

Fall 2015

LLUSD Articulator - Volume 26, Number 2

Loma Linda University School of Dentistry

Jung-Wei Chen
Loma Linda University

Morris J. De Leon
Loma Linda University

Follow this and additional works at: <https://scholarsrepository.llu.edu/articulator>

Part of the [Other Dentistry Commons](#)

Recommended Citation

Loma Linda University School of Dentistry; Chen, Jung-Wei; and De Leon, Morris J., "LLUSD Articulator - Volume 26, Number 2" (2015). *Articulator (Dentistry Journal)*.
<https://scholarsrepository.llu.edu/articulator/13>

This Book is brought to you for free and open access by the Loma Linda University Publications at TheScholarsRepository@LLU: Digital Archive of Research, Scholarship & Creative Works. It has been accepted for inclusion in Articulator (Dentistry Journal) by an authorized administrator of TheScholarsRepository@LLU: Digital Archive of Research, Scholarship & Creative Works. For more information, please contact scholarsrepository@llu.edu.

LLUSD ARTICULATOR

The melding of compassion and competence in dental education



Loma Linda
University
School of Dentistry

**Bracing for
accreditation**

**The rise of
Interprofessional
Education**

**Commencement
number 59**

**Assessing
Zirconia crowns**





**You are not
a benchmark.**



You are also not a sales goal or a quota or a statistic. You are a dentist. And if you're looking for a company that understands that distinction, we'd like to introduce ourselves. We are The Dentists Insurance Company, TDIC. We only protect dentists and are relentless in our pursuit of innovative ways to protect you, your first year in the profession and every year after. Take our New Dentist Program.

New Dentist Program

\$50 Professional Liability insurance for your first year.

45% discount in your second year and 25% in your third.

Free Risk Management seminar to help you practice safely.

Five-minute short form and e-signature make the online application process a breeze.

Apply today at tdicsolutions.com/newgrad

First year TDIC Professional Liability coverage rate depicted is for newly licensed and never practiced dentists in the state of California and is valid for a \$1M/\$3M coverage amount. Rates subject to increase per schedule in years two through eight until they reach maturity.

Protecting dentists. It's all we do.®

800.733.0633 | tdicsolutions.com | CA Insurance Lic. #0652783

Grandpa, What's Your Plan?

What's Your Plan?

MANY STRENGTHS.
ONE MISSION.



By including Loma Linda University Health in your plans now, you can be confident that you are helping to transform the lives of our students and patients.

Contact us to learn how you can receive lifetime income from a trust or charitable gift annuity by using your appreciated assets, such as real estate and stock.

For more information contact the
Office of Development
School of Dentistry
Call 909-558-4754
Visit llulegacy.org
Email sdlegacy@llu.edu

"My gift will help establish an endowed chair for the orthodontics program."

— J. Milford Anholm



LOMA LINDA UNIVERSITY
HEALTH

LLUSD ARTICULATOR

The melding of competence and compassion
in dental education.

VOLUME 26, NUMBER 2 SUMMER/AUTUMN 2015

Articulator (formerly **Dentistry**) celebrates with alumni and friends the School of Dentistry's efforts to combine compassion and competence in the education of oral healthcare professionals. LLUSD alumni represent the strength of that amalgam. The journal is published twice each year by the Loma Linda University School of Dentistry Office of Marketing.

Dean

Ronald J. Dailey, PhD

Alumni director

Kathleen Moore, MHIS

Marketing director

Krista Weymar, MBA

Director of Publications

Managing editor

Douglas Hackleman, MA

Contributing editor

Edna Maye Loveless, PhD

Science editor

Yiming Li, PhD, DDS, MSD

Photographers

Carmen Fernandez

Daryl Osborne

LLUSD Mission

Loma Linda University School of Dentistry seeks to further the healing and teaching ministry of Jesus Christ by providing an environment wherein:

Students learn to provide high quality oral healthcare based on sound scientific principles

Patients receive competent care, which is preventive in purpose, comprehensive in scope, and provided with compassion and respect

Faculty, students, and staff value the patient relationship, respect diversity, and share responsibility by working together toward academic, professional, spiritual, and personal growth

Scholarly activity and research provide a foundation for evidence-based learning and enhance whole person care

The workplace environment attracts and retains a superior and diverse faculty and staff who motivate, educate, and serve

Our communities (local, global, and professional) benefit from our service, stewardship, and commitment to life-long learning.



Student clinic operatories have been upgraded for 21st century dentistry.

Editor's note: There is relief for those who have been holding their breath since receiving word in the last LLUSD *Dentistry* that a new name for the School's alumni publication was under consideration. A name has been selected from a list of 163 suggestions that were submitted by 51 journal renaming contestants.

On July 20, the decision was made to select a variant of "LLUSD Articulated," a name that was submitted jointly early during the week of the contest by Carole White, assistant to the dean, and Shelley Console, academic assistant 2, Office of the Dean, now alumni journal renaming contest co-winners.

The LLU School of Dentistry alumni journal's new name is

LLUSD Articulator.

Articulator denotes a primary tool of the dental profession that enables the practitioner to diagnose the state of the patient's occlusion and planned dental procedures, that aids in the fabrication of restorations and prosthodontics replacements, and that makes it possible to accomplish most of the prosthetic work apart from the patient. But most of you knew that. 😊

Articulator has another designation: words meaningfully arranged or intelligible, words that concern clear and effective utterance—what a house organ or "mouthpiece" should produce.

And **Articulator** connotes united segments, or components, that oral healthcare (ideally practiced) implies in both its occlusions and in its relationships with peers and patients.

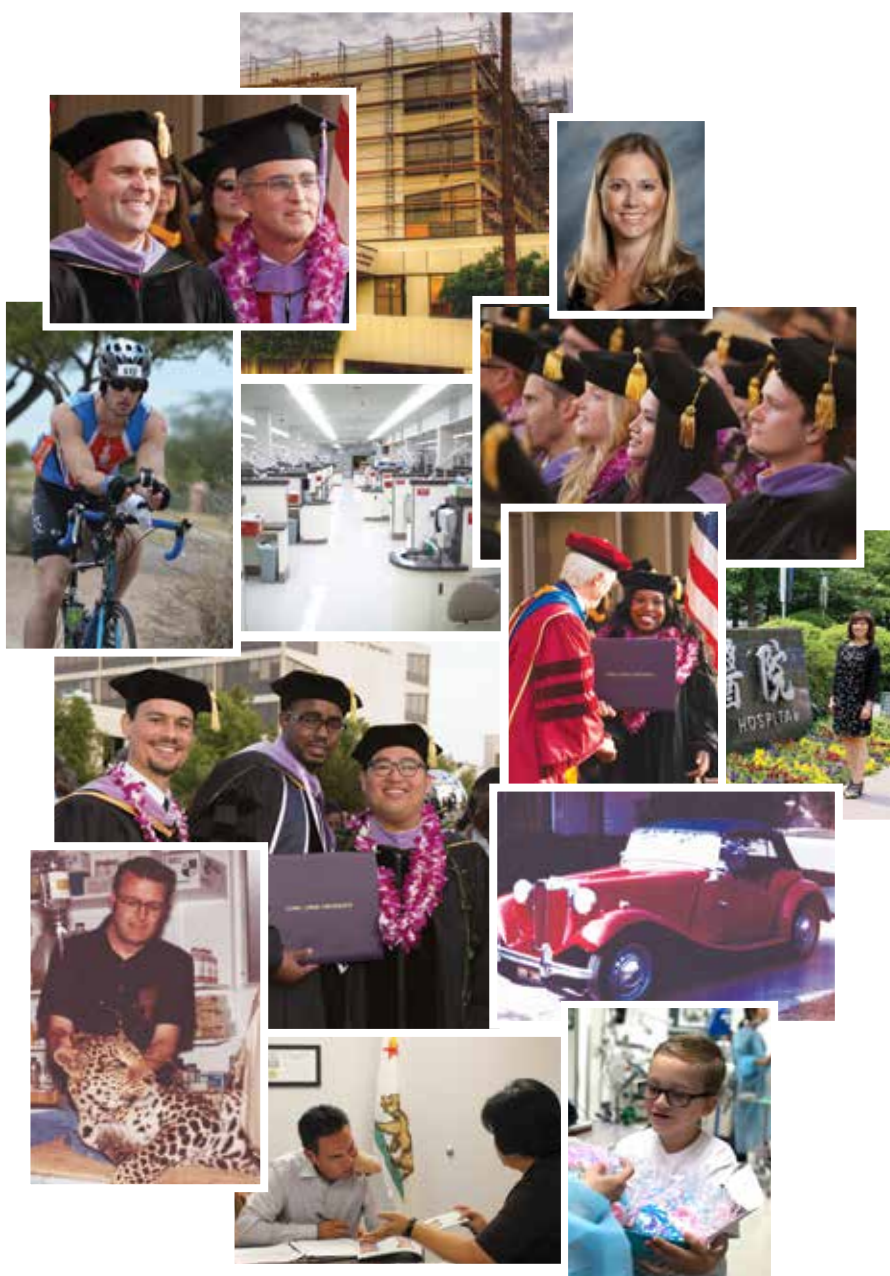
The Office of Marketing and the journal's managing editor thank so many of you for your participation in the effort to rename the alumni journal, and congratulate Carole White and Shelley Console for submitting the winning name, and to runner-up Tory Silvestrin, DDS, MSD'15 (endodontics), assistant professor, Department of Endodontics, who submitted the same name but later than had Ms. White and Ms. Console.

Appreciatively yours,

Doug Hackleman, MA
Editor

CONTENTS

- 4 Dean's message**
- 7 Bracing for accreditation**
- 14 Developing IPE**
- 17 Shirley Lee's long commute**
- 22 Commencement 2015**
- 32 Science: Assessing Zirconia crowns**
- 40 How to treat a lion**
- 42 NEWS**
 - Noah's cleft cookies
 - LLUSD Ironman
 - eBook pedagogy
 - Healing Hands
 - Lobbying for kids
- 57 Elmer Kelln: LLUSD pioneer**
- 60 Fond Farewells**



Direct advertising inquiries and correspondence to:
Publications Director
 LLU School of Dentistry
 11245 Anderson Street, Ste 120
 Loma Linda, CA 92354
 Phone: (909) 558-4984
 Fax: (909) 558-0992

To reach the School of Dentistry Alumni Association, contact:
Jeri Fowler, assistant director
 LLUSD Alumni Affairs
 11245 Anderson Street, Ste 120
 Loma Linda, CA 92354
 Phone: (909) 558-4399
 Fax: (909) 558-4858

For admissions information contact:
School of Dentistry
 Office of Admissions
 11092 Anderson Street
 Loma Linda, CA 92350
 Admissions.sd@llu.edu
 Phone: (909) 558-4621

DEAN'S MESSAGE

2016: The challenge and the opportunity

The transition from one year to the next is so often accompanied by both celebration and reflection.

