Forensic Odontology
American Academy of Forensic Sciences

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Education Necessary

- High School (4 years)
- College Degree (4 years)
- Dental School (4 years)
- Dental Specialty (2-6 years)
- Continuing Education in Forensics (lifetime)
What do Forensic Odontologists Do?

- Dental Identification
- Mass Disaster Identification
- Patterned Injury Analysis (Bitemarks)
- Age Estimation
- Child Abuse
- Dental Malpractice
Survivability of Dental Evidence

- Teeth are calcified structures
  - resistant to decomposition
  - resistant to changes associated with water
  - resistant to drying
  - resistant to cold
  - resistant to heat
Survivability of Dental Evidence

Dental Restorations are stable

- resistant to environmental effects
- resistant to temperature all the way up to cremation

Oral Structures in a protected environment

- soft tissues keep temperature lower (Tongue, Cheeks, Buccal fat pad)
- encasement in Alveolar Bone is protection
Incinerated Remains and Dental Evidence

Effects of heat

- household fire 1200 F
- cremation 1600 - 1800 F
- teeth and bone > 1000 F
- dental restorations 1600 - 2000 F

Note the teeth
Methods of Identification

• Visual
• Personal Effects
• Exclusion
• Anthropology
• Autopsy Findings
• Dental
• Fingerprints
• DNA

From Least to Most Scientific
TRAGIC ERROR
A CRUEL MIX-UP CAUSES A HEARTBREAKING DANCE BETWEEN GRIEF AND JOY

A 22-year-old woman believed to be Taylor University senior Laura VanRyn lay in a coma for five weeks following a horrific highway accident April 26 in Indiana. VanRyn’s family kept vigil at her bedside and posted pleas on their blog to “please pray for her to emerge from her coma soon.” When she did, the VanRyns received an unfathomable shock: “The young woman we have been taking care of... has not been our dear Laura.” She was Whitney Cerak, 19, a Taylor freshman. VanRyn, her near look-alike, had been buried in her place. Said VanRyn’s boyfriend: “I felt like it’s the biggest trick [God]’s ever played on me.”

HOW COULD IT HAPPEN?
A coroner’s original misidentification of one of five accident fatalities and a severely injured survivor was compounded when the family of the actual survivor, Cerak, decided on a closed casket. Inside was her look-alike schoolmate, VanRyn.
Dental

- Tooth either present or missing
- Five possible surfaces that can be restored
- 32 teeth
- \(7^{32}\) possible combinations
- \(1,104,427,674,000,000,000,000,000,000\)
Aging the Unknown
Dental Aging
Aging
Colleagues:

Hurricane Katrina left many deceased victims in her wake, some of whom may be your patients.

In many cases, your records—even heavily damaged ones—are the only source available to identify these victims.

You are advised not to destroy or discard any records, regardless of current condition. Despite extensive damage, certain elements remain interpretable and have proven essential for the reliable identification of deceased storm victims.

If you have damaged records, or if you have questions regarding the dental identification process, you are directed to call:

1-866-326-9393

and ask for

Douglas Cross, D.D.S.

at the

DMORT Dental Station
Bitemarks
Characteristics of Human Bitemarks

- Ovoid or elliptical in shape
Bitemarks
Is this a *Human* bite mark?
Animal vs. Human Bite Marks

Canines

Incisors

Shape

Size

Infection
# Animal vs. Human Bite Marks

## New York City 1982 Bite Mark Statistics*

<table>
<thead>
<tr>
<th>Animal</th>
<th>Total Bites</th>
<th>Animal</th>
<th>Total Bites</th>
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</thead>
<tbody>
<tr>
<td>Rabbit</td>
<td>19</td>
<td>Gerbil</td>
<td>16</td>
</tr>
<tr>
<td>Horse</td>
<td>12</td>
<td>Snake</td>
<td>12</td>
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<tr>
<td>Turtle</td>
<td>6</td>
<td>Raccoon</td>
<td>5</td>
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<tr>
<td>Monkey</td>
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<tr>
<td>Dog</td>
<td>12001</td>
<td>Cat</td>
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<tr>
<td>Hamster</td>
<td>40</td>
<td>Rat</td>
<td>241</td>
</tr>
<tr>
<td>Squirrel</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>14905</td>
<td>Human</td>
<td>1557</td>
</tr>
</tbody>
</table>

3 bites each — ferrets, opossums, crabs, bats
2 bites each — blue jays, spiders, goats
1 bite each — donkey, goose, scorpion, wasp, lion fish, sea lion, beaver, guinea pig, chipmunk

*NYC Health Dept. Statistics reported April 14, 1983 in San Antonio Express News
Organizations

www.aafs.org

www.asfo.org

www.abfo.org
Thinking
Change
Confusion
Solutions
QUESTIONS