21,23	21,23			
DYS576	19	19			
DYS570	29	29			
CODIS					
Comments					

Is it a match?
YES!

- It is not any one number that is unique to each person, but rather the list of numbers
- The more numbers on the list, the more unique the profile is.

DNA Rocks
5432 S. Helix Lane
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Because DNA is unique to an individual, it is useful in forensic investigations.

Understanding how DNA can help your investigation will help you apply this technology in the most effective manner.

Chemical structure of DNA
DNA is a double helix structure. It is made up of two strands of DNA that are twisted around each other. The strands are held together by hydrogen bonds between the nitrogenous bases. The bases are adenine, thymine, guanine, and cytosine. Adenine pairs with thymine and guanine pairs with cytosine. The sequence of the bases determines the genetic code.

Chemically, DNA consists of repeating units of single units called nucleotides. Each nucleotide is made up of a phosphate group, a sugar, and a nitrogenous base. The phosphate group and the sugar are bonded together and are therefore part of the DNA backbone. The nitrogenous base is attached to the sugar and is the part of the DNA that encodes information. The sequence of the bases determines the genetic code.

Water cells DNA is organized into long strands called chromosomes. These chromosomes are replicated before cell division. In a process called replication, Eukaryotic organisms have two sets of chromosomes and prokaryotic organisms have one set. The chromosomes are made up of DNA and proteins. The DNA is packaged into chromosomes by the action of histone proteins. The histone proteins are positively charged and the DNA is negatively charged. The interaction between the DNA and the histone proteins results in the formation of nucleosomes. The nucleosomes are the basic units of DNA packaging. The nucleosomes are further packaged into higher order structures called chromatin. The chromatin is further packaged into chromosomes.

What Can Forensic DNA Answer?

In terms of each case, think about what questions you are trying to answer and how DNA can help you answer those questions.



Some cases are just not DNA cases.

What Can Forensic DNA Answer?

Can help generate investigative leads in cold cases and cases without a suspect, utilizing CODIS (national database).

Example: A DNA profile from a cigarette butt found at the crime scene is put into CODIS and “hits” a profile already in CODIS.

What Can Forensic DNA Answer?

Whether a particular DNA profile is present on an item or at a crime scene (forensic evidence triangle)

Example: The DNA profile from the blood found on the knife collected from the suspect matches the DNA profile of the victim.



Forensic Evidence Triangle

CRIME SCENE

SUSPECT

VICTIM



Suspect's knife has victim's blood on it

What Can Forensic DNA Answer?

Perpetrator of a sex crime if we develop DNA profiles from Sex Crime Evidence Kits (SCEK)

Example: The DNA profile from semen found on the victim's body matches the suspect.

What Can Forensic DNA Answer?

Familial questions (ex. criminal paternity).

Example: Pregnancy resulting from a sexual assault or sexual contact with a minor (can test DNA from the baby or aborted fetus to compare with mother and/or suspect).

What Can Forensic DNA Answer?

Identity of an individual

Examples:

- Unidentified human remains (DPS will do only if it's related to a crime)
- Unknown identity cases (unable or unwilling to identify themselves)

What CAN'T Forensic DNA Answer?

How the DNA got there

There are many ways DNA can be transferred to an item: touching, sneezing, talking, transferring of bodily fluids and natural shedding of skin cells.

What CAN'T Forensic DNA Answer?

When the DNA got there



No time frame on how long DNA will last, it depends on several factors as well as how much DNA was left behind.

**“World's Oldest Genome
Sequenced From 700,000-Year-Old
Horse DNA”**

- By Jane J. Lee, National Geographic, June 27, 2013

What CAN'T Forensic DNA Answer?

Whether an item was or was not
handled by an individual

There are many ways for someone's DNA to be transferred to an item. This is why we typically will not perform DNA analysis on prohibited possessor cases.

What CAN'T Forensic DNA Answer?

Consent

Example: A sexual assault where the suspect claims the sexual contact was consensual.

Types of DNA Samples

We have broken them
down into three
categories:



Types of DNA Samples



The “Good” (blood, saliva & semen)

The “Bad” (trace/touch DNA)

The “Ugly” (urine, feces & vomit)



Blood, saliva and semen

- Usually very good sources for DNA
- Usually single source samples
- Usually need less sample to get results

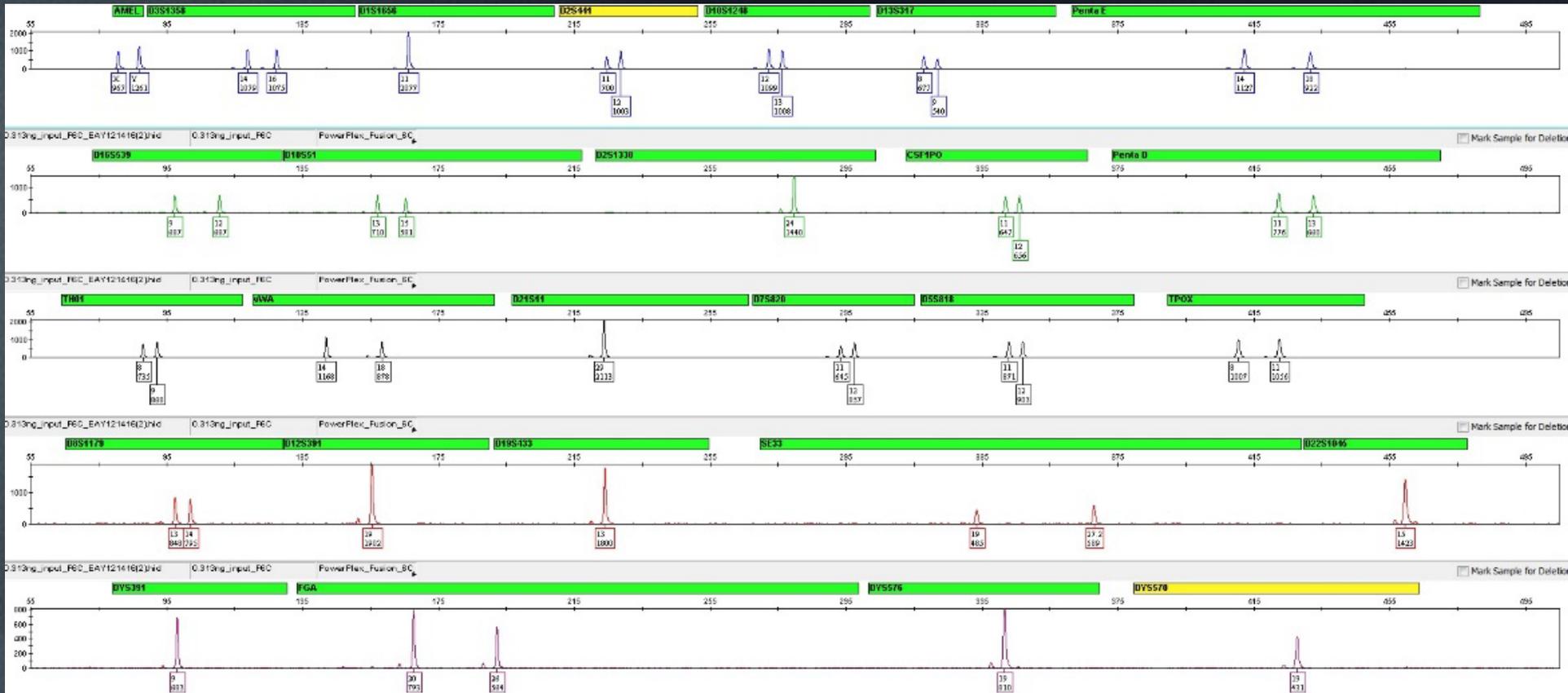
Chemical structure of DNA
DNA is a long, thin, double-stranded molecule. It is made up of two strands of DNA that are twisted around each other. The strands are made up of a sugar-phosphate backbone and nitrogenous bases. The bases are attached to the sugar-phosphate backbone and are held together by hydrogen bonds. The sequence of the bases is the genetic code. The genetic code is the set of instructions that tells the cell how to make proteins. The cell uses the genetic code to make proteins by reading the DNA. The cell then uses the proteins to build the body and carry out its functions.

Chemically, DNA consists of repeating polymers of single units called nucleotides. Each nucleotide is made up of a sugar and a phosphate group. The sugar and phosphate groups are linked together by a phosphate group. The two strands run in opposite directions to each other and are therefore anti-parallel. The base pair is one of four types of nucleotides: adenine, thymine, guanine, and cytosine. The sequence of the bases is the genetic code. The genetic code is the set of instructions that tells the cell how to make proteins. The cell uses the genetic code to make proteins by reading the DNA. The cell then uses the proteins to build the body and carry out its functions.

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Single Source DNA Profile



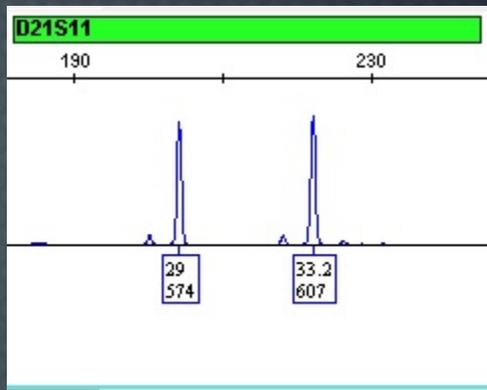
Each location usually has only one or two peaks



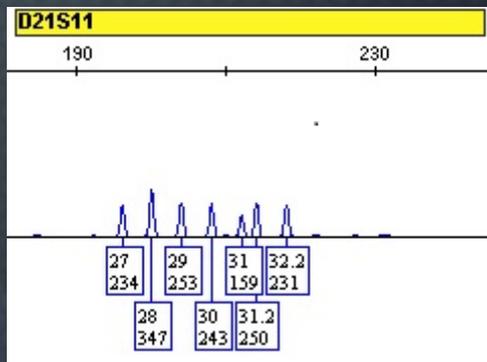
Trace/Touch DNA

- Generally a very limited source of DNA
- Sweat is considered a trace DNA sample
- Not much DNA present = might only get a partial DNA profile
- Often results in DNA mixtures of multiple people

What Does A Mixture Look Like?