At the cusp of another year, the sixteenth of this third millennium, I take the opportunity of this column to celebrate your innovation and commitment, and to thank you for your many contributions throughout the past year to the School of Dentistry's mission. We have accomplished so much together even while navigating the rapids that characterize the era of change that faces academic dentistry. The external forces driving this change are well known:

- Political mandates are fundamentally reshaping the delivery of healthcare and, consequently, the education of its practitioners.
- An ongoing series of advances in technology and materials is both driving and facilitating developments in healthcare solutions.
- The growth of innovative approaches to professional education is gaining acceptance, at Loma Linda University and across the nation.

Your School of Dentistry has been working as a team, creatively and assiduously, to adapt to these new expectations as well as to the accumulating opportunities provided by new technological tools to meet the changing expectations of emerging instructional models.

Within this whirlwind of challenge, change, opportunity, development, and the creative adjustments it all stimulates, we continue to graduate competent and compassionate dentists, even as we strengthen commitment to our Christian-based philosophy of education that makes service our calling.

While we have been preparing the School's self-study for its upcoming accreditation visit, I find myself eager to share our traditions and achievements with the site visit team. Not long ago, I jotted down a list of highlights from our collective accomplishments to share with you in my upcoming state of the school address during the 2016 Alumni Student Convention, and I am proud of, grateful for, and humbled by that partial list of our achievements.

Moving into 2016, the pace of change seems only to accelerate, as we confidently embark on what many believe will someday be seen as an era of transformation catalyzed by the aforementioned external forces and internal organizational challenges. While every moment is pivotal, the School of Dentistry's success in meeting this particular confluence of challenges delivers new opportunities for creativity and



Dr. Ronald Dailey

innovation that will expand our ability to fulfill our unique mission.

As exciting as all of this is, the degree—and pace—of change can sometimes be dizzying. At this moment, as we pass from one calendar year to the next, I pause to reiterate my thanks for your hard work, your leadership, and your tenacity. I hope that during the holidays you have had the opportunity to pause and enjoy down time with your family, friends, and colleagues in ways that allow for interpersonal renewal and celebration.

I am grateful for your contributions to and support for our missions. It is because of you—our faculty, students, staff, alumni, and friends—that we consistently surmount challenges and are poised to tackle the terrain before us that comprises the landscape of dentistry and healthcare. I look forward to working with all of you in the New Year and wish you and yours a blessed and joyful two thousand and sixteen.

Best regards,

Ronald J. Dailey, PhD
Dean, School of Dentistry

ASC 2016

ALUMNI
STUDENT
CONVENTION

Thursday, February 25, 2016

- 8:30am – 10:00am: Keynote address by Ronald Dailey, PhD – “Alumni – Your Indispensable Role”
- 10:30am – 3:00pm: Brad Neville, DDS – “The Changing Face of Oral and Oropharyngeal Cancer”
- 8:00am – 5:00pm: Scientific Sessions – Tracks 1 thru 7
- 8:00am – 6:30pm: Exhibitors
- 4:30pm – 6:30pm: All School-All Alumni Reception
- 5:00pm – 6:30pm: Practice Opportunity Sessions - Student and Alumni Networking

Friday, February 26, 2016

- 7:00am – 8:00am: Mission Emphasis Breakfast
- 8:00am – 9:00am: NASDAD Board of Directors meeting
- 8:30am – 12:30pm: Joseph Kan, DDS, MS – “Anterior Implant Esthetics: The Ortho-Periodontal Restorative Connection”
- 8:00am – 1:30pm: Scientific Sessions – Tracks 8 thru 14
- 8:00am – 3:30pm: Exhibitors
- 10:00am – 1:00pm: Women’s Auxiliary Brunch
- 11:30am – 2:30pm: Dental Hygiene & Assistants Luncheon
- 2:00pm – 4:30pm: Family Day Activities
- 5:00pm – 6:30pm: Student Dedication Service

Saturday, February 27, 2016

- 9:00am – 12:30pm: Worship Services
- 1:00pm – 6:30pm: 50th Anniversary Class of 1966 reunion
- 6:00pm: Class Reunions

Sunday, February 28, 2016

- 9:00am – 4:30pm: Leif Bakland, DDS/Christian Johnston, JD/Gregory Olson, DDS, MS/John Rugh, PhD/Gerald Winslow, PhD - “What You Don’t Know CAN Hurt You”

Registration

For more information or to register for the 2016 ASC, contact Loma Linda University School of Dentistry Continuing Dental Education office at (909) 558-4685 or visit us online at dentistry.llu.edu



LOMA LINDA
UNIVERSITY

School of Dentistry

LLUSD Continuing Dental Education Courses

Functional Esthetics and Anti-Aging Dentistry with Composite Resin and All Ceramic Restorations

Sunday, March 13, 2016

Nick Davis, DDS, MAGD, FIADFE

Hot Topics in Infection Control and the California Dental Practice Act

Sunday, March 20, 2016

Nancy Andrews Dewhirst, RDH, BS and Bette Robin, DDS, JD

40th Implant Anniversary: Anterior Implant Esthetics: Preservation vs Regeneration

April 3-4, 2016

Jaime Lozada, DDS and Joseph Kan, DDS, MS

I Would Like To Do More Oral Surgery for My Patients, But...

Sunday, April 17, 2016

Anders Nattestad, DDS, PhD

What's Red and White and Bumpy All Over?

Sunday, June 5, 2015

Lane C. Thomsen, DDS, MS

Hot Topics in Infection Control and the California Dental Practice Act

Sunday, September 18, 2016

Nancy Andrews Dewhirst, RDH, BS and Bette Robin, DDS, JD

Dentists Can Treat Tension - type Headaches

Sunday, September 25, 2016

Harold Avila, DDS, MS

Endodontics

Sunday, October 2, 2016

Robert Roda, DDS, MS

Creating Predictable Restorative Results with Crown Lengthening Surgery: A workshop program

Sunday, October 9, 2016

James Kohner, DDS

Prosthodontics

Sunday, October 30, 2016

Mark Estey, DDS

Medley of Resin Composite Technologies

Sunday, November 6, 2016

Richard D. Trushkowsky, DDS, FAGD, FICD, FACD, FADM

Managing Your Restorative Materials: The Path to Beautiful Dentistry

Sunday, November 13, 2016

Charles W. Wakefield, DDS

Behavior Management for the Pediatric Patient

Sunday, December 4, 2016

Greg Psaltis, DDS



For more information or to register for courses, contact the Loma Linda University School of Dentistry Continuing Dental Education office at (909) 558-4685 or visit us online at dentistry.llu.edu

Bracing for accreditation



The revamped main entrance to Prince Hall's lobby and patient waiting area boasts a handsome new tiled approach that has already been nicknamed the "yellow brick road."

The LLUSD *Articulator* cover story, "Bracing for accreditation," is more than a play on words that refers to the braces-like scaffolding that adorns Prince Hall's tower to facilitate the repainting of its exterior surface. (Jack Burdick, CPA(TN) MBA, assistant dean for Financial Administration, jokes that Invisalign would cost more than traditional scaffolding). Actually the following is about much more than primping for accreditation's site visitors, and \$3 million more than just a play on words.

The Prince Hall upgrades are driven by important factors that include \$300,000 worth of American Disabilities Act mandates for mobility-challenged patients that involve designated parking spots, the eradication of cul de sac curbs, a resting spot on the long main entrance ramp to Prince Hall's second floor, reworked ramp hand railing, patient bathroom augmentation, enhanced patient registration kiosks, and comfortable new waiting room seating.

The very considered implementation of the upgrade effort, Mr. Burdick points out, involved finding ways—through easement of use and environmental cheer—to make patients feel welcome, comfortable, and aware that they embody an

essential and meaningful component of the School's dental education mission.

Periodic emails with the subject heading "BUILDING BULLETIN" have been reaching School of Dentistry denizens from Mr. Burdick with updates on the progress being made to remodel Prince Hall inside and out. The upgrades include bright, energy efficient LED lobby lighting, new carpeting throughout the building, tiled elevator foyers, hallways, and brightly painted stairwells.

Important to patients, student practitioners, and faculty alike are the renovations to the main clinic that supersede the cosmetic such as 120 new Bien Air electric hand pieces and their infrastructure—an unheralded \$1.4 million in-kind gift from the Bien Air corporation to the School of Dentistry. Cosmetics were en-

hanced through granite finishes for the workspaces and new cubicle caps, while functionality was improved through lowered and repositioned desks, new sinks and flooring laid, as well as electronic signature pads.

Also, the Advanced Specialty Education Program in Periodontics clinic has been re-scaled with reconfigured space, the removal of smoked glass operatory partitions, and

120 new Bien Air electric hand pieces and their infrastructure represent an unheralded \$1.4 million in-kind gift from the Bien Air corporation.

fresh paint throughout. And the School's radiology clinic (to be renamed and officially introduced during Alumni Student Convention) has been entirely rebuilt and provided with the latest equipment all arrayed in an optimal layout for maximum efficiency.

The space designers/interior decorating firm of Adrian•Gaus Architects, Inc. (a member of AC-6 Architect Collaborative) was employed to impose 21st century charm on the School's common spaces and to provide color and finish guidance for future projects.

If visitors to (and those who work at) Prince Hall like what they see, they have these six members of LLUSD's ad hoc and long-suffering esthetics committee to thank for its selection of appointments from among the color, texture, and shape options provided by Adrian•Gaus Architects:

Joe Caruso, DDS, MS, MPH, (committee chair),
Debbie Catino, manager, Endodontic Clinic,
Paul Chambers, project manager, Dental Maintenance,
Zina Johnston, DDS'00 assistant professor, Division of General Dentistry,
Greg Mitchell, DDS'84, program director, Clinic Administration, and
Marlise Perry, assistant director, Office of Admissions.

The installation efforts of vendors and contractors benefited enormously from the essential assistance of Stan Lillard, director, Dental Maintenance, and Charles Dugaduga, IT project manager, Dental Computer Services. Tireless, competent service was provided by the staffs of Dental Maintenance, Dental Computer Services, and University Construction and Architectural Services.



The new tile leads to the Good Samaritan glass frieze and a left turn to the main clinic. New carpet below (also background to this page) anticipates new chairs.



Touch screen registration simplifies the patient check-in process.



