

Name: _____ Date: _____ Period: _____

Forensic Hair Notes

Introduction

Human hair is one of the most _____ found pieces of evidence at the scene of a violent crime. It can provide a link between the criminal and the crime.

From hair, one can determine:

- *If the source is _____ or animal*
- *Whether the hair was _____ removed*
- *R_____ (sometimes)*
- *If the hair has been treated with chemicals*
- *Origin of the _____ on the source's body*
- *If _____ have been ingested*

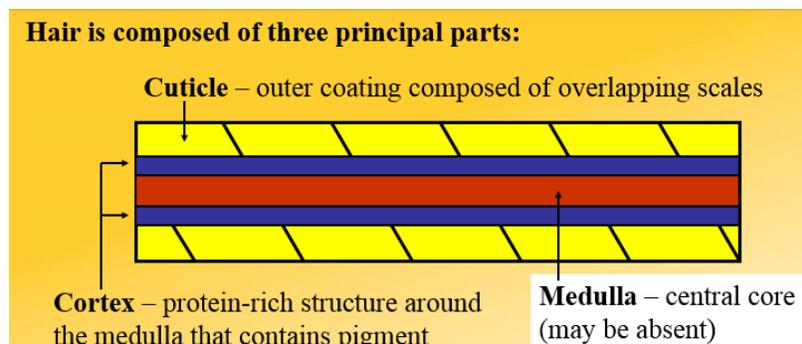
Biology of Hair

- Hair is composed of the protein _____, which is also the primary component of finger and toe _____.
- Hair is produced from a structure called the hair _____. Humans develop hair follicles during fetal development, and _____ new follicles are produced after _____.
- Hair color is mostly the result of pigments, which are chemical compounds that reflect certain wavelengths of _____ light.

Biology of Hair 2

- Hair _____ (round or oval) and _____ (curly or straight) is influenced heavily by _____.
- The physical appearance of hair can be affected by _____ status and intentional alteration
- The body area from which a hair _____ can be determined by the sample's *length, shape, size, color*, and other physical characteristics.

Hair Structure



The structure of hair has been compared to that of a _____ with the medulla being the _____, the cortex being the _____ and the cuticle being the _____ on the outside.

Cuticle

The cuticle varies in:

- Its _____,

How many there are per centimeter,

How much they overlap,

Their overall shape, and

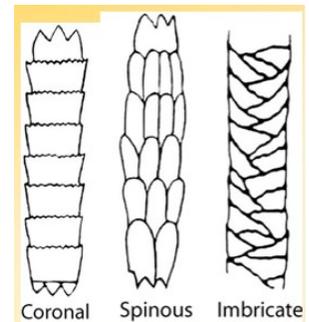
How much they protrude from the surface

- Its _____, and
- Whether or not it contains pigment.

Characteristics of the cuticle may be important in distinguishing between hairs of different _____ but are often not useful in distinguishing between different _____.

The Cuticle

- The cuticle is the _____ layer of hair which is covered with scales. The scales point toward the _____ of the hair.
- Scales differ among species of animals and are named based on their appearance.
- *The three basic patterns are:*
 - C _____
 - S _____
 - I _____



The Cortex

The cortex gives the hair its shape and takes up most of the _____ in human hair.

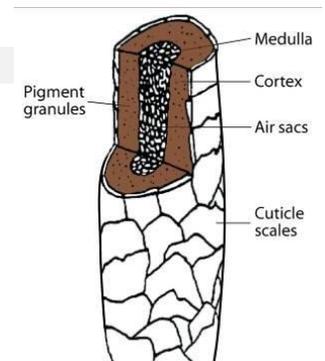
It has two major characteristics:

- M _____—pigment granules that give hair its _____
- C _____ fusi— _____ spaces, usually found near the root but may be found throughout the hair shaft

Medulla

The medulla may vary in:

- T _____
- C _____ - one continuous structure or broken into pieces
- O _____ - how much light is able to pass through it
- It may also be absent in some species.



- The medulla can be important for distinguishing between hairs of different **species**, but often does not lend to the differentiation between hairs from different **people**.