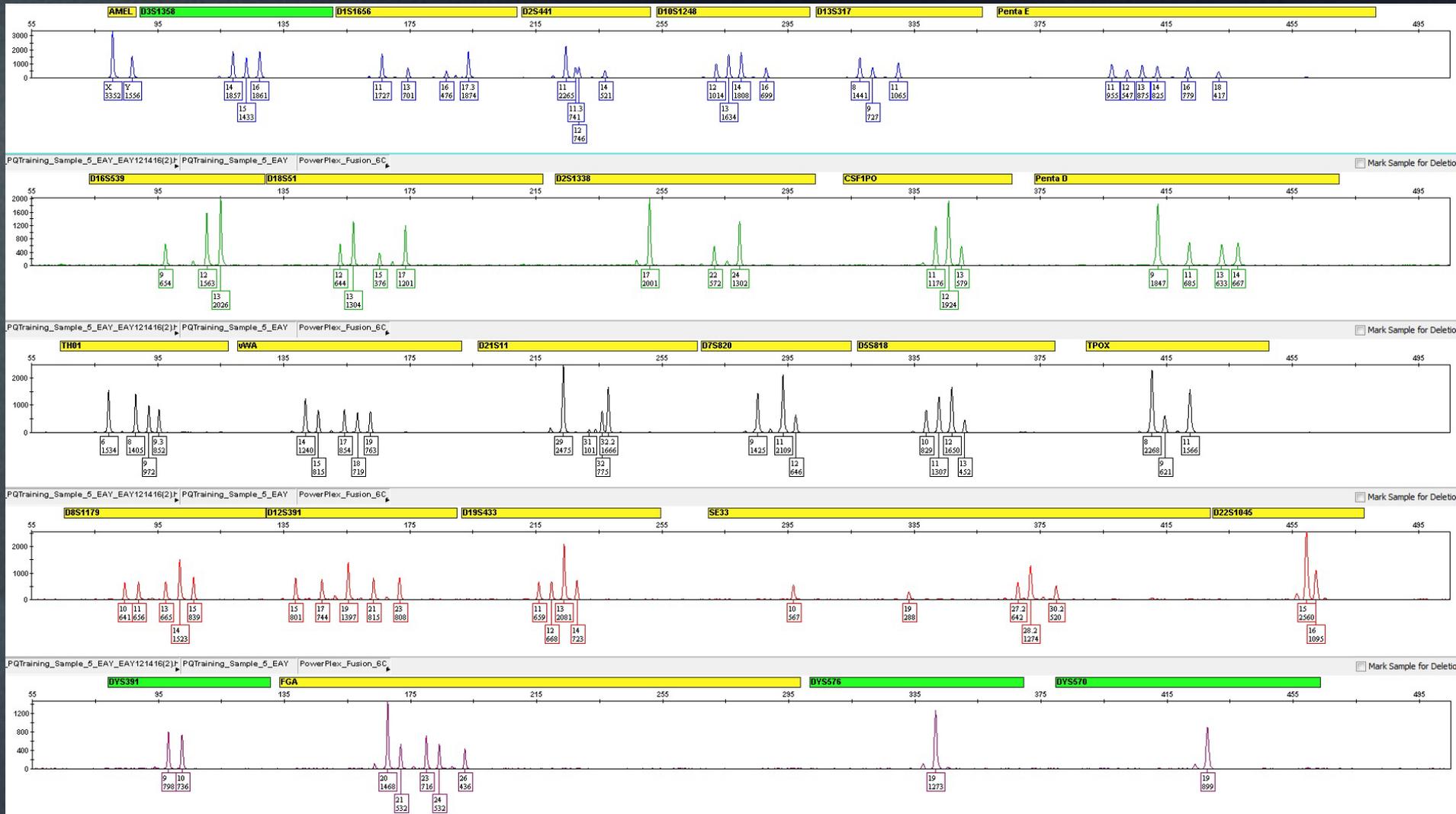
Single source – Usually one or two peaks per location



Mixture – Many peaks per location

Can be very difficult to interpret

What Does A Mixture Look Like?



“The Bad”

Trace/Touch DNA

Usually harder to get good results

In theory, only a small number of cells are needed for DNA analysis

However...

“The Bad”

- Touching a surface or item briefly usually leaves very little, *if any*, sample
- Better samples would be something handled/used over a long period of time (hat, cell phone, shirt, sunglasses)

“The REALLY Bad”

Trace, “touch” DNA

- Shell casings
 - Last resort item
 - Cannot be a dual request item (ex. cannot do both latent prints and DNA on a casing)
 - It is an item that is only touched briefly
 - Undergoes extreme heat (can destroy DNA)
 - Very small surface area



Urine, feces, vomit, etc.

Not tested routinely for DNA

- Feces: swab the outside
- Vomit: swab
- Urine: call the lab



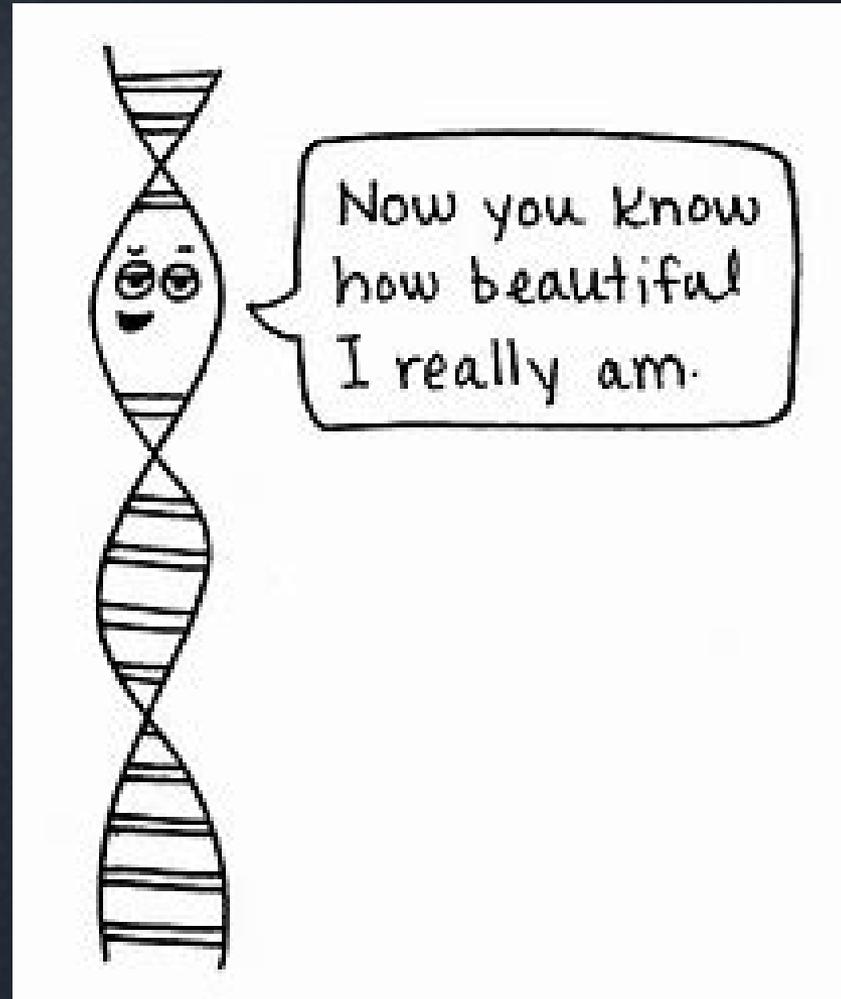
DNA Samples

Generally Better Samples of Each Type*

- Blood - Ex. Blood on broken window at point of entry
- Saliva - Ex. Cigarette butt or water bottle
- Mucus - Ex. Used tissue
- Semen - Ex. Used condom

**Please note that the condition of the sample, amount and other factors can affect the quality of the sample.*

Short break



CODIS

National DNA Database

Combined DNA Index System

- 3 Levels of Database
 - National, State and Local
- 3 Categories of Indexes
 - Forensic DNA Profiles, Convicted Offender DNA Profiles, Unidentified Human Remains Profiles

CODIS

National DNA Database

Combined DNA Index System

- Useful for generating a suspect
- Useful for linking suspects and/or cases nationwide



CODIS

Not all DNA profiles that we get from evidence are eligible to enter into CODIS.

CODIS is managed by the FBI and they have rules that we must follow.

CODIS Eligibility

Questions we *must* answer about the evidence in order to use CODIS

- Was a crime committed?
- Where was the evidence collected from within the crime scene?



CODIS Eligibility Information

Where, specifically, was the item located in relation to the crime scene?

Please be detailed and specific on the DNA Supplemental Form about where each item was located.



CODIS Eligibility

Questions we *must* answer

- Was the DNA on the evidence likely left by the perpetrator of the crime (not a victim or other person)?



CODIS Eligibility Information

Was the item located in an area where the public has access (i.e. sidewalk, front yard, parking lot)? If YES, please explain (how can the item be attributed to the perpetrator).



CODIS Eligibility Information

Can anyone confirm that the item does not belong to the victim and/or that the item was not present prior to the crime?

Considerations

Did the victim deny ownership of the item?

Ex. “We do not smoke. This cigarette butt isn’t ours.”

Did the victim state the item or body fluid wasn’t present prior to the incident?

