

THE OFFICIAL ALUMNI PUBLICATION OF THE HERMAN OSTROW SCHOOL OF DENTISTRY OF USC | SUMMER 2015

# TRODENT



## **MILITARY** **DENTISTS**

**DENTAL DETECTIVE**  
**CRACKING THE CASE**  
**WITH FORENSIC DENTISTRY**

**CEREBRAL DOWNLOAD**  
**ARE WISDOM TEETH THE NEW**  
**DENTAL RESTORATION?**





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### Dear Trojan Dental Family,

Welcome to the Summer 2015 issue of *TroDent*.

In this issue's cover story, we focus on the brave women and men who serve in the U.S. armed forces as military dentists after graduating from the Herman Ostrow School of Dentistry of USC. You can read all about their stories on pages 19-25.

You'll also find an interesting Q&A on pages 10-11 about the Secret Life of Ruby Hinds, who by day works as the director of healthcare compliance here at Ostrow. By night, though ... well you'll have to read on to find out.

On page 27, you can read about Dr. Mark Urata's vision for the future of the division of oral and maxillofacial surgery, which just started in 2013.

Finally, on page 29, you can learn about some of Dr. Pascal Magne's exciting work on natural CAD/CAM dentistry. If you have kids, keep their wisdom teeth. They might just come in handy.

I hope you enjoy reading *TroDent* as much as I do, and please send us any questions, thoughts or comments.

I'll look forward to seeing most of you on Nov. 6 and 7 at Ostrow's homecoming events, which, as always, include class reunions and casino night on Friday night and a picnic on Saturday before we head to the Coliseum to take on the Arizona Wildcats.

Have a great summer, and Fight on!

A handwritten signature in black ink that reads "Avishai Sadan".

Avishai Sadan DMD, MBA  
Dean  
G. Donald and Marian James Montgomery  
Professor of Dentistry  
Herman Ostrow School of Dentistry of USC

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# HATS OFF TO YOU

On May 15, Ostrow celebrated the class of 2015 as they completed their studies and faced the world for the first time as official Trojan dental professionals. The graduating class consisted of 174 DDS, 37 dental hygiene, 42 advanced specialty, 3 PhD and 22 master's students, which included graduates from the first ever master of dental hygiene and online master of orofacial pain and oral medicine programs. Congratulations to the newest members of the Trojan dental alumni family!

PHOTO BY LINDSEY NAM YIP DDS '16





## COVER STORY

# THE MILITARY DENTISTS 19-25

BY JOHN HOBBS MA '14,  
YASMINE PEZESHKPOUR MCM '17  
& JAMIE WETHERBE MA '04

Every year brave women and men leave Ostrow behind after graduation to serve their nation as military dentists. The Health Professions Scholarship Program pays these students' tuition in exchange for their expertise in treating our uniformed women and men all around the world.



## DEPARTMENTS

News: For Children with Autism,  
Trips to the Dentist Just Got Easier **8**

News Briefs **9**

Mouthpiece **10-15**

Memorials and Tributes **32**

Inspired **33**

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HERMAN OSTROW SCHOOL  
OF DENTISTRY OF USC  
925 W. 34TH STREET, DEN 202  
LOS ANGELES, CA 90089-0641

(213) 740-0428

### CONTACT US WITH STORY IDEAS AND PHOTOS AT:

OSTROW.ALUMNI@USC.EDU

### DEAN

AVISHAI SADAN DMD, MBA '14

### EDITOR

JOHN HOBBS MA '14

### DESIGN/PRODUCTION

GARETT YOSHIDA

### CONTRIBUTORS

JOHN HOBBS MA '14  
PASCAL MAGNE  
CARMEN MOLINA  
CALEN OUELLETTE  
YASMINE PEZESHKPOUR MCM '17  
JAMIE WETHERBE MA '04

### PHOTOGRAPHY

JOHN HOBBS  
NATE JENSEN  
GLENN MARZANO  
LAURA BRAVO MERTZ  
LINDSEY NAM YIP

### PHOTOGRAPHY ASSISTANT

ALEX DE LA HIDALGA

### ILLUSTRATIONS

GARY ALPHONSO  
I2IART.COM

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**Roseann Mulligan DDS, MS**  
Director of the Online Programs in Geriatric Dentistry  
Charles M. Goldstein Professor of Community Dentistry  
Associate Dean  
Community Health Programs and Hospital Affairs Chair  
Division of Dental Public  
Health and Pediatric Dentistry  
USC Davis School of Gerontology  
Fellow of the Gerontological Society of America  
Fellow of the Academy of Dentistry for Persons with  
Disabilities  
American Board of Special Care Dentistry Diplomate



**Glenn Clark DDS, MS**  
Director of Distance Education Programs in  
Dentistry, Professor and Director of the  
Orofacial Pain and Oral Medicine Program  
Chair of the Section of Diagnostic Sciences  
Fellow of the American Board of Oral Medicine  
American Board of Orofacial Pain Diplomate



**Reyes Enciso MS, PhD**  
Associate Professor of Clinical Dentistry  
Course Director  
Capstone Research Project for Online Programs  
Division of Dental Public Health and  
Pediatric Dentistry



**Phuu Han DDS, PhD**  
Assistant Professor of Clinical Dentistry  
Division of Dental Public Health and Pediatric  
Dentistry  
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## FEATURES

### BETTER TOGETHER 27

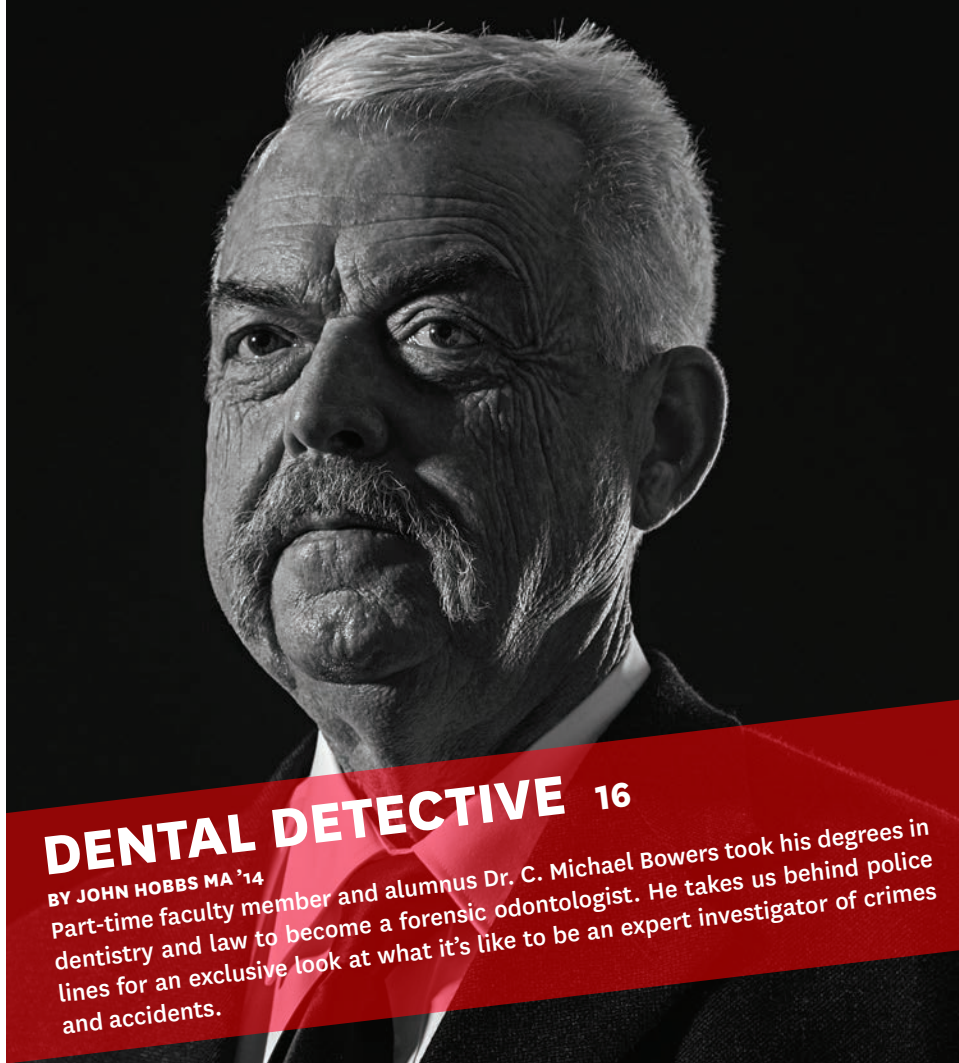
BY JOHN HOBBS MA '14

With Ostrow's new division of oral and maxillofacial surgery, Dr. Mark Urata has united two distinct disciplines—oral and maxillofacial surgery and plastic surgery—that work together symbiotically to train practitioners better than ever before.

### CEREBRAL DOWNLOAD 29

BY PASCAL MAGNE

Dr. Pascal Magne shares his scientific discovery on natural restorations—an approach that could not only shift paradigms in the restorative world but also might have you saving your children's wisdom teeth.



### DENTAL DETECTIVE 16

BY JOHN HOBBS MA '14

Part-time faculty member and alumnus Dr. C. Michael Bowers took his degrees in dentistry and law to become a forensic odontologist. He takes us behind police lines for an exclusive look at what it's like to be an expert investigator of crimes and accidents.

## CONTRIBUTORS



### NATE JENSEN

For more than a decade, Nate has meticulously crafted and refined a dynamic, unique style etched with detailed attention. He says his passion for photography renders him limitless potential and profound impact as one of today's creative voices. His personal and collaborative work have international visibility, with his work spanning ads for fashion labels and luxury hotels to portraits of Hollywood's A-listers. His work has appeared in a variety of publications, including *GQ*, *People* and *Vanity Fair*. Check out Nate's work at [INN8creative.com](http://INN8creative.com).



