A 3D-rendered wooden gavel with a smooth, polished finish. The gavel has a cylindrical head with a flat top and a long, tapered handle. It is positioned vertically on a circular wooden base. The lighting creates highlights and shadows, giving it a realistic appearance.

## *Chapter 2:* Types of Evidence

“You can learn a lot by  
just watching.”

—Yogi Berra, former New York  
Yankees catcher and sage



# Evidence

## *Students will learn:*

- The difference between indirect and direct evidence
- That eyewitness accounts have limitations
- What is meant by physical evidence and give examples
- What physical evidence can and cannot prove in court
- The significance of individual and class evidence





<http://science.howstuffworks.com/csi.htm>

<http://www.youtube.com/watch?v=ZZHf5G8MuUw&feature=Playlist&p=BF49F173D4A67E05&index=0>

<http://www.youtube.com/watch?v=EQUE8IeVmpA&feature=related>



# Types of Evidence

## Two general types:

- **Testimonial**—a statement made under oath; also known as direct evidence or *Prima Facie* evidence
- **Physical**—any object or material that is relevant in a crime; also known as indirect evidence. Examples are hair, fiber, fingerprints, documents, blood, soil, drugs, tool marks, impressions, glass.



# How observant are you?

 <http://www.shodor.org/workshops/forensic/skills/observation2.html>



# Reliability of Eyewitness

## Factors:

- Nature of the offense and the situation in which the crime is observed
- Characteristics of the witness
- Manner in which the information is retrieved

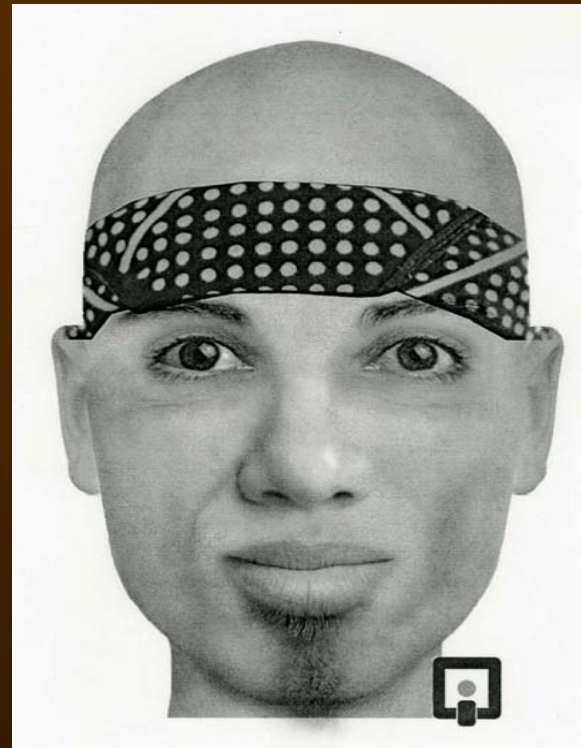
## Additional factors:

- Witness's prior relationship with the accused
- Length of time between the offense and the identification
- Any prior identification or failure to identify the defendant
- Any prior identification of a person other than the defendant by the eyewitness



# Eyewitness


- A police composite may be developed from the witness testimony by a computer program or forensic artist.
- “Perception is reality.”
- As a result of the influences in eyewitness memory, physical evidence becomes critical.



*Faces*—a composite program by InterQuest



# How observant are you?

 In order to be a good scientist of any kind you need to be observant.

 <http://www.shodor.org/workshops/forensic/skills/observation.html>



# Value of Physical Evidence

- Generally more reliable than testimonial
- Can prove that a crime has been committed
- Can corroborate or refute testimony
- Can link a suspect with a victim or with a crime scene
- Can establish the identity of persons associated with a crime
- Can allow reconstruction of events of a crime



# Reconstruction

**Physical Evidence is used to answer questions about:**

- what took place
- how the victim was killed
- number of people involved
- sequence of events

**A forensic scientist will compare the *questioned* or unknown sample with a sample of *known* origin.**



# Types of Physical Evidence

- **Transient Evidence**—temporary; easily changed or lost; usually observed by the first officer at the scene
- **Pattern Evidence**—produced by direct contact between a person and an object or between two objects
- **Conditional Evidence**—produced by a specific event or action; important in crime scene reconstruction and in determining the set of circumstances or sequence within a particular event
- **Transfer Evidence**—produced by contact between person(s) or object(s), or between person(s) and person(s)
- **Associative Evidence**—items that may associate a victim or suspect with a scene or each other; ie, personal belongings