Ex. “This Coke can wasn’t in my car when it was stolen.”

CODIS Eligibility Information

Has the item been handled by anyone other than the suspect (i.e. owner/victim)?

If yes, in most cases elimination standards must be submitted under the same DR# for each individual.*

* An exception to this would be in the case of blood.



Considerations

If the item does belong to the victim, but is believed to have suspect DNA on it:

Victim elimination standards must be submitted in most cases.*

*An exception would be in the case of blood left behind at a scene.

CODIS Eligibility

Questions we *must* answer

Was the evidence seized or collected directly from a suspect's possession? (Not CODIS eligible)



CODIS

Reasons a profile may not be CODIS eligible:

- The evidence did not meet CODIS eligibility requirements
- Elimination standards were not received
- We were not able to obtain a DNA profile or not enough of a profile to meet CODIS rules
- Complicated mixture

CODIS Eligible Examples

- Item #1 is a cigarette butt found inside burglarized residence. Owners confirmed it did not belong to them.
- Item #2 is a swab of red/brown stain located on broken window glass at point of entry.
- Item #3 is a hat collected from the fenced backyard of the residence. It does not belong to the occupants.



Examples that may not be CODIS eligible:

- In the front yard of a burglarized residence
- On the ground outside of a recovered vehicle
- In an empty lot nearby a burglarized business



CODIS Eligibility Scenarios

- Complete handout for CODIS Eligibility Scenarios utilizing information just presented.
- We will come back together as a class to go over the answers and discuss any questions regarding CODIS eligibility.

Scenario

A perpetrator grabs a woman's purse in a public parking lot, jumps into a car and drives away. The victim states that she saw the perpetrator throw his soda cup to the ground as he jumped into the car. She points out the cup and straw in the parking lot. The cup and straw are collected and submitted for DNA analysis.

- If a complete DNA profile is obtained from the cup/straw, will that profile be eligible to upload into CODIS?

Scenario

Yes, if the victim is positive that it is the same cup that the perpetrator threw to the ground.



Scenario

A suspect was stopped by the police and pulled a gun on the officer, but then dropped it and fled. The suspect was not apprehended, but the gun was collected.

If a complete DNA profile is obtained from the gun, will that profile be eligible to upload into CODIS?

Yes

Scenario

The offense in this case is felon in possession of a firearm. The DNA profile from a swabbing of the gun matches the suspect. The gun was recovered from a backpack belonging to the suspect.

Can the complete DNA profile obtained from the gun be eligible to upload into CODIS?

No

Scenario

Detectives investigating a residential burglary locate a cigarette butt in the front yard of the home near the sidewalk. None of the occupants living in the home smoke.

If a complete DNA profile is obtained from the cigarette butt, will that profile be eligible to upload into CODIS?

No

Scenario

- Victims answer their door late at night and multiple suspects enter and commit a home invasion/robbery. Only one suspect was identified, but he was not connected to the scene through DNA. On that same night, a suspicious scene unfolded in the same neighborhood, where a lady said that there was a knock on her door, but she did not answer. As the people were leaving, she saw one discard a bottle on her lawn...

Scenario

The investigator thought these two incidents may be related, so he recovered the bottle and submitted it for analysis in connection with the first case. A DNA profile was obtained from the bottle, however, it does not match the identified suspect from the first incident.

- Can the DNA profile from the bottle go into CODIS?

No

Scenario

- A gun is found under the seat of a suspect's car. He says he has no idea how it got there and has never seen it before. DNA is requested to show that he *handled* the gun.

Will DNA answer that question?

Scenario

- *NOT NECESSARILY*
- Finding his DNA on the gun doesn't absolutely prove that he handled it.
 - Sneezing/saliva
 - Skin cells
- NOT finding his DNA on the gun doesn't prove he DIDN'T handle it
- Latent print analysis may be more effective/efficient at answering this

Collection Techniques

To avoid contamination of DNA evidence, always take the following precautions:

- Wear gloves. Change them often.
- Use disposable instruments or thoroughly clean them after each item of evidence.
- Avoid touching the area where you believe DNA may be present
- Avoid coughing, sneezing or talking over the evidence (even if you're wearing a mask).

Collection Techniques

To avoid contamination of DNA evidence, always take the following precautions:

- Avoid touching your face, nose and mouth while collecting evidence.
- Air-dry evidence thoroughly before packaging
- Put evidence in new paper bags or envelopes. Avoid plastic bags.

Reminder

You only have one chance to collect the evidence.

Please do not forgo collection based on DPS crime lab submission policies.

A Tiered Approach is Recommended

Items collected at the crime scene
(cast a wide net)



Items of
evidentiary value

*<-- These should be carefully
scrutinized and prioritized*



Items processed by the crime lab

Every additional unnecessary analysis we perform on the case at hand is an analysis that is not done on the next urgent case waiting in line.

Collection Techniques

Blood

- Large bloodstains on a non-porous surface

- One to two swabs
- Saturate swabs



Collection Techniques

Blood

- Small bloodstains on non-porous surface
- One slightly wet swab
 - Concentrate stain on tip of swab



Collection Techniques

Blood

- Large bloodstains on clothing or bedding
 - Send to us for testing
- or*
- Cut out stained areas and send to us (document or photograph evidence before cutting)

Collection Techniques

Blood

- Small bloodstains on clothing or bedding
 - Send to us for testing
 - May circle any stains of interest

Collection Techniques

Blood

- Bloodstains on small, easily packaged items (cell phone, tools, water bottle, etc.)



- Send us the entire item

Collection Techniques

Saliva

- Send in small, easily packaged items (bottles, cans, cigarette butts), we will process them.
- If you are swabbing an item:
 - Concentrate sample on no more than two wet swabs
 - Swab vigorously around mouth area!

Collection Techniques

Trace

- Send in small, easily packaged items (bottles, cans, tools, etc.), we will swab them.
- If you are swabbing an item:
 - Concentrate sample on no more than two wet swabs
 - Swab vigorously!

Eyeglasses	One swab of entire item
Earphones	One swab of both earbuds
Winter Hats	Inside headband cutting
Baseball Caps	Swab inside headband or inside headband cutting
Fabric Gloves	Swab inside fingers & thumb or thumb pad area cutting
T-shirts	Swab inside collar or inside collar cutting
Watches	Swab inside surface and clasps
Latex Gloves	Swab inside surface
Socks	Swab inside surface or heel cutting

Don't forget to collect elimination standards!

Examples:

- Swabs from home - All occupants of the residence
- Vehicle swabs - All drivers of the vehicle
- Firearm – Anyone who uses the firearm
- Victim
- Consensual sex partner(s)



For Touch Cases

It doesn't matter who touched the item *last*.

There are many considerations:

Who else has touched this item?

How long did the person handle it?

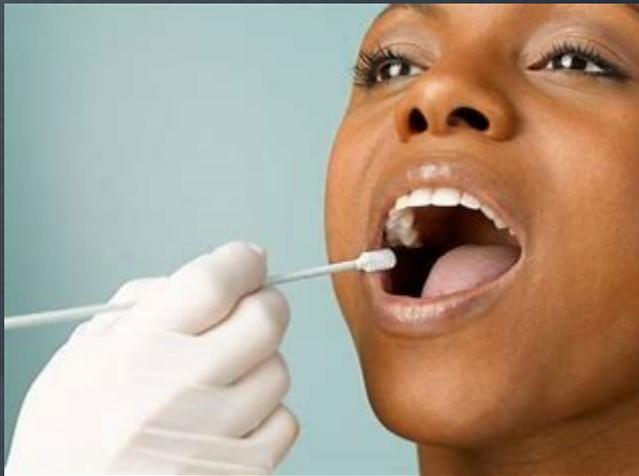
Some people “shed” more DNA than others.

**Cleaning products do not necessarily remove
DNA*

Known Standards = Buccal Swabs

Buccal = inner cheek of a person's mouth.

Buccal swab = cheek swab



THIS



NOT THIS



OR THIS

Known Standards = Buccal Swabs

- When collecting buccal swabs, take 2 swabs of the inner cheek
- Please ensure that buccal swabs are labeled with person's name and name is spelled correctly



Collection Techniques

Dual Requests

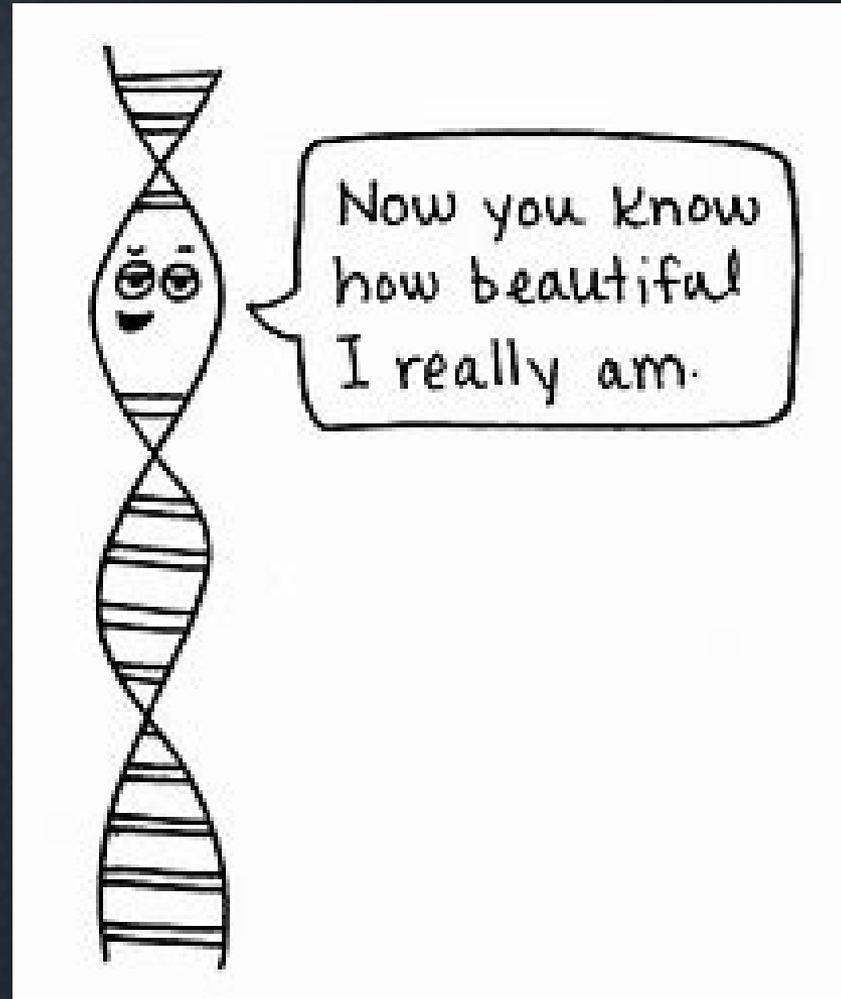
- DNA and Latent Prints/Firearms
 - DNA must be collected first.
 - Items undergoing DNA analysis must be handled by someone who is wearing gloves and a mask to prevent contamination.