### PASCAL MAGNE

Dr. Pascal Magne is the Don and Sybil Harrington Professor of Esthetic Dentistry in Ostrow's division of restorative sciences. He's an award-winning author of numerous articles on esthetics and adhesive dentistry and is an internationally known lecturer. Through his research and his book *Bonded Porcelain Restorations in the Anterior Dentition* (translated into 12 languages), Magne has pioneered the "biomimetic approach" in restorative dentistry through the structured use of composite resin, ceramic materials and dental adhesives. Read his research on using living donor teeth for restorations on p. 29.



### CARMEN MOLINA

Carmen came to the United States after fleeing war in her native El Salvador. In 2002, while working as a housekeeper, she met Dean Emeritus Harold Slavkin '61, DDS '65 and his wife Lois, both of whom Carmen credits for turning her life around. "They were my angels fallen from heaven," she says. "Now it is my turn to pay it forward." Since 2005, she's been doing just that, working as a *promotora* for Ostrow's Community Oral Health Programs. In her free time, Carmen has earned her high school diploma and was granted American citizenship in 2013. Read what keeps Carmen inspired on p. 33.



### LINDSEY NAM YIP DDS '16

Lindsey is currently a fourth-year doctor of dental surgery student at the Herman Ostrow School of Dentistry. Before starting dental school, she studied fine arts at Pomona College and interned with a wedding photographer in Los Angeles. In her free time, she enjoys photography and painting, samples of which can be found at [lindseynam.com/blog](http://lindseynam.com/blog). She currently resides in downtown Los Angeles with her loving husband and her mischievous puppy, d'Artagnan. Yip shot this issue's photo essay on p. 3.



## FOR CHILDREN WITH AUTISM, TRIPS TO THE DENTIST JUST GOT EASIER

*Adjusting the environment to be more soothing could eliminate the need for general anesthesia to cope with routine cleanings.*

BY JOHN HOBBS MA '14

Going to the dentist might have just gotten a little less scary for the estimated one in 68 U.S. children with autism spectrum disorder, thanks to new interdisciplinary research from the Herman Ostrow School of Dentistry of USC and the USC Chan Division of Occupational Science and Occupational Therapy.

In an article published by the *Journal of Autism and Developmental Disorders*, researchers examined the feasibility of adapting dental environments to be more calming for children with autism spectrum disorder.

“The regular dental environment can be quite frightening for children with autism who, not knowing how to react, tend to be completely averse to whatever we’re trying to do,” said one of the study’s authors, José Polido PEDO ’98, MS ’01, who is an assistant professor at Ostrow and head of dentistry at Children’s Hospital Los Angeles (CHLA).

Children with autism spectrum disorders—as well as some typically developing children—often show heightened responses to sensory input and find these sensations uncomfortable. As such, the dental office, with its bright lights, loud sounds and touch in and around the mouth, present particular challenges for such children.

In the study, 44 CHLA patients—22 with

autism, 22 typically developing children—underwent two professional dental cleanings. One cleaning took place in a regular dental environment, the other in a sensory adapted dental environment. During each session, the child’s physiological anxiety, behavioral distress and pain intensity were measured.

“I’ve talked to several parents who have said, ‘We really put off taking our child to the dentist because we know how hard it is and we know he’s going to scream and cry,’” said Sharon Cermak, the study’s lead author, who is a USC Chan professor as well as professor of pediatrics at the Keck School of Medicine of USC.

To help combat that reaction, researchers adapted the dental environments by turning off overhead office lights and headlamps, projecting slow-moving visual effects onto the ceiling and playing soothing music.

Instead of using traditional means to secure the child in the dental chair, practitioners used a seat cover that looked like a gigantic butterfly whose wings wrapped around the child and provided a comforting, deep-pressure hug.

The research team found that both children who are typically developing as well as those with autism spectrum disorders exhibited decreased psychological anxiety and reported lower pain and sensory discomfort in the sensory-adapted dental environment.



PHOTO BY JOHN HOBBS

The study—which represents a unique collaboration between pediatric dentists and occupational therapists—could help improve oral health care for children with autism, a group reported to have poor oral health, research shows.

The findings could also represent a cost savings to the health care system, with fewer insurance reimbursements paid to dental offices for the additional staff members and general anesthesia often necessary for children with autism.

In early May, Cermak earned an additional \$3.1 million from the National Institutes of Health to continue the study.

The next phase will be for researchers to increase their sample size—they’ll be using 220 children total; 110 in each group—to determine which factors (e.g. age, anxiety, sensory over-responsivity) best predict which children respond well to the intervention.

“One of our long-term goals with this study is to help dentists develop protocols for their own dental clinics to see how sensory components are contributing to behavioral issues,” Cermak said. “I think these protocols can then be translated across the globe.”

*Experience the sensory adapted dental environment for yourself at [tinyurl.com/USCside](http://tinyurl.com/USCside)*



# NEWS BRIEFS

## ■ SIMAIE TO REPRESENT OSTROW ON USC ALUMNI ASSOCIATION BOARD OF GOVERNORS

Joseph R. Simaie DDS '96 has been selected as the Ostrow representative on the USC Alumni Association's 2015-2016 Board of Governors. In this role, Simaie and more than 60 other representatives from across campus will provide critical advice and support to the USC Alumni Association. The alumni association's mission is to support USC by engaging Trojan alumni for life. The group provides benefits and services to more than 366,000 members around the world and distributes nearly \$4 million in scholarships to USC students each year. Simaie was officially installed at the alumni association's annual meeting in May 2015.

## ■ SLAVKIN AWARDED HONORARY DEGREE FROM MCGILL UNIVERSITY

Ostrow Dean Emeritus Harold Slavkin '61, DDS '65 was awarded a prestigious honorary degree from McGill University in Montreal, Canada, at its spring convocation on May 29. The award recognized Slavkin's leadership in research and his advocacy for increased access to health care for underserved populations. The honorary degree was awarded to 16 recipients, two of whom were Nobel Peace Prize winners. Slavkin served as dean from 2000 to 2008 and retired from Ostrow in June 2014.

## ■ CHAI PUBLISHED IN NATURE CELL BIOLOGY AND DEVELOPMENTAL CELL

This spring, Associate Dean of Research Yang Chai PhD '91, DDS '96 and his team had two high-impact journal articles published. In *Nature Cell Biology*, Chai shared findings that could improve treatment options for children with craniosynostosis, a condition in which a baby's soft spots close prematurely. Traditional thinking was that the birth defect—which can cause developmental delays, hearing loss and blindness—was the result of bone overgrowth. Chai's research suggests it's actually caused by a lack of stem cells. In *Developmental Cell*, Chai and lead author Jingyuan Li shared their investigations on the stem cell pathways underlying the constant growth of rodent incisors, research that could eventually lead to natural tooth restorations in human beings.

## ■ USC DENTAL HYGIENE TAKES GLOBAL STAGE

On June 6, Diane Melrose MA '11, director of dental hygiene, gave a presentation to the Nippon Dental University in Tokyo. During the presentation, titled "Trends in Dental Hygiene Practice in the United States," Melrose discussed dental hygiene education and new trends, including teledentistry, which uses a digital workflow to put dental hygienists in a new role in the fight against caries. Melrose's visit came just weeks after Linda Brookman '79, associate professor of clinical dentistry in dental hygiene, gave a presentation at the Maurice and Gabriela Goldschleger School of Dental Medicine at Tel Aviv University in Israel. Her presentation, titled "Interprofessional Education & Collaborative Practice: Working Together to Improve Outcomes," examined the ways in which the health sciences could work in teams to improve patient health after treatment.

## ■ OSTROW RESEARCHERS EARN IADR INNOVATION IN ORAL CARE AWARDS

Dr. Janet Moradian-Oldak and Alireza Moshaverinia PhD '12, PROS '12 earned two of the three IADR Innovation in Oral Care Awards given in 2015. The awards, worth up to \$75,000, are geared toward helping investigators pursue innovative research in oral care. Oldak's grant will help her continue the development of a patent-pending hydrogel that has the potential to rebuild tooth enamel. Moshaverinia's award will help the junior faculty member develop a hydrogel to treat peri-implantitis, a common inflammatory complication following dental implant. This research also earned Moshaverinia a 2015 Zumberge Individual Award, worth \$30,000.

## ■ BACH LE, LIFETIME HONORARY MEMBER OF THE AMERICAN COLLEGE OF PROSTHODONTISTS

Ostrow clinical associate professor Bach Le DDS '94 has been named a lifetime honorary member of the American College of Prosthodontists (ACP). "Dr. Le's yearly presentations and hands-on courses about implant placement and bone grafting during ACP Annual Scientific Sessions have been sold out and repeatedly received highest praise from our members," said ACP President Dr. John R. Agar in a congratulatory letter. Le has been an Ostrow faculty member since 2000. He has lectured internationally (on six continents) and has had numerous research articles published on hard and soft tissue regeneration for improving esthetic outcomes. The ACP is the official sponsoring organization for prosthodontics and has more than 3,700 members worldwide.



# MOUTHPIECE



SECRET LIVES

## *Ruby Hinds*

BY JOHN HOBBS MA '14

From 9 to 5, most might recognize Ruby Hinds as Ostrow's no-nonsense director of healthcare compliance. But after hours, this classically trained opera singer, actress and producer—who's performed all over Europe and America, including at such L.A. venues as the Hollywood Bowl and the Dorothy Chandler Pavilion—leaves behind all concerns about rules and regulations to pursue right-brain endeavors with a fervent passion. Turn the page to learn more about Ruby Hinds. »

PHOTO BY NATE JENSEN



## Ruby Hinds continued

### When did you discover this powerful voice of yours?

I have two other opera singers in my family [sisters Esther and Grace, who perform with Ruby as part of the Hinds Trio], so classical music had been around us all our lives. I just naturally fell into being part of the chorus and that then evolved into singing solos.

