



# Mississippi Forensic News

VOLUME 1, ISSUE 1

SEPTEMBER 1, 2017

## SPECIAL POINTS OF INTEREST:

- Welcome note from your President
- Fentanyl Info!
- Can you solve the Forensic Challenge Question?
- 2018 Conference Info!

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## From the President

Greetings,

The Mississippi Division of the International Association for Identification (MDIAI) has seen another year of exceptional training come to an end with the close of the 2017 Annual Conference in Hattiesburg, MS this past April. The conference was an overwhelming success and we were able to exceed our expectations, due in large part to the enthusiastic support of the Forensic Science Society at the University of Southern Mississippi. I believe this will bolster the future success of this organization. Increased attendance at recent conferences has generated an increase in our membership. These new members will serve a large part in moving our organization forward.

The MDIAI has implemented many changes this year that we believe will allow us to be more consistent with other IAI charters across the country. We have reinstated the position of Editor in hopes of increasing our exposure to the current membership

through a revival of the printed newsletter. The MDIAI website will continue to provide a valuable source of information. However, we believe that providing information in multiple formats will only serve to increase the distribution of our news and conference information. We have also added a student



**Jimmy Perdue, MDIAI President 2017-2018**

membership in hopes of providing a pathway for full or associate memberships upon their future employment. These new resolutions will be available for review in our constitution upon acceptance by the IAI parent body. And last but not least, we have made an additional change to our official logo. The new logo is now available on all new merchandise and

correspondence.

Plans are already under way for the 2018 Annual Conference to be held in Gulfport, MS March 26th-28th at the Marriott on the beach. With such a fantastic location, I couldn't help but spread the word to all the members and vendors during my attendance at the recent IAI educational conference in Atlanta. In anticipation of high attendance, arrangements for speakers will be finalized within the coming weeks. An official announcement will be released once we have all the pertinent information.

In closing, I am very enthusiastic about this upcoming year and the 2018 conference. As an organization, we look forward to serving you and welcome any questions, comments, or suggestions. The contact information for myself, the officers, and the Board of Directors can be found on our website at [www.mdiai.com](http://www.mdiai.com).

I look forward to seeing you all at the 2018 Conference in Gulfport.

-Jimmy Perdue, MDIAI President

# Our website has loads of info!



“Don’t use social media to impress people; use it to impact people.”  
- Dave Willis.org

- Need training? Visit our website for up to date lists of regional and national training! [www.mdiai.com/training](http://www.mdiai.com/training)
- As an organization, we’re always striving to be the best we can be for our members! We’ve made some changes to our MDIAI Constitution and By-Laws. Please review the up to date information at [www.mdiai.com/about-us](http://www.mdiai.com/about-us)
- We are always eager to hear how we’re doing! Please send us any questions, comments, concerns! You can reach us at [info@mdiai.com](mailto:info@mdiai.com) or fill out our contact form on our website. [www.mdiai.com/contact](http://www.mdiai.com/contact)
- You may have noticed our newsletter is new and improved. MDIAI’s official publication, formerly known as The Magnolia Print, has received a new name to reflect the forensic content of the publication. Current and past issues can be found at [www.mdiai.com/the-magnolia-print](http://www.mdiai.com/the-magnolia-print)

Click to connect with us!



## Save the date!

The 2018 MDIAI Annual Education Conference planning has started!

**Who:** MDIAI will be hosting professionals from the FBI, DEA, and more!

**What:** 2018 Annual Education Conference

**When:** March 26-28, 2018

**Where:** Courtyard by Marriott Gulfport Beachfront, Gulfport, MS

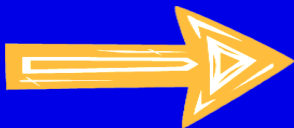
Marriott hotel is offering special group rate of \$91/ night!

[2018 MDIAI Conference Information and Reservation](#)

**Why:** MDIAI strives to bring you valuable, cutting edge knowledge that you can use in your daily work.

Stay tuned to [www.mdiai.com](http://www.mdiai.com) for the latest conference info!

