

# Forensic Odontology

Gary M Berman DDS, DABFO  
gberman@mich.com

Pictures are Graphic and may be disturbing!

## Forensic Odontology

“That Branch of Forensic  
Medicine Which Applies  
Dental Knowledge to Civil  
and Criminal Problems”

### American Academy of Forensic Sciences

- Criminalistics
- Engineering
- General
- Jurisprudence
- ODONTOLOGY
- Pathology / Biology
- Physical Anthropology
- Psychiatry & Behavioral Sciences
- Questionable Document
- Toxicology



### Why call a Forensic Dentist?

## 1. Identification

of unknown decedent by the teeth, jaws, and  
craniofacial bones in a ME office or Mass Disaster  
setting.

### Where do you work as a Forensic Odontologist?

- Medical Examiner's Office
- Mass Disaster site
- On staff at a Human (Child) Abuse Organization

### Human Identification

- Important for Survivors - *Psychological Considerations*
- Remarriage of Spouse
- Death Certificate for Estate Transfer
- Insurance Settlements
- Prosecution in homicide case

### Methods of Identification

The comparison of antemortem information with postmortem information

- Visual
- Fingerprints
- DNA
- Dental / Medical



### Visual Identification

- Visual - soft tissue ID
  - Often unreliable because of tissue changes.
  - Changes in appearance from illness, causes of death (fire, trauma, homicide, etc)
  - Changes due to decomposition, mummification, skeltonization
- Not an ideal method of identification
- Not scientific

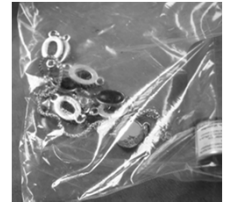
**You do not want to expose family to the condition of body**

### Visual Identification

- Visual -
  - Scars
  - Tattoos
  - Soft tissue deformities

### Presumptive ID by Personal Effects

- Anything found on the body (not around body)
- Unreliable but can be useful in directing investigation



### Best Identification

- Fingerprints
- Dental
- DNA

### Fingerprint Limitations

- Soft tissue often poorly preserved
- Limited antemortem data base
  - Only select population has fingerprints on file
    - Teachers
    - Military
    - Law Enforcement
    - Criminals
- Procedurally difficult to record

## Best Identification

- Fingerprints
- DNA
- Dental / Medical



## DNA

- DNA can be obtained from any body tissue or fluid, including teeth
- Costly procedure -
  - \$600 nuclear
  - \$3000 mitochondrial DNA

## Harvesting DNA from Teeth

- Pulp has the highest portion of DNA – molars
- If intact, extirpate pulp with endo access, or section tooth

## Dental

vs

## DNA

- |  |          |  |
|--|----------|--|
| <ul style="list-style-type: none"> <li>■ 100 % accurate</li> <li>■ Less expensive</li> <li>■ Faster</li> <li>■ Good antemortem record base</li> <li>■ DNA can be found in teeth</li> </ul> | <p>→</p> | <ul style="list-style-type: none"> <li>■ 100 % accurate</li> <li>■ Cost is coming down</li> <li>■ Potential to be extremely fast</li> <li>■ Need better antemortem record base</li> <li>■ Able to relate fragmented parts</li> </ul> |
|--|----------|--|

## Identification by Medical Radiographic Comparisons

### Skeletal Remains

Look for:

- Broken bones
- Pathological lesions
- Unique characteristics

### Problems:

- Not a good antemortem record base
- Characteristics not often found in general population



## ID by Dental

- The Most Common method of identification for decomposed, burnt, skeltonized, and fragmented remains
- Usually the fastest method to identify mass disaster victims
- Postmortem dental profiling possible

## Why call a Forensic Dentist?

1. Identification of unknown decedent by the teeth, jaws, and craniofacial bones in a ME office or Mass Disaster setting.
  - a. Unable to visually ID
  - b. You do not want to expose family to the condition of body
  - c. State Law
  - d. No fingerprints available

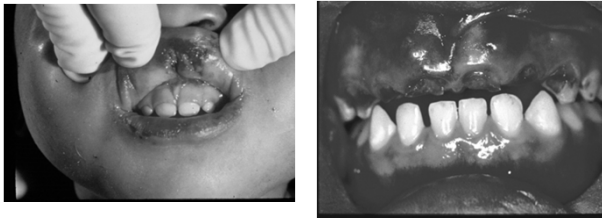
**“....shall verify the identity of the deceased through fingerprints, dental records, DNA, or other definitive ID procedures.....”**

STATE OF MICHIGAN  
93RD LEGISLATURE  
REGULAR SESSION OF 2006  
Introduced by Reps. Suk, Plakas, Gaffney, Adamini, Brown, Green, Anna Smith, I. Good, E. Spelman, Kozlowski, Bennett, Farnish, Grooms, Stok, Gibson, Bryant, Hansen, Vander Veen, Wojcik, Angerer, Noh, Yagcioglu, McDevitt, Farkas and Clark  
**ENROLLED HOUSE BILL No. 6308**

(4) The medical examiner shall ascertain the identity of the deceased and notify immediately as compassionately as possible the next of kin of the death and the location of the body except that such notification is not required if a person from the state police, a county sheriff department, a township police department, or a municipal police department states to the medical examiner that the notification has already occurred. If visual identification of an individual is impossible as a result of burns, decomposition, or other disfiguring injuries or if the county medical examiner is aware that the death is the result of an accident that involved 2 or more individuals who were approximately the same age, sex, height, weight, hair color, eye color, and race, then the county medical examiner shall verify the identity of the deceased through fingerprints, dental records, DNA, or other definitive identification procedures and, if the accident resulted in the survival of any individuals with the same attributes, shall notify the respective hospital or institution of his or her findings. The county medical examiner may conduct an autopsy if he or she determines that an autopsy reasonably appears to be required pursuant to law. After the county medical examiner, a deputy, a person from the state police, a county sheriff department, a township police department, or a municipal police department has made diligent effort to locate and notify the next of kin, he or she may order and conduct the autopsy with or without the consent of the next of kin of the deceased.