### What training have you had in operatic singing?

I was part of the All-City High School Chorus in New York. I enjoyed it but wasn't thinking about it in terms of a career until college. Then I was accepted at the Hartt School of Music at the University of Hartford, where I began my operatic studies. After that, I auditioned and was accepted at the Juilliard School for the American Opera Center.

### You've been performing since 1978. What are some of the highlights of your career?

One was having the opportunity to do the world premier of Philip Glass' *the CIVIL warS*. The second one was having the opportunity to do Bellini's *Norma* with my two sisters. That was the first time that three siblings had been in an opera together. I also created a piece called *See There in the Distance*, which is my one-woman show about the life and accomplishments of Marian Anderson, who was the first African-American singer at the Metropolitan Opera.

### How did a consummate performer fall into the role of Ostrow's director of compliance?

I've always loved rules and regulations, which is why I considered a career in law. Compliance satisfies that part of me because there are so many rules and laws associated with compliance, yet there's also a creative aspect in building a compliance program. I love what I do here.



**WATCH HINDS PERFORM:**  
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[tinyurl.com/hinds2](http://tinyurl.com/hinds2)

## MILESTONES



L-R Dean Avishai Sadan, David Good PEDO '77 and Leon Unterman DDS '63

PHOTO BY GLENN MARZANO

*At this year's Part-Time Faculty Appreciation Awards and Dinner, David Good PEDO '77 was honored for 45 years of service as clinical professor of pediatric dentistry at Ostrow. Here's what the good doctor had to say about his decades-long career as a Trojan instructor:*

### ON THE DIFFERENCES IN CURRICULUM:

"In 1970, the practice of pediatric dentistry was primarily surgical removal of decay and filling the tooth with various materials. Today the curriculum is oriented toward preventing surgical removal of tooth structure."

### ON THE REWARDS OF HIS CAREER:

"Over the years, my interaction with the residents in our program and the stimulation they give me to be on the cutting edge of our profession is what has made my experience as an educator so rewarding and fulfilling."

### ON WHAT HAS KEPT HIM TEACHING:

"I've wanted to continue to give back to the profession that I have benefited from and love."

## DIGITAL YEARBOOKS

Thumb through more than 100 years of memories with a few clicks of a mouse.

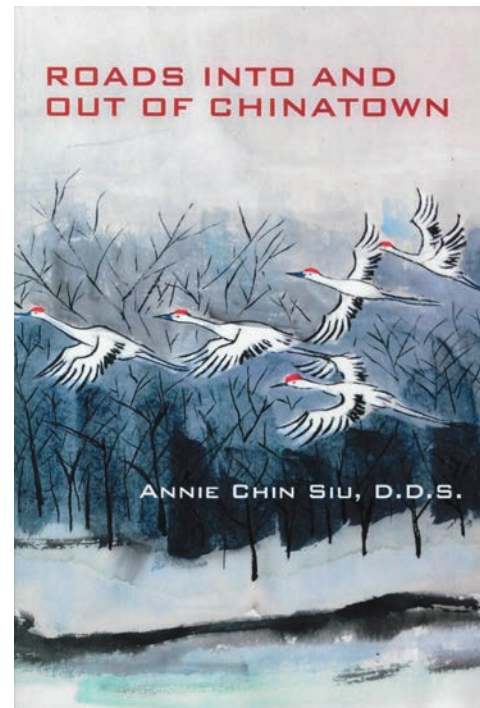
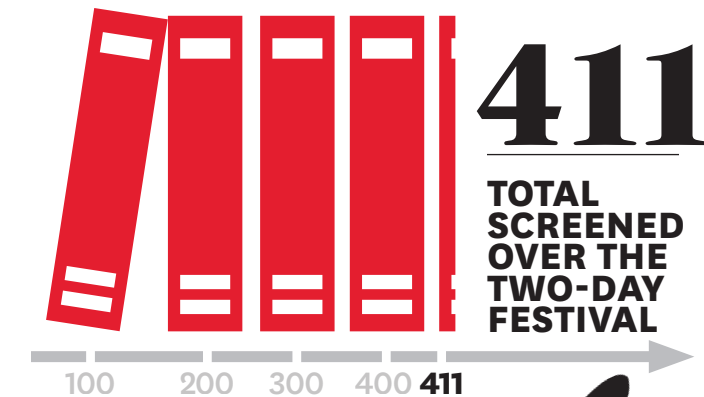
**Was it Tom or Todd?** Looking to catch up with your old buddy from that Morphology and Esthetics class during your first year in dental school but can't quite remember his name? Now you can look him up! Thanks to a partnership between the Herman Ostrow School of Dentistry and USC Libraries, copies of the dental school yearbooks have been digitized and electronically archived. The yearbooks, dating back to the class of 1904, are now available online.

Check them out at [tinyurl.com/dentistryyearbooks](http://tinyurl.com/dentistryyearbooks)

COMMUNITY FOCUS

# FESTIVAL OF BOOKS BY THE NUMBERS

On April 18 and 19, USC hosted the 20th annual *Los Angeles Times* Festival of Books. During the event, Ostrow volunteers set up a mini clinic at the Health and Wellness Pavilion, offering dental screenings to the 150,000 festival-goers. Here are a few more numbers from the Festival of Books:



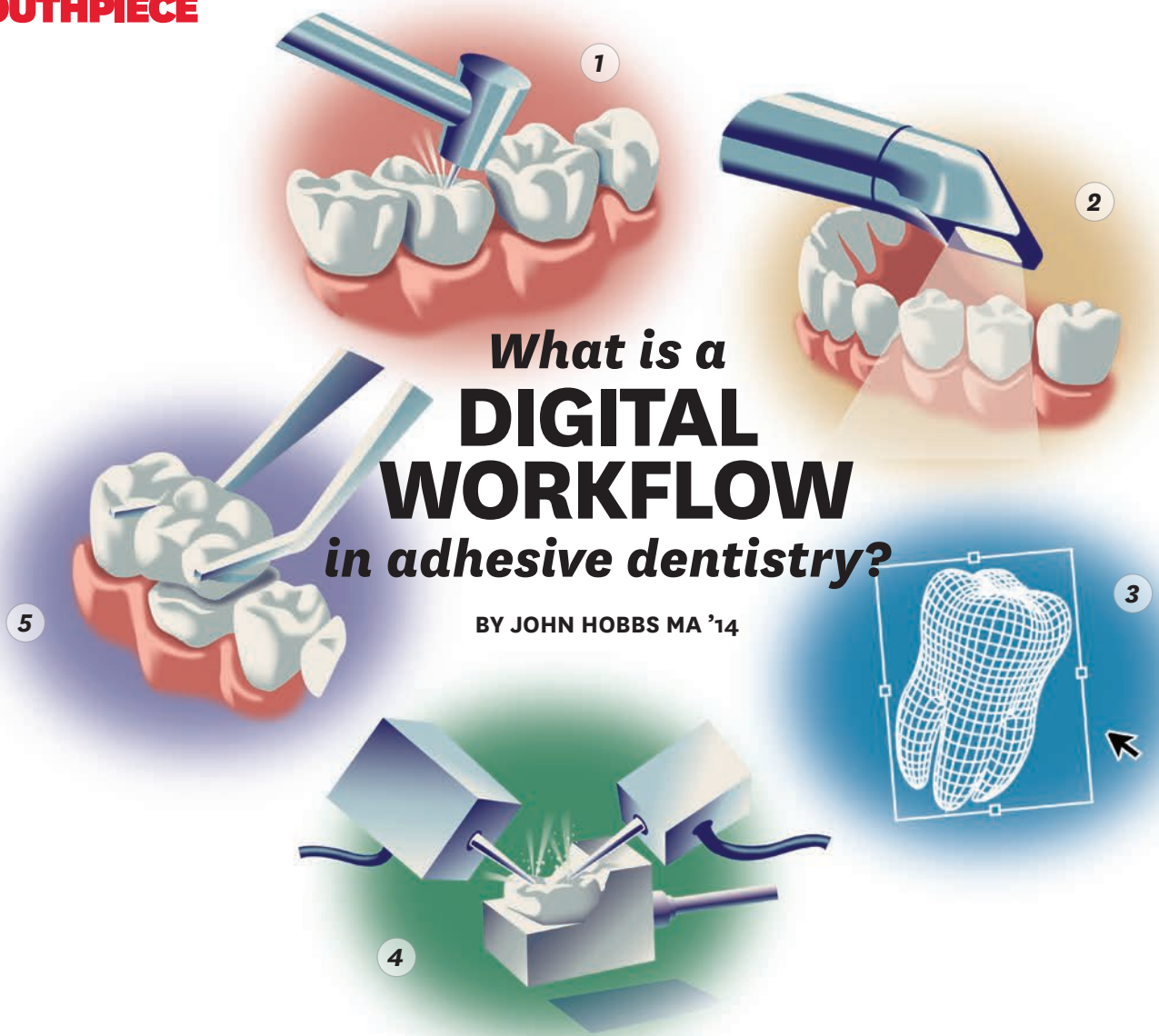
## BOOKS

### The Orthodontic Pioneer

Dr. Annie Chin Siu published her memoir, *Roads Into and Out of Chinatown*, earlier this year. In the book, illustrated with Siu's watercolors, the one-time Ostrow assistant clinical professor (of more than 25 years) describes her upbringing as part of an immigrant family in San Francisco's Chinatown in the 1930s. Siu's memoir reflects on her family's commitment to hard work and education, which landed her admission to dental school in 1950, making her the first Chinese woman in UC San Francisco's dental school. Purchase the book at [tinyurl.com/anniesiu](http://tinyurl.com/anniesiu).







