

Evaluating Scientific Evidence for Hair and Drug Testing

UTLaw CLE

Sol Bobst PhD DABT

ToxSci Advisors LLC

Houston, Texas

Nov 16th, 2020

1

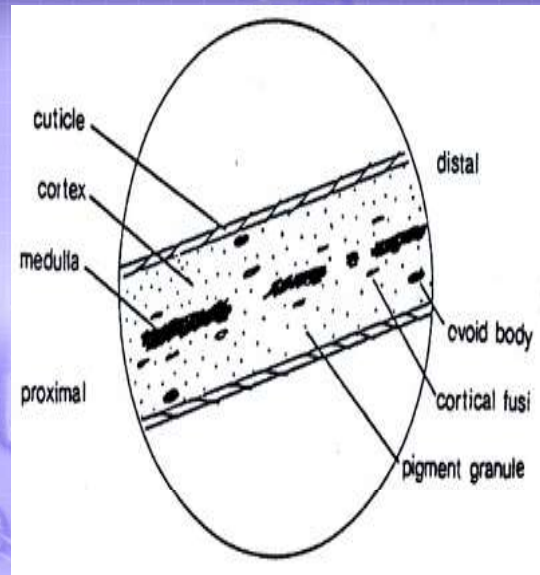
Overview

- The Science of Hair & Hair Testing
- Major Issues with Hair Testing
- Cocaine and Bias Case Study

2

Hair Morphology

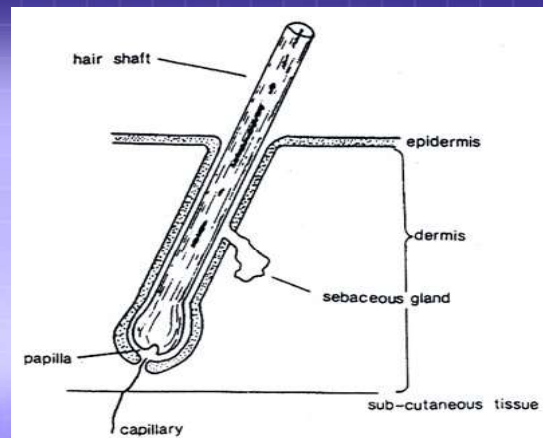
- The most basic components of hair are keratin, a very strong protein that is resistant to decomposition, and melanin, a pigment.
- The keratins form groups that interact and interconnect to form very stable fibrils. It is this property of hair that makes it such a prime example of physical evidence.



3

Hair Morphology

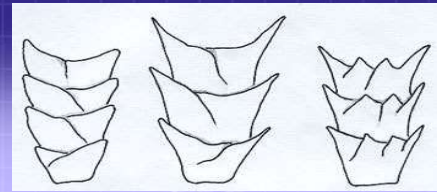
- Hairs are dead, cornified cells. The portion existing above the epidermis is called the shaft; below the epidermis, the root is embedded in the hair follicle.
- The hair shaft is composed of three layers:
 - Outer cuticle
 - Cortex
 - Central medulla



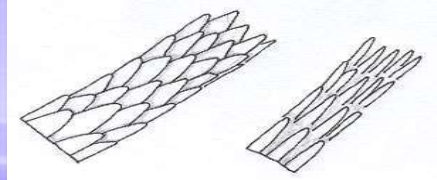
4

Cuticle

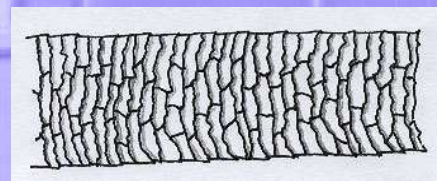
- The cuticle of a hair is the thin, translucent layer surrounding the shaft. It consists of scales of hardened, keratinized tissue that vary from species to species, and includes such patterns as:
 - Coronal, or “crown – like.” Rare in humans; typical of rodents. Found in hairs of very fine diameter.
 - Spinous, or “petal – like.” Never found in humans. Common in cats, seals, and minks.
 - Imbricate, or “flattened.” Common in humans.



Coronal



Spinous



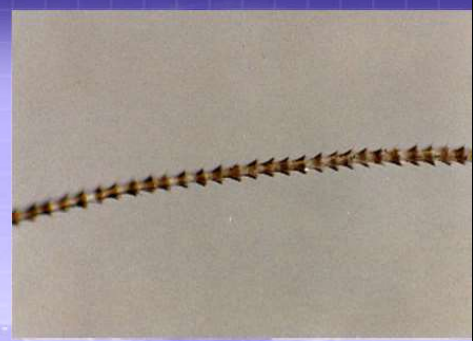
Imbricate

5

Cuticle



Photomicrograph of a mink hair possessing a Spinous cuticle.



Photomicrograph of a bat hair possessing a Coronal cuticle.



Photomicrograph of a human hair possessing an Imbricate cuticle.

6

Find the full text of this and thousands of other resources from leading experts in dozens of legal practice areas in the [UT Law CLE eLibrary \(utcle.org/elibrary\)](https://utcle.org/elibrary)

Title search: Evaluating Scientific Evidence for Hair and Drug Testing

Also available as part of the eCourse

[eSupplement to the 2022 Conference on Criminal Appeals](#)

First appeared as part of the conference materials for the
2020 Evaluating Scientific Evidence for Hair and Drug Testing session
"Evaluating Scientific Evidence for Hair and Drug Testing"