### Why call a Forensic Dentist?

2. Analysis of Oro-facial trauma associated with Human Abuse



### Why call a Forensic Dentist?

3. Bite Mark Investigation



## 95 % of Forensic Odontology is Identification



### Why does Dental ID Work?

1. Uniqueness of Dentition
2. Survivability of Dental Evidence
  - a. Durability of Dentition
  - b. Durability of Restorations
- Protected Environment

## Survivability of Dental Evidence

### ■ Teeth are calcified structures

- Harder than bone
- Can survive:
  - Immersion
  - Desiccation
  - decomposition
- resistant to cold
- resistant to heat



## Survivability of Dental Evidence

- Oral Structures in a protected environment
  - soft tissues keep temperature lower (Tongue, Cheeks, Buccal fat pad)
  - encasement in Alveolar Bone is protection
- Dental Restorations are stable
  - resistant to environmental effects
  - resistant to temperature all the way up to cremation



## Incinerated Remains and Dental Evidence

### Effects of heat

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



## Facial Dissection and Jaw Resection

1. Only with permission of Medical Examiner
2. Facilitates dental charting and radiographic examination in decomposed, incinerated or fragmented bodies

### Why does Dental ID Work?

3. Virtually infinite number of comparison points
  - Human Dentition consists of 32 Teeth, which may be virgin, restored or missing
  - each tooth has 16 possible ways to restore it
  - there are 32 teeth each with 16 ways to restore
  - over a trillion possible combinations for one restoration type

many different restorative materials

### Why does Dental ID Work?

4. Anatomic / physical features
5. Virtually infinite number of comparison points
6. Good Antemortem record base

### Antemortem Dental Record Base

- High % of people visit dental offices
- Dental Records are routinely generated
- Dental Records are retained for long periods of time
- Treatment is routinely recorded and graphically charted
- Radiographs are taken nearly 100% of time



### What do Forensic Dentists look for?

- Pattern recognition based on Dental Knowledge





### Important Dental Characteristics

- Dental Restorations / Prosthesis
- Missing / Unerupted Teeth
- Tooth Type and Morphology



### Important Dental Characteristics

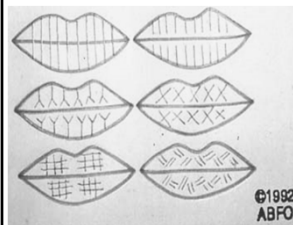
- Dental Restorations / Prosthesis
- Missing / Unerupted Teeth
- Tooth Type and Morphology
- Pulp Chamber and Root Canal Pathology
- Root Shape and Bone Pathology

### Important Dental Characteristics

- Dental Restorations / Prosthesis
- Missing / Unerupted Teeth
- Tooth Type and Morphology
- Pulp Chamber and Root Canal Pathology
- Root Shape and Bone Pathology
- Third Molar Formation
- Tooth Position
- Fixed Orthodontic Appliances
- Periapical Pathology and Implants

### Other Dental Identification Techniques

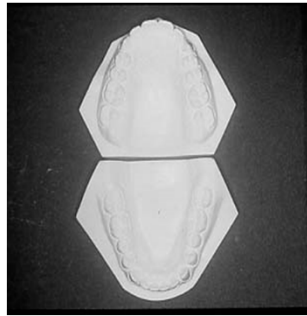
#### ■ Celioscopy



copyright 1987  
**ABFO**

## Other Dental Identification Techniques

- Celioscopy
- Rugoscopy



## Other Dental Identification Techniques

- Celioscopy
- Rugoscopy
- Frontal Sinus Outlines

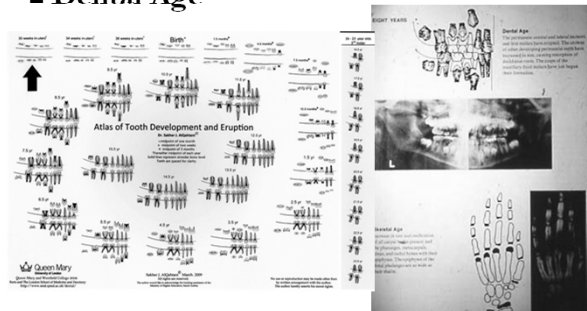


## POSTMORTEM DENTAL PROFILING

- Useful when there is no clue as to the identity of the presumed decedent
- Help to direct the investigator to the presumptive identification
- May provide information on the age, sex, ancestry, area of origin or residence, occupation, habits, lifestyle behavior, past or present diseases and socio-economic status

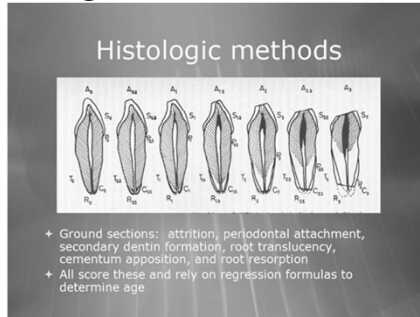
## POSTMORTEM DENTAL PROFILING

### ■ Dental Age



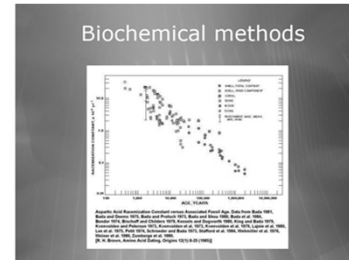
## POSTMORTEM DENTAL PROFILING

### ■ Dental Age



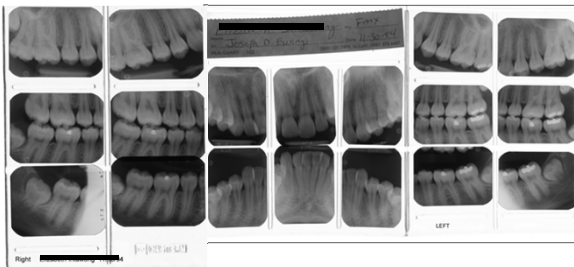
## POSTMORTEM DENTAL PROFILING

### ■ Dental Age – Aspartic Acid Racemization



## POSTMORTEM DENTAL PROFILING

### ■ Life Style – 3 years earlier



Occupation	Appearance	Cause
Musicians, Traffic Officer Carpenters, Electricians Seamstresses, Haudressers Shoe maker/repairer Upholsterer, Glassblower	Unusual abrasion or wear patterns on teeth	Stripping wires, holding nails, brads, pins, needles with teeth, biting on reed/mouthpiece, whistle, etc.
Sandblasters, grain mill, saw mill workers Miners, cement and stone cutters, jackhammer operator	Generalized tooth abrasion	Abrasive dust and particulate matter causing abrasion
Chemical, galvanizing and battery workers making or using acids	Eroded labial surfaces of anterior teeth, often smooth	Decalcification of enamel and dentin from acidic fumes
Bakers, candy makers, sugar refinery workers	Dental caries on facial surfaces of teeth	Sucrose exposure
Metal workers using copper, nickel, tin, iron	Green, yellow, black stains	Dust and fumes from exposure to the metals
Wine tasters	Erosion of labial surfaces of maxillary anterior teeth	Wine tasting of more than 20 samples per day
Competitive/ professional athletes	Acidic erosion, dental caries	Increased consumption of sports drinks, gels, Decreased pH of swimming pool water

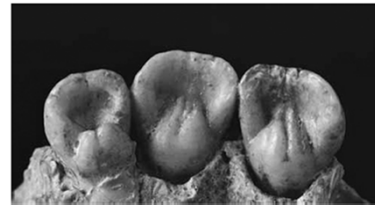
## POSTMORTEM DENTAL PROFILING

- Dental Age
- Race



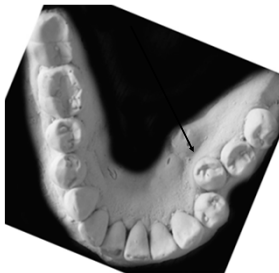
## Racial Characteristics of Teeth

- Shovel –shaped upper incisors  
Chinese, Japanese, Mongols,  
American Indians, and Eskimos