2018 Conference Info!



# Fentanyl— Information from DEA

Fentanyl and fentanyl related compounds such as carfentanil and acetyl fentanyl are synthetic opioids.

Drugs in this group have varying but often very high levels of potency. In recent years they have become more widely available in the United States and grown as a threat to public safety. It only takes a very small amount of fentanyl or its derivatives- which can be inhaled or absorbed through

the skin or mucus membranes (such as being inhaled through the nose or mouth)- to result in severe adverse reactions.

As a consequence, not only are users exposed to danger, but so are others who encounter them including the general public, first responders, and law enforcement.

For valuable resources, please visit :

<https://www.dea.gov/druginfo/fentanyl.shtml>



*“If you are actively engaged in the science of Forensic Identification... you should strongly consider joining our organization.”*

## Why become a member?

The parent body of The International Association for Identification was organized in 1915 as a non-profit organization created to “keep its members apprised of the latest techniques and discoveries in crime detection” and to “employ the collective wisdom of the profession to advance the scientific techniques of personal identification and crime detection.”

The Mississippi Division of the International Association for Identification (MDIAI) was organized in 1978 and chartered by the Parent Body in April 1980, basing its philosophy upon that of the Parent Body. Since that time, the MDIAI, its officers and members have worked diligently to now only produce a quality newsletter, the Mississippi Forensic News (formerly The Magnolia Print), but to also educate and inform pro-

fessional law enforcement personnel in the science of identification and crime detection.

Division members are professionals engaged in many facets of identification for federal, state, and local law enforcement or support agencies. Specifically, the membership includes police officers, sheriffs’ deputies, detectives, fire-arm’s examiners, investigators, medical examiners, latent print examiners, accident reconstructionists, questioned document examiners, crime scene analysts, photographers, security personnel, training officers, identification specialists, serologist, trace analysts, arson investigators, composite artists, probation officers and toxicologists.

If you are actively engaged in the science of Forensic Identification, or are a department identification head

who is employed by the national, state, county, municipal government, or are employed in a capacity like those of our present members, you should strongly consider joining our organization. The advantages include a quality informative newsletter, certification programs for latent print examiners and crime scene analysts, annual seminars where the MDIAI presents professional speakers/instructors. You will also have the advantage of conversing with and knowing individuals utilizing new and advanced techniques in forensics.





**Our  
members  
are our  
family.**

Find our  
membership  
application at  
[http://  
www.mdiai.com/  
membership](http://www.mdiai.com/membership)

## Membership Qualifications and Types

### Active

New: \$25/year  
Renewal: \$20/year

Shall consist of persons actively engaged in the science of forensic identification and their bureau department heads. Active Members shall not lose their status because of retirement or change of position, so long as they remain in good standing. Active Members may hold office within the Division.

### Associate

New: \$25/year  
Renewal: \$20/year

Shall consist of all reputable persons, wholly or partially engaged in any of the various phases of the science of identification, and who are not qualified for Active membership, are hereby eligible to become Associate Members. They shall, in all respects, be subject to the same rules, fees and charges, and entitled to the same rights and privileges as Active Members, except that they shall not be entitled to election to any office or be members of the Board of Directors.

### Student

\$15/year  
Flat rate

Shall consist of all reputable persons, fully or partially enrolled as a student pursuing a degree with a concentration in forensic science or criminal justice, who are not qualified for active or associate membership, are hereby eligible to become Student members. They shall, in all respects, be subject to the same rules, rights and privileges as Associate Members, including the ability to serve on committees within the organization; with the exception they shall not be able to sit as Chair of any committees nor be entitled to election of any office or to be a member of the Board of Directors.

