Tire Treads and Impressions

- Tire impressions
  - Tire treads—ridges and grooves channel water away and provide traction
  - Patent tread patterns—impressions made after tire runs through a fluid material
  - Latent tread patterns—impressions from tire oils used to keep tires soft and pliable
  - Plastic tread patterns—three dimensional impressions left in soft surfaces

Tire Treads and Impressions

- Tread patterns can indicate the type of vehicle that left the mark
- Link a suspect or victim to a crime scene
- Reveal events that took place at the scene

Anatomy of a Tire

- Tread area
- Rib
- Grooves
- Shoulders
- Steel belts
- Bead covers

Recording Tread Impressions

- Count ridges and grooves across the tire width
- Note unique characteristics—wear or pebbles embedded in the grooves
- Create a print of the suspect’s tire impressions through one revolution
- Compare impressions from the crime scene and suspect’s tire
- Identifying tread patterns may not be enough to link a suspect with a crime scene

Identifying a Vehicle

- Track widths—From center of tire to center of tire
- Wheelbase length—From center of front axle to center of rear axle
Identifying a Vehicle

- Turning diameter
  - Measured how tight a circle can be driven by a vehicle (amount of space required to take a U-turn)

Databases can be checked to find the vehicle with these specifications.

Accident Reconstruction

- Drivers may not recall the exact series of events before, during, and after an accident
- People, vehicles, and objects, however, can leave evidence of their actions at the scene of an accident
- Debris patterns and tire marks can be clues to speed, direction, and vehicle identification

Accident Reconstruction

There are three basic types of tire marks:

- Skid marks—clues to the distance traveled after brakes are applied and the vehicle’s speed
  - Formed when someone brakes suddenly and locks the wheels
- Yaw marks—shows a sideways skid
  - Formed when a vehicle travels in a curved path faster than the vehicle can handle and skids sideways
- Tire scrub—determines the area of impact
  - Formed by a damaged or overloaded tire or tires during or immediately after impact.

Intro to Dental Impressions

- Occasionally a perpetrator will leave behind a bite mark—considered individual evidence
- Note differences in the size of teeth and jaws, position, fillings, crowns, caps, breakage, and crowding

Development of Teeth

<table>
<thead>
<tr>
<th>Baby teeth come in</th>
<th>Adult teeth come in (years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.0 mos.</td>
<td>6.0 mos.</td>
</tr>
<tr>
<td>12.0 mos.</td>
<td>9.0 yrs.</td>
</tr>
<tr>
<td>18.0 mos.</td>
<td>12.0 yrs.</td>
</tr>
<tr>
<td>24.0 mos.</td>
<td>15.0 yrs.</td>
</tr>
<tr>
<td>6.0 yrs.</td>
<td>18.0 yrs.</td>
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</tbody>
</table>

Dental Patterns in Forensics

- The investigation consists of recognizing, documenting, collecting, and analyzing evidence
  - What are the two basic ways dental patterns can be used in forensic investigations?
- There are 76 points of comparison when comparing a suspect’s dental patterns with bite marks left at a crime scene
  - What is the common method used to reveal whether there is a match?
Summary

- Impression evidence—whether patent, latent, or plastic—will be considered class evidence unless it has individualizing features.
- Debris patterns and tire marks can be clues to speed, direction, and vehicle identification.
- Differences in dental patterns can connect a person to a crime scene.
- Documentation (including early photos) is extremely important in an investigation.