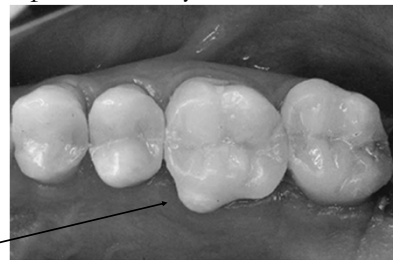
## Racial Characteristics of Teeth

- Two Cusp mandibular first premolars - African  
/ Black



## Racial Characteristics of Teeth

- Cusp of Carabelli – Maxillary molars -  
European ancestry



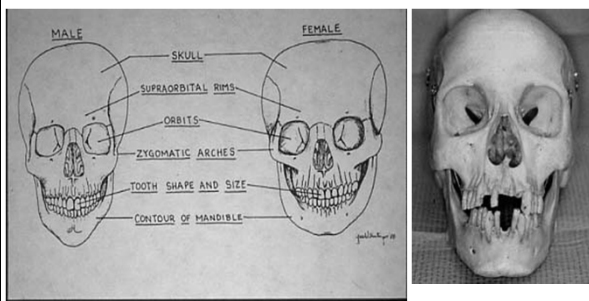
### Area of Origin or Residence

- Dental School Treatment - Gold foils and cast gold restoration
- SW Texas, SE Mexico, Rural US, China, Africa
  - Dental Fluorosis, mottled teeth from excess fluoride in water
- Mexico, Central America – Gold or silver colored crowns on anterior teeth

### Other Dental Identification Parameters

- Dental Age
- Race
- Sex (not possible from teeth)

## SEX DETERMINATION



### Why can't we do a dental Identification sometimes

1. No leads as to who it might be
2. Records missing or destroyed ( dental office)
3. Nothing to compare with (very young or old)
4. Insufficient evidence
5. No next of kin / family
6. Poor Dental Records or Radiographs

## Principles of General Dental Identification

### **I. Examination of Postmortem Remains**

1. Radiographic
2. Clinical
3. Photographic
4. Construction of composite postmortem record

## **Typical Equipment Used**

### 1. X-ray Source



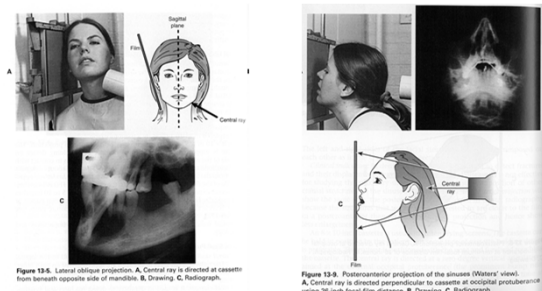
## **Typical Equipment Used**

### 2. Film Source



## **Typical Equipment Used**

### 3. Alternatives found in Hospitals



### Typical Equipment Used

4. Camera –
  - a. Macro lens
  - b. Dental Arch Mirror



### Typical Equipment Used

5. UV light Source



## Principles of General Dental Identification

### II. Antemortem Record Reconstruction

1. Review of written treatment record
2. Review of Antemortem radiographs
3. Construction of composite antemortem record

### What to request from the Dental Office

1. ALL original radiographs – no copies
  2. Copy of dental record
  3. Any dental models and photographs
- HIPAA has provisions to allow for release of records to Coroner / ME Office – offer to fax copy of HIPAA if they resist releasing records.

## Principles of General Dental Identification

### III. Comparison (matching of data)

1. Antemortem and Postmortem record Similarities
2. Radiographic Similarities
3. Inconsistencies - are they explainable?

## What are we looking for?

### Radiographic Comparisons

- exact match
- similar
- relative discrepancy
- absolute inconstancy

## What are we looking for?

### Points of Concordance

- No minimum # required or accepted
- As little as 1 sufficiently unusual similarity
- The greater the # the easier the Identification process
- Identification often requires a judgement of a Forensic Dentist

## What are we looking for?

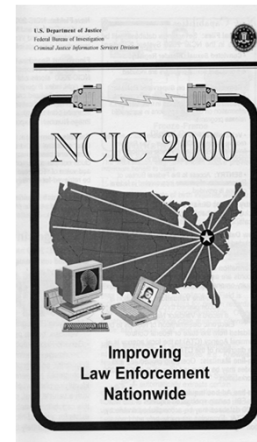
### Positive Dental Identification

- No absolute inconstancies
- All relative discrepancies can be explained

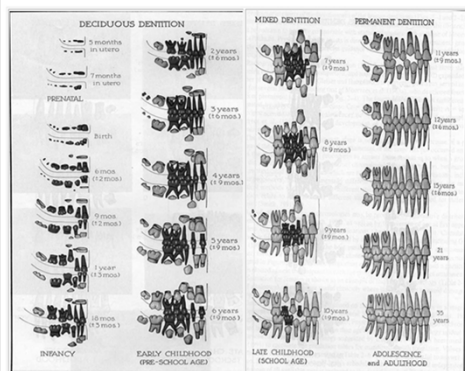


## Classification of Dental Identification

1. Positive Identification
2. Insufficient Evidence
3. Definite Exclusion  
(absolute inconsistencies)

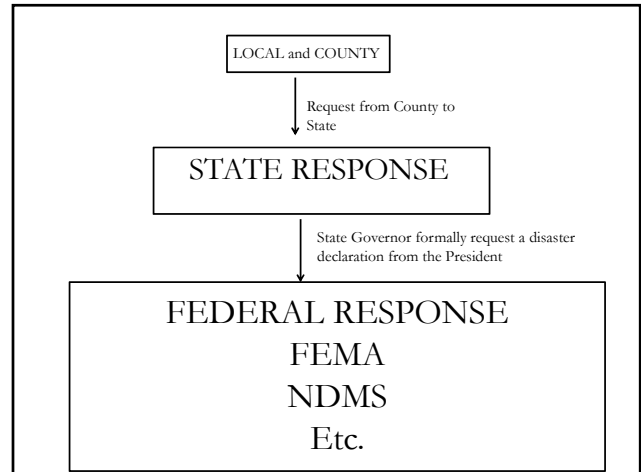


**Schour and Massler Dental Development Diagrams**



## Definition of a Disaster

- Any incident that results in loss of life and/or property that exceeds a community's resources and its ability to respond.
- Disaster victim identification (DVI) refers to the component of fatality management of a mass fatality incident that involves the scientific identification of human remains.



