



# Winners of the 2008 Table Clinic Competition

Each year, the California Dental Association invites dental, dental hygiene and dental assisting students and military residents from across the state to enter the Table Clinic Competition at the Anaheim Scientific Session. The first-place finishers in each category receive cash awards and an invitation to write an abstract of their work to appear in the *Journal of the California Dental Association*.

## CLINICAL DENTAL STUDENT WINNER

The CDA Foundation awarded multiple scholarships, totaling \$1,750 to the first-, second- and third-place winners of the Dental Assisting Table Clinical Competition. Following are the winners of the 2008 table clinic competition.



Third-year dental student Rita Chuang is ecstatic at winning first place, clinical category, during the annual Spring Scientific Session table clinics. Chuang, flanked by Dr. Anthony Perez, left, and Dr. Brian Scott, attends the University of Southern California School of Dentistry.

### Late Maxillary Protraction: Novel Treatment Modality for Cleft Lip and Palate Patients

*Rita Y. Chuang, Alex Alcaraz, and Stephen L-K Yen, University of Southern California, School of Dentistry*

Cleft lip and palate, CLP, is the most common craniofacial birth defect, occurring in 1/700 live births in the United States.

**OBJECTIVE:** To evaluate the effectiveness of a maxillary orthopedic protraction technique developed at Children's Hospital, Los Angeles, as

a nonsurgical alternative to orthognathic surgery to treat maxillary hypoplasia in CLP patient population.

**METHODS:** Twenty-eight patients with maxillary hypoplasia received treatment using the protraction technique. The alternating rapid maxillary expansion and constriction consisted of seven days of expansion followed by seven days of constriction, administered over eight weeks to achieve overcorrection of negative overjet.

After sutural loosening, patients received class III elastics with reverse pull headgear treatment at night. The control group of 26 CLP patients completed pubertal growth before Lefort I surgery. Lateral cephalometric were taken at three timepoints (pre-, immediately after, and six-months postprotraction) for analysis of maxillary length, mandibular length, rotation of the occlusal plane, and incisor positions. Soft tissue results were compared between postprotraction and post-LeFort 1 CLP patients.

**RESULTS:** In the control group, the class III malocclusion did not self-correct during adolescent growth. In the protraction group, the technique corrected class III

malocclusions ranging from 3-12 mm in 24 patients as measured by T2. The CI III correction was attained by a combination of maxillary advancement, mandibular incisor uprighting, maxillary incisors proclination, and counterclockwise occlusal-plane rotation. The soft tissue change in nasolabial angle was comparable to those

observed in LeFort 1 maxillary surgery.

**CONCLUSION:** The protraction technique demonstrates significant potential as an effective nonsurgical treatment to correct the maxillary hypoplasia in cleft lip patients during adolescent growth.

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## SCIENTIFIC DENTAL STUDENT WINNER



Drs. Anthony Perez and Brian Scott take a moment with Richard Rauth, who attends the University of California, Los Angeles, School of Dentistry. Rauth, who expects to graduate next June with a DDS, MS, presented a portion of his master's research at the table clinic competition, scientific category.

### Engineered M180ki Mouse Enamel: Simply Hard

*R.J. Rauth, University of California, Los Angeles, School of Dentistry; Y. Lei, D. Zhu, M.L. Paine, and M.L. Snead, University of Southern California, School of Dentistry; and S.N. White, PhD, MS, MA, University of California, Los Angeles, School of Dentistry*

**INTRODUCTION:** Enamel formation is based upon a preassembled protein matrix that controls the mineral habitat, creating a ceramic composite with unique material properties that allow it to last a lifetime without renewal. Ameloblast cells synthesize enamel matrix proteins, with amelogenin being the most abundant protein that undergoes self-assembly to form nanospheres. Alternative splicing creates amelogenins of different lengths and potential functions. Although many tooth formation genes and proteins have been identified, their relations to mechanical function are still largely unknown.

**OBJECTIVE:** A knock-in approach was used to engineer enamel produced from a single

amelogenin isoform; the authors measured the consequence of this simplified design on enamel hardness and toughness.

**METHODS:** Genetic M180KI mice were created and verified. Vickers micro-indentations were made in enamel and dentin. Ten repetitions per tooth were averaged for 10 teeth in each group; means and SDs were calculated. Microscopy was used to measure microstructure. Data were analyzed by T-tests.

**RESULTS:** Reducing amelogenin isoform complexity by over 1 order of magnitude, to only the M180 amelogenin protein, produced enamel that was significantly harder, 7 percent ( $p=0.01$ ), but also significantly ( $p<0.001$ ), 21 percent, less tough, than wild type enamel. Microstructural organization was indistinguishable between wild type and transgenic enamel and dentin. Dentin hardness did not differ between the animal types ( $p=0.4$ ), suggesting that the amelogenin M180 isoform alone was sufficient for any epithelial-mesenchymal signaling required for dentin formation.