Collection Practicum Activity

Choose one station to start at:

- Blood collection
- Saliva/Trace collection
- Buccal swab collection
- Instructions are at each station
 - Use information from presentation to aid in collection process
- Rotate stations when instructed

Short break



Components of Packaging

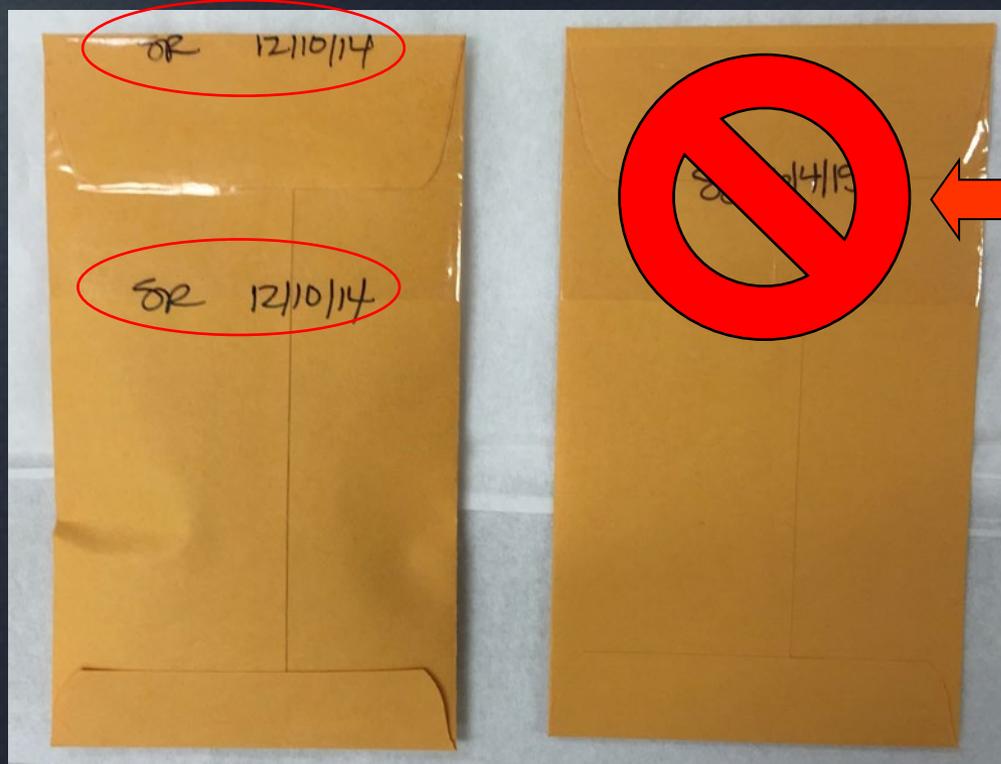


- Appropriate packaging material
 - Envelope
 - Paper bag
 - Cardboard Box
 - Swab box
- Required markings
 - Item #
 - DPS DR #
 - Agency DR #
- Correctly spelled names

Components of Packaging

Proper Tape Seal

Markings
/initials
are on
tape *and*
the
package
= **TAPE
SEALED**



Markings
on tape
do not
overlap
onto the
package =
**NOT
TAPE
SEALED**

Other Packaging Considerations

- Dry all items and swabs prior to packaging
- Empty liquids from drinking containers prior to packaging
 - Empty liquid through bottom if saliva is suspected on mouth area
- If possible, package each item separately
- Do not over package (*please!*)
 - No clown car packaging
 - No Russian doll packaging



Known Standards (a.k.a. buccal swabs)

- Except for sex assault and biological standards kits, all known standards should be submitted in a package separate from crime scene evidence
- Package the 2 swabs in a swab box and seal this swab box in only one large outer manila envelope
- Submit known DNA standards as a single item, at the same time crime scene evidence is submitted to the lab

Chemically, DNA consists of two long strands of single units called nucleotides. Each nucleotide is made of a sugar and phosphate group. The two strands are joined together by hydrogen bonds between the nitrogenous bases. The sequence of these bases encodes the genetic information. This information is used to synthesize proteins. The amino acids within proteins form the building blocks of life. DNA is copied into RNA in a process called transcription.

Water cells. DNA is organized into long strands called chromosomes. These chromosomes are replicated before cell division, in a process called mitosis. Eukaryotic organisms, animals, plants, fungi, and protists store most of their DNA inside the cell nucleus and some of their DNA in organelles, such as mitochondria or chloroplasts. In prokaryotic cells, DNA is packaged into a single circular chromosome. Within the chromosome, DNA is packaged into nucleosomes. Nucleosomes are made of DNA and proteins such as histone proteins and histone tails. These compact DNA into structures called nucleosomes. Between DNA and other proteins, histone tails, which parts of the DNA are associated.

random]]pLasnId

Packaging Handout

- Take the next 5-7 minutes to complete packaging handout
- Feel free to discuss scenarios with your neighbors
- We'll come back together as a class to discuss scenarios and answer any questions you may have

Chemical structure of DNA
DNA is a double helix structure. It is made of two strands of DNA that are twisted around each other. The strands are held together by hydrogen bonds between the nitrogenous bases. The bases are adenine, thymine, guanine, and cytosine. Adenine pairs with thymine and guanine pairs with cytosine. The sequence of the bases determines the genetic code.

Chemically, DNA consists of repeating units of single units called nucleotides. Each nucleotide is composed of a phosphate group, a sugar, and a nitrogenous base. The phosphate groups are attached to the sugar, and the sugar is attached to the nitrogenous base. The sequence of the bases determines the genetic code.

Within cells, DNA is organized into long strands called chromosomes. These chromosomes are replicated before cell division. In a process called replication, Eukaryotic organisms have two sets of chromosomes, one from each parent. Prokaryotic organisms have one set of chromosomes. The chromosomes are made of DNA and proteins. The DNA is wrapped around proteins called histones. The histones are made of amino acids. The DNA and histones are called chromatin. The chromatin is organized into chromosomes.

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ARIZONA DEPARTMENT OF PUBLIC SAFETY
NON-DPS AGENCY REQUEST FOR SCIENTIFIC EXAMINATION
 PHOENIX – (602)223-2394 FLAGSTAFF – (928)773-3684
 TUCSON – (520)746-4575 LAKE HAVASU – (928)680-5490

DPS DR #	
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AGENCY	SUBMITTING AGENCY CASE #	PAGE ____ OF ____
		S= SUSPECT V= VICTIM O= OTHER

CASE OFFICER	ID#	OFFICER'S DIRECT WORK PHONE	(1) ASSOCIATED INDIVIDUALS (LAST, FIRST, M) D.O.B.	S	V	O
				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

CASE OFFICER EMAIL	CHARGE(S)	(2) ASSOCIATED INDIVIDUALS (LAST, FIRST, M) D.O.B.	S	V	O
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

SPECIAL INSTRUCTIONS/CASE HISTORY	CHARGE(S)	(3) ASSOCIATED INDIVIDUALS (LAST, FIRST, M) D.O.B.	S	V	O
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	CHARGE(S)		S	V	O
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

DPS ONLY	ITEM #	BRIEF DESCRIPTION OF EVIDENCE	REQUESTS FOR ANALYSIS							ASSOCIATED INDIVIDUALS			
			BA	CS	DNA	F/T	LP	QD	TOX	CFU	(1)	(2)	(3)
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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HAS THIS EVIDENCE BEEN EXAMINED BY ANOTHER AGENCY? YES NO IF YES, EXPLAIN

CHAIN OF CUSTODY

DPS P&E USE ONLY	ITEM(S)/PACKAGE(S)	FROM NAME	ID NO.	TO NAME	ID NO.	PURPOSE	DATE/TIME

THE ARIZONA DEPARTMENT OF PUBLIC SAFETY CRIME LABORATORY WILL HAVE INITIAL DISCRETION OVER THE SELECTION OF TEST ITEMS AND METHODS FOR ANALYSIS.