## DMORT

- The National Response Plan assigns the NDMS, under Emergency Support Function #8 (ESF #8), to provide victim identification and mortuary services

## DMORT Membership

- |                                |                                  |
|--------------------------------|----------------------------------|
| ■ Medical Examiner/Coroners    | ■ Mental Health Specialists      |
| ■ <u>Forensic Pathologists</u> | ■ DNA Specialists                |
| ■ Physical Anthropologists     | ■ Computer Specialists           |
| ■ Fingerprint Specialists      | ■ Medical Record custodians      |
| ■ <u>Odontologists</u>         | ■ Administrative support staff   |
| ■ Funeral Directors            | ■ Transcriptionists              |
| ■ Dental Assistants            | ■ Security personnel             |
| ■ X-ray Technicians            | ■ Investigative personnel        |
| ■ Photographic Specialists     | ■ Evidence Specialists           |
| ■ Heavy Equipment Operators    | ■ Facility Maintenance Personnel |

## What DMORT can provide

- Mobile Morgue Operations
- Forensic examination
- DNA Acquisition
- Remains identification
- Search and recovery
- Scene documentation
- Medical/psychology support
- Embalming/casketing
- Family Assistance center
- Records data entry
- Ante- & post-mortem data collection
- Database administration
- Personal effects processing
- Coordination of release of remains
- Provide a Liaison to USPHS
- Provide communications equipment
- Safety Officers and Specialists

## Disaster Portable Morgue Unit

- Highly specialized equipment and supplies pre-staged for deployment to a disaster site.
- Complete morgue with designated work stations for each processing element and prepackaged equipment and supplies.
- One stationed in Maryland and a second is planned for California
- DPMU can be deployed to the incident site by rail, truck, plane or military transportation.
- DPMU contains:
  - Site search and recovery equipment including a Laser Survey System, disaster pouches, tags etc.
  - Pathology equipment including forceps, scalpels, hemostats etc.
  - Anthropology Equipment including Measuring devices, instruments etc.
  - Radiology equipment including a Dental X-Ray, 2 Full Body X-ray machines and Developers etc.
  - Photography/Personal Effects including Camera, film, Ladder etc.
  - Information Resources including Computers, Fax machines, copiers, forms, Win-ID ver2, VIP etc.
  - Wheeled Exam tables
  - Support equipment including Partitions and Supports; Electrical Distribution; Plumbing/ Hot water heaters; Personal Protective Gear, etc.

## DMORT Specialty Teams

- Specialized Forensic and Mortuary Expertise
- Disaster Portable Morgue Unit Team (DPMU)
- Family Information Center Team (FACT)
- Weapons of Mass Destruction Team (WMD)



## The MiMORT DPMU

is a packaged system containing forensic equipment, instrumentation, support equipment, and administrative supplies required to operate a temporary morgue facility under field conditions or support an existing morgue facility.

## MDA

### Forensic Dental Identification Team



## Michigan Dental Association Mass Disaster Dental Team Set-up



## Goals in Morgue

1. Identification of the remains
2. Injury documentation
3. Recovery of evidence
4. Cause and Manner of death
5. Flight crew evaluation

### **Antemortem Dental Section**

- Collection of the antemortem dental information for the deceased.
- Digitally scanning all of the antemortem radiographs received
- Records are then charted on a common form or entered directly into the computer software program.

### **Postmortem Dental Section**

- Forensic Dental Examination of the deceased with the findings charted and / or entered into the software program
- Radiographs of the deceased
- Photographs of the deceased

### **Dental Comparison Section**

- Primary responsibility of the comparison section is to make the identifications
- The use of forensic dental software can assist in this comparison
- the final determination is always made by the forensic Odontologists, not the computer
- Once the victim's identity is established, it is then relayed to the Information Resource Center or the Medical Examiner

### **DOMESTIC VIOLENCE**

- Child Abuse and Neglect
- Intimate Partner Abuse
- Elder Abuse
- Abuse of the Disabled



Domestic Violence and  
Child / Elderly Neglect  
occurs in all educational,  
economic and social levels

More than 50% of families  
in the U.S. will experience  
some form of Abuse

There are 5 Times More  
Battered Women Than  
Abused Children

9 out of 10 are NOT Reported

#### Intimate Partner Abuse

- Definition: non-accidental infliction of trauma upon an intimate partner to include, but not limited to assault, battery, threat to injury or kill, or another act of force or violence, or emotional maltreatment of one's intimate partner upon another.
- Physical violence, sexual violence, property violence, and psychological violence are all included in the definition

### Who abuses who?

- In 2001 there were 588,490 nonfatal violent acts reported against females by intimate partners
  - More than 44,000 robberies and 42,000 rapes against women and girls by intimate acquaintances
- In 2001 there were 103,220 nonfatal violent offenses committed by intimate partners against men.
- In 2001 it was found that 1,247 women and 440 men were killed by intimate partners

### Harsh Statistics

- Battered women represent >30% of all women presenting for care in the Emergency Room
- Battering precipitates 25% of all suicide
- Abuse causes more injuries to woman than auto accidents, muggings, and rapes combined

### Harsh Statistics

- 25% of ALL women will be abused by a current or former partner
- Woman battering occurs 10X more frequency than sexual abuse

### Types of Human Abuse

- Physical Abuse
- Sexual Abuse
- Psychological Abuse

### Physical Battering

- Any act of violence causing injury or physical discomfort
  - Slapping, pinching, punching or other rough handling

### Signs and Symptoms of Battering

- Bleeding Injuries
  - Facial lacerations
  - Body lacerations (vaginal)

### Signs and Symptoms of Battering

- External Injuries
  - Severe Bruising
  - Eye Injuries
  - Perio-oral / dental injuries
  - Strangulation / ligature marks
  - Alopecia (hair pulling)

### Signs and Symptoms of Battering

- Fractures
  - Maxillofacial complex, skull
  - Arms (common in defense)
  - Pelvis
  - Clavicles
  - Legs



## Sexual Abuse

- Sexual Activity without Consent
- Sexual assault
- "No" means "No"



## Psychological Abuse

- Women fear imminent injury
- Others battered in her stead (minors, baby)
- Personal property destruction

## Features Identifying Battered Women

- Delay in seeking care
- Prior E.R. visits
- Mandibular ramus fracture
- Injuries at various stages of healing
- Injury at variance with history
- Interpersonal difficulties

## Abuse of the Elderly

1.5 Million in 1989  
5% of all Older Americans  
1 out of 8 is reported

Elder Abuse is at least as common as Child Abuse

### Financial Abuse of the Elderly

- The illegal or unethical exploitation and / or use of funds, property or assets belonging to the elderly person.
  - Forgery
  - Misuse of a person's money
  - This includes health care workers charging for procedures not needed or not done

### Active Neglect of the Elderly

- Intentional failure of a caregiver to fulfill their caregiving responsibilities

### Neglect of the Elderly

- Lack of attention
- Abandonment
- Undue confinement
- Inadequate supervision or safety precaution
- Withholding medical Services / treatment

### Indicators of Neglect of the Elderly

- Unkempt appearance
- Inappropriate or dirty clothes
- Signs of infrequent bathing
- Living conditions unhealthy
- Dangerous and / or in disrepair conditions
- Lack of social contact
- No regular medical appointments

Domestic Abuse “is an overwhelming moral, economic, public health burden that our society can no longer bear”

C. Everett Koop  
Former Surgeon General of the United States

### The Dentist and Dental Assistant's Role

1. To observe and examine any suspicious evidence that can be ascertained in the office
2. To record, per legal and court rules, any evidence that may be helpful in the case, including physical evidence and any comments from questioning or interviews