ILLUSTRATIONS BY GARY ALPHONSO/2ART.COM

**WELCOME TO DIGITAL DENTISTRY**—a place where conventional impressions are gone, a dental restoration can be created with a few mouse clicks and a procedure that once took a week can be done in a single visit. Ostrow dental students are required to learn digital dentistry beginning in Trimester III, giving them an advantage in a world increasingly going digital. So what will a digital dental appointment look like? Here are the five steps of a typical digital workflow in the dentist chair:

### 1| **PREP**

As with any dental appointment—traditional or digital—the dental professional's first step is to prepare the area, usually by removing all caries infections so only healthy tissue remains.

### 2| **SCAN**

The practitioner then scans the tooth and its surroundings with an intraoral scanner—a camera that takes extremely precise 3-D images. The intraoral scanners are just one component of the CAD/CAM system. Ostrow currently houses 40 CAD/CAM systems. Our students get hands-on experience with CAD/CAM dentistry beginning in Trimester III.

### 3| **DESIGN**

Sitting chairside, the dental professional uses the digital images to design a dental restoration onscreen while the patient watches. The design process can take anywhere from two to 10 minutes, depending on the case's complexity.

### 4| **MILL**

The dentist sends the data to a milling machine—Ostrow currently has nine such machines—to mill the restoration. The milling machines can make restorations from composite material, ceramics, hybrid ceramics or acrylic. Milling a restoration can take anywhere from seven to 20 minutes, depending on the case's complexity.

### 5| **PLACE**

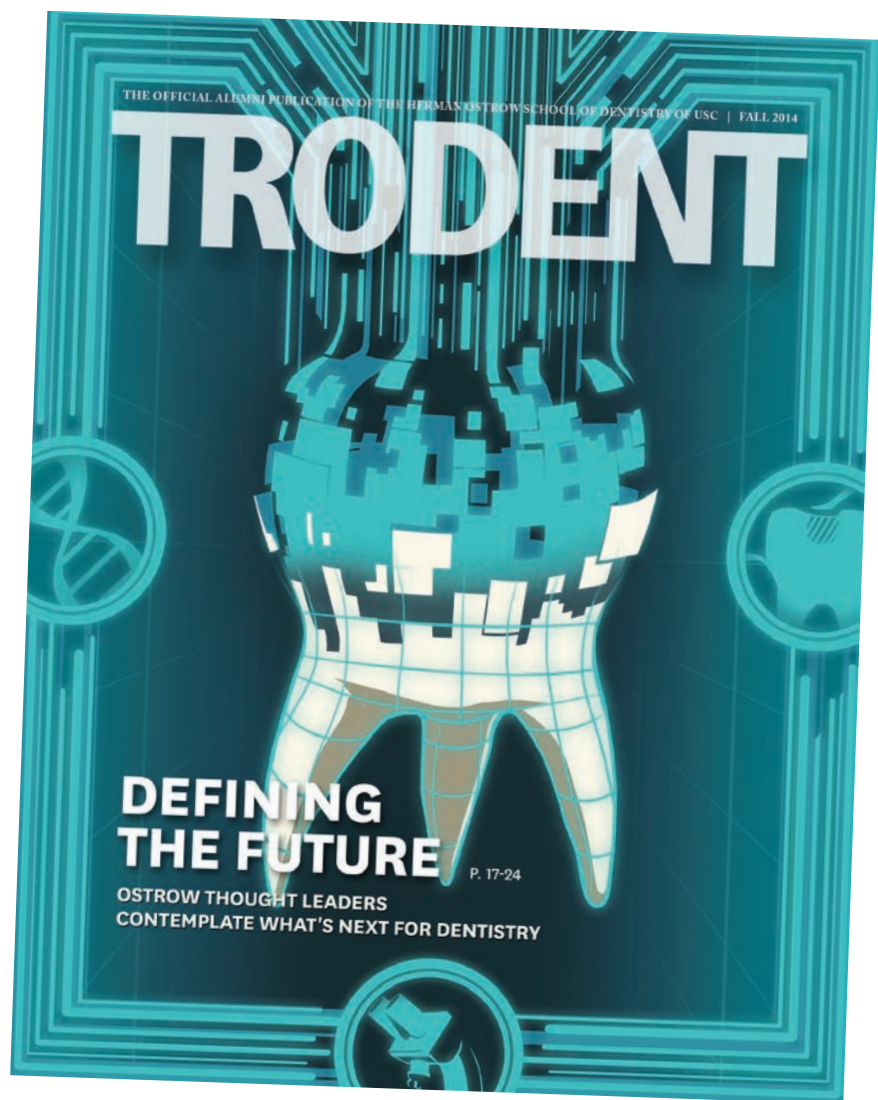
Finally, the dental practitioner bonds the restoration to the affected tooth, bringing the procedure to a close. By the end of Trimester III, a typical DDS class will have collectively placed 300 inlays and onlays. In Trimester V, students move on to more complex cases involving full-coverage restorations (crowns) using a similar digital workflow and 3-D digital treatment planning of implant placement using digital technology.

BE SEEN BY MORE THAN

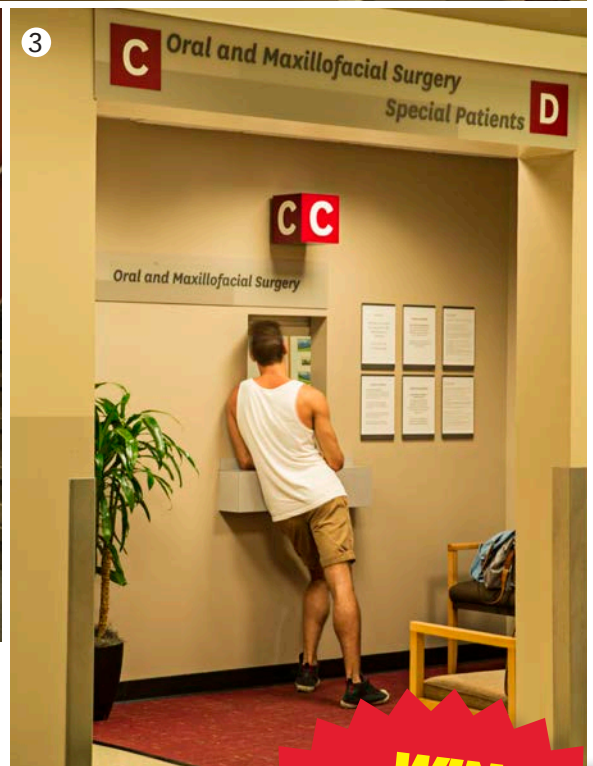
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# Redesigning Norris Dental Science Center

Renovations to the aging Norris Dental Science Center continued this spring, with the second-floor wet lab (Room 263) being gutted to make room for stainless steel water fixtures and modernized equipment. See picture 1 above. The east-end lobby lost its trophy case and art deco partitions to give the space a more contemporary, communal feel. See picture 2. And nearly 800 signs were placed throughout the building to better guide patients through clinical areas, including a new alphabetical system for each department. See picture 3. Next up will be a project to refurbish the dental hygiene lab—soon to be called the Baldwin and Doreen Marchack Learning Lab—modernizing instructional areas and making room for case-based learning sessions.

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BY JOHN HOBBS MA '14

# DENTAL DETECTIVE

*Ostrow clinical associate professor C. Michael Bowers spends his evenings and weekends consulting as a forensic odontologist. Bowers took us behind police lines for a look into the world of investigating accidents and crimes using only dental expertise. »*

PHOTO BY NATE JENSEN



# HIS LINE OF WORK IS NOT FOR THE SQUEAMISH ...

If C. Michael Bowers '71, DDS '75 gets a call from the Ventura County Medical Examiner's Office, chances are he's going to be taking part in an autopsy with a human body that's in some of the worst possible conditions.

Decomposition, burns and dismemberment can often prevent a coroner's office from making a positive identification.

It's under these circumstances that a forensic odontologist would be called into the morgue to help identify the deceased by comparing their teeth with existing dental records of missing persons or other individuals.

Bowers, an Ostrow part-time faculty member and Ventura, Calif., dentist, is one of 27 forensic odontologists practicing in California—one of the highest concentrations in the nation.

While forensic odontologists' case loads often require them to identify human remains—either individually (in accidents and homicides) or in mass fatality events (in plane crashes and natural disasters)—they are also involved in bitemark analyses in cases of abuse and assault and often find themselves in court offering expert testimony.

"Like most dentists, I found it fascinating how dentistry can interface with law enforcement and the legal system," explains Bowers whose boyhood passion for Sherlock Holmes mysteries was rekindled during a 1971 lecture by forensic dentistry expert and one-time Ostrow interim dean Gerald Vale MDS '54.

After graduation, Bowers moved to Ventura, where he opened a private practice and began volunteering at nearby medical examiners' offices. "I got *carte blanche* to get the experience and training necessary to start getting involved with actual case work," Bowers says. He's been working as a forensic odontologist for more than 30 years.

Through the years, he's published several books, book chapters and peer-reviewed journal articles. Recently, his book *Forensic Testimony, Science, Law and Forensic Evidence*, won an honorable mention in the 2015 PROSE Awards, an annual competition for professional and scholarly writing.

## MASS FATALITIES

In 1986, Bowers' mettle was first tested with a mass fatality case when he briefly assisted medical examiners who were combing through the wreckage of Aeroméxico Flight 498 after it collided with a smaller private aircraft over a Cerritos, Calif., neighborhood, killing 67 onboard and another 15 on the ground.

The following year, Bowers was called by Duane Spencer DDS '65 to the Santa Lucia Mountains to help identify the 43 individuals killed after Pacific Southwest Airlines Flight 1771 was hijacked and crashed into the California countryside (*See sidebar*). The remains of 27 of those individuals were never identified.

By 2000, Bowers had worked his way up to chief forensic dentist when Alaska Airlines Flight 261 bound for Seattle crashed into the Pacific Ocean, killing all 88 individuals onboard. Bowers and his team, including fellow alum Kent Hollenback DDS '82 and Dr. Raymond Johansen, scoured through hundreds of body fragments to match partial jaws or single teeth with the dental records of those onboard. Bowers says it took the team nearly three months to finish all the dental identifications.