Bien Air hand piece



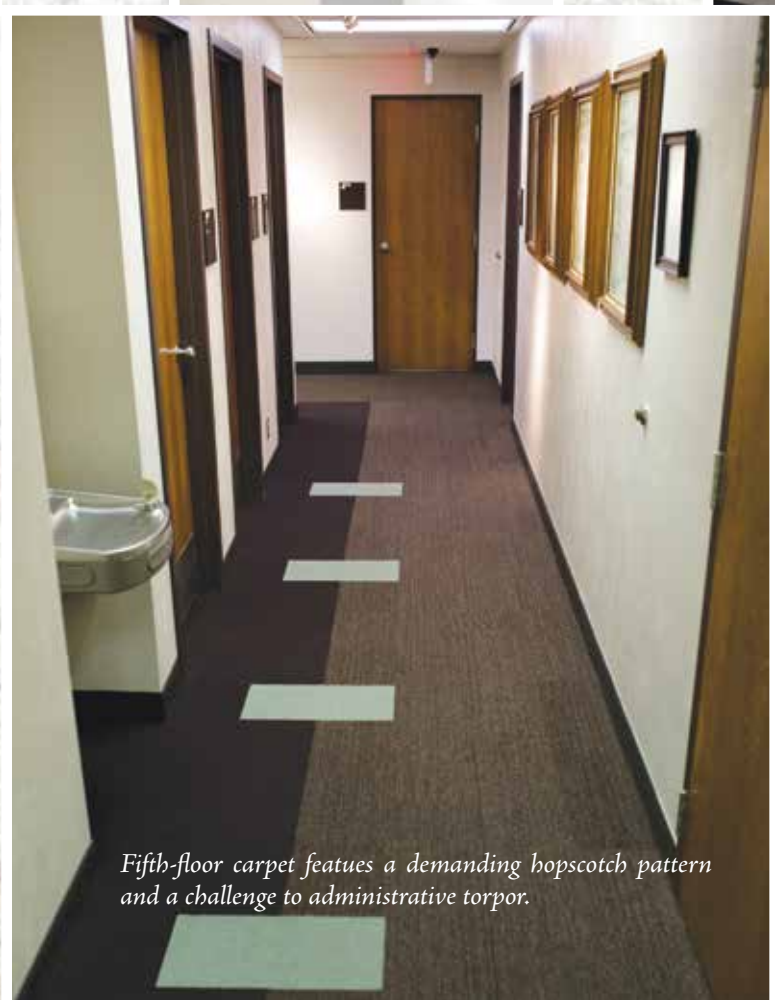
Flat screens, digital signature pads, and granite work surfaces provide appropriate context for Bien Air hand piece controllers (below).



All clinic operatories reequipped for 21st century dentistry.



Ceramic tiles grace new elevator foyer treatment throughout the building and complement the trendy, step-lively carpet pattern. Below: the exit view from the clinic level elevator foyer.



Fifth-floor carpet features a demanding hopscotch pattern and a challenge to administrative torpor.



40 Years of Implant Dentistry

April 3-4, 2016



Loma Linda University
School of Dentistry

Anterior Implant Esthetics: Preservation *vs* Regeneration



Jaime Lozada, DDS
Director
LLU Implant Dentistry
40 Years of Implant
Dentistry at Loma
Linda University



Stephen Chu, DMD, MSD, CDT
*Prosthodontic Innovations in
Soft Tissue Preservation Around
Immediate Single Tooth Implants
in the Esthetic Zone*



Sascha Jovanovic, DDS, MS
*Esthetic Benefits of Horizontal
and Vertical Ridge and Soft
Tissue Augmentation in the
Anterior Zone*



Joseph Kan, DDS, MS
*Immediate Anterior Tooth
Replacement: 19 years of
Myth or Reality*



John Kois, DMD, MSD
*Myth of Anterior
Guidance*



Ernesto Lee, DMD
*Interdisciplinary Strat-
egies for the Esthetic
Implant Reconstruction
of High Risk Cases*



Kirk Pasquinelli, DDS
*Connective Tissue Augmenta-
tion in Implant Therapy*



Mike Pikos, DDS
*Maxillary Arch
Reconstruction: Single
Tooth to Full Arch*



Istvan Urban, DMD, MD, PhD
*New Perspectives on Vertical
and Horizontal GBR*



Giovanni Zucchelli, DMD, PhD
*Esthetic Treatment of Soft
Tissue Defects Around Teeth and
Implants*



Otto Zuhr, DMD
*Tunneling Flap
Procedures in
Plastic Periodontal
and Implant
Surgery*

The Robert A. James Society for Implant Dentistry hosts a Fundraising Dinner

Sunday at 6:30pm | Mission Inn, Riverside, CA | Cost: \$125 per person*

*all additional funds over dinner event expenses will go to the Robert A. James Society Fund

**Seating is limited, so mark your
calendar and register early!**

DATE:.....April 3 & 4, 2016

TIME:.....8:00am - 8:30am - Registration
8:30am to 5:00pm - Lecture

LOCATION:.....Loma Linda University, Centennial Complex

TUITION:.....\$550 DDS/AUX

CREDIT:.....This course meets the Dental Board of California's requirements
for 16 units of continuing education.

REGISTRATION INFORMATION

For more information on this symposium contact Loma Linda University School of Dentistry Continuing Dental Education office at **(909) 558-4685** or visit us online at **dentistry.llu.edu**

TRANSITIONS

Heidi Kohltfarber joins Department of Radiologic and Imaging Sciences

Heidi Kohltfarber, DDS'03, MS, has been away from her alma mater since June 2009—initially, to pursue a master's degree in oral and maxillofacial radiology at the University of North Carolina—Chapel Hill, and then to shuttle between Chapel Hill and King's College in London, England, for a joint venture PhD in oral and maxillofacial radiology.

Dr. Kohltfarber has returned to LLUSD as assistant professor in the newly formed Department of Radiology and Imaging Sciences chaired by Kenneth Abramovitch, DDS, MS.

Upon graduating with her doctor of dental surgery in 2003, Dr. Kohltfarber remained with the School of Dentistry as assistant professor, Department of Oral Diagnosis, Radiology, and Pathology, to direct courses in oral diagnosis and urgent care and to lecture and provide clinic coverage in the areas of oral diagnosis, radiology, and pathology. In her private practice time she worked between 2003 and 2009 as an associate with three privately practicing Southland dentists, the School's Dental Faculty Associates, and the Koppel Special Care Dentistry Center.

In 2009, Dr. Kohltfarber transferred as a resident to the Department of Diagnostic Sciences at the University of North Carolina—Chapel Hill. She received an NC Tracks Grant in November 2009 for research to explore salivary biomarkers in diabetic patients and a Future Faculty Fellowship in May 2011. Her master's research evaluated 2D versus 3D radiography in the treatment planning of root canal treated teeth with periapical lesions and completed her requirements for the master's degree in Oral and Maxillofacial Radiology she received in 2012.

Dr. Kohltfarber's interest in 3D imaging and its application to oral healthcare led her to apply in 2012 (and gain acceptance in 2013) to the oral and maxillofacial radiology PhD program that

is a joint venture between King's College London and UNC—Chapel Hill. Dr. Frederic Festy, senior lecturer, Department of

Tissue Engineering & Biophotonics at King's College, has directed her doctoral training while her research has been accomplished at UNC—Chapel Hill, where she was a visiting scholar and now maintains the title of adjunct professor.

The thesis Dr. Kohltfarber expects to defend in 2016 is entitled "Validation and Diagnostic Efficacy of 3D Surface Models in Dentistry: Temporomandibular Joints."

As a diplomate of the American Academy of Oral and Maxillofacial Radiology, Dr. Kohltfarber has been the managing oral and maxillofacial radiologist for Dental Radiology Diagnostics since 2013 and a Sirona 3D trainer since 2012.

Dr. Kohltfarber is particularly grateful to Loma Linda University School of Dentistry for sponsoring her trip through UNC—Chapel Hill's master's degree program in Oral and Maxillofacial Radiology. She recalls warmly the encouragement of then Department of Oral Diagnosis, Radiology, and Pathology chair Lane Thomsen, DDS'65 MS'74, and then associate dean, Office of Academic Affairs, Ronald Dailey, PhD, that ultimately led to her journey through advanced specialty training in oral and maxillofacial imaging.

In an earlier life (mostly high school years), Dr. Kohltfarber was a United States Youth National Champion in Arabian Western Horsemanship (1993) and National Reserve Champion Arabian for US and Canada for 1994, 1995, and 1996 when she was rated the number one Amateur Arabian Horseman in North America.

Last and most importantly, Dr. Kohltfarber is the wife of Bobby Kohltfarber, a civil engineer with Michael Baker International, and the mother of daughters Madison and Haley, ages ten and eight respectively.



Dr. Heidi Kohltfarber

TRANSITIONS

Introducing Kimberly LaBelle

The School of Dentistry's Office of Development is very pleased to welcome Kimberly M. LaBelle as its new development coordinator.

Beyond making sense of the Office of Development, tracking its donor gifts, and scheduling its travel, Ms. LaBelle will be in charge of its various philanthropic events, annual giving roster, and related projects.

Ms. LaBelle is one of those people who could have been an air traffic controller, with her ability to multitask and to keep a lot of spinning crockery in the air simultaneously.

She received her college education and expertise in kinesiology at Riverside City College before jumping into the real estate world for five years as an agent, loan processor, and administrative assistant at Valley View Financial Services. She then subsequently worked in all aspects of real estate (except that of broker) at Highlander Realty.

Ms. LaBelle spent a year as an account executive for advertising at the *Press Enterprise* (2007-2008), before returning to real estate for three years as an underwriting assistant and conditions underwriter for FHA, VA, and conventional loans, typically working on 30 or more loan files each day.



Ms. Kimberly LaBelle

In 2011, Ms. LaBelle joined the Loma Linda University School of Medicine as a development assistant and events coordinator directing events for School of Medicine alumni and arranging all donor/alumni visits for the assistant dean, Office of Development and Alumni Relations.

Remaining with the School of Medicine between 2012 and 2015, Ms. LaBelle served as medical student education coordinator for the Department of Family Medicine, coordinating all activities for third- and fourth-year medical students that included their clinical rotations, site visits and evaluations, exams, and graduation requirements.

But as she joined 2,000 celebrants on Loma Linda University's Good Samaritan quadrangle, July 15, 2014, for the rollout of the LLUH Vision 2020 campaign, Ms. LaBelle realized how much she missed

working with a philanthropy team and the management of various projects.

"We are really glad Kim has joined the LLUSD philanthropy team," says Tim Sherwin, senior development officer, LLUSD Office of Development. "It is already apparent that she has the knowledge, ability, and interpersonal engagement skills to help us surpass our goals."

**That filing date arrives every April 15.
This may be a good time to make a gift to your alma mater.**

**Please visit your LLUSD Office of Advancement at:
lluhealth.org/giving/dentistry**

TRANSITIONS

Introducing Steven Powell

Steven Powell, DDS'87, is a newly appointed assistant professor in the School of Dentistry's new Division of General Dentistry.

For the past 28 years, Dr. Powell operated a dental practice devoted to health that included comprehensive restorative and cosmetic dental procedures. Located in Okemos, Michigan, the practice borders the East Lansing campus of Michigan State University.

Early in 2013, Ronald Dailey, PhD, then the School's executive associate dean, learned that Dr. Powell and his wife, Juliana, were vacationing in Palm Desert. Dr. Dailey and his wife, Karen, drove out one evening to join the couple for dinner. Of course Dean Dailey suggested that the School's alumnus consider returning to his alma mater to teach, and much discussion ensued regarding Dr. Dailey's vision and goals for the school.