### Documentation

- Record clinical and behavioral findings in patient chart.
- Take radiographs of affected areas
- Take clinical photographs

### The Dentist and Dental Assistant's Role

3. To remain objective toward all parties
4. To treat any dental injuries
5. To establish / maintain a professional therapeutic relationship with the family
6. To hold a child, who is in danger of life, and transfer him/her to the proper authorities

### The Dentist and Dental Assistant's Role

1. Under the Michigan Child Protection Law, the dentist / dental hygienist is required to report immediately when there is a reasonable cause to suspect child abuse or neglect
2. A written report is required within 72 hours

### Sources of Professional Liability

- FAILURE TO DIAGNOSIS and/or refer a case for diagnosis and treatment when the case was beyond his/her expertise (i.e. Bitemark evidence)
- FAILURE TO REPORT (there has been out of court settlements and criminal and civil prosecutions for failure to report child abuse and neglect)

### Reasons that the Dental Profession May Fail to Report

1. Lack of Knowledge of child abuse and neglect
2. Difficulties in diagnosis
3. Fear of legal involvement
4. Effect on Practice
5. Fear of confrontation
6. Lack of confidence in Social Service system

Davis et al 1979

### Reasons that the Dental Profession May Fail to Report

7. Isolation from Social Service or Health Agencies
8. Variation in acceptable definitions
9. Indifference to family matters
10. Disruption of dentist/patient relationship
11. Fear of physical and/or verbal reprisals

Davis et al 1979

## Bitemarks

### Definition:

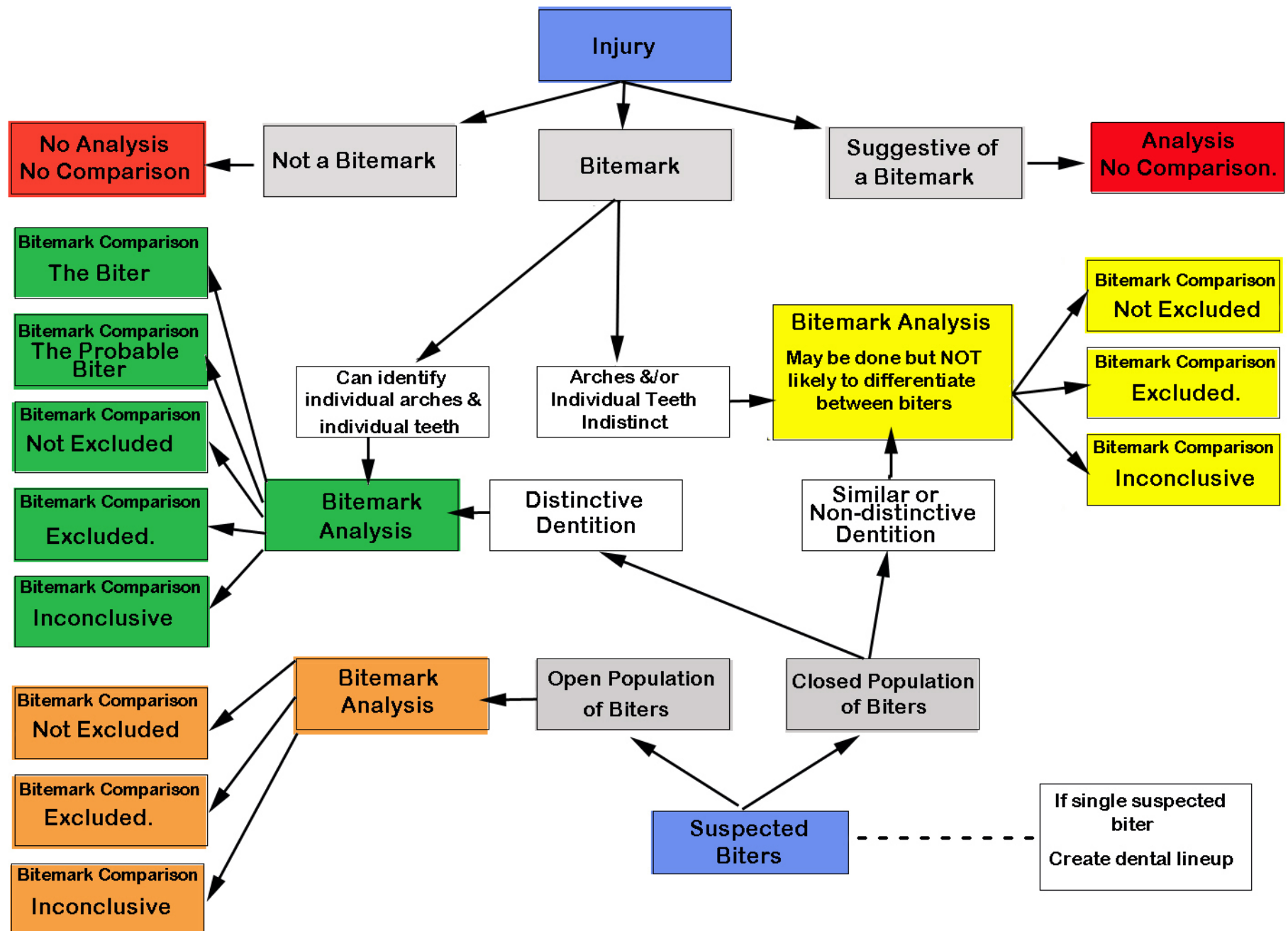
Patterned injuries  
produced by teeth

## Bitemarks Definition

- A physical alteration in a medium caused by the contact of teeth.
- A representative pattern left in an object or tissue by the dental structures of an animal or human

## Bitemarks - Significance

1. Suggests an altercation between the victim and perpetrator.
  - violent crime
  - Bitemark left by victim can help ID suspect
2. Mere presence of a bitemark supports the allegation that sexual assault or child abuse has occurred.
  - Adult or Child
3. Can DNA be recovered from the bitemark?





SCHOOL OF DENTISTRY  
Institute for Advanced Continuing  
Dental Education



# Forensic Odontology in a Medical Examiner's Office

October 13-17, 2015 - Detroit, Michigan

## Course Overview

This newly structured, five-day interactive seminar is held at one of the largest medical examiners offices in the country. Participants will meet the 10 point requirement (approval pending) by covering all topics needed for membership as a Forensic Odontologist in the American Academy of Forensic Sciences. Some of the topics to be covered are: identification, mass disaster, bite mark recognition, anthropology, toxicology, death investigation, facial reconstruction/ DNA, forensic photography, child abuse and the legal system, age determination and advances in the science of forensic odontology.



## Location

Wayne County Medical Examiner's Office  
1300 East Warren Ave  
Detroit, MI 48207

## Credits

35 CEUs (Lecture and Hands-On)

University of Detroit Mercy School of Dentistry Institute for Advanced Continuing Dental Education is an ADA CERP Recognized Provider and is designated as an Approved PACE Program Provider by the Academy of General Dentistry.