"Mass disasters always have much more emotions attached to them than any other case concerning just a single individual," Bowers says.

"The difficulty was seeing people semi-intact who just before had been happily vacationing," Bowers told *USC*

*News* in 2002 about the Alaska Airlines crash (*See sidebar*).

But as emotionally difficult as it can be to investigate such scenes of catastrophe, Bowers concedes there is some satisfaction in it.

"Satisfaction is knowing that families have the chance to know that their loved ones have been taken care of," he says. "It takes some of the grief and stress out of the death process for the bereaved families."

## INDIVIDUAL IDENTIFICATIONS

Of course, not all of Bowers' cases involve such mass chaos. Sometimes, he's simply called to investigate a dumped body.

"Forensic odontologists are always on call," Bowers says. "Typically you're working in your practice and the police or coroner investigator gives you a call, saying there's a case active and when can you show up?"

This was the case when the remains of Nichole Lee Hendrix were discovered scattered throughout a ravine in the Ventura countryside in 1999.

On Oct. 15, 1998, Hendrix, 17, went out with her friends for the night. Late in the evening, she called home from a motel to tell her mother she'd be back soon. Sadly, she never returned.

Bowers helped identify Hendrix's body by matching a dental restoration to one she had had done seven years earlier.

To make such identifications, forensic odontologists often compare X-rays, dental impressions, tooth shape and dental restorations to the records of known missing persons or individuals believed to be the deceased until they make a match.

"DNA is certainly the gold standard when it comes to making such identifications," Bowers says. "But dentistry certainly seems to have a very good history if there are sufficient dental records to compare

with an unidentified person.”

Investigators eventually discovered that Hendrix had been kidnapped, robbed and stabbed to death in a motel room by gang members, according to the *Los Angeles Times*.

Thanks to Hendrix’s mother, artifacts from her case are now on display as part of the University of Maryland’s National Museum of Dentistry, which has a traveling exhibit called “Your Spitting Image” about forensic dentistry.

Bowers also uses the case to teach would-be forensic odontologists the ins and outs of his trade in *GPR 622: Introduction to Forensic Odontology*, a course through the general practice residency specialty certificate program at Ostrow.

He says this type of class is generally the only introduction an American dentist can expect to get to this line of work, which is not a specialty recognized by the American Dental Association. There are no master’s programs in forensic dentistry offered in the United States, either—unlike in other countries such as Australia and Scotland.

Typically, an American dentist falls into forensic odontology by virtue of being a skilled dentist and a vetted consultant.

“No one sets out to become a forensic odontologist,” Bowers explains. “My advice to anyone interested would be to develop a good practice and then expect that it will take quite awhile to actually get affiliated with the medical-legal profession to start doing actual cases.”

Bowers says he does 20 to 30 forensic cases a year.

“Probably about 80 percent of my cases involve investigating skin injuries and patterns that occur in assaults, homicides and abuse work,” he says.

## APPELLATE CASES

Perhaps one of the more unexpected areas of focus for Bowers is his involvement with the forensic science reform movement. He has been active in fighting convictions his own forensic odontological colleagues have helped achieve against individuals based on bite mark analysis.

Bowers, who has a legal degree from the Ventura College of Law and is a member of the California Bar, has become active with the Innocence Project—a nonprofit legal and public policy organization that seeks to exonerate through DNA testing those wrongfully convicted of crimes.

Bowers aims to curb the use of bitemark analysis in court cases, citing its lack of scientific validity.

Bite mark analysis work includes comparing

the bite marks left on a body to those made by defendants from dental casts. The problem, Bowers says, is that the technique is entirely subjective and lacks empirical basis. In fact, there have even been discrepancies between experts about whether bites were made by a human or an animal.

“The ability of the skin to register sufficient detail of a biter’s teeth is highly variable and commonly achieves contradictory results,” Bowers argued in a 2011 article, “Recognition, Documentation, Evidence Collection, and Interpretation of Bitemark Evidence.”

Since 2000, at least 24 men have been exonerated after being arrested and convicted, based on bite mark analysis, according to the Innocence Project.

Bowers has successfully fought two convictions in Mississippi that hinged on faulty bite mark analyses.

Sixty-two-year-old Eddie Lee Howard Jr. is currently on death row, convicted of the 1992 rape and stabbing death of an 84-year-old woman. Testing indicated the presence of another man’s DNA at the crime scene and excluded Howard. But the bite mark analyst—who has since recanted his testimony—was so convincing with his analysis that Howard was convicted and has been behind bars for more than two decades. His case is currently being reviewed by the Mississippi Supreme Court. (See *sidebar*.)

Another faulty bite mark analysis has left an indelible mark on Leigh Stubbs’ life.

The Mississippi woman was recently freed on bail after serving 11 years of a 44-year sentence for assault and drug charges, a conviction based largely on a problematic bite mark analysis. She’s currently awaiting word on whether she’ll be retried in the case, despite the faulty evidence.

“It cuts to the core of what is accurate and reliable and what can be said in terms of science regarding bite mark injuries versus what’s said at trial,” he explains of his work to reform the criminal justice system to use a more skeptical eye when making convictions based on bite mark analyses.

With the completion of our interview—a brief respite for Bowers whose work by nature will never truly be done—it’s off to the morgue for the next task. Authorities believe they have a 61-year-old Academy Award-winning movie composer, who had been flying his S-312 Tucano MK1 over the Los Padres National Forest when he lost control and crashed.

They need a forensic odontologist to weigh in on his identity.

## CASE FILES OF C.M. BOWERS

As a consultant for the Ventura County Medical Examiner’s Office, C.M. Bowers investigates up to 20-30 cases a year. We dug into some of the case files of the forensic odontologist who’s been at it for nearly 30 years.

### PACIFIC SOUTHWEST AIRLINES FLIGHT 1771

On Dec. 7, 1987, a flight from Los Angeles to San Francisco was hijacked before crashing into a rocky hillside near Paso Robles. The plane was estimated to have been traveling at around 770 miles per hour upon impact, causing the plane to virtually disintegrate. Forty-three were killed. Bowers was called to the scene to assist in the identification of the victims.

### ALASKA AIRLINES FLIGHT 261

On Jan. 31, 2000, an international flight from Puerto Vallarta, Mexico, to Seattle crashed into the Pacific Ocean, killing all 88 onboard. Very few bodies were recovered intact, which left authorities with fingerprints, dental records and other personal items for identification. Bowers served as the crash’s chief forensic dentist.

### NICHOLE LEE HENDRIX

Seventeen-year-old Hendrix phoned her parents on Oct. 15, 1998, to say she’d be home soon. But she never returned; the Ventura teen was kidnapped, robbed and stabbed to death. Her body was found six months later in a ditch, requiring Bowers to identify the remains based on dentition.

### EDDIE LEE HOWARD JR.

In 1992, Howard was convicted of raping and stabbing an 84-year-old woman based on bite mark analysis, which was contradicted by DNA evidence. This summer, Bowers and the Innocence Project are asking the Mississippi Supreme Court to throw out the bite mark evidence and grant Howard a new trial. Bowers was successful on a recent wrongful conviction involving another Mississippian, Leigh Stubbs, who may face another trial herself. According to a 2013 Associated Press analysis, at least two dozen of the convicts who have been convicted of rape and murder using bite mark evidence have been exonerated since 2000.



A woman with dark hair, wearing a grey blazer over a light-colored shirt, stands with her right hand over her heart. She is looking upwards and to the right. The background is a solid blue color.

# *The Military* **DENTISTS**

**Their reasons for entering the U.S. Armed Forces** after graduating from dental school are many. Some find inspiration in calamitous news events (Sept. 11 attacks, the Great Recession, Hurricane Sandy); others because their parents fought in previous wars. Some hope to beef up their dental skills by working on a military base, others need relief from dental school debt. Whatever their reasons, this issue's cover story celebrates the women and men who—even past 1973 when the military draft was canceled—have voluntarily chosen to enlist in the armed forces to protect the United States from all enemies, foreign and domestic. Here are some of their stories.

PHOTO BY NATE JENSEN

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# DEANNE MARTINEZ NATIVIDAD DDS '18

U.S. Army-Bound

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BY JOHN HOBBS MA '14

**W**hen it comes to paying for college, Deanne Martinez Natividad is on her own.

Her father Dean, a 56-year-old postal worker, and mother Edna, a 63-year-old retired accountant, have a policy for their children about higher education: *You need to pay for it yourself.*

The policy left Natividad no other choice than to take out loans to fund her bachelor's degree from the University of Nevada, Las Vegas, in biological sciences.

As she began applying to dental schools, she was dispirited to find out her dream career would mean taking on a considerable amount of additional debt.

The remedy came during a formal presentation Natividad attended as a member of the premedical honor society Alpha Epsilon Delta. Natividad would apply for the F. Edward Hébert Armed Forces Health Professions Scholarship Program.

"We had presentations every month at Alpha Epsilon Delta, so usually the Navy or the Air Force would come to talk to us," Natividad explains. "I usually never listened, but, as I was beginning to apply to dental schools, I really considered it and realized it would make a difference in my life. That's when I contacted the recruiter."

The scholarship—commonly referred to as the Health Professions Scholarship Program—offers students pursuing an advanced health care degree some incredible benefits in exchange for their eventual enlistment in and service to the U.S. Air Force, U.S. Army, U.S. Coast Guard or U.S. Navy. The U.S. Marine Corps does not offer a health professions scholarship program because it receives medical services from the U.S. Navy.

Benefits include a \$20,000 sign-on bonus, a \$2,000 monthly stipend throughout school and a full-tuition scholarship to any accredited medical, dental, optometry, veterinary, psychiatric nurse practitioner, clinical

or counseling psychology program.