After earning his Bachelor of Science degree from Hillsdale College in 1978, Dr. Powell took medical technology at Kettering College of Medical Arts and remained there for three years to teach clinical chemistry and work in the clinical laboratory. Although he considered clinical chemistry and hospital administration as career options, he soon realized dentistry was the career he had been searching for and applied to Loma Linda School of Dentistry. At LLUSD, Dr. Powell was a particularly engaged student who served as Dental Student Association president and student representative to the American Association of Dental Educators. He was named Student of the Year for 1987.



Dr. Steven Powell

While practicing in Okemos, Dr. Powell made arrangements with Michigan State University to provide the university's students who were interested an opportunity to shadow his practice of dentistry. Over the years numerous students took advantage of the opportunity to observe his practice of dentistry for a semester. Many of those students have become dentists with whom Dr. Powell still maintains contact. In 2005, one of them became his partner and has now taken over the practice.

From 2011 through 2013, Dr. Powell served one day each week as a clinical instructor at the University of Michigan School of Dentistry in Ann Arbor.

In September 2013, Dr. Powell met in Loma Linda with Paul Richardson, DDS'83, associate dean for Clinic Administration, Ronald Forde, DDS'72, then chair, Department of Restorative Dentistry, and Greg Mitchell, DDS'84, director, Clinical Management Systems. On subsequent trips, he was introduced to more faculty and staff; and on a March 2015 visit his wife, Juliana, and daughter, Adrienne, accompanied him. Ultimately, a significant factor in Dr. Powell's decision to return to LLUSD was the opportunity to work with colleagues in an institution dedicated to the teaching and healing ministry of Jesus Christ.

Mrs. Juliana Powell, will continue to chair a fundraising and philanthropy committee for Michigan State University's Resource Center for Persons with Disabilities.

ADVANCES

Developing Interprofessional Education at LLUSD

Erin E. A. Stephens, DDS

Continuing advances in healthcare solutions and constant challenges to their optimal delivery is requiring significant adjustments to the education of healthcare professionals, and the impact on oral healthcare professional education is profound. CODA Standard 2-19 requires that dental school “graduates must be competent in communicating and collaborating with other members of the health care team to facilitate the provision of health care.”

Among the efforts to enhance healthcare education and (consequently) its delivery is the emerging development and application of Interprofessional Education (IPE). The term designates circumstances in which students from two or more healthcare professions learn together during some of their professional training on the assumption that the resulting knowledge of the other’s profession will result ultimately in collaborative healthcare delivery to the advantage of their patients.

PAST

Interprofessional Education (IPE) at Loma Linda University (LLU) has gone through several phases of implementation since the most recent Western Association of Schools and Colleges site visit in 2010. In fact, in 2008, LLU was the recipient of a grant entitled “Loma Linda Inter-professional Prevention Education in Diabetes for the Underserved at SACHS Clinic.” The schools of medicine, pharmacy, nursing, and allied health professions (nutrition and physician’s assistant programs) participated in the grant.

In 2010, Janice Palaganas, RN, NP, COO, Medical Simulation Center, began developing, along with several LLU schools, an IPE Lab at the Centennial Center’s Medical Simulation Center (MSC). Success and challenges in the lab led LLU Provost Ronald Carter, PhD, to form the LLU IPE Committee. The new committee’s initial charge was to define IPE and reach a consensus on terminology. It also received reports on current IPE activities occurring at LLU’s schools. Dr. Palaganas went on to compose a doctoral thesis on the experience that resulted in a prestigious job offer and her departure.

Kathryn Knecht, PhD, associate professor, pharmaceutical and administrative sciences, subsequently took leadership of the IPE Lab that began to be known in 2011 as the Interprofessional Laboratory (IPL). In its three years with Dr. Knecht at the helm, IPL’s student participation numbers grew by approximately 66 percent each year. There was a core planning group of interprofessional faculty members that functioned as a steering committee. This, with the pre and post-survey data collected at the time, was invaluable to



Carlos Poni, D4, proactively initiates Basic Life Support during the “Immersive Simulation” station.

the development of the IPL experience, and garnered a ground-swell of interest from additional schools and programs.

In October 2012 and 2013, LLU sent teams from the schools of dentistry, pharmacy, medicine and nursing to the IPE Collaborative (IPEC). IPEC consists of six national education associations of schools from the health professions, which formed a collaborative in 2009 to promote and encourage constituent efforts that would help prepare future health professionals for enhanced team-based care of patients. IPEC’s annual, multi-professional collaborative conferences support the integration of interprofessional education in healthcare education institutes across the nation. The LLU team’s report and recommendations to the LLU IPE Committee

after attending the IPE Collaborative conferences coincided with mandates by several professional accrediting bodies that IPE should be in each school's curriculum. LLU's Interprofessional Education leaders determined to make IPL the University's first priority.

LLU's Center for Interprofessional Education (CIPE) was established in August 2014, after consultation with Dr. Carter, the LLU IPE Committee, LLUH President Richard Hart, MD, DrPH, senior VP of Finance, Rodney D. Neal, MBA, and, finally, to the Joint Council of Deans and Academic Deans. Kent Denmark, MD, director of the Medical Simulation Center, was appointed as its first director.

PRESENT

The Interprofessional Laboratory (IPL) has become a focal point of the Interprofessional Education initiative at Loma Linda University. An IPL session convenes multiple times each quarter at the LLU Medical Simulation Center, which is home to a simulation program that provides superlative simulation education for LLU healthcare students.

Each IPL session consists of approximately 24 healthcare students from a variety of disciplines rotating through three stations—including (but not limited to) medicine, nursing, pharmacy, dentistry, dental hygiene, health informatics



L-R: Drs. Erin Stephens, Eunni Cho, and Kent Denmark

management, and radiology technology. The first station, *Defining Roles in Practice*, engages students in analysis of a case scenario by considering how the interprofessional team will work together to assess, evaluate, potentially medicate,

treat, and refer the recovering patient. At station two, titled *Short Scenarios*, students utilize TeamSTEPPS communication tools (discussed in the paragraph below) to enhance their situational awareness in a healthcare setting. Station three, *Immersive Simulation*, involves a high-fidelity mannequin on which students perform emergency Basic Life Support (BLS), which then is evaluated in a debrief session.

TeamSTEPPS communication tools and strategies are identified at the beginning of each IPL session. Tools include tactics for communicating critical information that requires immediate attention and action, the transition of information along with authority and responsibility, leadership strategies, situational monitoring and awareness tips, as well as key words necessary to minimize defensiveness and criticism.

So far, the majority of students have not been introduced to TeamSTEPPS tools prior to their arrival at IPL, which can devalue the effectiveness of the sessions. Additionally, there is not yet a method in place to determine whether students are using these tools subsequently in a clinical setting once their IPL session has concluded.

All students who attend IPL are required to take both a pre- and post-RIPLS (*Student Readiness for InterProfessional Learning*) survey that is presented in a Likert scale format. These surveys assess the students' attitudes toward interprofessional learning both before and after an IPL session. Data accumulated from the 2014 fall quarter pre-survey from LLUSD students illustrates that prior to their participation in IPL, 88 percent of students thought patients ultimately would benefit if healthcare students worked together to solve patient problems; this percentage jumped to 97 at the conclusion of the sessions as shown in the 2014 Fall Quarter Post-Survey data. Moreover, preceding their IPL session, 83 percent of students thought that shared learning helps to clarify the nature of patient problems; however, that number increased to 97 percent at the conclusion of the sessions as noted in the 2014 fall quarter survey.

Although the pre- and post-survey data have been extremely instrumental in assessing students' perspectives toward interprofessional learning, it is difficult to enforce survey participation because IPL is not a course requirement for the majority of LLU school's disciplines; rather, IPL is offered as an extracurricular course, or elective course, with no credit attached to completing the surveys. Additionally, because there is no identifier attached to the surveys, it is impossible to identify what discipline's students are taking the surveys, and which do not. The LLU IPE Task Force has addressed this assessment issue, and a solution is currently being implemented.

Eventually, members of the Task Force would like to remove the surveys from the IPL experience and replace

them with a long-term research project to determine whether students who participate in IPL utilize in a clinical setting the skills that they have learned. More importantly, however, consistent and expanded IPL participation from the different healthcare disciplines at Loma Linda University would strengthen the program's impact.

Moving proactively, the School of Dentistry and School of Pharmacy have established a collaborative relationship out of which interprofessional didactic and clinical activities have developed. One of the activities is a clinical rotation that provides pharmacy and dental students the opportunity to work and learn together in the setting of an urgent care dental facility. During this elective course, students interview patients and collect data that are pertinent to the patients' dental care. Students also observe healthcare delivered in other professions. The course is designed to demonstrate how the collaboration of different professions can improve the health of patients. Emphasis is placed on developing communication skills between healthcare providers.

FUTURE

The Center for IPE (CIPE) has created a mission and a vision aligned with that of the University, guided by the four IPE domains, as identified by IPEC: *Value/Ethics, Roles/Responsibilities, Interprofessional Communication, and Teams/Teamwork*.

CIPE is developing a website that will link to the Office of Provost webpage on the LLU website, and through frequent communication with stakeholder faculty will continue to build momentum throughout the campus. An important aspect of this momentum will be standardization of language and terms used to refer to IPE. Considered, ongoing communication from the IPE task force will keep faculty engaged in the refinement of the process and standardization of the terminology, with the secondary goal of continuing to advance the IPE agenda on campus.

The LLU IPE committee chaired by Roger Hadley, MD, dean, School of Medicine, will oversee the activities of the IPE core group and the Center for IPE at biannual meetings. The IPE task force and the IPE director will make operational and short-term impact decisions so long as those decisions do not violate the long-term goals of the LLU IPE committee.

These initiatives will lead to university-wide IPE activities that are captured by the Center for analysis and presentation to accrediting bodies. The Center for IPE will continue to

move toward a standard of multiple IPE experiences for all students during their education at Loma Linda University. Coincident with an increasing percentage of students who participate in IPE experiences will be the assessment of their experiences and iterative revisions of the assessment tools for the IPE core competencies.



Michelle Ballou, RN, leads the "Defining Roles in Practice" station, discussing interprofessional approaches to patient care.

The Center for IPE envisions a dedicated physical space for IPE activities along with protected time for faculty members from each of the participating schools on campus. Through presentations at regional and national conferences, the Center's personnel will represent Loma Linda University as a vanguard in the emergences of interprofessional education.

To achieve integrated and efficient healthcare, each Loma Linda University healthcare entity needs to invest in and support this cultural shift toward interprofessional education. Interprofessional Education at Loma Linda University is essential to its common goal of "making man whole." Prompted not only by the accrediting body but by a God-given commission, the healthcare team works together for the greater wellbeing of its patients.