## Dates

Tuesday– Saturday, October 13-17, 2015  
8:30 AM to 5:00 PM each day

## Course Director

Allan Warnick, DDS, DABFO

## Registration

Registration opens June 1, 2014.  
To register, or for complete course information, please visit our website at:  
<http://dental.udmercy.edu>

Still have questions?  
Call Kimberly at 313-494-6694.



## Registration Form

Please Photocopy one form per registrant/guest

Name \_\_\_\_\_

D.O.B. \_\_\_\_\_

☐ DDS ☐ DMD ☐ RDH ☐ DLT ☐ DA

Office Address \_\_\_\_\_

Suite \_\_\_\_\_

City/State/Zip \_\_\_\_\_

Home Address \_\_\_\_\_

City/State/Zip \_\_\_\_\_

Office Phone \_\_\_\_\_

Home Phone \_\_\_\_\_

E-Mail \_\_\_\_\_

Specialty or Position \_\_\_\_\_

Dental School \_\_\_\_\_

Year of Graduation \_\_\_\_\_

Check ☐ Visa® ☐ Mastercard® ☐ Discover®

Card No. \_\_\_\_\_

\_\_\_\_ Last three digit on the back of credit card • Exp Date \_\_\_\_\_

Card Holder's Name \_\_\_\_\_

Signature \_\_\_\_\_

### Forensic Symposium Package Options

#### ☐ Level I - \$1949.50 -154657B

(All week Monday - Saturday) - 51 hours of CE credit

This package consists of all lectures and workshops Monday through Friday. Includes lunch and course materials.

#### ☐ Level II - \$1299.50

(Half Week)

This package consists of lectures and workshops.

Includes lunch and course materials.

#### Select either

☐ Monday through Wednesday - 28.5 Hours of CE credit -150830B

☐ Wednesday through Saturday - 22.5 Hours of CE credit -150830C

AGD CODE: 145

## Registration Information

Pre-registration is necessary. Please call the Office of Continuing Dental Education at The University of Texas Health Science Center at San Antonio, (210) 567-3177 or mail the registration form with check made payable to "UTHSCSA" to:

#### UTHSCSA

Continuing Dental Education MSC 7930

7703 Floyd Curl Drive

San Antonio, Texas 78229-3900

Tel: (210) 567-3177 Fax: (210) 567-6807

Payment may also be made by credit card:

Mastercard, Visa, or Discover only.

### CONTINUUM REFUND POLICY

If you must cancel your registration, please notify the Office of Continuing Dental Education as soon as you determine you are unable to attend so that a refund may be considered. Due to commitments to these type of programs, any cancellation made before May 2, 2014 will be subject to an administrative fee assessment of \$175.00 plus applicable nonrefundable deposits.

Any cancellation made after May 2, 2014 does not qualify for a refund. However, participants may choose to place their tuition minus an administrative, applicable nonrefundable deposits, and any direct cost fee assessment's into a holding account for future use. "No Shows" will not qualify for refunds. Written notification is required within five business days by mail, fax, or e-mail to initiate the refund process. Please allow four to six weeks for all refunds.

### HOTEL ACCOMMODATION

Special rates and arrangements have been made at the hotel listed below. Please contact the hotel directly, indicating your participation in the UTHSCSA Continuing Dental Education program, Forensic Dentistry Symposium.

#### LA QUINTA INN & SUITES

4431 HORIZON HILL

SAN ANTONIO, TEXAS 78229

210-525-8090

RATES: \$85.00

INDICATE 21ST SOUTHWEST SYMPOSIUM 2014

ROOM BLOCK

#### AIRPORT SHUTTLE SERVICE

SHUTTLE SERVICE TO THE DENTAL SCHOOL

Cut-off Date: April 30, 2014

La Quinta Inn & Suites provide round trip transportation to the Dental School - make reservations at front desk

## Forensic Symposium Workshops

### WORKSHOP I • DENTAL IDENTIFICATION AND DISASTER VICTIM IDENTIFICATION (DVI)

This two-day workshop combines instruction and hands-on experience in the areas of forensic dental photography, forensic dental radiography, forensic comparisons of antemortem and postmortem evidence, and disaster victim identification (DVI) management. Included are background and use of the dental identification software program WinID3 and the integration of digital dental radiography with this software. The workshop leaders are Adam Freeman, DDS, Westport, CT & Peter W. Loomis, DDS, Albuquerque, NM

### WORKSHOP II • BITEMARK MANAGEMENT

The Bitemark Management workshop includes lectures and hands-on experience in evidence collection (photography, DNA swabbing, pattern and 3-D information collection, etc); evidence analysis (overlays, microscopy, etc); and evidence presentation (report writing, courtroom displays, etc). Participants will learn to produce, evaluate, and defend bitemark data. Greg Golden, DDS, San Bernardino County, California and Frank Wright, DMD, Cincinnati, Ohio will lead this workshop.

### WORKSHOP III • ABUSE OF CHILDREN, ADULTS, AND THE ELDERLY

This half-day workshop gives the participant crucial information for preparing to deal with the responsibilities of forensic dentists in recognizing, reporting, and intervening in cases of abuse. Background information, statistics, case reports, and technique instructions will aid attendees in developing strategies to return to their communities and make a positive impact. The goal is to reduce the level and severity of abuse and to impede the activities of abusers. John McDowell, DDS, DABFO of the University of Colorado School of Dentistry will lead this workshop.

### WORKSHOP IV • EXPERT WITNESS TESTIMONY

Instruction and information related to expert witness testimony will be followed by hands-on experience. Participants will study a forensic case and some will be examined and cross-examined by attorneys in a courtroom before a judge. The workshop leaders are Robert Barsley DDS, JD, New Orleans, LA and Roger D. Metcalf, DDS, JD, Ft. Worth, TX.

### WORKSHOP V • FORENSIC PATHOLOGY AND AUTOPSY

Participants will observe forensic autopsy cases. The supervising pathologist will explain and demonstrate the procedure for determining cause, mechanism, and manner of death. The workshop leaders are Randall E. Frost, MD, Chief Medical Examiner, Bexar County, Texas and Kimberly Molina, MD, Deputy Chief Medical Examiner, Bexar County, Texas.

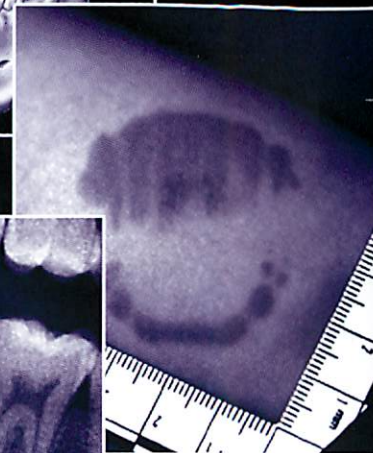
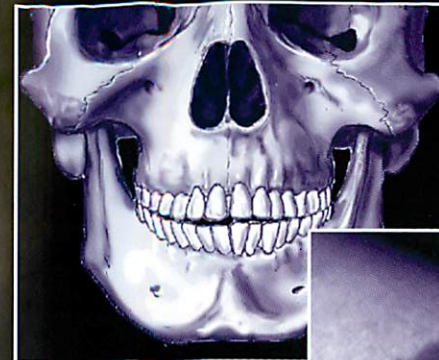
### WORKSHOP VI • AGE ESTIMATION

Following background information on different methods of estimating age, this workshop will provide participants hands-on practice using the computer program UT-AGE in estimating age by determining the level of 3rd molar development. The workshop leaders are Jim Lewis, DDS, Madison, AL and Kathleen A. Kasper, DDS, Ft. Worth, TX.

