

## FINGERPRINTS

**What causes fingerprints to be left behind when we touch things?**

- a) Salt produced by our sweat glands
- b) Natural sweats and oils in the skin
- c) Moisture in the atmosphere
- d) Dust on the things we touch

**IAFIS is the FBI's national fingerprint database. Criminologists often search the database for fingerprint matches. What does IAFIS stand for?**

- a) Intelligent Automated Footprint Identification System
- b) Intelligent Authentic Fingerprint Index System
- c) Integrated Automated Fingerprint Identification System
- d) Integrated Auto Fingerprint Index System

**During fuming, the super glue heats up and attaches to \_\_\_\_ in the fingerprint.**

- a) Human skin
- b) Amino acids and oil
- c) Valleys
- d) Fingerprint powder

**Evidence is usually placed in a superglue \_\_\_\_ when developing the fingerprints.**

- a) Chamber
- b) Tube
- c) Slide
- d) Tank

## DNA AND mtDNA

**DNA (deoxyribonucleic acid) is the genetic material in our cells that controls what we inherit from our parents. Which of the following statements is true?**

- a) Different parts of a person's body have different DNA.
- b) A DNA profile contains 31 unique genetic markers (known DNA sequences).
- c) Except identical twins, no two individuals have the exact same DNA.
- d) Siblings have the same DNA, because they were born by the same parents.

**What system used by the FBI compiles DNA of known violent offenders from all over the nation and can be used to match DNA with a sample found at a crime scene?**

- a) IAFIS
- b) DNAW
- c) CODIS
- d) Cddb

**A woman gets out of bed, watches TV, talks on the phone, pets her cat, and then goes shopping. Which object would be most useful in collecting the woman's DNA sample?**

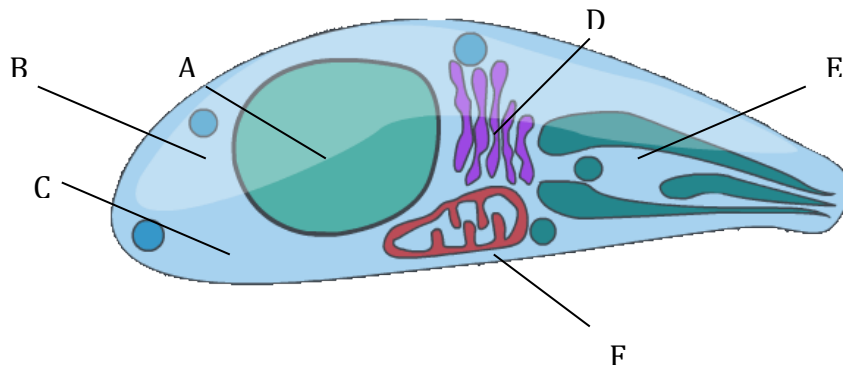
- a) The TV
- b) The cat
- c) The phone
- d) The TV remote

**Decide the correctness of the following statement:**

**You can alter your DNA so it will appear to be different.**

- a) True
- b) False

*Below is a diagram of a simplified human cell structure. Use this diagram to answer the following question.*



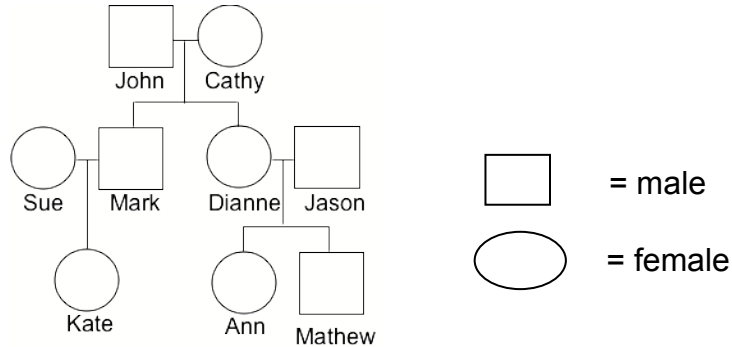
**A mitochondrion is the site of energy production and contains copies of mitochondrial DNA. Which one is it in the diagram?**

- a) A
- b) B
- c) C
- d) D
- e) E
- f) F

**Which of the following statements is true?**

- a) Mitochondrial DNA is as unique as nuclear DNA, so different people cannot have identical mitochondrial DNA.
- b) The shape of nuclear DNA is circular, while mitochondrial DNA is linear.
- c) In a cell, there are much more copies of mitochondrial DNA than nuclear DNA.
- d) Nuclear DNA is inherited from both parents, and so is mitochondrial DNA

**According to this family tree, which pair of people must have the same mitochondrial DNA?**



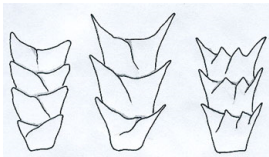
*John and Cathy are married. They have two children (Mark and Dianne) and three grandchildren (Kate, Ann and Mathew), as is shown in the family tree below.*

- a) Mark and Kate
- b) Jason and Mathew
- c) Cathy and Kate
- d) Cathy and Ann

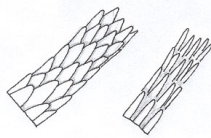
Note: same mtDNA=Cathy, Mark, Dianne, Ann, Mathew

## HAIR ANALYSIS

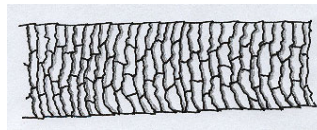
**The cuticle is the outside covering of a hair, and it has three different scale patterns. Which of the following pictures shows the cuticle scale that is found in a human hair?**