# Highlights from our 2017 Conference!

As an organization, we strive to keep progressing each year to cover relevant topics of training at our annual conferences. If you missed the Mississippi Division of the International Association for Identification (MDIAI) 2017 Annual Conference, you missed a smashing good training session! We partnered with the Forensic Science Society (FSS) at The University of

Southern Mississippi in Hattiesburg. The topic this year was from Crime Scene to Courtroom and began with Dr. Laura Pettler teaching *Victim Centered Death Investigation Methodology* and ended with Jamie Bush, CLPE, covering Courtroom Testimony. Along the way Crime Scene Photography, Crime Scene Reconstruction, the Collection/Documentation

of Latent Prints, the Collection of Biological Samples, Interviewing /Interrogation Techniques, and Challenges in Forensic Identification, were all discussed. With amazing vendors and sponsors we were able to provide the tools our attendees need to be more successful in their careers.

*“As an organization, we strive to keep progressing each year to cover relevant topics of training at our annual conferences...”*



“It was a great learning experience! It was so much fun to learn from the professionals that are working in the field.” – Katie Acosta – USM Forensic Science Graduate

“Enjoyed Dr. Laura P. because it pertains to coroner office. Courtroom testimony from Jamie Bush was great!” – Deputy Coroner

“All four years of my college career I was told how beneficial it was to attend the MDIAI Conference as a student. My senior year I was not only able to attend, but I was able to help plan the event. It was a great opportunity for my education and business career. I was able to learn outside the classroom as well as network; it was an experience I will never forget.” – Ashley Aucoin – USM Forensic Science Graduate

“Great conference as usual. Look forward to next year. Lots of great information given and awesome networking opportunities.” – Crime Scene Investigator

“I enjoyed getting to listen to keynote speaker Dr. Laura Pettler on the first day of the conference. She is so knowledgeable about the Forensic Science field and a great speaker. The conference was also a great way for college students to make connections for future internships and jobs.” – Kelli Sharp – USM Forensic Science Student (Senior)

“Gladly recommend this class to anyone involved in law enforcement investigations or crime scene investigations.” – Police Sergeant

“I really enjoyed the conference this year. The main theme was interesting and informative in many ways, and the location was great. Because the conference was held at USM, it was easier for students to attend because we could go to the conference around our class schedules. It was an amazing learning and networking experience, and I look forward to attending next year’s conference!” – Kaylee Sanders – USM Forensic Science Student (Senior)

# Dental Length as an Age Indicator for Juvenile Remains

## Abstract

Skeletal remains can provide much information about an individual, but what is revealed depends if the remains are adult or juvenile. Adult remains can answer many questions such as an individual's sex, age, ancestry, and stature. There is a limitation to the data that juvenile remains can provide, but due to their rapid growth, age can be more precisely determined than in adults. Juveniles can be aged three different ways: epiphyseal closure, diaphyseal length, and dental formation. Teeth are the most reliable way to age immature remains. Recently, a study was published in the *Journal of Forensic Science* presenting a new method involving dental length (Cardoso et al., 2016).

The aim of the present research was to use the methods from this study to determine if dental length can be an age indicator for the Tipu population. This is one of the largest and best preserved Maya collections. There were 26 individuals aged 0 to 15 years used in the sample study. Individuals were chosen if there was a presence at least four different teeth. All teeth were measured from the occlusal surface to the most distal portion of root formation with a sliding caliper. Age prediction formulas developed by Cardoso et al. (2016) were used to calculate age. The external consistency was checked by comparing these ages to the predicated ages from diaphyseal length of the femur. Internal consistency was also checked. For the overall population, the canine and second premolar were the most reliable teeth. It was concluded that the methods of Cardoso et al. (2016) could be used for the Tipu series.

## Introduction

Skeletal remains can provide much information about an individual such as their sex, ancestry, and age at death. Adult remains are helpful in providing this information whereas immature remains are more challenging due to the fact they were still developing at the time of death. Before puberty, juveniles show little sexual dimorphism making it difficult to sex the remains (Tierney & Bird, 2015). Ancestry is hard to determine since the cranium is still developing. For the majority of the time, age is the only aspect of the biological profile that juvenile remains can provide. To accurately age juveniles, more than one indicator ideally is observed. Among those used are degree of epiphyseal closure and diaphyseal length of long bones; however, the teeth are the most reliable age estimators for juvenile remains (Shackleford et al., 2012).