**CONCLUSION:** A marked reduction in the enamel matrix protein complexity produced an engineered enamel with unaltered architecture and acceptable material properties.

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COMMUNITY/EDUCATION WINNERS



Loma Linda University's Ryan Falke, Sue Park, and Brian Evans took the blue ribbon in the Community/Education category. They are congratulated by Dr. Anthony Perez, far left and Dr. Brian Scott.

**Computer-aided Diagnosis of Oral Pathology**

*Brian Evans, Sue Park, and Ryan Falke, Loma Linda University*

**BACKGROUND:** The use of computer-assisted diagnostic software may be effective in reducing clinician time and accuracy in diagnosing presenting problems.

**METHODS:** An experimental design was used to investigate the usefulness of computer-assisted diagnostic software to diagnose oral pathology. Participations (N=34) were recruited through convenience sampling. The group was given four patient vignettes from which they created a differential diagnosis, which were recorded for time and accuracy. The lesions were presented in a PowerPoint presentation so every participant had two minutes to diagnose. Accuracy was determined by grading each differential diagnosis and looking if the actual lesion was in the differential.

Participants were also polled to find out if they felt the computer program was effective, if it was easy to use, and if they preferred using the program over a book.

**RESULTS:** From the results of the test the authors found that the majority of the lesions were correctly placed within the top three lesions of the differential diagnosis in more than 80 percent of the participants tested. In the participant survey, 64 percent reported they preferred using the CADOP program over a book for differential diagnosis with 21 percent reporting neutral over a book or CADOP.

Of the participants surveyed, 60 percent said they felt that the computer program was an effective tool for creating a differential diagnosis with 15 percent stating they were neutral if it was effective or not. Finally, 73 percent felt the CADOP program was easy to use with 15 percent reporting neutrality in the matter.

**CONCLUSIONS:** The results suggest that the CADOP program is effective tool for oral diagnosis. Survey results showed that CADOP is an effective and easy way to create a differential diagnosis. Dental professionals have a responsibility to provide efficient dental care to the patients that includes a timely and accurate diagnosis. Computer-assisted diagnostic software may be helpful for a working practitioner or dentists in training to fulfill this responsibility.

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MILITARY — PUBLIC VOTE WINNER

Winning the Military/Public vote category is Matthew Avrit, DMD, far right, as Drs. Gary Ackerman and Anthony Perez look on.



**Maximizing Anterior Implant Esthetics**

*Matthew Avrit, DMD*

**ABSTRACT:** Maximizing anterior implant esthetics is a multifaceted approach, involving multiple steps beginning before the extraction until the final delivery of the prosthesis.

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## RDH STUDENT WINNERS



First-place finishers in the dental hygiene category Laura Zahorik, second from left, and Alison Corwin, proudly show their winning table clinic to Dr. Anthony Perez, far left, and Dr. Brian Scott.

### Herbal Supplements: To Bleed or Not To Bleed?

*Alison Corwin and Laura Zahorik, West Los Angeles College*

**BACKGROUND:** With the growing popularity of herbal supplement use, concerns arise when used alone or in conjunction with other medications. According to research, the majority of health care practitioners and consumers

are unaware of the potential side effects of commonly used herbal supplements.

**METHODS:** A literature review was conducted using dental and medical professional journals.

**RESULTS:** Herbal supplements used in conjunction with analgesics, non-steroidal anti-inflammatory drugs, and commonly prescribed medications such as anticoagulants and antidepressants can cause oral and systemic effects. A thorough medical and dental history is necessary to prevent possible drug interactions. Modification of the dental treatment plan may be necessary with patients currently taking herbal supplements.

**CONCLUSION:** Dental professionals play a key role in the assessment and prevention of complications associated with the use of herbal supplements.

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## RDA STUDENT WINNERS

Dr. Brian Scott congratulates the first-place winners of the dental assisting table clinic competition. The team members (in alphabetical order) are: Lorena Cairo, Hayley Campbell, Shannon Hewko, and Cindy Salazar, all of Citrus Community College.



### Natural Sugar vs. Artificial Sugar

*Cindy Salazar, Hayley Campbell, Shannon Hewko, and Lorena Cairo, Citrus Community College*

To determine whether artificial sugar would produce the same amount of bacterial activity as natural sugar, two members of the group swished 2 ounces of water with dissolved sugar for one minute. After 20 minutes, a sample from the maxillary molars and the mandibular anteriors was taken and placed in a sterile Petri dish that contained agar.

Four types of sugars were tested: two natural and two chemically processed. The samples were incubated for five days.

The results showed that natural sugar produced significantly more bacteria than artificial sugar.

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