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CASE OFFICER EMAIL CHARGE(S) S V O

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SPECIAL INSTRUCTIONS/CASE HISTORY CHARGE(S)
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(1) ASSOCIATED INDIVIDUALS (LAST, FIRST, M) D.O.B. _____

S V O

CASE OFFICER EMAIL _____

CHARGE(S) _____

(2) ASSOCIATED INDIVIDUALS (LAST, FIRST, M) D.O.B. _____

S V O

SPECIAL INSTRUCTIONS/CASE HISTORY _____

CHARGE(S) _____

(3) ASSOCIATED INDIVIDUALS (LAST, FIRST, M) D.O.B. _____

S V O

CHARGE(S) _____

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S= SUSPECT V= VICTIM O= OTHER

CASE OFFICER EMAIL _____ CHARGE(S) _____ S V O

(2) ASSOCIATED INDIVIDUALS (LAST, FIRST, M) D.O.B. _____

SPECIAL INSTRUCTIONS/CASE HISTORY _____ CHARGE(S) _____ S V O

(3) ASSOCIATED INDIVIDUALS (LAST, FIRST, M) D.O.B. _____

CHARGE(S) _____ S V O

REQUESTS FOR ANALYSIS ASSOCIATED INDIVIDUALS

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			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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Please Keep in Mind

- Usually we do not test evidence that has had any previous testing by another lab.
- Using Bluestar/Luminol (or similar) at crime scenes can dilute stains and limit our chances of getting a DNA profile.

Supplemental Information

- Case information/synopsis
- Sex Crimes Evidence Kit paperwork

DNA Supplemental Form



Arizona Department of Public Safety Crime Laboratory DNA Evidence Submission Supplement

Answer the questions below and attach to request form or email to the appropriate lab handling your request.
Lack of information or incomplete answers will result in the delay of analysis.

PHOENIX: crcl_dna@azdps.gov TUCSON: srcl_dna@azdps.gov FLAGSTAFF: nrcl_dna@azdps.gov

All questions must be answered.

Agency: _____	Agency Case Number: _____
Officer/Det: _____ Badge# _____	DPS DR Number: _____
Direct Email: _____	Direct Phone: _____
Offense(s): _____	Trial Date: _____

1. Describe what happened in this case (or attach a short case summary):

2. How does each item submitted relate to the crime, and where was it found?

3. Identify the 5 most probative items:

4. If blood was present at the scene, how many people were bleeding? _____ How does each person relate to the crime?

5. What is believed to be the source of DNA for each item?

Source:	Item Number(s)
Blood	
Saliva	
Touch	
Other (Please identify):	

Y N

6. Was the item(s) located in an area accessible to the public (e.g., sidewalk, front yard, parking lot)? <i>If YES, please contact the Laboratory before submission.</i>				
7. Was the item(s) left behind by the perpetrator?				
8. Does the item(s) belong to the victim?				
9. Was the item(s) present at the crime scene before the crime was committed?				
10. Has the item(s) ever been handled by someone other than the perpetrator (e.g., owner/victim)? <i>If YES, an elimination standard from this person must be submitted under the same DPS DR number.</i>				
11. Was the item(s) taken directly from the suspect or from something belonging to the suspect (e.g., backpack, car, etc.)? <i>If YES, please contact the Laboratory before submission.</i>				
12. If a sexual assault, does the victim have a consensual sex partner within 120 hours of the alleged assault? <i>If YES, an elimination standard from this person must be submitted under the same DPS DR number.</i>				
13. Is there any additional important information that the laboratory needs to know (e.g., victim & perpetrator live together)?				

If there is one or more perpetrators in the case or if anyone other than the perpetrator (victim/owner/residents) has touched the evidence item ever, elimination standards from this (these) individual(s) must be obtained and **SUBMITTED IN A SEPARATE ENVELOPE UNDER THE SAME DPS DR NUMBER.**

Evidence origin information is required by the FBI to determine CODIS eligibility requirements. Form Effective: 10/2017

Form completed by: _____ Badge#: _____ Date of completion: _____

DNA Supplemental Form

This and other forms/ information available on our website:

<https://www.azdps.gov/organization/TSD/scientific-analysis/dna#casework>

From our main website:

AZDPS.gov > Services > Governmental Services
> Crime Laboratory > DNA Scientific Services

DNA Supplemental Form Find on AZDPS.gov

The screenshot shows the AZDPS.gov website with the following elements:

- Browser:** Chrome browser with the URL <https://www.azdps.gov/>. Several tabs are open, including 'SAB Intranet', 'CRCL In-Out Board', and 'Arizona Department of Publ...'. The address bar shows search, lock, and refresh icons.
- Navigation Menu:** A horizontal menu with the following items: NEWS, SERVICES (highlighted), THE COLONEL, DEPARTMENT INFORMATION, CAREERS, SAFETY, CONTACT US.
- SERVICES Dropdown:** A vertical dropdown menu containing the following items: PUBLIC SERVICES, ENFORCEMENT SERVICES, GOVERNMENTAL SERVICES, ADRS, ADOT, AFIS, CRIME LABORATORY (highlighted with a red arrow), CRIME VICTIM SERVICES, NCJA, and TOW PROGRAM.
- 50th Anniversary:** A large graphic on the left side of the page celebrating the 50th anniversary of the Arizona Department of Public Safety (1969-2019). The graphic features the state seal and the text '50th ANNIVERSARY 1969 - 2019'.
- Background:** A large banner with the text 'Celebrating 50 Years of AZDPS history.' in a stylized font.
- News Section:** A section at the bottom of the page with a title 'Governor Doug Ducey announced his budget for Fiscal Year 2019...' and a sub-headline 'Wrong-way drivers are a nationwide problem...'. The text describes the Governor's budget recommendations for additional funding to support public safety, including funding to combat the opioid crisis, expand DPS Night Watch operations, and increase patrol coverage in Southern Arizona.
- Taskbar:** The Windows taskbar at the bottom shows various application icons, including the Start menu, File Explorer, Microsoft Edge, and several instances of Google Chrome. The system tray shows the time as 7:55 AM on 4/23/2019.

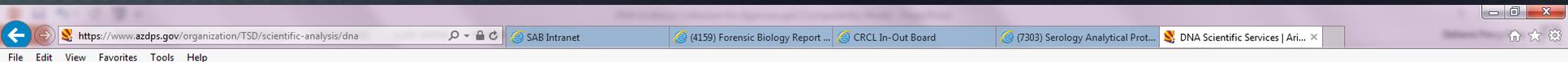
DNA Supplemental Form Find on AZDPS.gov

The screenshot shows the Arizona Department of Public Safety (AZDPS) website. At the top, there is a navigation menu with the following items: AFIS, CRIME LABORATORY, CRIME VICTIM SERVICES, NCJA, and TOW PROGRAM. A dropdown menu is open, listing the following services: SIMPLIFIED LABORATORY REPORTS, QUALITY ASSURANCE, BLOOD ALCOHOL, TOXICOLOGY, CONTROLLED SUBSTANCES, LATENT PRINTS, FIREARMS/TOOLMARKS, TRACE EVIDENCE, QUESTIONED DOCUMENTS, DNA SCIENTIFIC SERVICES (highlighted with a red arrow), FIELD SERVICES, and PROPERTY AND EVIDENCE.

The main content area features a banner for the 50th Anniversary (1969-2019) and a news section. The news section includes a photo of Governor Doug Ducey and a headline: "Governor Doug Ducey's recommendations to combat the opioid crisis and increase coverage in Southern Arizona." Below this, there is a section for "CURRENT NEWS" with a headline: "NOTICE OF REGULAR MEETING OF THE DPS LOCAL RETIREMENT SYSTEM RETIREMENT SYSTEM".

The bottom of the page shows a taskbar with various application icons and a system tray with the date and time: 7:57 AM, 4/23/2019.

DNA Supplemental Form Find on AZDPS.gov



Home » Services » Governmental Services » Crime Laboratory » DNA Scientific Services

DNA SCIENTIFIC SERVICES

DNA CASEWORK

Forensic DNA analysis involves testing of biological samples left at a scene to determine a DNA profile which can then be compared to the known profile of an individual or entered into the Combined DNA Index System (CODIS), a national database of DNA profiles, to search for a potential match. The first step, serology, determines the nature of the biological sample and indicates the potential for a DNA profile to be developed with further testing. This further testing, using a technique called capillary electrophoresis, results in a profile that illustrates multiple locations (loci) on the DNA molecule.

The Scientific Analysis Bureau provides serology and forensic DNA analysis using the most modern DNA scientific services for the examination of crime evidence to identify or exonerate individuals. DNA analysis is offered at the Central, Southern and Northern laboratories.

- Announcements/bulletins
 - [DNA Evidence Submission Supplement Required for All DNA Analysis Requests](#)
 - [Touch-DNA Case Acceptance Guidelines](#)
 - [DNA Evidence Collection and Submission Presentation Flyer](#)
 - [DNA Collection Brochure](#)
 - [Track-Kit Information](#)
 - [CODIS Searches](#)
- [DNA Supplemental Form](#)
- [DNA Evidence Collection Presentation](#)

DNA DATABASE

The Combined DNA Index System is the DNA database utilized in the United States. Created and maintained by the Federal Bureau of Investigation, it involves various levels of databases at local, state and national levels which allow searching of unknown DNA profiles against other unknown forensic profiles, convicted offender profiles, and arrestee profiles.

ORGANIZATION

- ▶ [Office of the Director](#)
- ▶ [Agency Support Division](#)
- ▶ [Criminal Investigations Division](#)
- ▶ [Highway Patrol Division](#)
- ▶ [Technical Services Division](#)



WHO KILLED

JOHN RINGO

BY JOSEPHINE EARP

(EDITED BY GLENN G. BOYER)



John Ringo is buried in this pleasant spot along Wyatt Dutton Creek.

**WYATT EARP: FAMILY, FRIENDS
AND FOES, VOL. V**



The Cliff Notes

- Wyatt Earp was bringing on the reckoning.
- Johnny Ringo sends his peeps to Earp's peeps to challenge him to a duel.
 - Note- Ringo is a skilled gun fighter->Earp would probably lose
- Allegedly... Doc Holiday, who is Earp's BFF, unknowingly shows up in Earp's place
 - Doc->better gun fighter than Earp & Ringo



- Ringo was unpleasantly surprised
 - Note- Ringo has a big ego & emotional problems that questioned his desire to live
- Shoot out occurs->Bang Ringo is dead!