An individual's dentition begins calcifying in the fetal period (Shackleford et al., 2012). This allows for more precision in age estimation since teeth create a relatively complete chronology from fetal life to adulthood (Shackleford et al., 2012). The dentition is also the most commonly found element of human remains because teeth are made up of enamel, which is the hardest material in the body (Jacobi, 2007). The most frequent way to use teeth as an age indicator is by observing the formation of deciduous and permanent teeth and comparing it to the dental eruption chart developed by Ubelaker (1989) (Cardoso et al., 2016). A more precise way of measuring degree of dental development is measuring the length of permanent teeth (Cardoso et al., 2016). The difficulty with this method is there are a variety of ways the measurements can be used to calculate age estimations (Cardoso et al., 2016). Recently, a study done by Cardoso et al. was published that helps with the issue of calculating age determination by the use of any isolated tooth with the use of simple equations.

This method is said to be particularly beneficial to skeletal populations that are poorly preserved or incomplete such as the human remains recovered from the Maya region due to the acidic soil. One population that is well preserved and quite large in sample size for the Maya is the colonial series from Tipu, Belize (Cohen et al., 1997). This study used the age prediction formula to estimate the age of juveniles recovered from this cemetery.

## Background

This research was conducted by using recent standards published from a study done by Cardoso et al. (2016). The purpose of their study was to expand on existing juvenile age predictions previously performed by Liversidge and Molleson (1999) by increasing sample size and using classical calibration. Data of known sex and age was used from two European collections (Lisbon, Portugal and Spitalfields, England) dating from the eighth to twentieth centuries. Some 178 individuals ranging from birth to 21 years old were used for this study. The lengths of developing teeth were measured for the left mandible; the right side was substituted in cases of damage or loss. The tooth was measured parallel to the long axis and length was defined as distance from the tip or edge of the tooth to the developing cusp or root. Unerupted teeth or those that could not be removed from the mandible were measured with the use of an undistorted peri-apical radiograph. An age estimation formula was calculated for each tooth and for each sex. ANCOVA testing showed that there were no major differences between the populations for tooth length except the canine and second premolar. Also, there were no significant differences between the sexes. Teeth that developed early in life, such as the incisors and first molar, had the least prediction error averaging from 0.51 to 1.23 years. The third molar had the highest prediction error. The age prediction formula allows for the use of dental length to be used with the use of isolated teeth in any skeletal context. The

method performed in this study has been hypothesized to have greater applicability to archaeological skeletons or children in developing countries and can be applied to incomplete or poorly preserved skeletal remains of unknown sex. Therefore, it was applied to the Tipu series.

Tipu, in what is now western Belize, was located on the shores of the Macal River in the Southern Maya Lowlands (Graham, 2011). This was a site of a Spanish vista mission at the edge of the Spanish colonial empire during the late 16<sup>th</sup> century. Tipu kept its independence, but the Maya lifestyle and religion had Spanish influences. Yucatec Maya fleeing from Spanish control would go to Tipu resulting in the town being of a mixture of several Maya groups (Cohen et al., 1997). As the Spanish began to be more influential in this area the Maya population decreased especially due to disease (Cohen et al., 1997). The population began to grow again after they overthrew Spanish civil and clerical control; however, by the early 18<sup>th</sup> century Tipu lost its influence after the successful conquest of the Petén region (Cohen et al, 1997; Graham 2011). In the 1980s, a church cemetery associated with Tipu was discovered. There were over 500 sets of skeletal remains recovered at the site, making it one of the largest and best preserved series from the region. However, many of the individuals, especially juveniles, are still fragmentary and often incomplete. The collection is currently stored at The University of Southern Mississippi Biological Anthropology Laboratory.

