

Backboard Information for Hair Analysis

Hair Identification

It is difficult to stop hair from falling from your body. A few strands fall from your head every hour and if there is a struggle, hair could easily be torn out or become embedded under fingernails. Strands of hair are picked up at a crime scene with forceps and are placed in clip-top bottles.

Forensic scientists first determine whether a hair found at the crime scene is human or animal. They do this by examining the medullary pattern. There are four different medullary patterns and different species have unique medullary patterns. The medulla of a hair is made up of cells that run through the center of the cortex like a canal. In humans this is a very small layer. Scientists calculate the medullary index of a hair as a fraction. Human hair has a medullary index of less than $\frac{1}{3}$ while the medullary index of animals is . or greater.

Scientists examine the hair under a microscope and compare color and diameter. By studying the scales of that line the exterior of a hair, experts can determine whether the hair is similar. Although this process allows experts to judge how similar the hairs are, it cannot prove a definite link to a person. If the hair has a root, scientists can build a DNA profile from the hair which would then definitively link the hair to the suspect.

Hair can also be a form of a biological diary. If someone has been poisoned a small amount of the poison lodges in the millimeter of hair that forms in an average day.

Analysis can reveal the presence of a poison in hair.

Hair can also carry other evidence as well such as traces of dust, blood, fibers or even small particles of paint.

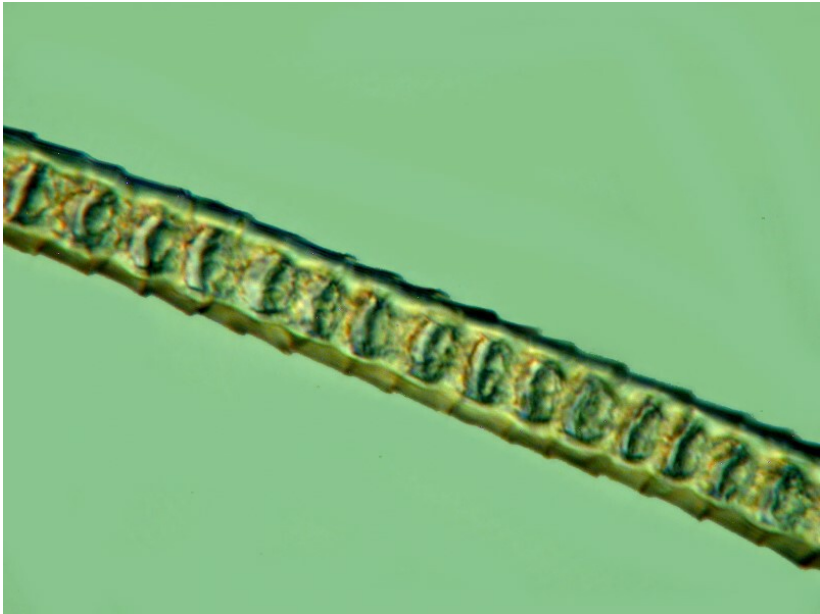
Instruction Card
A LESSON ON
HAIR ANALYSIS

A comb was found at the crime scene. You have examined the comb and retrieved two hairs. Compare the three hair samples to the crime scene evidence. Determine which hair [a, b, c,] matches the hair in the comb found at the crime scene.

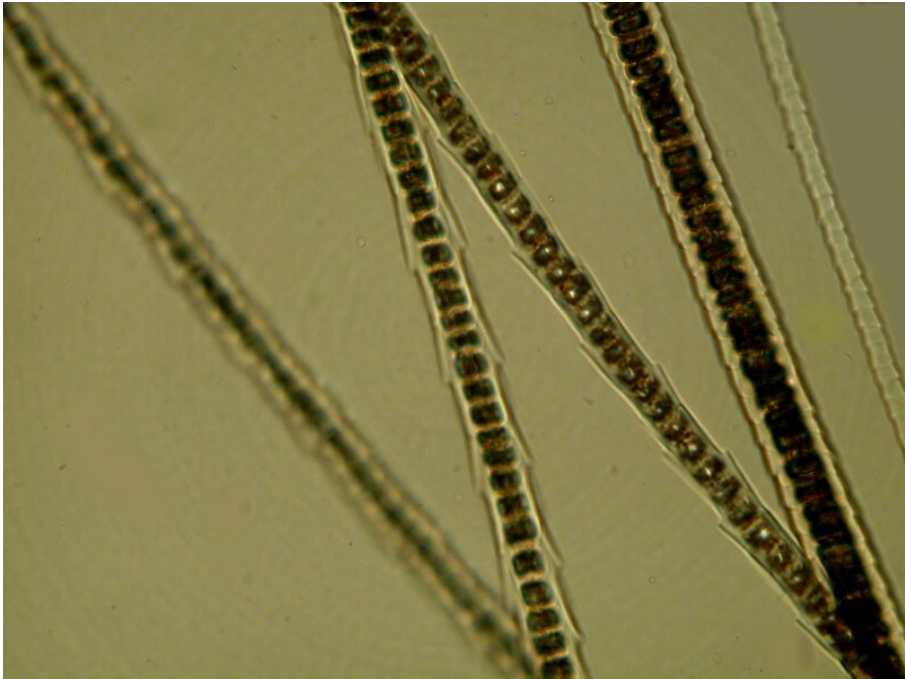
Procedure:

2. Compare the three hair samples to the crime scene evidence.
3. Sketch the three samples and the crime scene evidence.
4. Identify which hair matches the crime scene hair.
(use instructions below the samples)
5. Answer the questions.

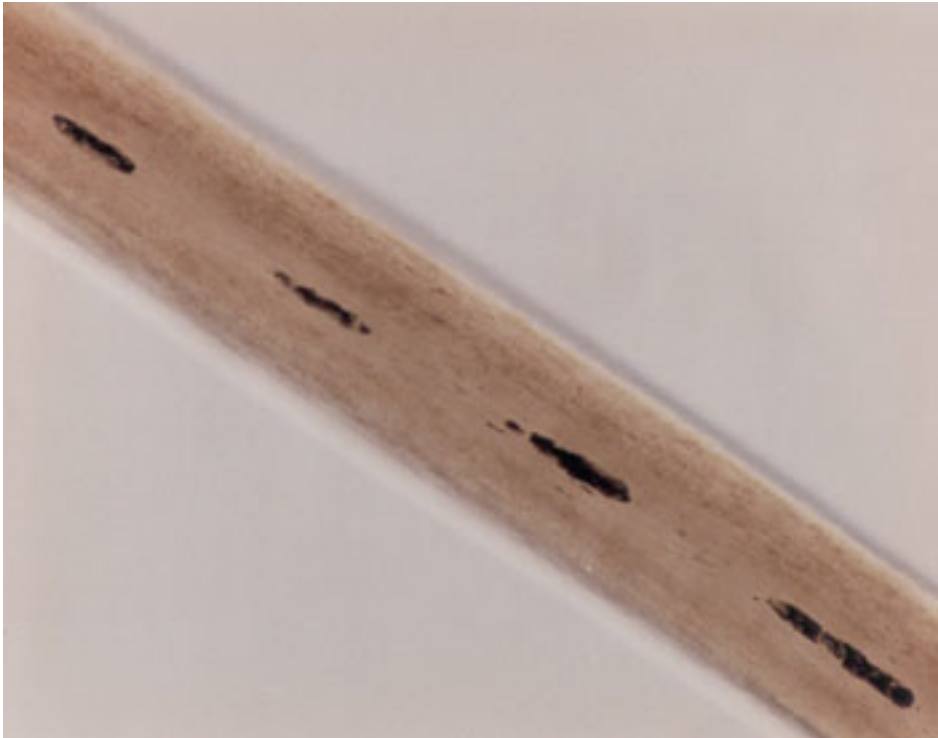
Crime Scene Hair:



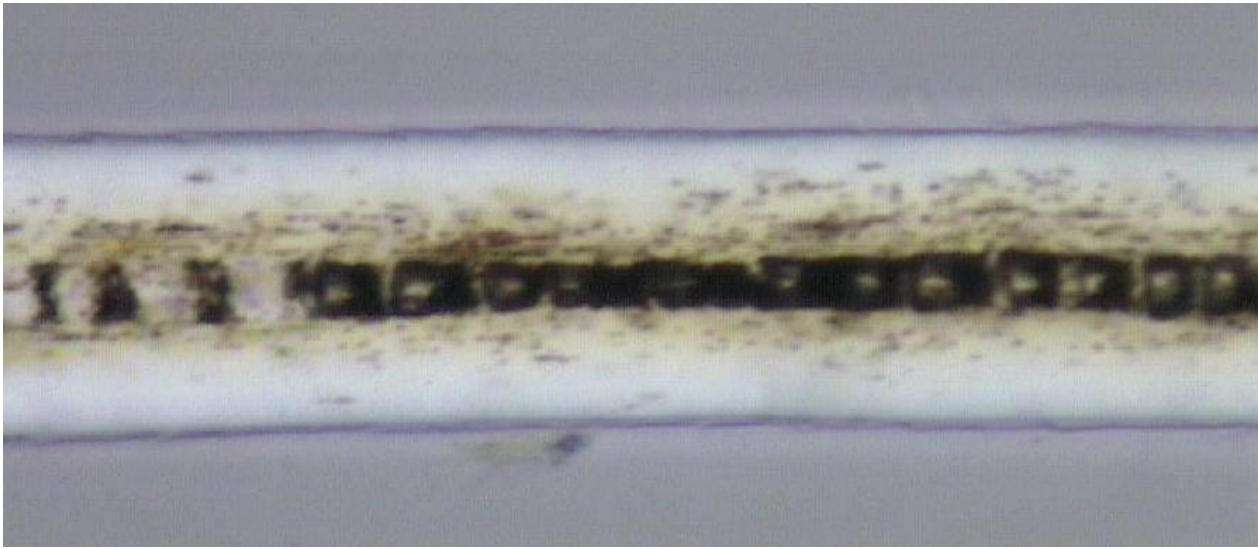
Sample A



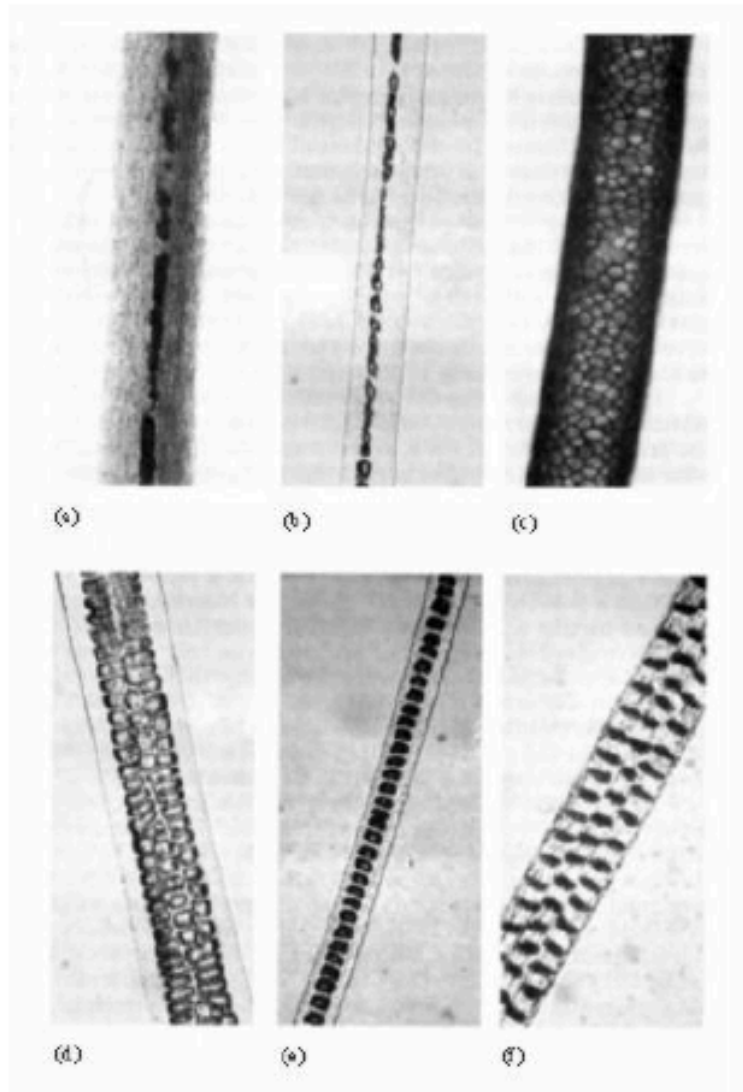
Sample B



Sample C



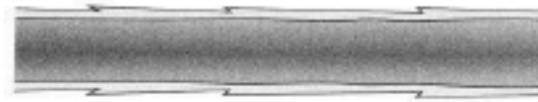
Medullary Patterns



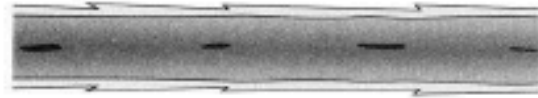
a human hair
b dog hair
c deer hair

d rabbit hair
e cat hair
f mouse hair

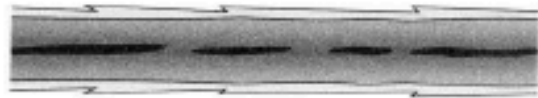
Medullary Pattern:



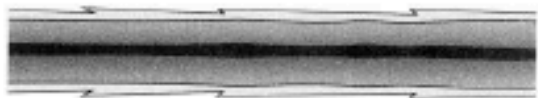
(a) Absent



(b) Fragmental



(c) Interrupted



(d) Continuous

Cross section of a shaft of Hair