NON-DPS AGENCY REQUEST FOR SCIENTIFIC EXAMINATION

PHOENIX - (602)223-2394 FLAGSTAFF - (928)773-3684
TUCSON - (520)746-4575 LAKE HAVASU - (928)680-5490

DPS DR # 2019123456

AGENCY Tombstone Sheriff's Office SUBMITTING AGENCY CASE # 201912345 PAGE OF

CASE OFFICER Wyatt Earp ID# 1OG OFFICER'S DIRECT WORK PHONE dispatch (1) ASSOCIATED INDIVIDUALS (LAST, FIRST, M) D.O.B. Doc Holiday

CASE OFFICER EMAIL SPECIAL INSTRUCTIONS/CASE HISTORY Do DNA, RUSH DIRECT Contact information

CHARGE(S) unknown (2) ASSOCIATED INDIVIDUALS (LAST, FIRST, M) D.O.B. CHARGE(S) Ringo (3) ASSOCIATED INDIVIDUALS (LAST, FIRST, M) D.O.B.

REQUESTS FOR ANALYSIS ASSOCIATED INDIVIDUALS

Table with columns: DPS ONLY, ITEM #, BRIEF DESCRIPTION OF EVIDENCE, BA, CS, DNA, F/T, LP, QD, TOX, CFU, (1), (2), (3). Rows include items like 'swab of what?', 'clothes from whom? Why?', 'swab of what?', and 'cigarette butt'.

HAS THIS EVIDENCE BEEN EXAMINED BY ANOTHER AGENCY? YES NO IF YES, EXPLAIN

CHAIN OF CUSTODY table with columns: DPS P&E USE ONLY, ITEM(S)/PACKAGE(S), FROM NAME, ID NO., TO NAME, ID NO., PURPOSE, DATE/TIME

THE ARIZONA DEPARTMENT OF PUBLIC SAFETY CRIME LABORATORY WILL HAVE INITIAL DISCRETION OVER THE SELECTION OF TEST ITEMS AND METHODS FOR ANALYSIS.

All questions must be answered.

Agency: <u>Tombstone Sheriff's Office</u>	Agency Case Number: <u> </u>
Officer/Det: <u>Wyatt Earp</u> Badge# <u>10G</u>	DPS DR Number: <u> </u>
Direct Email: <u> </u>	Direct Phone: <u> </u>
Offense(s): <u> </u>	Trial Date: <u>tomorrow</u>

1. Describe what happened in this case (or attach a short case summary):

shoot out at the OK Corral

2. How does each item submitted relate to the crime, and where was it found?

collected from scene, DNA

3. Identify the 5 most probative items:

1-5

4. If blood was present at the scene, how many people were bleeding? How does each person relate to the crime?

everyone

5. What is believed to be the source of DNA for each item?

Source:	Item Number(s)
Blood	2 Ringo's clothes
Saliva	maybe
Touch	yes
Other (Please identify):	

Y N

6. Was the item(s) located in an area accessible to the public (e.g., sidewalk, front yard, parking lot)? <i>If YES, please contact the Laboratory before submission.</i>	<input checked="" type="radio"/>	<input type="radio"/>
7. Was the item(s) left behind by the perpetrator?	<input checked="" type="radio"/>	<input type="radio"/>
8. Does the item(s) belong to the victim?	<input checked="" type="radio"/>	<input type="radio"/>
9. Was the item(s) present at the crime scene before the crime was committed?	<input checked="" type="radio"/>	<input type="radio"/>
10. Has the item(s) ever been handled by someone other than the perpetrator (e.g., owner/victim)? <i>If YES, an elimination standard from this person must be submitted under the same DPS DR number.</i>	<input type="radio"/>	<input checked="" type="radio"/>
11. Was the item(s) taken directly from the suspect or from something belonging to the suspect (e.g., backpack, car, etc.)? <i>If YES, please contact the Laboratory before submission.</i>	<input checked="" type="radio"/>	<input type="radio"/>
12. If a sexual assault, does the victim have a consensual sex partner within 120 hours of the alleged assault? <i>If YES, an elimination standard from this person must be submitted under the same DPS DR number.</i>	<input type="radio"/>	<input checked="" type="radio"/>
13. Is there any additional important information that the laboratory needs to know (e.g., victim & perpetrator live together)?		

If there is one or more perpetrators in the case or if anyone other than the perpetrator (victim/owner/residents) has touched the evidence item ever, elimination standards from this (these) individual(s) must be obtained and **SUBMITTED IN A SEPARATE ENVELOPE UNDER THE SAME DPS DR NUMBER.**

Evidence origin information is required by the FBI to determine CODIS eligibility requirements. Form Effective: 10/2017

Form completed by: Wyatt Earp Badge# 10G Date of completion



NON-DPS AGENCY REQUEST FOR SCIENTIFIC EXAMINATION

PHOENIX - (602)223-2394 FLAGSTAFF - (928)773-3684
TUCSON - (520)746-4575 LAKE HAVASU - (928)680-5490

DPS DR # 2019123456

Form containing fields for Agency (Tombstone Sheriff's Office), Case Officer (Wyatt Earp), Case Officer Email (w.earp@tombstone.gov), Special Instructions (Shoot out between Holiday and Ringo...), Requests for Analysis table, and Chain of Custody table.

Agency: Tombstone Sheriff's Office
 Officer/Det: Wyatt Earp Badge# 10G
 Direct Email: W.Earp@tombstone.gov
 Offense(s): Homicide, impersonating a peace officer

Agency Case Number: 201912345
 DPS DR Number: 2019123456
 Direct Phone: 480-867-5309
 Trial Date: 10/19/19

1. Describe what happened in this case (or attach a short summary):

Shoot out between Holiday and Ringo. Ringo was fatally injured.

2. How does each item submitted relate to the crime and where found?

Revolver believed to be murder weapon possessed by Holiday, recovered from shoot out location. Cigarette butt believed to have been dropped by Holiday at shoot out location.

3. Identify the 5 most probative items:

1-

4. If blood was found, identify the source of the blood to the crime?

Johnny Ringo (victim)

5. What is believed to be the source:

Blood	
Saliva	+
Touch	+
Other (Please identify):	

	Y	N
6. Was the item(s) located in a public location (e.g., parking lot)? <i>If YES, please contact the Laboratory for submission.</i>	<input checked="" type="radio"/>	<input type="radio"/>
7. Was the item(s) left behind by the suspect?	<input checked="" type="radio"/>	<input type="radio"/>
8. Does the item(s) belong to the suspect?	<input type="radio"/>	<input checked="" type="radio"/>
9. Was the item(s) present at the crime scene before the crime was committed?	<input type="radio"/>	<input checked="" type="radio"/>
10. Has the item(s) ever been handled by someone other than the perpetrator (e.g., owner/victim)? <i>If YES, an elimination standard from this person must be submitted under the same DPS DR number.</i>	<input type="radio"/>	<input checked="" type="radio"/>
11. Was the item(s) taken directly from the suspect or from something belonging to the suspect (e.g., backpack, car, etc.)? <i>If YES, please contact the Laboratory before submission.</i>	<input type="radio"/>	<input checked="" type="radio"/>
12. If a sexual assault, does the victim have a consensual sex partner within 120 hours of the alleged assault? <i>If YES, an elimination standard from this person must be submitted under the same DPS DR number.</i>	<input type="radio"/>	<input checked="" type="radio"/>

13. Is there any additional important information that the laboratory needs to know (e.g., victim & perpetrator live together)?

Items recovered from a public location, however, grainy video surveillance shows suspect drop revolver and cigarette butt, face is not clear, however it appears he said "I'm your huckleberry."

Why We Ask for Supplemental Information

- Triage cases
 - Who does the item belong to?
 - What type of bodily fluid?
 - How many possible bleeders?
 - How many assailants/victims?
- Determine required standards
- Determine CODIS eligibility

DNA Supplemental Form Exercise

- Using scenario provided on the handout, please fill out a DNA Supplemental Form
- Fill out properly, as you will need a sign off from one of the instructors



Lab Workflow

- What actually happens to all that paperwork and evidence you submit???
- How will you know if you did it properly or if you missed something???

Agency Withdrawal

- An effort to obtain standards and/or CODIS eligibility information
- Cases missing information will be issued this report
- Case analysis is on hold for 60 days. After 60 days, if we receive no response, evidence is returned to agency.



ARIZONA DEPARTMENT OF PUBLIC SAFETY
SCIENTIFIC EXAMINATION REPORT

DR NO. 2015
Page 1 of 1



AGENCY

AGENCY NO.

OFFICER

DATE

February 12, 2015

NAME(S)

EXAMINATION REQUESTED:

DNA

In order for the laboratory to proceed with an analysis in this case, the following information is required:

Suspect standard(s) for comparison

Additional information on how the evidence is related to the crime/crime scene as required for entry into the CODIS database.

If additional information is available, please fill out a DNA supplemental form and email it, along with any questions, to CRCLPropCrimes@azdps.gov. If the requested information is not received within 60 days of the date on this report, the request for analysis will be withdrawn and the evidence returned. The DNA Supervising Criminalist can be reached at 602-223-2394.

A handwritten signature in black ink, appearing to read "Brittany Aguilar".

BRITTANY AGUILAR, #7561, Criminalist
Central Regional Crime Laboratory
2102 W. Encanto Blvd., Phoenix, AZ 85009
(602) 223-2394

Laboratory System Accredited by ASCLD/LAB - International (ISO)

Any notes, photographs, charts, or graphs generated during the examination are retained in the laboratory.

Suspect Standards

Can be used to do a direct comparison to the evidence. This is useful on evidence that is not CODIS eligible.



