

Hair

Name: _____ # _____

Date: _____ Block: _____

1. What remains the hairs most characteristic forensic feature?

Morphology

2. The shaft is composed of what three layers?

Cuticle, Cortex, Medulla

3. The scales that make up the cuticle are made from what?

Special cells that have hardened and flattened while progressing from the follicle

4. The cortex contains granules. What are these granules and what do they determine?

Spindle-shaped cortical cells aligned in a regular array, parallel to the length of the hair. The cortex is embedded with pigment granules that impart color to hair.

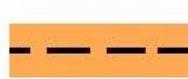
5. The medullary index measures what?

An estimate of the width of the hair taken up by the medulla

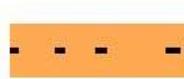
6. Name, describe, and sketch the four medulla patterns.



Continuous



Interrupted



Fragmented

and no medulla

7. What is the main purpose for examining a hair found at the crime scene?

The first thing to be done is an examination in a crime laboratory to establish whether the hair originates from a human or animal. If human, the hair retrieved at the crime scene should be compared with hair from suspects and victims to discover a match.

8. Can you distinguish a hair that has been bleached or dyed from a natural hair? How or why not?

A hair that has been dyed or artificially colored, displays a smooth uniform color similar to tinted glass. In contrast, naturally-colored hair usually contains granules with a texture similar to picture colored by a crayon.

9. What is the approximate growth rate for hair?

Hair is known to grow at a rate of approximately one centimeter (1 cm) per month.

10. What are the odds of a head hair originating from one person to another? A pubic hair?

The odds against a hair originating from another person are about 4500 to 1. The odds against two similar pubic hairs originating from two different individuals are about 800 to 1

11. Can the body area of a hair be determined? Why not?/How?

It is quite easy to identify where on a body a hair originated. Head hair has a smaller diameter than hair from the rest of the body and is more evenly colored. Hair from the legs and trunk contain more medulla than head hair, and exhibit a less uniform distribution of pigment. Pubic hairs are short, curly, and have a much more pronounced medulla. Facial hair is coarse and may have a triangular cross section, with blunt tips as a result of trimming and shaving.

12. Can the racial origin of hair be determined? Why not? /How?

Negroid hairs are normally kinky, containing dense, unevenly distributed pigments. Caucasian hairs are straight or wavy, with very fine to coarse pigments that are more evenly distributed when compared to Negroid hair. Sometimes a cross-sectional examination of hair may also aid in the identification of race. Cross sections of hair from Caucasians are oval to round in shape, whereas cross sections of Negroid hair are flat or oval in shape. Through DNA, specific information may be determined about the donor's racial origin.

13. Can the age and sex of a hair be determined? Why not? /How?

The age of an individual cannot be determined from a hair examination, except with infant hair. Infant hairs are fine, short in length, and have fine pigment. DNA can be used to determine the sex of the suspect.

14. Is it possible to determine if a body hair so was forcibly removed from the body? Why not? /How?

A hair root found to have follicular tissue adhering to it, indicative of a hair that has been pulled out. Hair naturally falling off the body will show a bulbous-shaped root, free of adhering tissue. An important consideration is how quickly the hair is pulled out of the head. Hairs pulled quickly from the head are much more likely to have blood or skin as compared to hairs which have been removed slowly.

15. DNA can be extracted from hair so why is hair found at a crime scene not normally used for DNA typing?

The recent development of mtDNA (mitochondrial DNA) analysis has made it possible to determine perform DNA typing on a single hair. However, the procedure is time consuming and expensive.

16. Can you distinguish between natural and synthetic fibers? Why not?/How?

Under close examination and comparison to natural fibers, synthetic fibers exhibit a uniform, un-natural texture.

17. List the features which are examined when observing a hair under a microscope.

Cortex (color), cuticle (outside edge), Medulla (index, type, shape), end (root, cut, . . .)

18. Where would an investigator look for control hairs in a missing person's case? Give a few examples.

Hair brush; suspects car, bed, favorite chair, sink or drain of bath tub.