The student's duty is to serve in the armed forces as a military dentist one year for each year they use the scholarship.

In Natividad's case, it will mean a four-year commitment after she completes her degree in 2018.

"I was concerned about deployment and whether or not I'd have to go to training during school," Natividad says.

Recruiters helped clear up her concerns, she says, explaining that her obligations wouldn't begin until after commencement and that, if she were deployed, chances are she wouldn't serve in a combat role.

After a few months' consideration and talking to those who've already done it, Natividad enlisted.

"My parents were very happy," she says. "They hold a lot of respect for people who are in the military."

Natividad's proud too. "I love America. I was born and raised here," she says. "I feel that anyone who has served in the military has given a part of their life to the country and for our freedom, and I respect that a lot."

Armed with the military scholarship, Natividad was able to be more selective when choosing dental school.

"I probably wouldn't have been able to go to USC without this scholarship," she says. But the financial freedom gave her the chance to choose USC—a school she said was not only prestigious but also had a reputation for having happy students.

Now in her second year of dental school, Natividad has been able to focus exclusively on her studies, thanks to the military scholarship.

"My classmates talk about loans all the time, but I don't have to worry about that," she says. "It means a lot to me that I can start my career on the right foot and not think about debt."





## LAWRENCE FUNG '07, DDS '11, MBV '15

U.S. Navy

BY JAMIE WETHERBE MA '04

**L**awrence Fung joined the U.S. Navy for two reasons. “To build upon the clinical skills I gained from the school ... and to give back,” he says.

Fung received a full-ride scholarship to USC, thanks to the Health Professions Scholarship Program.

“The military paid for my entire dental school education,” he says. “When I was commissioned, they were offering three- or four-year scholarships—serve a year, and they paid for that year in dental school with a minimum three-year commitment.”

As the first in his family to serve in the military, Fung says he was “definitely apprehensive” about joining the Navy. “I had only known a handful of individuals in my life that had military service, and their experience due to their occupations—infantry, supply officer, marine—was very different from mine,” he says. “They are the true heroes.”

Fung’s four-year tenure started soon after he graduated from USC in 2011.

A month after earning his DDS degree, he reported to the Navy’s officer devel-

opment school, which he describes as a 10-week boot camp for medical personnel and was soon off to Okinawa, Japan.

Fung says the Navy offered a few state-side options, but he opted to be stationed in a far-off location.

“It was a chance to live abroad, and I didn’t know when I would have that chance again,” he says.

For Fung, leaving friends and family was difficult, especially “when my move was not based on my own terms.” But once acclimated, he says, “being overseas was one of the best experiences of my life.”

Fung spent two years in Japan treating service members from all branches—not just the Navy—as well as their families. Cases ranged from general dentistry to CAD/CAM to restoring implants, under the guidance of a prosthodontist.

“If they needed an implant, they got an implant; if they needed braces, they got braces,” he says of the clinic’s comprehensive care.

Fung calls his experience in the clinic “invaluable” in taking the “high clinical skills

USC had taught me and extending that to the next level,” he says. “I was allowed to practice according to my limits, able to step out of my comfort zone on various cases ... as long as it was in conjunction with a specialist who oversaw the entire procedure from literally over my shoulder.”

After two years in Japan, Fung returned to California to finish his service at 29 Palms, a military base near Joshua Tree.

The clinic where Fung landed came well-equipped with an oral surgeon, periodontist, prosthodontist and endodontist.

“Each clinic—whether overseas or stateside—have different staffing requirements, so my arrangement may not have been as typical as other clinics,” he explains.

In addition to honing his skills, Fung’s learning extended into a new admiration for those who serve.

“The experience was extremely rewarding and humbling,” he says. “I gained a new appreciation for the military and the sacrifices service members and family go through ... and for what it takes to preserve our way of life.”

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# SARA HALE DDS '05

U.S. Air Force

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BY YASMINE PEZESHKPOUR MCM '17

**F**or as long as Sara Hale can remember, the U.S. Air Force has been a part of her life.

Her hometown of Minot, N.D., is also home to the Minot Air Force Base, which employs more than 6,500 people.

Many of her classmates had mothers, fathers, aunts and uncles that reported to the military base every day.

Hale herself didn't have any relatives in the military—other than her husband—but with a background so steeped in armed service, it wasn't an unexpected leap for Hale to consider a career in the military.

It was during her first year as a dental student that Hale, who was pregnant with her first child at the time, applied for the Health Professions Scholarship Program.

"It was 2001; I was married, pregnant and starting my first semester of dental school when I realized the implications and costs of getting a dental degree," Hale says.

"I had heard about the Health Professions Scholarship Program through my husband, who was in the Air Force, and also from the recruiters who came to the dental school," she explains. "So I decided to look into it and apply."

A few months later, Hale learned she was about to get a whole new title added to her name, Lieutenant. She was set to become a scholarship recipient beginning her second year in dental school.

"The scholarship covered my tuition for the remaining three years of dental school, where I was considered an inactive member of the Air Force," Hale says.

By the time she received her DDS in 2005, Hale was pregnant with her third child, Evelyn. Still determined to continue learning, she enrolled in an advanced

general dentistry residency program in Washington, D.C.

Following the program, Hale and her family moved to El Segundo, Calif., where Hale began her service, practicing dentistry at the L.A. Air Force Base.

"What was interesting was that we would see patients from all branches of the military," Hale says.

Alongside four other general dentists, Hale and her team saw thousands of patients during her three years of service.

"We would treat military from all branches, including veterans," she explains. "Of course there were times we had to refer people out for specialty care, but mostly we would be the primary dentists of many military personnel."

After completion of her four years in the U.S. Air Force, Hale decided to take a break from practicing to care for her fourth son, Townsend, who had been born with a heart condition and had to undergo two open-heart surgeries before his first birthday.

"It was a hard time for my family, but the military was extremely supportive," Hale says. "When I imagine going through what I went through while working or owning a private practice, I'm not sure I would have been able to make it work."

Now with six kids, Hale still manages to help out at friends' practices and even hopes to return to Ostrow one day as an educator.

"My education at USC was extremely valuable and something I'm not sure I would have been able to manage without the help of the Air Force," Hale says.







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# MATTHEW CHESLER DDS '04

U.S. Navy

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BY JAMIE WETHERBE MA '04



Matthew Chesler entered the Navy as a commissioned dental officer during the international turmoil of 2004.

"It was in the middle of Operation Iraqi Freedom ... so it was guaranteed at that time that you were going to deploy," he says. "And the only reason I didn't go to Iraq was because I got selected for residency."

Chesler started his 11-year tenure with a residency in general dentistry at Camp Pendleton in San Diego. He was later stationed at Pearl Harbor in Hawaii and outside Washington, D.C., where he completed a two-year endodontics residency at the Walter Reed National Military Medical Center, before again serving in San Diego.

"I know my experience is very atypical, and I've caught some really big breaks," he says. "I was fortunate to go to these places and get that training."

Chesler received a full ride to USC through the Health Professions Scholarship Program.

"They take care of everything: tuition, books, supplies, and you get a little stipend while you're in school," he says. But as a student, "you really have little to no affiliation with the Navy. You have to check in once a year, but you don't actively drill, wear a uniform or anything like that."

Still, Chesler didn't have any misgivings joining the military.

"It's different when you come in as a commissioned officer," he explains. "You go through an interview process with other dental officers in the military, so you've got a pretty good idea of what you're getting into right away."

While on duty, Chesler treated some of the military's finest, including Navy SEALs, admirals and

generals, as well as visiting foreign dignitaries.

"It can be intimidating when [people] come in with all the ribbons, and you know they're a big deal," he says. "But they were really great patients."

Chesler also treated many soldiers needing a wide range of treatments, which helped him further hone his skills.

"You have a big patient population to pull from," he explains. "You also have a lot of senior [clinicians] there to keep an eye on you, but they're all about letting you get a lot of good clinical experience."

With everyone working in close quarters, Chesler says he got to know his "patient base better, more so than you would in private practice," which came with "really cool" perks.

"I got to tour the SEAL team headquarters in Hawaii," he says. "And I've been on a bunch of different aircraft carriers, ships and subs."

Despite his "11 good years," Chesler's decided to leave the Navy so his family could put down roots in Southern California.

Chesler started "shopping for practices" by moonlighting at different offices around San Diego, eventually connecting with a ready-to-retire dentist who served 15 years in the Navy Dental Corps.

On June 5—the same day he came off active-duty—Chesler closed on his practice, San Diego North Endodontics.

Chesler says his time in the Navy helped him become a better and faster clinician, without the pressure of opening an office right out of school.

"You're not trying to start a business without totally having your skill set ready to go, and it's a great way to give back," he says. "It was an honor to treat those guys."





## JOSH COHEN '99, RDH '02, DDS '06

U.S. Navy

BY YASMINE PEZESHKPOUR MCM '17

A dental career at sea may be considered unconventional by most occupational standards.

For Josh Cohen, it was more than a career choice; it was his desire to serve his country as a dental officer in the U.S. Navy.

When Cohen was notified that he would be a recipient of the Health Professions Scholarship during his time at USC, he realized his career would take a slightly different path than his peers and classmates.

"A big reason to apply for the scholarship was obviously to offset the cost of dental school tuition," Cohen says. "But there was a sense of honor that came along with being able to serve my country in the armed forces. It was 2002, just one year after 9/11 attacks."

While many branches of the military offer the Health Professions Scholarship, Cohen decided to apply through the U.S. Navy to follow in the footsteps of his grandfather who was a Naval veteran.

"I gravitated towards the Navy because of my grandfather's affiliation and all the proud stories my dad would tell me about him and his experiences," Cohen says.

Upon completion of his DDS degree in 2006, Cohen went on to an advanced general dentistry residency through the Navy for one year in San Diego. Just days after completion of his advanced GPR training, Cohen flew to Dubai for his first set of military appointed orders.

