

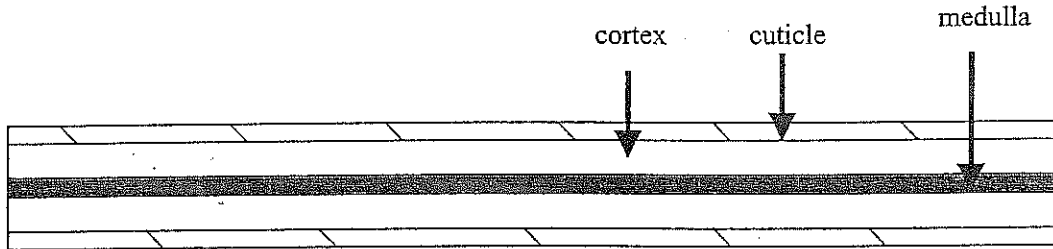
Investigating and Describing Hair

Problem: Who's hair is this?

I will use microscope number: _____

Background Information:

Each hair grows out of a tiny pocket in the skin called a follicle. The base of the hair--the part attached to the follicle--is called the root hair. A strand of hair has three layers: cuticle, cortex and medulla. It is easy to compare a hair follicle to a pencil. In a pencil, the medulla would be the lead, the cortex would be the wood, and the cuticle would be the paint on the outside.



** Please highlight New information you learn in the next 3 paragraphs.*

The **cuticle** is the outer covering. The scales of the cuticle may vary in number (how many there are), how much they overlap, their overall shape, and how much they protrude from the surface. The thickness of the cuticle may vary as well, and the cuticles of some species' hairs may contain pigment (color). Characteristics of the cuticle may be important in distinguishing between hairs of different species but are often not useful in distinguishing between different people.

The **cortex** varies in thickness, texture, and color. The cortex contains pigment granules. These give hair its color. The color and shape provide important points of comparison between the hair of different individuals. Generally, African American hair is curly and contains uneven pigment (color). Caucasian hair is usually straight or wavy, with more even distribution of color. The cortex is perhaps the most important component in determining which individual a human hair may have come.

The **medulla** is a hollow tube that runs the length of the hair. Sometimes it is present, sometimes not. Sometimes the canal is continuous, while in other cases it is fragmented. For example, except for the Asian race, human head hairs usually have fragmented medullae or no medullae at all. Among Asians, head hair generally have continuous medullae. Animal hair has a characteristically thicker medulla and cuticle than in a human, since their hair is their means of warmth.



continuous medulla



broken medulla

Forensic analysts are often asked to compare hair found at a crime scene with hair from a particular individual. The examiner compares a variety of factors, including color, coarseness, hair diameter, amount of curl, length of the hair, and the presence or absence of a medulla.


Procedure (or **Experiment**):

1. Examine strands of hair under a microscope. Be sure to view all colors: blonde, brown, black, & gray.
2. Look for the cuticle, cortex, and medulla. Note the distribution of color (pigment) in the hair strands.
3. Make drawings of all hair types listed below. Be sure to draw arrows to the cuticle, cortex, and medulla in each drawing.
4. In the blank provided, please write what magnification you are using when you are sketching your hair samples. (40x, 100x, or 400x)
5. Record observations under your drawings that might help you to identify the specific color of hair.

Record Data / Observations:

_____ 's

BLONDE HAIR



Cuticle

Cortex

Medulla

Magnification: _____ X

Amount of curl? _____

Length (in mm)? _____


Cuticle Scales (flat & smooth, protruding, spikey, etc.)

Medulla (present,/absent, broken/continuous, thick/thin)

Other details? _____

_____ 's

BROWN HAIR



Cuticle

Cortex

Medulla

Magnification: _____ X

Amount of curl? _____

Length (in mm)? _____

Cuticle Scales (flat & smooth, protruding, spikey, etc.)

Medulla (present,/absent, broken/continuous, thick/thin)