—Lee and Labriola in *Famous Cases*, 2001



## Examples of Transient Evidence



- **Odor**—putrefaction, perfume, gasoline, urine, burning, explosives, cigarette or cigar smoke
- **Temperature**—surroundings, car hood, coffee, water in a bathtub, cadaver
- **Imprints and indentations**—footprints, teeth marks in perishable foods, tire marks on certain surfaces
- **Markings**



# Examples of Pattern Evidence

**Pattern Evidence**—most are in the form of imprints, indentations, striations, markings, fractures or deposits.

- Blood spatter
- Glass fracture
- Fire burn pattern
- Furniture position
- Projectile trajectory
- Tire marks or skid marks
- Clothing or article distribution
- Gun powder residue
- Material damage
- Body position
- Tool marks
- Modus operandi











## Examples of Conditional Evidence

- **Light**—headlight, lighting conditions
- **Smoke**—color, direction of travel, density, odor
- **Fire**—color and direction of the flames, speed of spread, temperature and condition of fire
- **Location**—of injuries or wounds, of bloodstains, of the victim's vehicle, of weapons or cartridge cases, of broken glass
- **Vehicles**—doors locked or unlocked, windows opened or closed, radio off or on (station), odometer mileage
- **Body**—position, types of wounds; rigor, livor and algor mortis
- **Scene**—condition of furniture, doors and windows, any disturbance or signs of a struggle



# Classification of Evidence by Nature

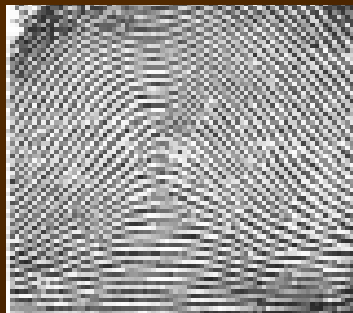
- **Biological**—blood, semen, saliva, sweat, tears, hair, bone, tissues, urine, feces, animal material, insects, bacterial, fungal, botanical
- **Chemical**—fibers, glass, soil, gunpowder, metal, mineral, narcotics, drugs, paper, ink, cosmetics, paint, plastic, lubricants, fertilizer
- **Physical**—fingerprints, footprints, shoe prints, handwriting, firearms, tire marks, tool marks, typewriting
- **Miscellaneous**—laundry marks, voice analysis, polygraph, photography, stress evaluation, psycholinguistic analysis, vehicle identification



# Evidence Characteristics

- **Class**—common to a group of objects or persons
- **Individual**—can be identified with a particular person or a single source

Fingerprints



Blood DNA Typing





# Class vs Individual Evidence



Which examples do you think could be individual evidence?





# Forensic Investigations

*Include some or all of these seven major activities*

1. Recognition—ability to distinguish important evidence from unrelated material
  - Pattern recognition
  - Physical property observation
  - Information analysis
  - Field testing
2. Preservation—collection and proper preservation of evidence



# Investigations

3. Identification—use of scientific testing
  - Physical properties
  - Chemical properties
  - Morphological (structural) properties
  - Biological properties
  - Immunological properties
4. Comparison—class characteristics are measured against those of known standards or controls; if all measurements are equal, then the two samples may be considered to have come from the same source or origin.



# Investigations

5. Individualization—demonstrating that the sample is unique, even among members of the same class
6. Interpretation—gives meaning to all the information
7. Reconstruction—reconstructs the events of the case
  - Inductive and deductive logic
  - Statistical data
  - Pattern analysis
  - Results of laboratory analysis

—Lee, Dr. Henry. *Famous Crimes*, 2001



# Class vs Individual Evidence



- These fibers are class evidence; there is no way to determine if they came from this garment.
- The large piece of glass fits exactly to the bottle; it is individual evidence.



# People in the News

**Dr. Henry Lee**—Chief Emeritus for Scientific Services and the former Commissioner of Public Safety for the state of Connecticut. He served as that state’s Chief Criminality from 1979 to 2000. Lee was the driving force in establishing the modern forensic lab in Connecticut. He has worked with many high profile cases including O.J. Simpson, Jon Benet Ramsey, and the “wood chipper” case. He is also seen on many of the true crime shows, including his own, “*Trace Evidence: The Case Files of Dr. Henry Lee*”. Learn more at his website:



[www.drhenrylee.com/review.shtml](http://www.drhenrylee.com/review.shtml)



# FBI Investigation

Read a case investigated by the FBI.  
Observe the various units of their lab and  
read the section: “How They Do That?”.

[www.fbi.gov/kids/6th12th/investigates/investigates.htm](http://www.fbi.gov/kids/6th12th/investigates/investigates.htm)