Erin Stephens, DDS, is the associate director of the Center for Interprofessional Education at Loma Linda University, is a member of the LLU IPE committee, a member of the IPE Task Force at the SIM Center (Centennial Complex), chairs the LLUSD IPE Task Force, and coordinates all the LLUSD's interprofessional activities.

Euni Cho, DDS, the director of assessment at LLUSD, is a member of the LLU IPE committee, a member of the IPE Task Force at the SIM Center (Centennial Complex) and is on the LLUSD IPE Task Force. Dr. Cho contributed most generously to this overview.

Shirley Lee's long commute



Hangzhou, China, wasn't on the agenda Shirley Lee, BS'82 (DH), MS'07, LLUSD dental hygiene faculty member since 1991, had set for herself when volunteering for a three-month clerkship. Taiwan, 112 miles off the east coast of China, wasn't on her agenda either. Nevertheless, the island nation was her designated assignment. Her grandmother gently reminded her, "When you serve God, you go where He wants you to go."

After three months on Taiwan, Ms. Lee had begun to understand Mandarin, relating it to the similar Cantonese language she had heard her father speak while growing up. The following year Ms. Lee accepted a position at a dental clinic on Guam, the largest island in Micronesia, 1,600 miles east of Manila. It would be years before she put her Chinese language skills to use in Hangzhou.

The first dental hygienist on Guam, Ms. Lee became a trendsetter. She went through hoops required by the island's wary dental board. Until her arrival, uncredentialed dentists from abroad were doing limited dental hygiene procedures. Board members examined Ms. Lee's transcripts and dental hygiene course syllabi. She submitted volumes of paper work. Ultimately, her qualifications would set the precedent for dental hygiene practice on the island. A dental hygienist subsequently arriving from a prestigious American dental school was denied certification until she gained proficiency in all the skills that Ms. Lee had brought with her.

With the conviction that she was where God wanted her to be, the freeway savvy southern Californian adapted to a "we get there when we get there" culture. Ms. Lee recalls a 35-miles-per-hour maximum speed limit on the island. She prudently observed it. "Coral-based roads are slick," she says, "especially when wet."

It was a babysitter from Ulithi, a Yap state island, who expanded Ms. Lee's horizons. "I want you to come to my island," said the sitter of her home island, where two dental assistants were providing the only dental care available. Responding to the sitter's urgent request, Guam's mission dental team pursued the required paper work to perform dental care sanctioned by the government of Yap. Expediting the red tape were the chief of the island and the Yap governor's representative on the island, each an uncle of Ms. Lee's babysitter.

When they boarded a plane for Ulithi, the dental team knew that no electricity existed on the island except at a Mobile gasoline complex and at the office of the Yap governor's representative. Thus they had added to their luggage a generator, two portable dental chairs, and two portable dental units. They would put a couch into use as a third chair.

Ms. Lee was immediately and overwhelmingly busy with patients she describes as "all topless," the women attired in woven skirts, the men in loincloths. She diligently attacked her patients' beetlenut stains, responsible for extensive plaque and



SRRSH students perform a dental hygiene treatment under Shirley Lee's close observation.

tartar buildup. Unfortunately, the island's "code of chic" valued the beetlenut stained teeth. Ms. Lee was mortified to see that her adult patients hastened to avoid looking unfashionable by replacing the stain. Only the younger patients with more exposure to images from modern cultures—of white, toothy smiles—sought to retain their stainless look. Dental team members not only repaired teeth; they also busied themselves delivering earnest oral health lectures.

Returning to the States in 1991 to provide educational opportunities for her children, Ms. Lee realized a life-long dream. "I always knew I wanted to teach," she says. In the department of dental hygiene at LLUSD, "I'm in my element." She recalls being among the few in her class of 1982 who chose an elective that focused on dental hygiene education. Ms. Lee became the Department of Dental Hygiene's junior clinical advisor, as well as instructor in oral anatomy—a rigorous course. And whereas she arrived with the idea that she had something to teach her students, she finds "they teach me more about perseverance and about life."

When a new item appeared on Ms. Lee's agenda, she entered a different venue. Her LLUSD colleagues were becoming involved in Hangzhou, China (100 miles southeast of Shanghai), where Sir Run Run Shaw Hospital (SRRSH) recently had opened—a facility built with a generous contribution from Sir Run Run Shaw, a Hong Kong media tycoon and philanthropist. The healing care his seriously ill mother had received in a Seventh-day Adventist hospital prompted her grateful son to

invite Seventh-day Adventists to collaborate in the design and operation of the hospital, introducing Western dentistry and medicine to the staff.

Ms. Lee followed reports of LLUSD's faculty participation in the plans for a dental clinic scheduled to open in 1994. Active in the design and selection of equipment was the late Lloyd Baum, DDS, MS, LLUSD professor, who also taught dental techniques to its staff, all recent graduates of Chinese dental schools. Thor Bakland, DDS, MBA, a recently retired LLUSD professor, designed a new, six-chair dental clinic, and assisted with the establishment of processes and policies to manage the new state-of-the-art clinic. He became a guiding principal as the clinic developed and expanded for the next 20 years. (Eventually, Dr. Thor Bakland would turn the reins of the project over to his brother, Leif Bakland, DDS, MS, emeritus professor and past chair, LLUSD Department of Endodontics.)

Various LLUSD alumni volunteers circulated through the clinic. In 1997 Jack Sloan, DDS'63, spent two and a half eye-opening months at SRRSH's dental clinic. His dental hygienist wife Doris was a curiosity. "They told us that Mrs. Sloan was the first dental hygienist in China," he reported. She gave lectures; Dr. Sloan worked with patients while the staff observed. Mrs. Sloan's first patient was a clinic staff member. He had never had his teeth cleaned. Ultimately all the staff presented with decay, missing teeth, and perio problems. Even though the staff did Ceramco crown-and-bridge work, metal partials, full dentures, and many restorations, there remained a serious lack of preventive care. (Nearly 1 billion people lived in main land China at the turn of the century, none with access to a dental hygiene treatment.)

By 2002, SRRSH's nine dentists, four technicians, five dental assistants, and eight chairs were accommodating more than 1,000 patients monthly. Two years later, when SRRSH celebrated ten years of operation, 18 dentists staffed the dental clinic, reputed to be one of the best in the nation. In 2007 the clinic expanded to a 27-station operatory again designed by Dr. Bakland for a full range of dental services. But the People's Republic of China was still without a dental hygiene program.

Leslie Arnett, DDS, MS'69, LLUSD professor of periodontics, and his dental hygienist wife Linda, traveled to SRRSH in 2005 and introduced basic scaling in dental prophylaxis procedures to a pair of dental assistants at the hospital's clinic. The idea caught on.

Finally, during two extended visits to China in 2009, the Arnetts oversaw initiation of the country's first and only dental hygiene program. Fifteen dental assistants enrolled in the two-year program modeled on LLUSD's dental hygiene curriculum. The instructor, Amy Bergman BS, (DH), a University of Maryland graduate, had almost given up hope for a mission appointment, something she had dreamed of since preschool

years in Swaziland with her medical missionary parents. "So much of mission health care concerns patients in crisis that my dental hygiene career, mainly preventive, seemed irrelevant," she comments. Then Global Health Institute responded to her application with a query. "Would you be interested in going to China? You're perfect for this position." Expecting to be a clinician and perhaps advise in the clinic, she learned less than a month before leaving that SRRSH wanted her to become the initial instructor of dental hygienists in China. "I grabbed all my textbooks and consulted with my professors. I did online research from all over the world," she says. With no step-by-step curriculum in place, she leaned on her public health education and formulated lectures just days ahead of delivering them. Fortunately, the students knew tooth morphology and numbering. But they knew very little English. Ms. Bergman was teaching during their lunch breaks and evenings through an interpreter. Dentists from the staff also sat in on her classes that introduced them to dental prophylaxis.

Ms. Bergman had instituted a strong didactic program while awaiting the arrival of Claudine Stevenson, BS'05(DH), MPH, recipient of a LLU Global Services scholarship in 2010, who would supervise the students' clinical experience and prepare them for examination. Ms. Stevenson found herself in a modern, high tech clinic, except for its lack of supplies, instruments, and equipment for dental hygiene. The lacking necessities were procured through multiple translators and negotiations involving institutional red tape and marketplace delays.

Posing questions in the classroom brought no volunteer responses. In Chinese schools, students recite only when addressed by name. Yet students arrived at class armed with cell phones, frequently used during class sessions. Ms. Stevenson stopped her lectures during such conversations; ultimately, the offending talker got signals from attentive classmates. "They were learning!" she reports.

The instruction schedule at SRRSH was unique: lectures and clinical training, conducted through an interpreter, were delivered at noon and after normal work hours. Students learned English dental terminology to facilitate treatment of foreign patients. The clinical training included no local anesthesia, which is illegal in China, no soft tissue curettage, no sealants, no N2O.

When the 15 students completed the program in 2011, their competency level met California licensure requirements except for the local anesthesia procedures prohibited in China. Employed at the clinic, the 15 students demonstrated to

other staff personnel, as time permitted, their dental hygiene skills. Now applicants for a second dental hygiene class were clamoring for an academic curriculum and sequence of courses.

Exiting the classrooms and dental hygiene clinic at LLUSD, Shirley Lee found herself in 2013 and 2014 on three extended



SRRSH dental hygiene students watch as Shirley Lee demonstrates instrumentation skills on a typodont.

trips to the other side of the world, as she accomplished the instruction of China's second ever dental hygiene class. Initially, she met with the new students and identified 13 subjects for which they wanted supplemental instruction. She addressed these subjects during noon-hour lectures. Working with an English-Mandarin interpreter who possessed a "growing understanding of English," Ms. Lee sometimes resorted to her recall of Cantonese for clarification. Use of cognates aided the translation. Her task: certifying the students' knowledge and skills. She found them unusually eager to learn and aware of the significance of their newfound profession.

Particularly gratifying to Ms. Lee, who with others has made repeated trips to Hangzhou to certify the dental hygiene program, is the plan for two of the 2014 graduates to attend a nine-month program of dental hygiene classes at LLUSD, giving particular attention to teaching methods so that the dental hygiene instructional program at SRRSH can continue.

Back in her LLUSD teaching role, Ms. Lee continues to receive phone calls and text messages from the SRRSH students regarding dental hygiene treatment. Her students on both sides of the globe, she observes, will become her colleagues in a few months. Like previous graduates, they are likely to greet her with the message, "I am glad you had such high expectations for me."