"When I arrived in Dubai, I boarded the *USS Denver* to serve as the ship's dentist for the remainder of its tour," Cohen says.

"After about a year on the *USS Denver*, we had a haul swap where we took the ship to Japan then took the *USS Juno* to return it to San Diego."

In San Diego, Cohen was served new orders, supporting the Marine Corp Air Station in Miramar at the First Dental Battalion. During his two years of service there, Cohen decided he wanted to get further training in operative dentistry. Upon completion of his service in Miramar, Cohen was accepted into a two-year program at the University of Iowa that offers students a master's degree in oral surgery and a certificate in operative dentistry.

Cohen returned to San Diego in 2013 and ran the branch clinic at the First Dental Battalion before going on a humanitarian mission, serving on a medical executive committee in Vietnam and the Philippines last summer.

Cohen now serves as the advanced education in general dentistry director at the First Dental Battalion and is general dentistry department head for 13 Area Dental Clinic.

"I am so grateful for the assistance the military has provided for my education and career. It has been such an adventure; you work with really phenomenal people from all different walks of life," Cohen says.

"You get to treat some really amazing and brave people, service members, sailors and marines. I love what I do and the camaraderie that comes along with it."

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**Glenn Clark DDS, MS**  
Director of Distance Education Programs in Dentistry, Professor and Director of the Orofacial Pain and Oral Medicine Program  
Chair of the Section of Diagnostic Sciences  
Fellow of the American Board of Oral Medicine  
American Board of Orofacial Pain Diplomate



**Tomoko Wada DDS**  
Assistant Professor of Clinical Dentistry  
Section of Diagnostic Sciences  
Division of Periodontology  
Dental Hygiene & Diagnostic Sciences



**Saravanan Ram DDS, MS**  
Director of the Oral Medicine Clinic and Residency Program  
Associate Professor of Clinical Dentistry  
Division of Periodontology  
Dental Hygiene and Diagnostic Sciences  
American Board of Orofacial Pain Diplomate  
American Board of Oral Medicine Diplomate



**Parish Sedghizadeh DDS, MS**  
Assistant Professor of Dentistry Tenure Track  
Director of the USC Center for Biofilms  
Division of Periodontology  
Dental Hygiene & Diagnostic Sciences Diplomate  
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A close-up portrait of Dr. Mark Urata, a middle-aged man with dark hair, a goatee, and glasses. He is wearing a dark suit jacket over a red and white checkered shirt and a red patterned tie. The background is dark and out of focus.

# *Better* **TOGETHER**

BY  
JOHN HOBBS  
MA '14

*Dr. Mark Urata discusses the unique alliance that will define  
the future for both oral and maxillofacial surgery  
and plastic surgery at USC.*



t the end of 2013, Dean Avishai Sadan announced the creation of a new division of oral and maxillofacial surgery at Ostrow.

The division was to be headed by Mark Urata '85, DDS '89, OMFS '93, MD '96, General Surgery '99, Plastic and Reconstructive Surgery '02, Craniofacial Surgery '03—an impressive choice not just for his record-breaking continuous education at USC (21 years!) but also because Urata was already chief of the Division of Plastic and Reconstructive Surgery at the Keck School of Medicine.

Urata's appointment positioned the new division of oral and maxillofacial surgery uniquely to be able to merge the best aspects of the two distinct disciplines of plastic and oral and maxillofacial surgeries.

Today, an entering student can choose between a four-year program leading to a specialty certificate in oral and maxillofacial surgery or a six-year program, which leads to both the specialty certificate and a medical degree.

We sat down with the director to discuss how the collaboration is making for better oral and maxillofacial surgeons.

### **WHAT WAS THE ORIGINAL VISION BEHIND THE DIVISION OF ORAL AND MAXILLOFACIAL SURGERY?**

We started with the premise [made famous by USC President Emeritus Steven B. Sample] that we were not going to copy our way into success. I wasn't interested in looking at what some might have considered to have been at the forefront of oral and maxillofacial surgery and replicating that. Our oral and maxillofacial surgery division was already a clinically outstanding program. I was more interested in thinking about what is it that we could possibly create that hadn't been created yet that could best prepare our trainees for the future.

### **IN WHAT WAYS IS THE DIVISION DIFFERENT FROM OTHER PROGRAMS?**

The collaboration with the Division of Plastic and Reconstructive Surgery [at Keck] allows our oral and maxillofacial surgery residents unparalleled access to a variety of resources, surgeries and patients that they otherwise wouldn't have. It's not uncommon to find our oral surgery residents side by side with our plastic surgery residents, [removing] tumors from the jaw and then reconstructing that [by] taking bone and soft tissue from one part of the body, disconnecting the blood vessels, transferring them to the jaw and plugging those blood vessels back in.

### **HOW MUCH OF A ROLE DOES PLASTIC SURGERY PLAY IN THE EDUCATION OF AN ORAL SURGEON?**

Plastic surgery is a completely different training

program, but, as an example, I [recently] heard two residents speaking—an oral surgery and plastic surgery resident. They were talking about a patient that they had taken care of together in which they were moving the jaws. The actual orthognathic surgery was much more in the realm of the oral surgeons. And in that situation, the oral surgery residents were teaching the plastic surgery residents how to do that. At the same time, the plastic surgery residents were teaching the oral surgery residents how they could achieve a better aesthetic result in the soft tissue closures.

### **IN WHAT OTHER WAYS HAVE THE TWO DISCIPLINES WORKED TOGETHER TO GET BETTER RESULTS?**

Both plastic surgeons and oral surgeons take care of facial fractures. The plastic surgery residency didn't really have as strong of a trauma training as I wanted them to have. On the other hand, the oral surgeons didn't have the educational background of managing soft tissues like the plastic surgeons. So we began offering a combined craniofacial trauma conference every month, where the residents of both plastic surgery and oral surgery can present really challenging cases, and we can learn both how to better manage the bony issues of fractures and reconstruction as well as the soft tissues. In this particular situation, 1 plus 1 doesn't equal 2. It equals 5.

### **WHAT TYPE OF STUDENTS DO YOU LOOK FOR?**

We're looking for leaders, people who are going to fit into our vision of wanting to define the next millennium of what oral and maxillofacial surgery is going to look like. So we're looking for people who are unique and who want to change and lead.

### **WHERE WOULD YOU LIKE TO SEE THE DIVISION IN 10, 15 YEARS?**

I expect that our division will be thought of as the best division in oral and maxillofacial surgery and the best training program for both residents and dental students in the country. I also expect that I likely will never know when that is achieved and that will further give us the sense that we need to continually evolve and be dynamic in the program that we're developing.

### **WHAT FUELS YOUR FIRE TO PROPEL THE DIVISION FORWARD?**

A large part of it has to do with the pride I have in USC. It's interesting how strong of a driver that can be—and that's certainly true with me. I want this place to be number one. I expect it to be number one in the country. I expect us to lead the nation in the training of oral and maxillofacial surgeons. And I do it in part because of my pride in this university.

### **CLOSER LOOK:**

## **ORAL AND MAXILLOFACIAL SURGERY**

### **WHAT IT IS:**

Oral and maxillofacial surgery (OMFS) is used to treat diseases, injuries and defects in the face, head, jaws, mouth and neck.

### **OMFS EXAMPLES:**

Impacted teeth removal, cleft lip and palate treatment, implanting bone-anchored dental restorations, head and neck cosmetic surgery and temporomandibular joint disorder treatment

### **NUMBER OF U.S. BOARD-CERTIFIED ORAL AND MAXILLOFACIAL SURGEONS:**

5,349 (*American Board of Oral and Maxillofacial Surgery*)