## Materials and Methods

The aim of this research was to apply the methods presented by Cardoso et al. (2016) on the population of Tipu. Juveniles with more than four different teeth accessible for measuring were used from the study. Twenty-six individuals fit these criteria, providing 159 teeth for measurement. Developing teeth were measured with the use of sliding caliper. The left mandibular teeth were measured with the right side being substituted if the left tooth was not present. All teeth were included in the study except the third molar. The teeth were measured parallel to the long axis. The length was defined by the tip of the tooth to the end of the developing root or cusp. Teeth that were not fully present due to postmortem damage were not used. Only loose teeth were used, so any dentition still left in the mandible were not measured. After all data was collected, each tooth length was plugged into the combined age prediction formula for that specific tooth (Cardoso et al., 2016).

Another age indicator was used to help independently test the accuracy of the findings. The femur measurement from 16 of the individuals in the sample were used to determine age from diaphyseal length; this bone was chosen since it is the largest and most accurate for one used for age determination. The Eskimo growth standard was used since they are a genetically short population (Ubelaker, 1989) as are the Maya. The predicted age from diaphyseal and dental length as well as internal consistency between the teeth were evaluated by finding the correlation coefficient.

## Results

Age estimations were calculated from the tooth specific age predication formulas established by Cardoso et al. (2016) (Table 1). The canine was observed to typically have the highest predicated age. The second premolar and molar were observed to usually have the lowest predicated age. The central incisor age was on average a younger age than the lateral incisor whereas, the molars and premolars were the opposite. Since these observations are not enough to establish the reliability of the formulas, correlation coefficients were used to test external and internal consistency.

In order to test if these formulas were reliable for the Tipu population, diaphyseal length was used as an independent age predictor to compare with the age determined from tooth length. To establish difference in the tooth reliability, the sample was split into two different age groups, 0-8 and 9-15, to determine if a certain tooth or teeth worked better for younger or older individuals (Table 2). From the correlations calculated, dental length was shown to be reliable for age estimation. The values for the entire sample ranged from 0.59-0.84. This shows good external consistency. The canine and second premolar were established to be the most reliable teeth since both had the high correlation values amongst the sample. The central incisor and first premolar had the lowest correlations. The age estimates were seen to be better in younger children. The correlation values ranged from 0.70-0.98 except for the first premolar, whereas the older individuals had more sporadic values ranging from 0.07 to 0.70. The highest correlation coefficients calculated for juveniles ages 0-8 were between 0.94-0.98 for the second premolar, first and second molars. The first premolar had the lowest was of 0.20. The highest correlation coefficient for juveniles ages 8-15 was the canine with a value of 0.70. The lowest was the central incisor with a correlation value of 0.07.

Correlation coefficients were calculated between each tooth type such the central incisor versus the lateral incisor (Table 3). These calculations were done to observe internal consistency, which had good results. The averages were calculated for each correlation; the results ranged from 0.63-0.77. Central incisors with the lowest value, and canines with the highest. The canine and second premolar showed to have the best internal consistency.

For the overall sample, the canines and second premolar proved to be the most reliable teeth to use as an age indicator at Tipu; the central incisor and first premolar were the least reliable. The external and internal consistency observed were good indicating the formulas can be a method used for an age estimation. The results indicated the age predication formulas due indeed reliably work for this population.

## Discussion

This research supports the proposed theory of Cardoso et al. (2016) that the age predication formulas developed in their research can be used in archaeological contexts for incomplete or poorly preserved remains. Even though Tipu is well preserved for a Maya series, many individuals are incomplete. This can be observed in this study since not all juveniles in the collection were available for this research and those that were included did not have all remains available. The study was not hindered due to the unavailable dental remains since the formulas were tooth specific (Cardoso et al., 2016). The use of diaphyseal length age predications were not affected either since more than half of the sample had a femur present allowing for a more dependable external consistency test. The reason diaphyseal age predications were used for this study was to further test if tooth length is a reliable age indicator by observing the correlation between the two. Dental development has two periods of greatest activity, so the correlation values were calculated for individuals ranging from 0-8 and 9-15 years old (Ubelaker, 1989).