Other details? _____

_____ 's

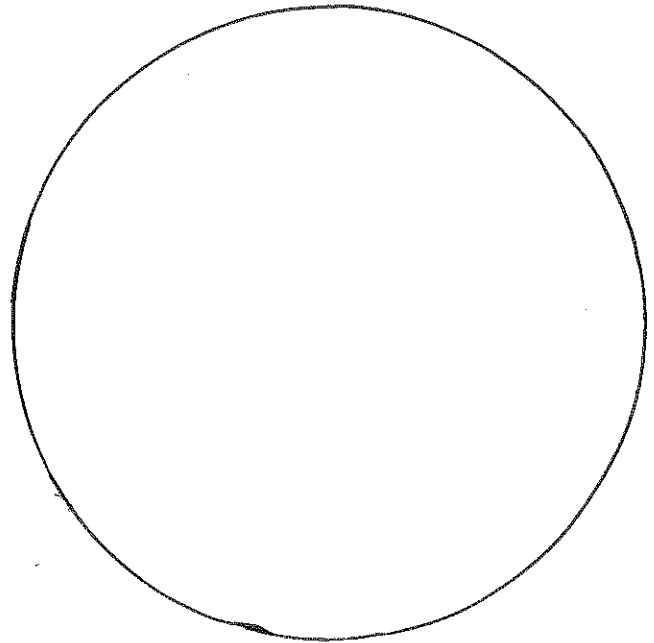
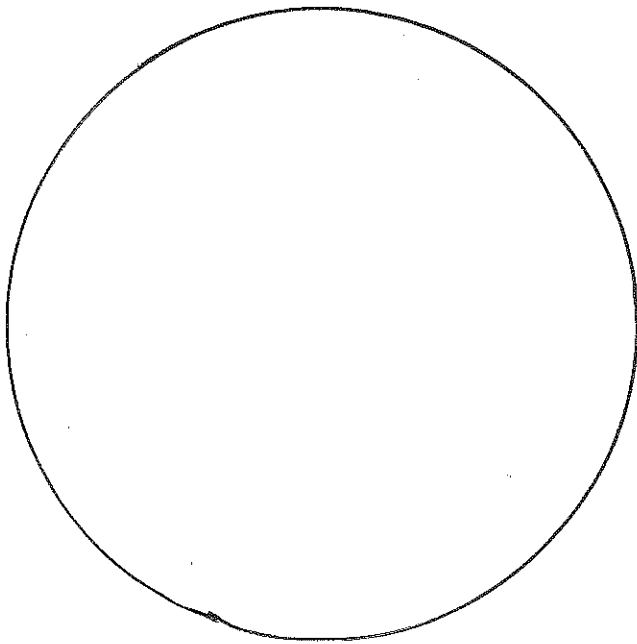
GRAY HAIR



_____ 's

BLACK HAIR

Cuticle



Cortex

Medulla

Magnification: _____X

Magnification: _____X

Amount of curl? _____

Amount of curl? _____

Length (in mm)? _____

Length (in mm)? _____

Cuticle Scales (flat & smooth, protruding, spikey, etc.)

Cuticle Scales (flat & smooth, protruding, spikey, etc.)

Medulla (present./absent, broken/continuous, thick/thin)

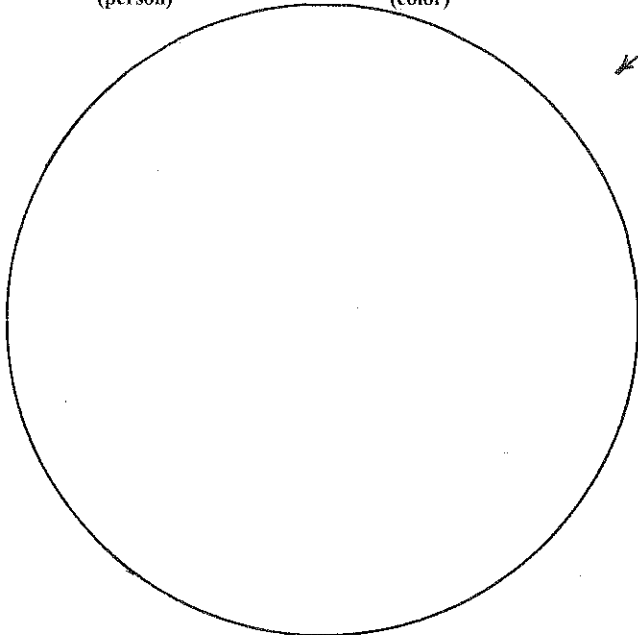
Medulla (present./absent, broken/continuous, thick/thin)

Other details? _____

Other details? _____

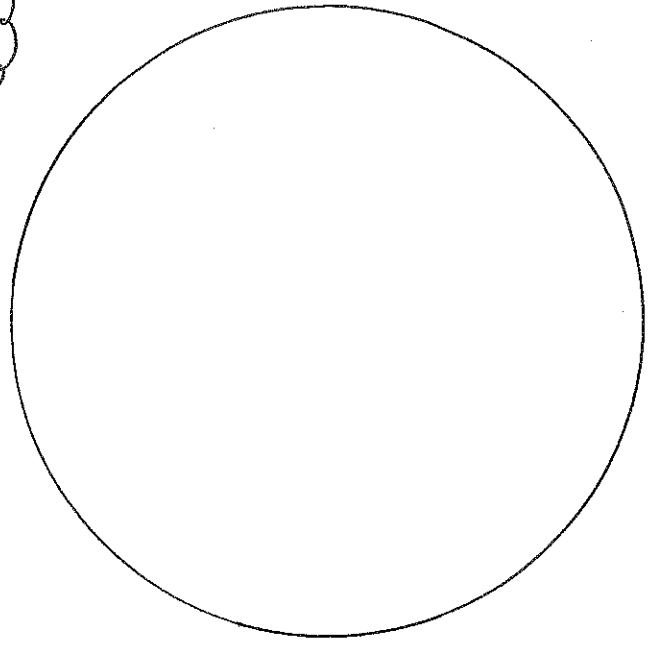
_____ 's _____ hair
↑ (person) ↑ (color)

Please label!



Magnification: _____X

ROOT of a hair



Cuticle

Cortex

Medulla

Magnification: _____X

Condition of root: (narrow, rounded, pointed, attached)

bits of skin, etc.) _____

Conclusion: Write 3 new ideas you learned from this activity?

1. _____

2. _____

3. _____