Suspect Standards

- Convicted offender and arrestee samples in CODIS *CANNOT* be used as suspect standards
- Must be collected and submitted by law enforcement (chain of custody)
- A suspect standard is required to confirm a match made in CODIS

No Suspect Standard Received

- Case evidence processed for DNA
- DNA profile from evidence
- DNA profile to CODIS
- **Report issued**
- DNA “hit” occurs
- **Hit report issued**

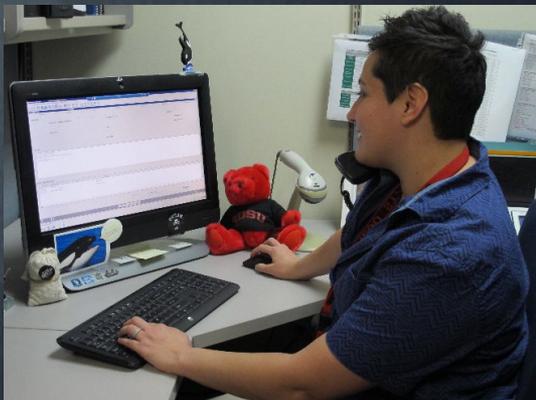
- Agency needs to get known standard
- Known standard submitted to Lab
- DNA profile from known standard
- Comparison to evidence
- **Report issued**

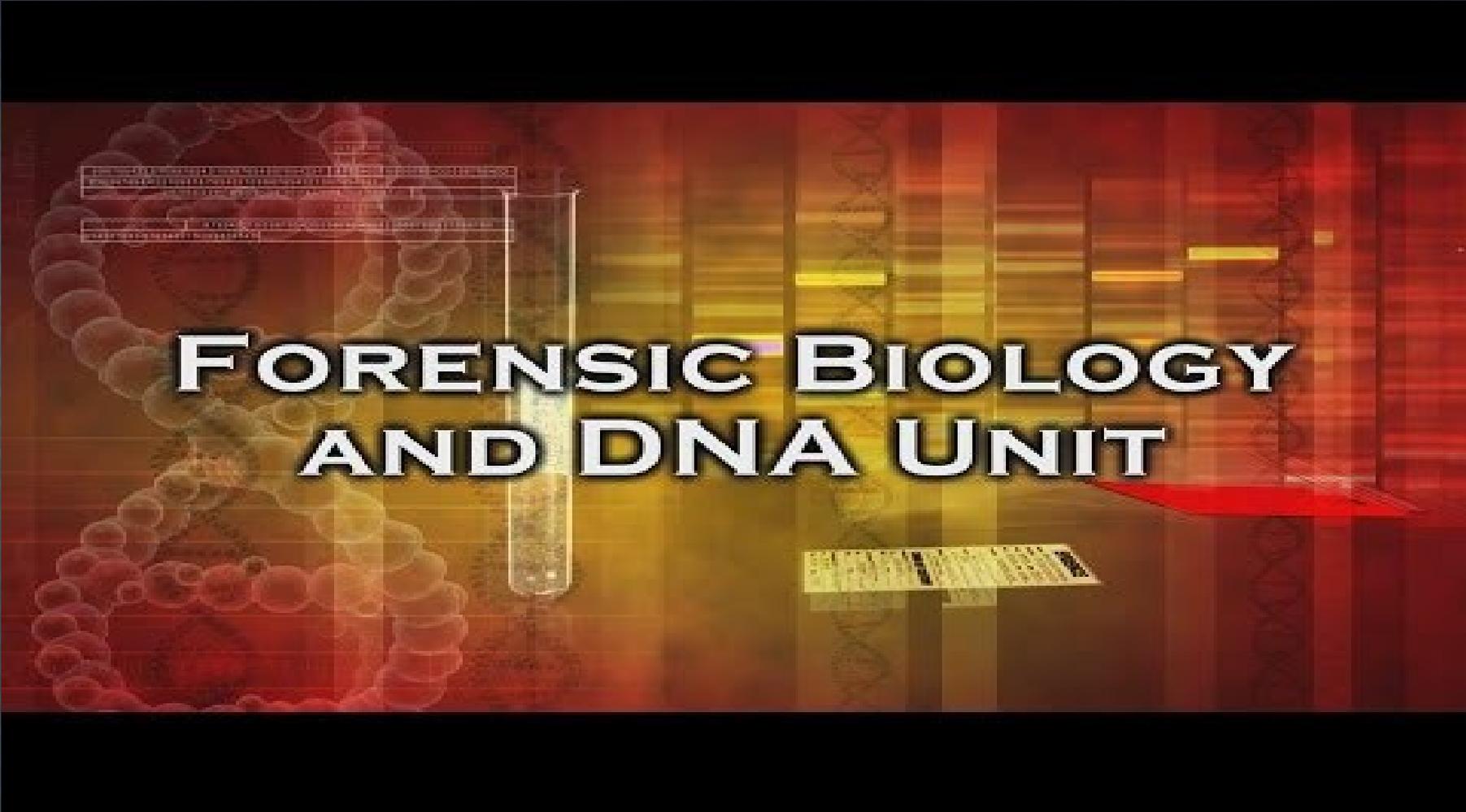
Suspect Standard Received

- Known standard and case evidence processed for DNA
- DNA profile from known standard and evidence
- Comparison to evidence
- Both DNA profiles to CODIS
- **Report issued**

How Providing Supplemental Information Benefits You

- We can start work on your case faster
- We will not need to use up your time with phone calls/e-mails
- We will be spending more of our time working on your cases in the lab instead of making phone calls
- Helps to streamline overall lab workflow