BY THE NUMBERS

Profiling the DDS class of 2019

GPA (cumulative) 3.53

Non-science average 3.71
 Science average 3.53

Non-science average 20.15

DAT average 21.00
 Total Science 19.81
 Reading Composition 20.69

Applicants

Total applicants 1,709
 SDA 185

Gender

Female 41
 Male 59

Ethnicity

African American 4
 Asian Pacific Islander 36
 Caucasian 38
 Hispanic 15
 Mixed ethnicity 7

Averag Age 24.7 years

More than half the class of 2019 matriculated from these eight schools:

Walla Walla University	12
La Sierra University	11
Pacific Union College	8
Southern Adventist University	7
Andrews University	5
UC, Irvine	5
UC, Los Angeles	4
UC, San Diego	4

LLUSD Continuing Education

July 1, 2014–June 30, 2015

7 Electronic programs

26 Topic areas
 (all programs, virtual and real)

144 Lectures

5,501 Course registrations

2,199 Unique registrants

LLUSD Dental Research

July 1, 2014–June 30, 2015

27 Projects with extramural funding

9 Clinical
 18 Animal/laboratory

\$104,133 Internal research support

22 graduate/resident thesis projects: \$31,503
 2 faculty grants (1 FIT grant and 1 seed grant): \$60,000
 Dental/dental hygiene student research program: \$12,630

\$2,622,457 Extramural Research Projects and Funding

Total new research funding: : \$1,991,439
 Royalty income: \$131,018
 Royalty contract: \$500,000



2016 LLU/AAID



Implant MaxiCourse[®]

For more than 30 years, the Advanced Education Program in Implant Dentistry through the Continuing Dental Education Division has provided part-time didactic and clinical training in implant dentistry to general practitioners and specialists.

The 2016 LLU/AAID MaxiCourse[®] offers 300 hours of lectures, hands-on workshop sessions, live surgical demonstrations, online lectures and clinical experiences placing dental implants on participants' patients. The LLU/AAID MaxiCourse[®] brings the experience of renowned instructors and clinicians from Loma Linda University and around the world.

The 10-month sessions (two days per month) also help prepare the participant to take the written portion of the AAID Associate Fellow Membership Examination. The didactic portion of the course includes information for beginners, intermediate and advanced clinicians in implant dentistry wishing to expand their knowledge in this field.

The program is designed to take the participants through a systematic learning approach of implant dentistry.

Starting with basic concepts, diagnosis, treatment planning, dental implant surgery and implant prosthodontics, the attendees have the opportunity to develop sequential treatment plans on their own patients and participate in performing surgeries with the assistance of experienced faculty and residents of the Advanced Education Program in Implant Dentistry.

The attendees also experience hands-on workshops where procedures such as cone-beam imaging analysis, simulated patient-based dental implant surgery on life-like mannequins and guided-bone regeneration procedures on cadavers and pig jaws complete the understanding of basic and advanced dental surgical procedures.

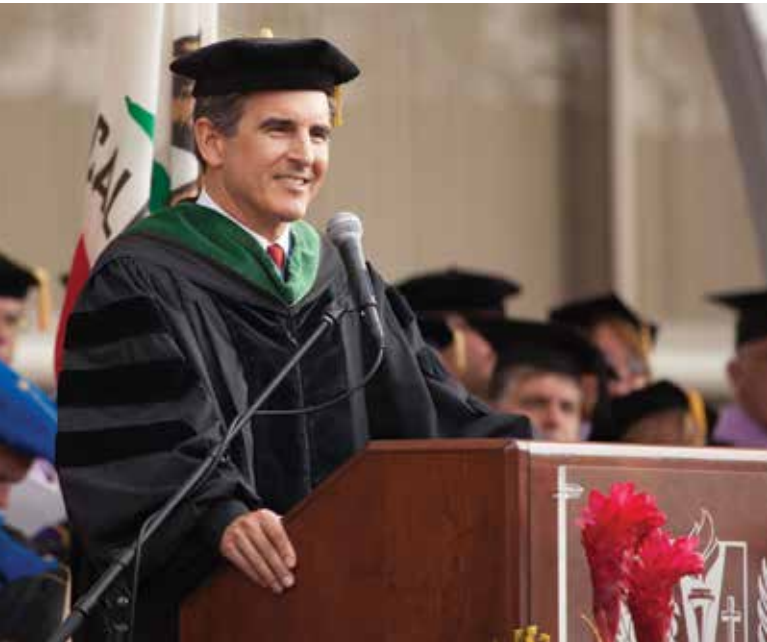
Dates: March 17 - December 9, 2016
Tuition: \$14,500

REGISTRATION INFORMATION

To register for LLU/AAID MaxiCourse contact Loma Linda University School of Dentistry Continuing Dental Education office at **(909) 651-5673** or visit us online at **dentistry.llu.edu**

Nearly 450 participants have completed the LLU School of Dentistry and AAID MaxiCourse program.

COMMENCEMENT 2015

59th LLUSD conferring of degrees

Dr. David Levy tells LLUSD graduates that “people are literally dying to know what is right with them.”

Loma Linda University School of Dentistry’s 59th conferring of degrees began Sunday, May 24, at 5:00 pm on the University mall. And for all that it represents (and by comparison with the marathons that each graduating student ran), its two and a half hours represented a joyous, early summer sprint.

Addressing the 206 cheerfully restive graduates from 34 countries was *Gray Matter* author David I. Levy, MD, clinical professor of surgery (neurosurgery) School of Medicine, University of California, San Diego—a neurovascular surgeon who prays with his patients.

His message was in his conclusion: “As healthcare professionals we are trained, expertly trained, to find out what is wrong with people—to diagnose them. But there are people who are literally dying to know what is right with them. . . . So go forth and encourage and speak life to those around you, showing compassion on those with weakness. Because when you do, it will bring them joy and add joy to your life.”

Susannah Diaz, president of the 2015 class of graduating dental hygiene students, gave the requisite thanks to family, faculty, and friends. She spoke of the roadblocks she and her classmates had overcome (path, perio, pharm) and the accomplishments they could boast (100 percent pass rate on written national boards, completed competencies, first class laser certified), but concluded on a theme of Dr. Levy’s: “At the end of the day, it’s not about what you have, or even what

you’ve accomplished, it’s about who you’ve lifted up, who you made better, and it’s about giving back.”

Derrick Nelson, president, dentistry class of 2015, approached the lectern to chants of “four more years.”

After expressing his various gratitudes, he spoke mostly about “the great class of 2015.”

“Success may go the extra mile,” he allowed, “but greatness will stay back to help someone struggling to do the first mile. Our class has been more than successful,” he let his audience do the logic.

He challenged the School’s deans by name: “Do not make the mistake of comparing other class’ success with our greatness. Because, you may have your National Board and your GPAs; you may have your clinical production stats; but don’t forget our cards that went out every time there was a faculty or staff member or classmate in pain. When the School of dentistry needed a shoulder to lean on, we were there. We were more than a successful class.”

Derrick closed with a poignant reminder “to my class that I’ve come to know and love so much. . . . They will come in the name of success to trade their quantity for our quality. They will come in the name of success to exchange our family and friends for their fame and fortune. And when the time comes to choose between what’s best for that patient versus meeting the production schedule and pressures of overhead, when it comes to sending that staff member or that patient or colleague a card of sympathy, may we choose to be that which we’ve already become: the one and only great class of 2015.”



Susannah Diaz, president of the 2015 graduating dental hygiene students, reminds her classmates, “It’s about giving back.”



Derrick Nelson, president of the dentistry class of 2015, spoke with word and gesture.

As is its commencement ceremony custom, the first order of business witnessed the honoring of four School of Dentistry faculty members for their contributions to the life of the School and its students.

Robert Handysides, DDS'93, associate dean, Office of Academic Affairs, presented the Teacher of the Year Award to **Shelley Hayton**, BS'82 (DH), MAT, assistant professor, Department of Dental Hygiene, with these remarks:

The Teacher of the Year Award was established to recognize and honor School of Dentistry faculty members whose accomplishments have made an extraordinary impact on students, peers, and the School family. Each year a full-time faculty member is chosen for this award based on having an outstanding reputation as a teacher, and on having contributed to the quality of the School, the community, and the church.

It is a distinct honor to have this opportunity to present Shelley Hayton as the recipient of the 2015 SCHOOL TEACHER OF THE YEAR AWARD. The significance of this award comes in large measure from the extensive process by which she was chosen. This selection process involves all School of Dentistry students and faculty in all departments in Prince Hall. They all have input into choosing the award recipient, making the recommendation to the dean a most universal and fair process.

Shelley Hayton is a 1982 graduate from the dental hygiene program at Loma Linda University School of Dentistry. Continuing her education, she received an SDA teaching credential for grades K-8 from La Sierra University in 2009, and continued on to receive a Master of Arts in Teaching from La Sierra University in August 2010. Ms. Hayton joined the faculty at LLUSD in October 2009 as a part-time faculty member in the Department of Dental Hygiene, changing to full-time status in March 2013. She has become an invaluable asset to the Department of Dental Hygiene and is well respected by both colleagues and students.

It has been said, "The mediocre teacher tells, the good teacher explains, the superior teacher demonstrates, and the great teacher inspires." It is clear to me today that we are in the presence of greatness. As evidence of the students' respect for Shelley Hayton's approach to teaching, one has only to look at the consistently outstanding evaluations submitted by students over the past several years.

Let me share a few examples:

"She is the most amazing instructor ever! She is always straight to the point and very helpful. She will find time to help students individually, even if she does not really have time to spare."

"Couldn't have had a better, more understanding, or kinder instructor. Best instructor by far."

"Ms. Hayton is an excellent instructor! She is very clear about what she wants, and is helpful when there is confusion!"

"You are one of the nicest and most caring teachers I have had, and you are always open and smiling, making it easy for us to reach you. I hope to have you as my instructor until I have completed school at LLU!"

"Ms. Hayton is not only a great teacher but a wonderful person to have in the dental hygiene department. She is always going above and beyond what she is expected to do here at our School."

"Ms. Hayton, you are amazing! There is nothing I would change about you or your class."

"Thank you for making your classroom a delight and a wonderful learning atmosphere, and for always encouraging us. You are one in a million and one of the best teachers I have ever had!"

To all of the educators here this afternoon I would like to honor and thank you for inspiring and influencing us all. Great teachers are the soul of an enlightened society. We can all name a great teacher who changed our lives—a teacher who



Dr. Handysides delivers Shelley Hayton's professional sketch.

COMMENCEMENT 2015

inspired us. Today reading these comments we clearly see why our recipient today is deserving of the honor.

Ms. Shelley Hayton has been teaching since 2012, a relatively short term in a teaching career. Based on what she has already accomplished, we predict a long successful career devoted to the high calling of mentoring our future colleagues in both the art and the science of dental health and hygiene.

It is now my honor to present Ms. Shelley Hayton the 2015, SCHOOL TEACHER OF THE YEAR AWARD. Congratulations Shelley!

Yiming Li, DDS, PhD, MSD associate dean for Research, presented the School Distinguished Research Award to **Leif K. Bakland**, DDS, professor emeritus, Department of Endodontics, with these words:

Dr. Bakland is a member of a small, elite group of endodontists who are recognized internationally for their accomplishments. After completing the Doctor of Dental Surgery degree at Loma Linda University, he opened a general dentistry practice in Massachusetts. In 1971, Dr. Bakland was accepted to the Harvard University School of Dental Medicine where he completed a residency in endodontics. While in Massachusetts, he joined the United States Army Reserves in which he served for over three decades, retiring as a full colonel.