Nonprofit Organization  
U.S. Postage  
Paid  
Permit No. 1941  
San Antonio, Texas

DENTAL SCHOOL  
UT HEALTH SCIENCE CENTER®  
SAN ANTONIO  
CDE - MSC 7930  
7703 Floyd Curl Drive  
San Antonio, Texas 78229-3900

Dated Material  
21st Southwest Symposium on Forensic Dentistry  
Mail Date: March 1, 2014



## 21ST SOUTHWEST SYMPOSIUM ON Forensic Dentistry

### June 2-7, 2014

The Center for Education and Research in Forensics (CERF)  
at The University of Texas Health Science Center  
at San Antonio, Dental School in cooperation with the  
Bexar County Medical Examiner's Office.

## 21st Southwest Symposium on Forensic Dentistry Updates and Highlights

### Hear all about it...

- ⊕ Integrated Dental Identification and Disaster Victim Identification (DVI) workshop led by Adam Freeman, DDS and Peter W. Loomis, DDS.
- ⊕ Bitemark Management workshop led by Greg Golden, DDS and Frank Wright, DMD. This workshop will address all phases of Bitemark Management plus digital and special photographic techniques. (UV, IR, ALI)
- ⊕ John McDowell, will lead the workshop focusing on abuse of children, adults and the elderly.
- ⊕ Jim Lewis, DDS and Kathleen A. Kasper, DDS will lead the workshop on Age Estimation.
- ⊕ Roger Metcalf, DDS, JD and Robert Barsley, DDS, JD to lead the expert testimony workshop.

### Science for Lunch presentations Monday through Friday

**Monday**  
Medical Examiner System  
Randall E. Frost, MD

**Tuesday**  
Forensic Autopsy  
Leticia F. Schuman, MD

**Wednesday**  
Forensic Anthropology Overview  
James P. Fancher, DDS, PhD

**Thursday**  
DNA Update  
Garon Foster, BA, MS

**Friday**  
Dental Auxiliaries in Forensic odontology  
Amber D. Riley, RDH, MS



# 21<sup>st</sup> Southwest Symposium on Forensic Dentistry + June 2-7, 2014

The symposium offers comprehensive classroom and hands on courses in all phases of Forensic Odontology.

## WORKSHOPS

- Workshop I** Dental Identification and Disaster Victim Identification (DVI)  
*Leaders: Adam Freeman, DDS & Peter W. Loomis, DDS*
- Workshop II** Bite Mark Management  
*Leaders: Greg Golden, DDS & Frank Wright, DMD*
- Workshop III** Abuse of Children, Adults, and the Elderly  
*Leaders: John D. McDowell, DDS, MS*
- Workshop IV** Expert Witness Testimony  
*Leaders: Robert Barsley, DDS, JD, Roger D. Metcalf, DDS, JD*
- Workshop V** Forensic Pathology and Autopsy  
*Leaders: Randall E. Frost, MD & Kimberly Molina, MD*
- Workshop VI** Age Estimation  
*Leaders: Jim Lewis, DMD and Kathleen A. Kasper, DDS*



Contact UTHSCSA, Continuing Dental Education, 210-567-3177 for course brochure and registration.

Contact Dr. David Senn for specific course information: [senn@uthscsa.edu](mailto:senn@uthscsa.edu)  
Follow the links to summer courses at <http://smile.uthscsa.edu>

## MONDAY, JUNE 2

- 8:30-9:30 **WELCOME**  
**Lecture:** History and Scope of Forensic Dentistry-*Brumit*  
**Lecture:** Dental Identification-*Freeman*
- 9:30-1:00 **WORKSHOP I**  
Dental Identification/Disaster Victim Identification (DVI)-*Freeman/Loomis*
- 1:00-2:00 **SCIENCE FOR LUNCH**  
Medical Examiner System-*Frost*
- 2:00-7:00 **WORKSHOP I**  
Dental Identification/Disaster Victim Identification (DVI)-*Freeman/Loomis*
- TUESDAY, JUNE 3**
- 8:30-9:30 **Lecture:** Ethics and Professional Responsibility in Odontology-Stimson
- 9:30-1:00 **WORKSHOP I**  
Dental Identification/Disaster Victim Identification (DVI)-*Freeman/Loomis*
- 1:00-2:00 **SCIENCE FOR LUNCH**  
Forensic Autopsy-Schuman
- 2:00-5:30 **WORKSHOP I**  
Dental Identification/Mass Disaster Management-*Freeman/Loomis*

## WEDNESDAY, JUNE 4

- 8:30-10:00 **WORKSHOP V**  
Forensic Autopsy • Group 1  
**WORKSHOP VI**  
Age Estimation • Group 2
- 10:00-1:00 **WORKSHOP III**  
Abuse of Children, Adults, and the Elderly-McDowell
- 1:00-2:00 **SCIENCE FOR LUNCH**  
Forensic Anthropology Overview-Fancher
- 2:00-5:30 **WORKSHOP II**  
Bitemark Management (Introduction)  
*Golden/Wright*

## THURSDAY, JUNE 5

- 8:30-1:00 **WORKSHOP II**  
Bitemark Management (Continued)  
*Golden/Wright*
- 1:00-2:00 **SCIENCE FOR LUNCH**  
DNA Update-Foster
- 2:00-5:30 **WORKSHOP II**  
Bitemark Management (Continued)  
*Golden/Wright*
- FRIDAY, JUNE 6**
- 8:30-10:00 **WORKSHOP V**  
Forensic Autopsy • Group 2  
*Frost/Molina*  
**WORKSHOP VI**  
Age Estimation • Group 1  
*Lewis/Kasper*
- 10:00-12:00 **WORKSHOP II**  
Bitemark Management (Continued)  
*Golden/Wright*
- 12:00-1:00 **SCIENCE FOR LUNCH**  
Dental Auxiliaries in Forensic Odontology-Riley
- 1:00-5:00 **WORKSHOP IV**  
Expert Witness Testimony  
*Barsley/Metcalf*

## SATURDAY, JUNE 7

- 8:00-1:00 **WORKSHOP IV**  
Expert Witness Testimony (Continued)  
Bexar County Courthouse  
*Barsley/Metcalf*  
Transportation will be provided

**The cut-off date for the rooms at our host hotel, La Quinta Inn & Suites is April 30, 2014.**

call the hotel directly, at 210-525-8090, not the corporate number.