The results showed that for this population, the canine and second premolar were the most reliable teeth for predicating age using dental length. From simply observing the predicated ages for each tooth, both the canine and premolar would not be expected to be the most reliable since the canine had the highest age estimation while the second premolar had the lowest. The correlation coefficients indeed determined these teeth are reliable age indicators. Both had high correlation values for external and internal consistency tests. The canine was observed to be the best indicator for those in the age range of 9-15. This was expected since the canine is typically erupted by the age of eleven (Ubelaker, 1989). For juveniles between the ages of 0-8, the second premolar had the highest correlation. The first and second molars also had high values as well. These values are to be expected since these three teeth erupt earlier than the canine (Ubelaker, 1989). The first molar typically erupts around the age of six and the other two erupt shortly after (Ubelaker, 1989). Both the first molar and central incisor had low correlation values indicating they have the lowest reliability as an age indicator. This is expected since the first molar is one of the first teeth to erupt and the central incisor follows shortly after (Ubelaker, 1989). The results showed that there is good consistency in age estimation between the teeth. The averages of each correlation were between 0.63-0.77. The values were close in range to each other indicating that there is strong agreement among the teeth. The internal consistency also supports the canine and second premolar to be a reliable age indicator since they both had a high correlation values. These results support this method as another reliable way to estimate age.

There are factors that could have altered the values collected such as sample size, individual variation, data collection error, and preservation. The sample size was relatively small for the population. A larger sample size would provide better accuracy for reliability of the formulas. Individual growth can affect the results since children grow at varying rates. There is not much research on the growth curve for the Maya population, so the diaphyseal length age can vary in comparison to tooth development such as the teeth may develop faster than the long bones. However sample size and individual variation are factors that cannot be controlled. Recording error could have affected the data collected for tooth length and calculated predicated ages. The same set of calipers were used to help reduce inconsistency with measurement values. One individual measured all the teeth, which allows for consistency throughout the measurements. Preservation of the teeth could have affected the data collected since some teeth measured may have been missing fragments. Teeth with too much fragmentation were not used for the study to help reduce this effect. Only loose teeth were used for this study. Further research on this population can be done by observing the length of teeth still present in the jaw with the use of x-rays. Also, the age predication formulas were only used for mandibular teeth in another study the maxillary teeth could be used to determine if the formulas can be used for any tooth.

Overall, this study supports the methods developed by Cardoso et al (2016) for tooth length as an age indicator for juvenile remains. The internal and external consistency were good. The canines and premolars are the most reliable teeth and the central incisor and first molar are the least reliable for the Tipu series.

## Conclusion

In conclusion, the age predication formulas could be used for this population. The canine and second premolar were calculated to be the most reliable teeth for this population. Both the internal and external consistency was adequate for this sample. The results support the theory of Cardoso et al. (2016) that this method would be useful in an archaeological context and the age predication formulas created can be easily useable for incomplete or poorly preserved remains. The study supports the method proposed by Cardoso et al. that mandibular tooth length can be used as another method of age estimation.

### *Acknowledgements*

Special thanks to Dr. Marie Danforth for her advisement during this research process. Also the Archaeology Institute of Belize kindly gave permission for use of the Tipu series.

Research by Ashley Aucoin for The University of Southern Mississippi

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Table 1 - Predicted Age Calculated By Age Prediction Formula