In 1976, Dr. Bakland accepted an invitation to return to Loma Linda University and within a short time was asked to serve as the first chair of the new Department of Endodontics, a position he ultimately held for 32 years. Over his 39-year tenure in the School of Dentistry, Dr. Bakland has held numerous administrative appointments that include associate dean for Clinic Administration and associate dean for Advanced Education Programs.

Dental trauma has long been Dr. Bakland's passion. While he would hesitate to say so, he is arguably the foremost authority on the topic in the United States and is regularly sought after by the international community for his expertise.

He is also an outstanding editor, as can be noted by reading his textbook, Endodontics, the 6th edition, often affectionately referred to as the "Bible of Endodontics." Dr. Bakland has been author and co-author of more than 80 publications, and is acknowledged for his research in dental trauma and endodontics.

In 2008, Dr. Bakland became the first Ronald E. Buell Professor of Endodontics, an endowed professorship that he held through 2014. Dr. Bakland has touched the lives of countless pre-doctoral and graduate students as he mentored them in their research and clinical education.

For his contributions as a researcher, teacher, and mentor—and for exceptional competence demonstrated in serving his profession—the School of Dentistry is pleased to honor Dr. Leif K. Bakland as the recipient of the SCHOOL DISTINGUISHED RESEARCH AWARD.

Congratulations, Leif!



Dr. Li congratulates Dr. Bakland on his honor.

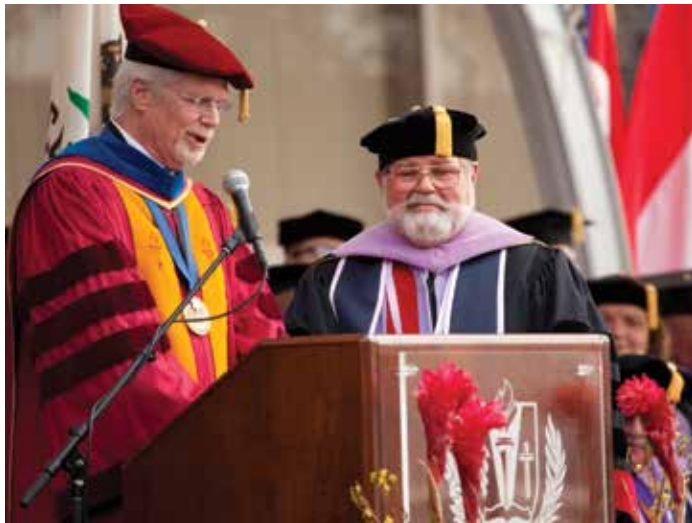
Dean Ronald Dailey, PhD, presented the School Distinguished Service Award to **Gary J. Golden**, DDS'76, assistant professor, Division of General Dentistry:

After completing his DDS degree, Dr. Gary J. Golden commenced a 22-year military career that culminated in the rank of colonel. Through the years, he served in positions of increasing responsibility—including general dental officer, dental laboratory officer, chief of prosthodontics, assistant chair and then chair of departments of prosthodontics at bases in Texas, Alaska, and California.

In 1992, Dr. Golden was appointed assistant clinical professor in the Department of Restorative Dentistry at the University of California, San Francisco, where he served until 1995. In 1996, Dr. Golden retired from the U.S. Air Force and was recruited to join the faculty of Loma Linda University where he was appointed director of fixed prosthodontics.



Dr. Golden accepts the congratulations of Dean Ron Dailey, PhD.



Dr. Richardson listens as Dean Dailey summarizes his distinguished service to the School of Dentistry.

Dr. Golden has been the course director and principal instructor in fixed prosthodontics courses at Loma Linda for over 19 years. He enjoys a reputation as an excellent dental educator who is highly respected and valued by students and faculty alike for his rigorous, thorough, and fair assessment of students. Students especially appreciate the personal and generous attention he extends to them when they seek his help.

In recognition of, and appreciation for, his contributions to the dental profession and for his commitment to the education of students, the School of Dentistry is pleased to present to Dr. Gary J. Golden the SCHOOL DISTINGUISHED SERVICE AWARD.

As he presented the School Distinguished Service Award to **Paul Richardson**, DDS'72, associate dean, Clinic Administration, Dean Dailey said:

Paul L. Richardson earned his Doctor of Dental Surgery degree from Loma Linda University in 1972. After completion of his DDS, he continued his education at the University of Southern California, earning a certificate in prosthodontics and a Master's in Education degree in 1974.

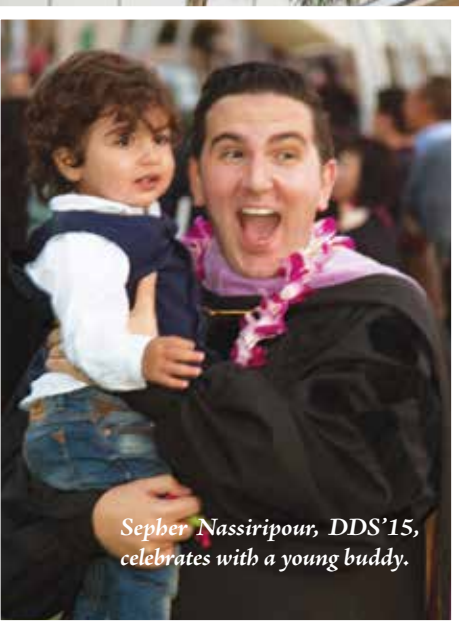
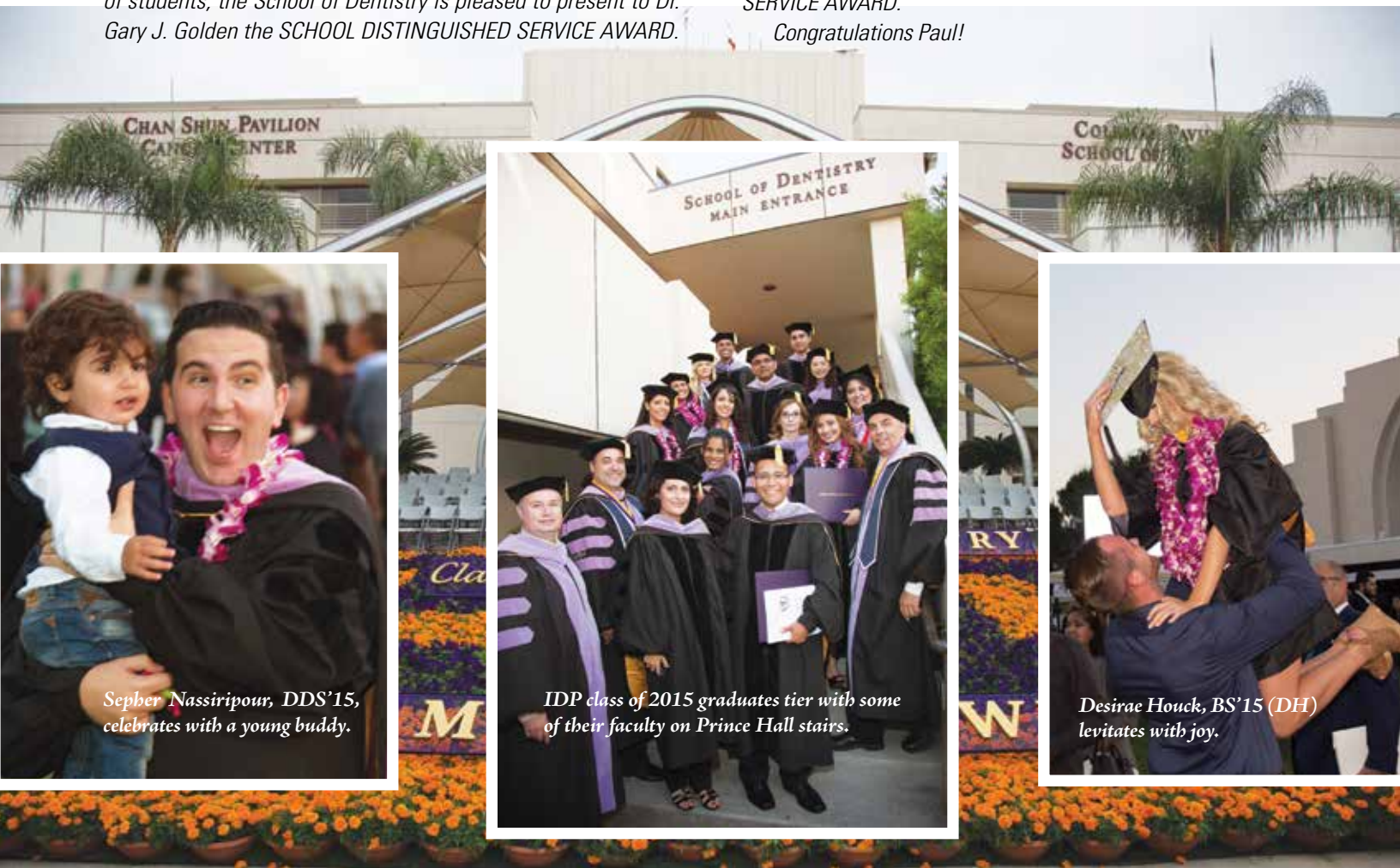
Dr. Richardson then became the principal architect of the general practice residency in 1976 at the School of Dentistry.

In 1996, Dr. Richardson was named program director for the Clinical Services Division; and, in 1999, he was appointed associate dean for Clinic Administration, a title he continues to hold. His innovations and effective leadership in managing the many School of Dentistry clinics have resulted in ongoing improvements that enable students to experience an effective learning environment, and become clinically competent.

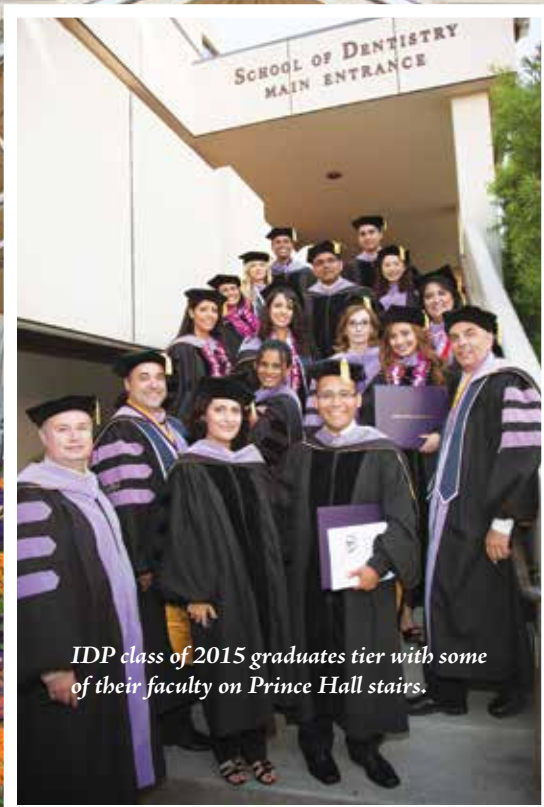
Dr. Richardson is distinguished for his extensive educational and clinical background. His knowledge and vast experience in prosthodontics, diagnosis, treatment planning, practice and business administration, as well as organizational management and leadership, continue to strengthen the programs in the school.