The Medulla

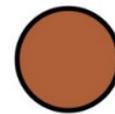
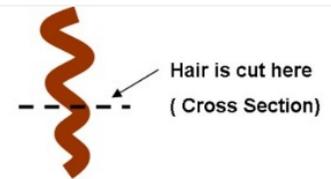
The medulla is the hair core that is not always visible. It comes in different _____ and patterns.

Medulla Pattern	Description	Diagram
<i>Continuous</i>	One unbroken line of color	
<i>Interrupted (Intermittent)</i>	Pigmented line broken at regular intervals	
<i>Fragmented or Segmented</i>	Pigmented line unevenly spaced	
<i>Solid</i>	Pigmented area filling both the medulla and the cortex	
<i>None</i>	No separate pigmentation in the medulla	

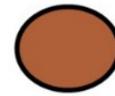
Hair Shape

Can be *straight*, *curly*, or *kinky*, depending on the cross-section, which may be:

- > *R* _____
- > *O* _____
- > *C* _____



Asian hair
Round shape



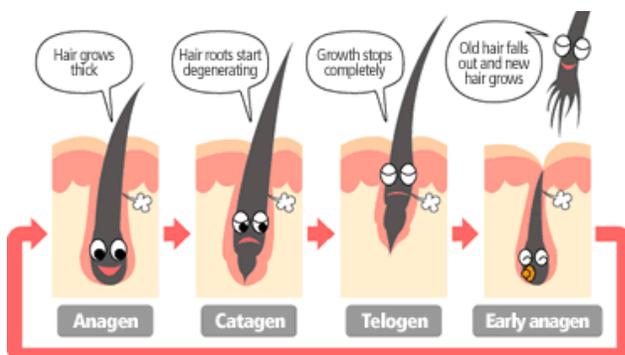
Caucasian hair
Slightly less round than asian hair



African hair
Oval or elliptical shape.

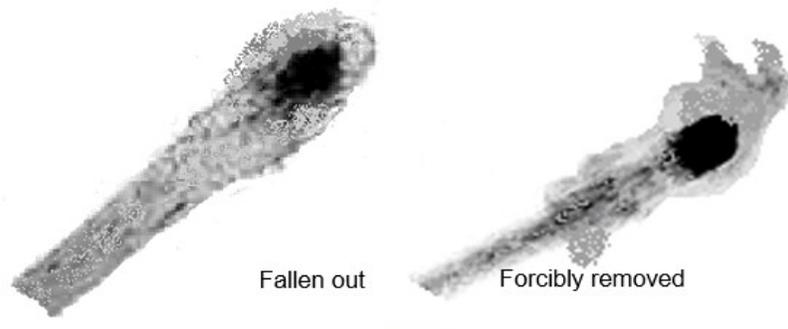
Hair Growth

- A _____—hair is actively growing; lasts up to _____ years
- C _____—hair is _____ growing; a resting phase
- T _____—follicle is getting ready to push the hair out; lasts _____ to _____ months
- Grows about 0.4 mm per day or 1/2 inch per month



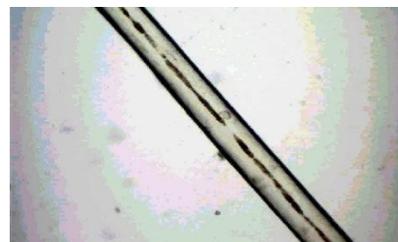
The Root

- Human roots look different based on whether they have been _____ removed or they are telogen hairs and have _____ out.
- Animal roots vary, but in general have a _____ shape.



Gray Hair

Pigment granules are _____ in grey hairs



Hair Toxicology

Advantages:

- Easy to _____ and store
- Is externally available
- Can provide information on the individual's history of _____ use or evidence of _____

Collections must be taken from _____ locations on the body to get an accurate timeline.

Napoleon

Napoleon died in exile in 1821. By analyzing his hair, some investigators suggest he was poisoned by the deliberate administration of _____; others suggest that it was vapors from the dyes in the wallpaper that killed him.

Hair drug testing

Drugs can be detected in hair for up to three months after use while urine tests go back only a few days and can be easily altered.

Analyzing hair for drug abuse

Trace amounts of chemical substance are entrapped in the hair