A



B



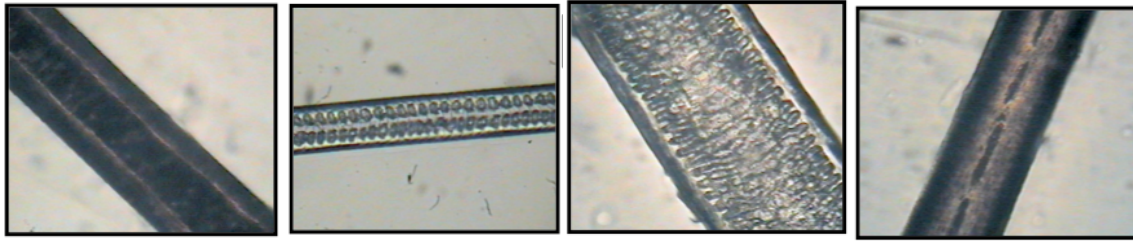
C

- a) A
- b) B
- c) C

**What must be present in a hair sample to test for nuclear DNA?**

1. Follicular tag
2. Cuticle
3. Medulla
4. Cortex

**John uses a microscope to exam hair samples from four different animals. Below is what he sees from each sample. Which one is most likely to be from a human? (picture source: [http:// sciencespot.net/](http://sciencespot.net/))**



A

B

C

D

Note: A=dog, B=rabbit, C=rat, D=human

- a) A
- b) B
- c) C
- d) D

## **FORENSIC ODONTOLOGY**

**There are various methods to document or preserve the bite mark on a victim. Which is NOT one of them?**

- a) The tissue and skin of the bite site is frozen for future comparisons.
- b) The bite mark is photographed using different lighting effects.
- c) An L-shape ruler is used to document the measurements of the bite mark.
- d) The saliva left on the bite mark is collected for DNA analysis.

**The anterior teeth are the front-most teeth that usually produce a bite mark.**

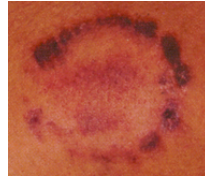
**What do the anterior teeth consist of?**

- a) Bicuspids and molars
- b) Incisors and canine
- c) Canine and Bicuspids
- d) Incisors and molars

**Picture A below is likely to be a dog bite, and picture B is likely to be a human bite. Which statement is part of the reasoning for this judgment?**



A



B

- a) There are more teeth marks in picture B than in picture A.
- b) Picture B shows prominent and large canine teeth.
- c) The bitemark in picture A is larger than the one in picture B.
- d) The bitemark in picture A is oval shaped, while the one in picture B is roughly circular.

**When photographing a bitemark, what tool is commonly used to document the measurements of the bitemark?**

- a) A coin
- b) An ABFO NO. 2 scale
- c) A tape measure
- d) A number tag

**You have a photo of the bitemark on a victim and have identified a suspect. Below is a list of tasks you need to complete before you can decide if his/her teeth match the bitemark. What is the correct order to complete these tasks?**

- A. Create a 3D cast of the suspect's teeth
  - B. Compare the end product with the bitemark photo
  - C. Take dental impression from the suspect
  - D. Trace the outline of the teeth onto a transparent sheet
- a) ACDB
  - b) CDAB
  - c) DACB
  - d) CADB

## TOXICOLOGY

### Does the sample below contain chemical A?

To test if a sample contains chemical A, the examiner used a reagent that reacts with chemical A to produce an orange color. The picture on the right shows the results on the testing tray. Use this information to answer the following questions.



- a) Yes
- b) No

### What does “negative control” mean in this test?

- a) It means nothing is added in that well.
- b) It means a sample that purposely does not contain chemical A.
- c) It means a sample that purposely gets a negative charge.
- d) It means the amount of chemical A is controlled to be small.

### What should be used as a positive control?

- a) Water
- b) Cyanide
- c) Chemical A
- d) Extraction buffer

### When is the victim’s sample taken for a toxicology screen?

- a) At the crime scene
- b) At the Morgue
- c) After a suspect is identified
- d) Never

### A toxicologist is responsible for:

- a) Examining the organs during an autopsy
- b) Testing blood and bodily fluids for poisoning
- c) Investigating whether a person died of natural causes
- d) Collecting fingerprints from the crime scene

## OTHERS

### A medical examiner autopsy does NOT require\_\_\_\_\_.

1. Evidence collection
2. Identification of the body
3. Photographic documentation
4. Permission from the next-of-kin

### Which chemical can be used to detect blood, even if it’s been wiped from a surface?

- a) Ninhydrin
- b) Cyanide
- c) CO<sub>2</sub>
- d) Luminol

**Blunt force trauma refers to:**

- a) Injures caused by sharp objects.
- b) Drowning and asphyxiation.
- c) Fractures, broken bones and external bruising.
- d) Diseases of the heart

**Identifying a specific person can best be achieved by\_\_\_\_\_.**

- a) Hair analysis
- b) Bitemark analysis
- c) Fingerprint analysis
- d) Shoeprint analysis

**A special type of microscope that allows two separate objects to be viewed simultaneously in the same ocular is known as a \_\_\_\_\_.**

- a) Compound microscope
- b) Comparison microscope
- c) Dissecting microscope
- d) Polarized light microscope