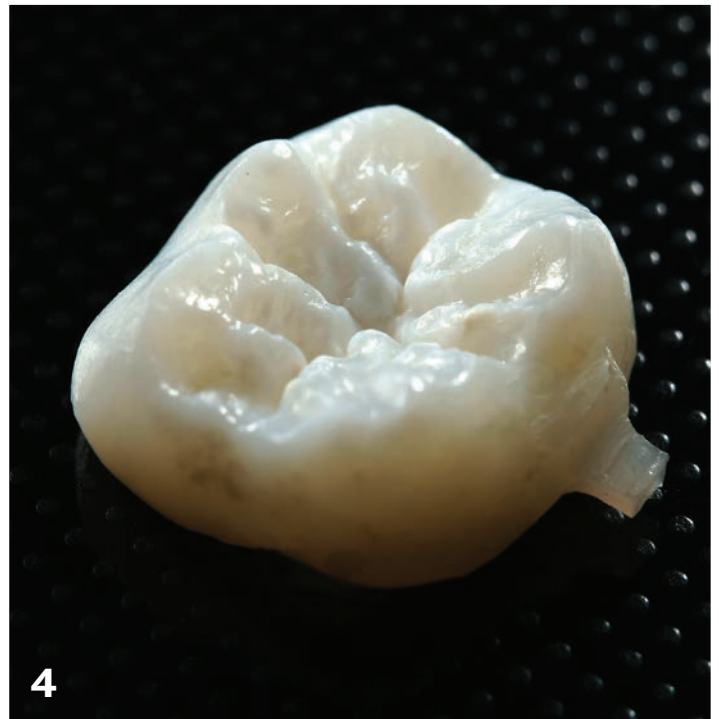
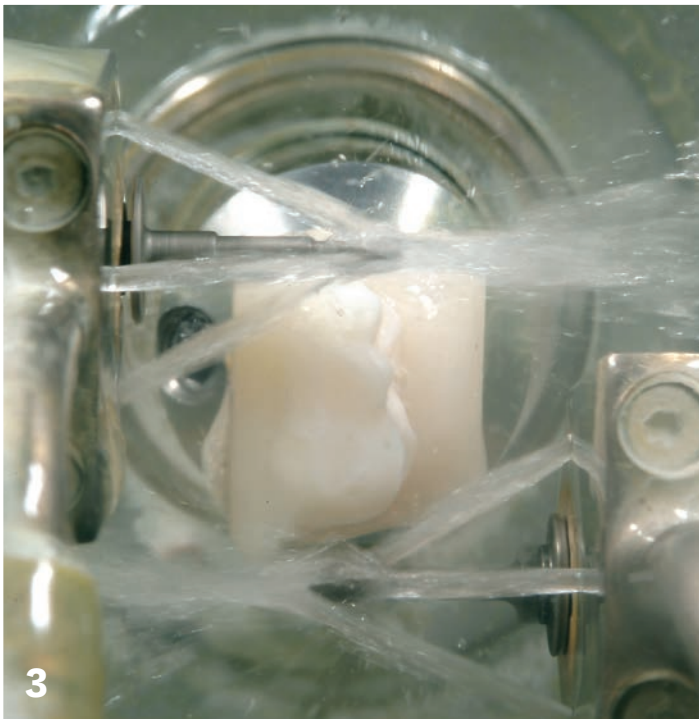
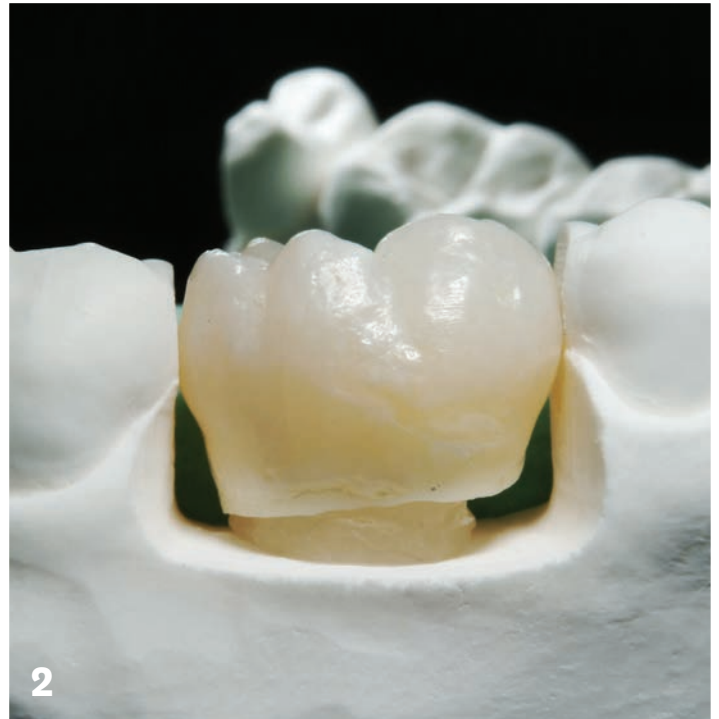
### **ACADEMIC PROGRAMS:**

Ostrow offers two: a 48-month course leading to a certificate in oral and maxillofacial surgery or a 72-month medical degree/certificate program.

### **NUMBER IN EACH COHORT:**

3 (one on four-year track to specialty certificate, two on six-year track to combined medical degree, specialty certificate)





**1** Extracted third molar donated by patient's daughter **2** Second stone cast trimmed, including some extent of neighboring teeth to allow seating of extracted tooth  
**3** Milling of the restoration **4** Natural restoration after milling; note the fine original morphological details

# By **DR. PASCAL MAGNE**

*Don & Sybil Harrington Professor of Esthetic Dentistry*

*Editor's note: This article was written with the participation of Luis Henrique Schlichting (clinical assistant professor at the School of Dental Medicine of East Carolina University in Greenville, N.C.).*

My main mission during my 25 years of experience as an educator, mentor, researcher and international speaker has been to promote the utmost respect for the structure, function and beauty of natural teeth.

Through an approach called biomimetics<sup>1</sup> or Bio-Emulation<sup>2</sup>, it is possible to meticulously select the most appropriate materials, techniques and equipment to mimic the natural tooth. Those materials able to simulate the respective role of enamel and dentin are traditionally ceramic- and resin-based synthetic products that are available to most dentists. Even though dental ceramics and composite resins have been optimized and used “biomimetically” in synergy to function very similarly to natural teeth through the use of strong dentin/enamel adhesives (direct and indirect bonded restorations), the dream of clinicians and researchers has always been to produce replacement parts with the exact same characteristics of the original hard tissues.

This prompted the use of stem cells, with the hope of being able to generate a “tooth in a Petri dish” that could be used as a replacement part.<sup>3</sup> Ironically, such replacement parts are readily available and have been existing for a long time for almost every patient, at least as a substitute for molar teeth. They are called wisdom teeth or third molars. Interestingly, a synonym of the word *wisdom* is the word *providence*. Could it be, then, that God’s providence was manifested through those third molars to be used as a replacement part for our patients?

Recently, our group, led by Dr. Luis Henrique Schlichting (then a Brazilian visiting researcher at Ostrow, now an assistant clinical professor at East Carolina University, Greenville, N.C.) published a proof of concept that a natural restoration made of real enamel and dentin

could be generated from a wisdom tooth.<sup>4</sup>

It tells the compelling story of a mother who had one of her severely damaged molars restored thanks to the “donation” of her daughter’s third molars.

The 41-year-old woman presented in 2010 and mentioned that her daughter’s wisdom teeth had recently been removed.

A classic restorative approach taught in our school would have been to fabricate a CAD/CAM restoration and have a synthetic block of ceramic or composite resin milled by the machine to fit into the prepared tooth. However, the patient agreed to have one of her daughter’s tooth used as a “donated organ.”

Therefore, we developed a very precise and customized workflow and used an existing CAD/CAM device, called the Cerec system, to carefully position the donated tooth inside the milling unit. The uniqueness of the workflow lies in the fact that only the fitting surface of the tooth was milled, allowing the perfect fitting on the mother’s tooth while leaving totally intact the functional surface of the daughter’s donated tooth part (see images on opposite page). The so-called “natural restoration” was then delivered to the mother’s tooth using well-known adhesive principles of bonding to enamel and dentin.

Unlike synthetic materials, the donated natural tissues are expected to exhibit the exact biomechanical and wear behavior of antagonistic intact teeth. The restoration has been serving successfully for more than four years. This report opens a wide range of questions and opportunities for the use of extracted teeth (from the same patient, from a family member or a friend)—including not only wisdom teeth but also premolars when removed for orthodontic reasons. It also shows that the restorative dentist is potentially ready to receive and use the biomimetic teeth produced in vitro, when available. Meanwhile, wisdom teeth constitute a free manna, God’s providence, in fact.

*Read more about Dr. Magne’s work at [tinyurl.com/magnecerebraldownload](http://tinyurl.com/magnecerebraldownload)*

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# HOMECOMING

## SAVE THE DATE | NOV 6&7

### FRIDAY, NOVEMBER 6

#### **Class Reunions**

*For class years ending in '-5 and '-0*

#### **and Casino Night for all alumni**

*The newly remodeled Sheraton Los Angeles Downtown Hotel*

### SATURDAY, NOVEMBER 7

#### **Dental School Homecoming Picnic**

#### **before the USC vs. Arizona football game**

*USC Campus*

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*Invites in the mail in August!*

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are gifts given in  
honor of or tribute  
to individuals  
who have made  
a lasting impact  
on the community  
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***I am an advocate of dental health and dental education for a healthier life.***



PHOTO BY NATE JENSEN

*Editor's note: Carmen Molina works for Ostrow's Community Oral Health Programs, where she serves as a promotora. In that role, Molina functions as a liaison between dental professionals and the community, helping to educate community members about the importance of oral health. We asked her how her job inspires her.*

**W**hen I was asked what inspired me to become a part of Ostrow, my immediate answer was "my community." My long-time goal has been to make a difference in my community, and I knew that becoming a part of Ostrow would help me reach that goal, as both a community member as well as an advocate of health education.

I serve as a *promotora*, a professional in the community trained to provide basic health education—especially about health issues affecting the population.

Seeing the lack of education about oral health and dental hygiene—especially for children—inspired me to educate as many people as possible.

Many children and families in local communities don't have access to basic dental care. When you have a family that is struggling to pay their rent, they probably aren't thinking about their oral health. That is where I step in.

Working at Ostrow has helped me provide education and information on healthy habits. Through workshops, fliers, distributing toothbrushes, toothpaste and floss, I am finally able to provide resources and information that people need.

I see each day as an opportunity to save someone's smile, which leads to overall health. For instance, a common health condition in local communities is diabetes.

Diabetics are more prone to gum disease. If it's left untreated, it can lead to bone loss, severe pain and infection and even premature birth in pregnant women.

My job is to reinforce oral hygiene and healthy habits to our patients, as well as people inside and outside of Ostrow.

Proper oral health includes brushing your teeth at least twice a day for at least two minutes, flossing twice a day, limiting sugar and adding more fruit and vegetables to your diets. I also encourage those in the community to schedule medical and dental visits at least twice a year, not just when you're ill or have pain.

One of the most effective choices communities can make is to provide free health education and promote dental awareness. I know that I'm able to help save someone's teeth or break someone's bad habit. Knowing that I can save someone's smile reminds me about the important role I have in my community as a health *promotora*.

I am passionate about helping the community, serving with respect, love and care.

I feel the community's need because I am a part of it. I have always wanted to help transform underserved communities, and the Herman Ostrow School of Dentistry has given me that opportunity.

They have given me the education, unconditional support and, most importantly, the resources needed to transform and help others.

What feeds my soul is knowing that I'm able to impact people's lives and promote healthy habits.



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---

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A photograph of three dental students, two men and one woman, standing in front of a brick building. They are all wearing white lab coats with "Herman Ostrow School of Dentistry of USC" and "Entering Class of 2016" embroidered on them. They are all smiling and making peace signs with their right hands.

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