<b>Age Estimates from Tooth Length</b>							
<i>Burial</i>	<i>I1</i>	<i>I2</i>	<i>C</i>	<i>P1</i>	<i>P2</i>	<i>M1</i>	<i>M2</i>
79	8.5	9.8	13.7	5.4	8.6	9.5	7.8
94	9.1	10.8	13.5	12.7	8.9	9.5	9
104	10.6	11.1	12.3	9	7.5	9.4	6.3
143	9.6	10.6		10.1	6.3	10.8	5.9
176			12.2	12.2	8.2		9.5
181	5.1	4.4	5.2	4.4	2.23	5.4	2.5
191	9.6	9.5	10.2	8.3	5.2	9.4	6.4
257		9.5	7.4	5.2	4.24	8.7	3.8
259	9.7	10.4	8.7	7.13		9.6	
265	8.6	9.5	12.9	10.7	9.08		10.2
276			13.5	11.9	7.9	9.5	7.8
282	9.3	10.2	13.6	11	9.18	11.3	9.1
336A	9.1	9.8	11.1	11.5	4.8		5.2
337A	10.1	11.9	13.4	11.6	9.24	9.8	9.1
362	5.8	7.1	5.9	4.7	2.12	7.2	3.1
365	4.5	4.6	4.9	3.6	1.3	5.8	
382	6.1	6.4	4.3				
386	3.1	3.3	3.5	2.7	1.8	2.7	
387	8.4	8.8	7.3	5.9		7.6	3.4
396	8.7	11.1	11.1	9.5	5.32	5.5	
397	7.4	7.6		2.9		7.1	2.5
426	7.4	6.6	6	3.7	3	6.6	2.8
464		9.4	9.9	8.2	5.4	9.6	7.3
490	8.2	9.9	12.7	11.9	9.6	9.9	10.1
517	7.8	7.1	7		2.8	8	3.4
524	5.9	7.5	6.5	4.3	3.7	6.7	3.4

Table 2 - Internal Consistence Of All Teeth Measured

<b>Correlation of Age Estimation: Diaphyseal v. Dental</b>							
	<i>I1</i>	<i>I2</i>	<i>C</i>	<i>P1</i>	<i>P2</i>	<i>M1</i>	<i>M2</i>
<i>Ages 0-8</i>	0.88	0.7	0.77	0.21	0.98	0.96	0.94
<i>Ages 9-15</i>	0.07	0.29	0.7	0.22	0.56	0.3	0.49
<i>All ages</i>	0.59	0.67	0.84	0.59	0.81	0.67	0.7

Table 3 - Diaphyseal Versus Dental Age Prediction For Ages 0-8, 8-15 And All

<b>Correlation Among Individual Teeth</b>							
	<i>I1</i>	<i>I2</i>	<i>C</i>	<i>P1</i>	<i>P2</i>	<i>M1</i>	<i>M2</i>
<i>I1</i>							
<i>I2</i>	0.88						
<i>C</i>	0.68	0.75					
<i>P1</i>	0.55	0.62	0.77				
<i>P2</i>	0.59	0.66	0.91				
<i>M1</i>	0.7	0.64	0.63	0.51	0.62		
<i>M2</i>	0.39	0.56	0.85	0.72	0.91	0.71	
<i>Average</i>	0.63	0.68	0.77	0.64	0.73	0.66	0.69

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**Answer correctly  
and we'll feature  
you in the next  
MS Forensic  
News!**

## MDIAI Forensic Challenge Question:

Detective Itami found the notorious gangster Phil Sanfilippo lying face down on the bar room floor. A bullet had entered right behind his left ear and must have lodged somewhere in his brain as there was no exit wound.

The bullet matched the gun that was owned by R. K. Lawson, another hoodlum, and Phil's rival gang member. It was well known that they hated each other but frequented the same bar. Lawson said that he was the

only customer in the bar when Phil came in and started yelling at him. "He was like a madman," said Lawson. "He pulled out a knife and started coming at me. I shot him in self-defense as he charged head-on at me swinging that knife." Phil's body lying close by still had the knife clutched in his left hand. "He just wouldn't stop coming at me," exclaimed Lawson. "I had to shoot, I had no choice."

The only witness was the

bartender, another shady character, who agreed with Lawson's story. Detective Itami just smiled and said, "You boys will have time to think of something better than that story on the way to the precinct."

**Why didn't he believe them?**

**Submit your answer to [info@mdiai.com](mailto:info@mdiai.com)!**

**MDIAI would like to say a huge THANK YOU to all of the great professionals in Mississippi who selflessly serve our citizens! BE SAFE!**