# 21st Forensic Symposium Faculty

## DAVID R. SENN, DDS, SYMPOSIUM DIRECTOR

Clinical Assistant Professor, University of Texas Health Science Center at San Antonio. Dr. Senn is the Director of the Center for Education and Research in Forensics, and Director of the Bexar County Forensic Dental Identification Team. He is Chief Forensic Odontologist for the Bexar County Medical Examiner's Office and a member of DMORT Region VI. Dr. Senn is a Diplomate and Past President of the American Board of Forensic Odontology, a Fellow in the American Academy of Forensic Sciences and a member of the American Society of Forensic Odontology.

## PAUL G. STIMSON, DDS, MS, SYMPOSIUM CO-DIRECTOR

Professor (retired) UTDB Houston. Dr. Stimson is a Diplomate of the American Board of Forensic Odontology and the American Board of Oral Pathology. He is Past President and a founding member of the ABFO. He has been a consultant in forensic odontology in Houston, Texas for more than 30 years. Dr. Stimson is a Fellow in the American Academy of Forensic Sciences and a member of the American Society of Forensic Odontology.

## PAULA BRUMIT, DDS, SYMPOSIUM CO-DIRECTOR

She is an Adjunct Clinical Professor and Instructor for the Forensic Odontology Fellowship at UTHSCSA and a Forensic Odontology Consultant for the Bexar County Medical Examiner's Office. She is the Treasurer of the American Board of Forensic Odontology, past Chair of the Odontology section of the American Academy of Forensic Sciences, and a member of the American Society of Forensic Odontology.

## ROGER D. METCALF, DDS, JD, SYMPOSIUM CO-DIRECTOR

Director of the Human Identification Lab and Chief Forensic Odontologist for the Tarrant County Medical Examiner's District in Ft. Worth, Texas. Also a member of the Fellowship faculty, Dr. Metcalf is a Diplomate of the American Board of Forensic Odontology. A Fellow of the American Academy of Forensic Sciences and member of the American Society of Forensic Odontology.

## BRUCE A. SCHRADER, DDS, SYMPOSIUM CO-DIRECTOR

Is an Adjunct Clinical Professor and Instructor for the Forensic Odontology Fellowship at UTHSCSA and a Forensic Odontology Consultant for the Bexar and Lubbock County Medical Examiner's Office. He is a Diplomate of the American Board of Forensic Odontology, a Fellow of the American Academy of Forensic Sciences and is the Executive Director of the American Society of Forensic Odontology.

## ROBERT E. BARSLEY, DDS, JD

Is a Professor at LSU School of Dentistry and practices and teaches Forensic Odontology in New Orleans. Dr. Barsley is also an attorney and has served as a municipal judge in Ponchatoula, LA. He is a Fellow and Past President of the American Academy of Forensic Sciences. Dr. Barsley is a Diplomate and Past President of the American Board of Forensic Odontology.

## JAMES P. FANCHER, DDS, PHD

completed a career in the US Air Force in 2009 and the Fellowship in Forensic Odontology at UTHSCSA in 2010. He is currently a graduate student in Forensic Anthropology at Texas State University. He is an odontology consultant for the Bexar and Nueces County Medical Examiner Offices and for Operation ID, working to identify bodies presumed to be immigrants found in several South Texas border counties.

## ADAM FREEMAN, DDS

Is a forensic dental consultant in the state of Connecticut and has a private dental practice in Westport, CT. He is an Assistant Professor at Columbia University, School of Dental Medicine. Dr. Freeman is the Secretary of the American Board of Forensic Odontology, a Fellow in the American Academy of Forensic Sciences, and a member and past president of the American Society of Forensic Odontology. He is the director of Connecticut's Disaster Identification Response Team (DIRT) and a member of DMORT.

## RANDALL E. FROST, MD

Chief Medical Examiner, Bexar County, Texas. He is a member of the College of American Pathologists, National Association of Medical Examiners, and the American Academy of Forensic Sciences.

## GREGORY S. GOLDEN, DDS

Received his dental degree from the University of Southern California and practices general dentistry in Rancho Cucamonga, California. He is the Chief Odontologist for San Bernardino County. He is a Fellow in the American Academy of Forensic Sciences and a Diplomate and 2013-2014 President of the American Board of Forensic Odontology.

## KATHLEEN A. KASPER, DDS

is a graduate of the University of Iowa College Of Dentistry and has practiced general dentistry in Carrollton, Texas since 1994. She is a Deputy Forensic Odontologist to the Tarrant County Medical Examiner's District in Ft. Worth, Texas. She was a 2003 Fellow of the Fellowship in Forensic Odontology at UTHSCSA and is a Diplomate of the ABFO, a Fellow in the AAFS and is a member of the ASFO.

## JAMES M. LEWIS, DMD

Is a forensic dental consultant to the State of Alabama. He has a private dental practice in Madison, Alabama. Dr. Lewis is a Diplomate of the American Board of Forensic Odontology, a Fellow in the American Academy of Forensic Sciences, and a Past President of the American Society of Forensic Odontology.

## PETER W. LOOMIS, DDS

is the Forensic Odontologist for the New Mexico Office of the Medical Investigator and is the director of the New Mexico Mass Fatality Incident Dental ID Team. He is a member of DMORT Region VI, a Diplomate and 2014-2015 President of the American Board of Forensic Odontology, a Fellow in the American Academy of Forensic Sciences and a member of the American Society of Forensic Odontology.

## JOHN D. MCDOWELL, DDS, MS

A Professor of oral medicine, diagnosis and radiology at the University of Colorado School of Dentistry. He was President of the American Academy of Forensic Sciences in 2000-2001. Dr. McDowell is a Diplomate of the American Board of Forensic Odontology, a Fellow in the American Academy of Forensic Sciences and a member of the American Society of Forensic Odontology.

## FRANKLIN D. WRIGHT, DMD

Has a general dentistry practice in Cincinnati, Ohio and is the forensic dental consultant for the Hamilton County (Cincinnati) Coroner's Office and is a Chief of the Hamilton County Coroner's Office Forensic Dental Team. He is a Diplomate of and Past President of the American Board of Forensic Odontology and a Fellow and past Chairman of the Odontology Section of the American Academy of Forensic Sciences (AAFS), and is a member of the American Society of Forensic Odontology (ASFO)

## Additional 21st Symposium Faculty

Faculty and Staff of the Department of Dental Diagnostic Science, UTHSCSA, the Bexar County Medical Examiner's Office, and the Bexar County Criminal Investigation Laboratory.

*Garon Foster, BA, MS*  
*Amber D. Riley, RDH, MS*  
*Leticia F. Schuman, MD*

## ADA CERP® | Continuing Education Recognition Program

The University of Texas Health Science Center at San Antonio is an ADA CERP Recognized Provider. ADA CERP is a service of the American Dental Association to assist dental professionals in identifying quality providers of continuing dental education. ADA CERP does not approve or endorse individual courses or instructors, nor does it imply acceptance of credit hours by boards of dentistry.

Continuing Dental Education credits are designated in each course description.

Concerns or complaints about a CE provider may be directed to the provider or to ADA CERP at [www.ada.org/goto/cefp](http://www.ada.org/goto/cefp).