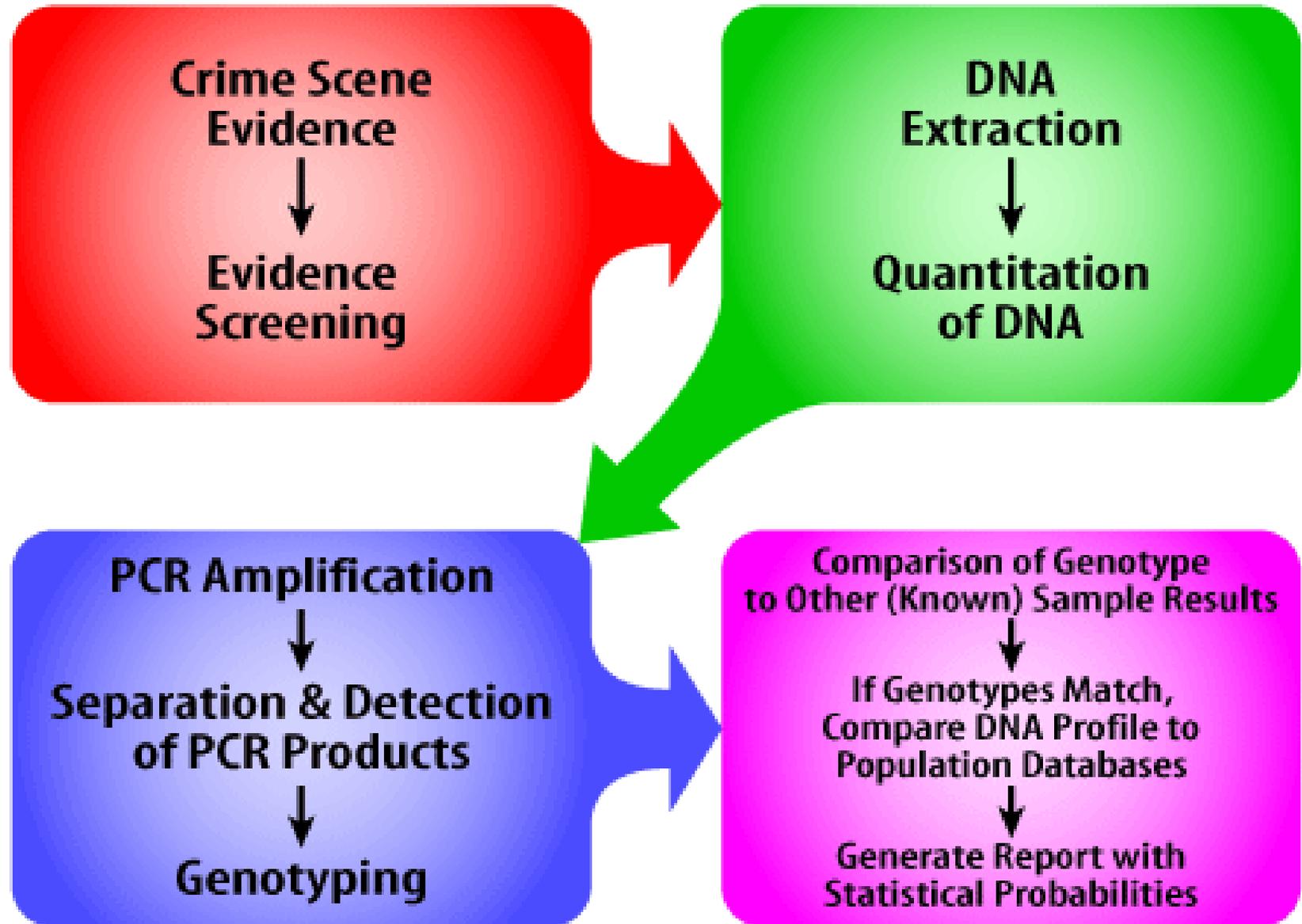




FORENSIC BIOLOGY AND DNA UNIT

<https://www.youtube.com/watch?v=kF6EGa8GpDo>

SCHEMATIC OF THE LABORATORY TESTING PROCESS



AZDPS Central Regional Crime Lab DNA Workflow



Serology is always the first step
towards DNA analysis

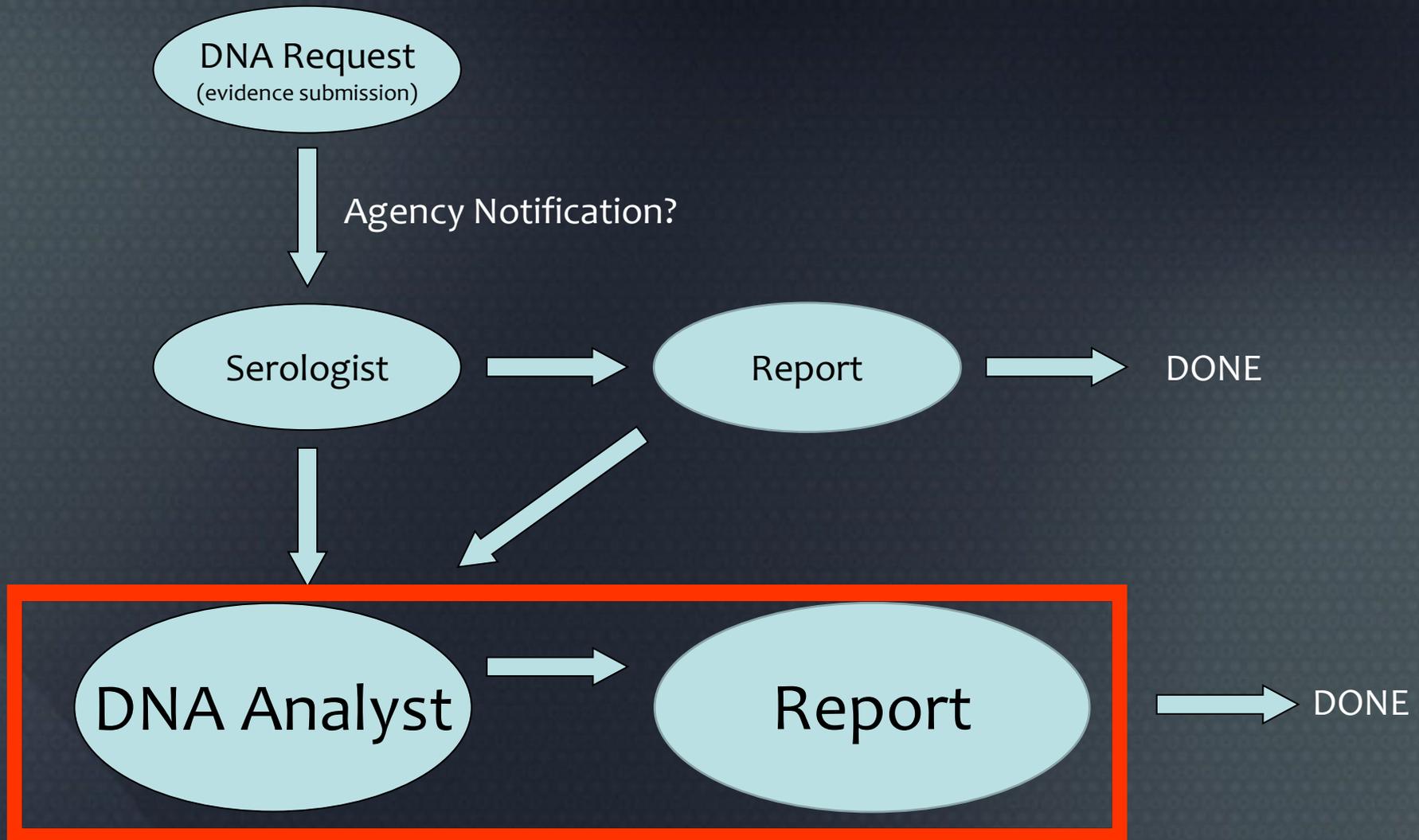


Serologist

- Reads all submitted information
- Contacts Detective if necessary
- Analyzes for possible blood, semen, saliva, touch DNA, etc.
- Retains cuttings, swabs, etc. for DNA Analyst
- May issue a report to submitting Detective/Officer
- In most cases action from you will be required



AZDPS Central Regional Crime Lab DNA Workflow

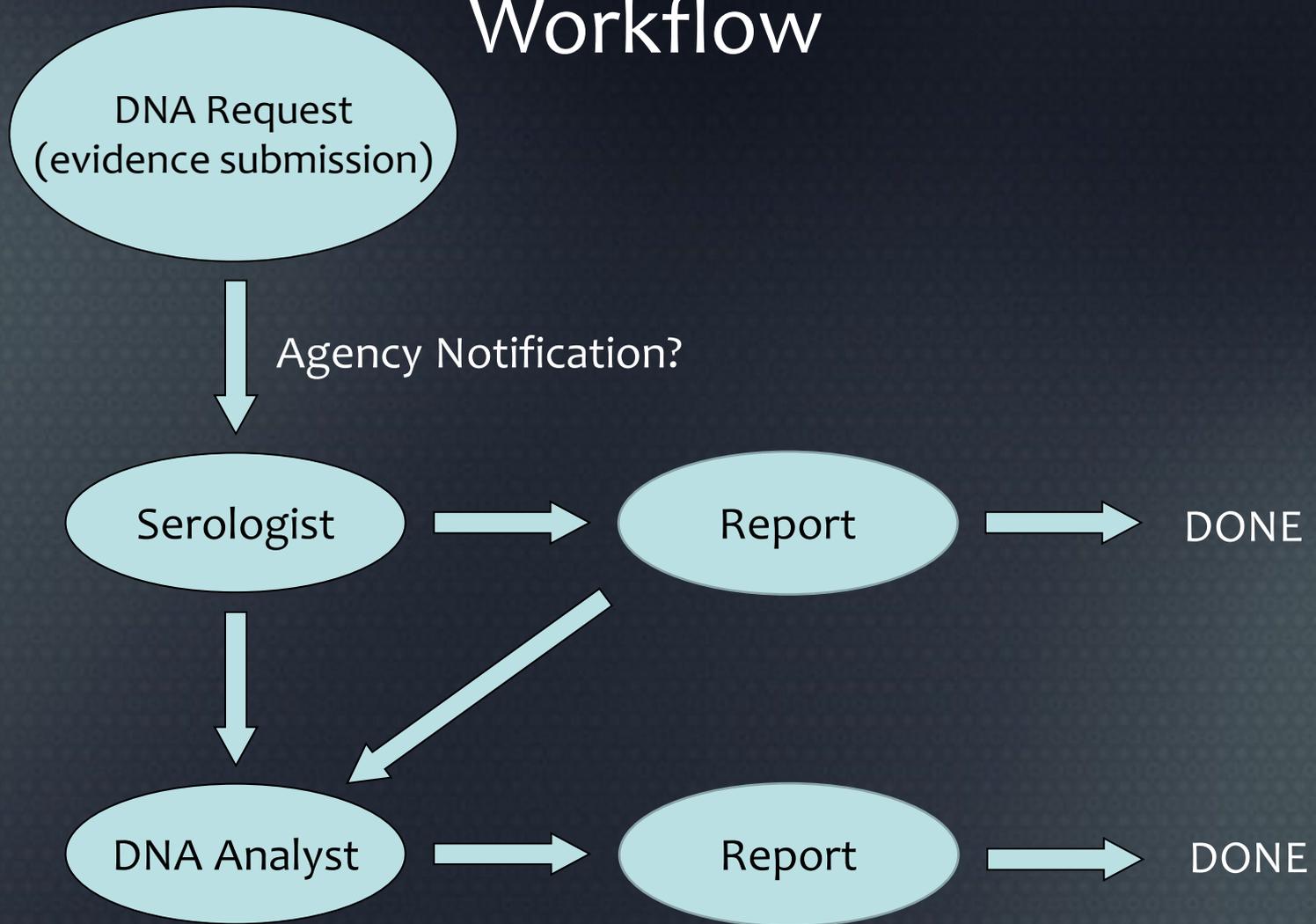


DNA Analyst

- Extracts DNA from cutting, swab, etc. retained by Serologist
- Potentially obtain a DNA profile(s) and enter into CODIS
- Interpret/compare DNA profile(s)
- Issue a report to submitting Detective/Officer

Note: Not all samples tested for DNA will yield usable results.

AZDPS Central Regional Crime Lab DNA Workflow



Q&A



“I’ll give you a topic”

- What did you want us to talk about that we didn’t?
- CODIS questions?
- Questions about packaging/collection techniques?
- Case-specifics? What-ifs? Weird scenarios?
- Jellybeans contain neither jelly nor beans... discuss!

Please fill out your survey

AZDPS Crime Lab Main Line Phone Numbers

Central Regional Crime Lab (Phoenix)	602-223-2394
Southern Regional Crime Lab (Tucson)	520-746-4575
Northern Regional Crime Lab (Flagstaff)	928-773-3687



Courtney Campbell, DNA Technical Unit Supervisor
Desk: 602-223-2766, e-mail: ccampbell@AZDPS.gov



Grant Belancik, DNA Casework Unit Supervisor
Sexual Assault Casework Point of Contact
Desk: 602-223-2848, e-mail: gbelancik@AZDPS.gov



Kelli Raley, Serology Unit Supervisor
Violent & Property Crime Casework Point of Contact
Desk: 602-223-2842, e-mail: kraley@AZDPS.gov



Amy Gerow, DNA CODIS Unit Supervisor
Desk: 602-271-7413, e-mail: agerow@AZDPS.gov

Questions about Rapid DNA?

Scott Rex, Lab Manager

Rapid DNA Program Point of Contact

Desk: 602-223-2339

e-mail: srex@AZDPS.gov

Mark Smith, Technical Services Unit Supervisor

Rapid DNA Program Point of Contact

Desk: 602-223-2889

e-mail: msmith@AZDPS.gov

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