In recognition of, and appreciation for, his many years of excellent teaching and effective leadership and contributions to this University and the community, the School of Dentistry honors Dr. Paul L. Richardson as recipient of the SCHOOL DISTINGUISHED SERVICE AWARD.

Congratulations Paul!



Sepher Nassiripour, DDS'15, celebrates with a young buddy.



IDP class of 2015 graduates tier with some of their faculty on Prince Hall stairs.



Desirae Houck, BS'15 (DH) levitates with joy.



Above (L-R): Clara Mendez Baez, DDS'15 (IDP) and Brockton Willey, DDS'15, address the baccalaureate service audience. A student ensemble performs, comprised of (L-R) Jed De La Paz, DDS'15, Chris Lopes, D2, Mel Bersaba, D3, Rachel Zabounian, BS'15 (DH), Amy Loredo, BS'15 (DH), Stephanie Rodriguez, BS'15 (DH), and singing (inset) Brandie Vargas, BS'15 (DH).



Lisa Mohn, DDS'87, and Robert Mohn, DDS'88, pose with their daughter, Haley Mohn BS'15, (DH) and Dean Dailey.



Cherish Hicks, BS'15 (DH) clutches her diploma with pride.



Daniel Gomez, BS'15 (DH) receives his diploma from Dean Dailey.



Brittany Brown, BS'15 (DH) leaves the podium with the proof of her accomplishment.



Dominic Castro, BS'15 (DH) displays his diploma.



*Lieutenant Taylor Binghm, DDS'15
Air Force*



*Colonel Kristofer Ceredon, DDS'15
Navy*



*Colonel Yu Sheng "David" Chen, DDS'15
Army*



*Lieutenant Lucas Kim, DDS'15
Air Force*

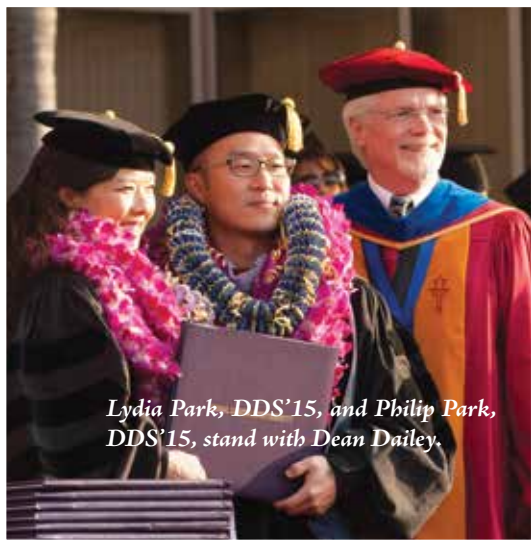


*Colonel Andrew Korcek, DDS'15
Navy*

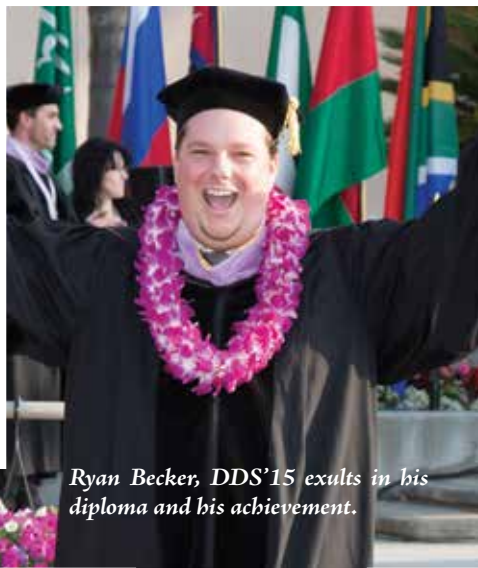


*Colonel Anthony Marin, DDS'15
Navy*

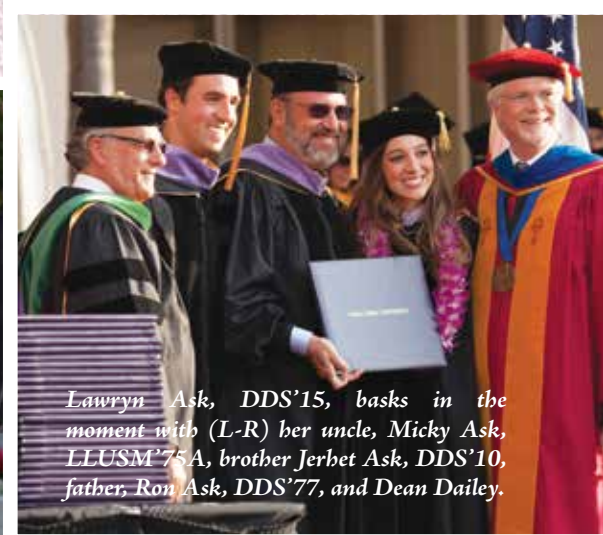
Brigadier General, US Army (Ret.), Michael Walter, MD, associate professor, LLU School of Medicine, conducted the May 24 commissioning of six graduating LLUSD dental students in Randall Visitor's Center. Their commissioning was witnessed by family, friends, classmates, and School of Dentistry faculty members (and senior military officers) Lieutenant, US Navy, R. Leslie Arnett, DDS, MS'68, professor, Department of Periodontics; Lt. Colonel, US Air Force (Ret), Clyde Roggenkamp, SD'70, MSD, MPH, associate professor, Division of General Dentistry; and Colonel, US Air Force (Ret), Wayne Tanaka, DDS, associate professor, Oral and Maxillofacial Surgery.



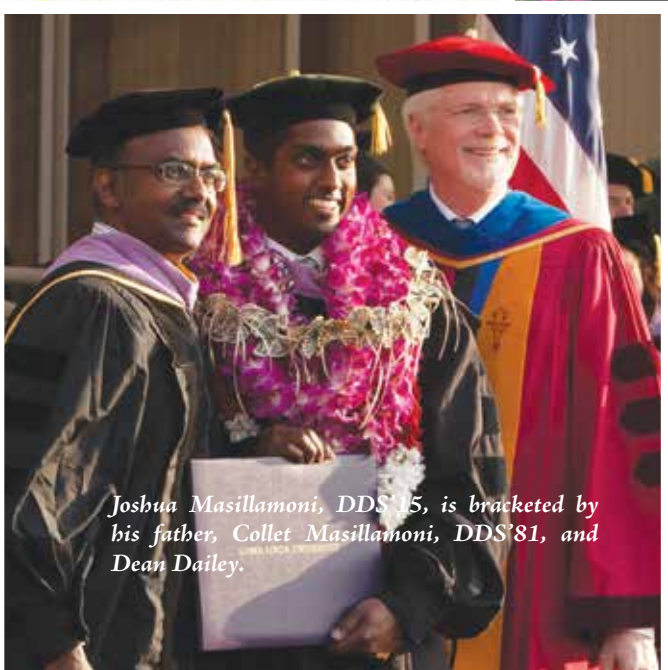
Lydia Park, DDS'15, and Philip Park, DDS'15, stand with Dean Dailey.



Ryan Becker, DDS'15 exults in his diploma and his achievement.



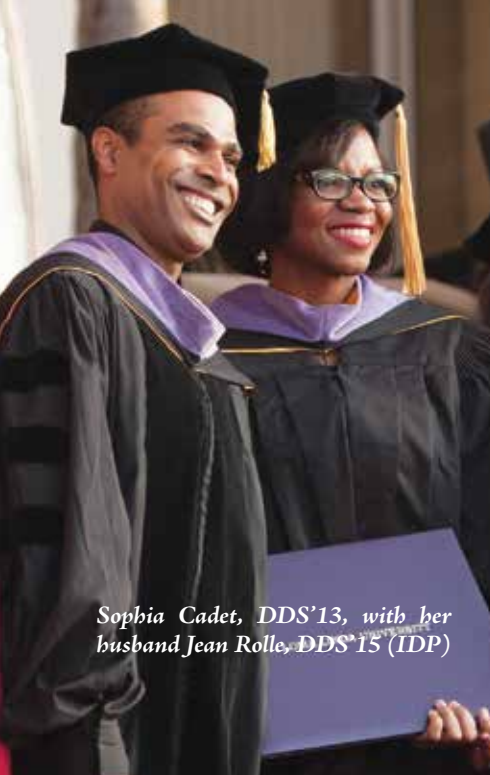
Lawryn Ask, DDS'15, basks in the moment with (L-R) her uncle, Micky Ask, LLUSM'75A, brother Jerbet Ask, DDS'10, father, Ron Ask, DDS'77, and Dean Dailey.



Joshua Masillamoni, DDS'15, is bracketed by his father, Collet Masillamoni, DDS'81, and Dean Dailey.



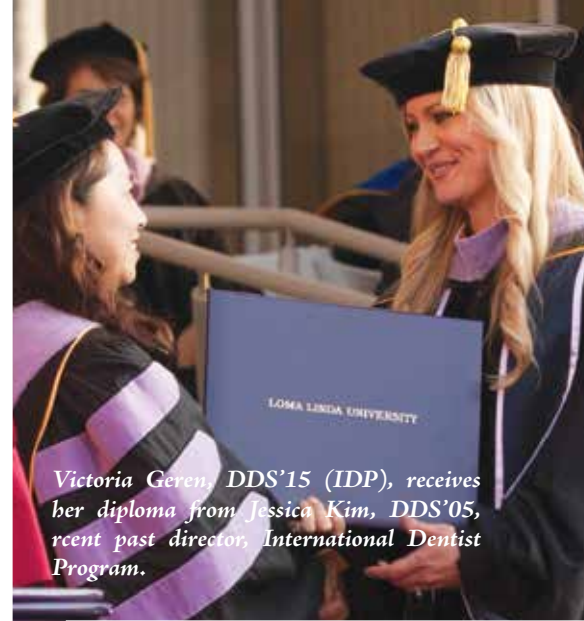
Sarah Goodacre, DDS'15, celebrates with Charles Goodacre, DDS'71, MSD, distinguished professor, Advanced Specialty Education Program in Prosthodontics, and her husband, Brian Goodacre, DDS'13.



Sophia Cadet, DDS'13, with her husband Jean Rolle, DDS'15 (IDP)



Leila Adab, DDS'15 (IDP) happily carries what she came for.



Victoria Geren, DDS'15 (IDP), receives her diploma from Jessica Kim, DDS'05, recent past director, International Dentist Program.



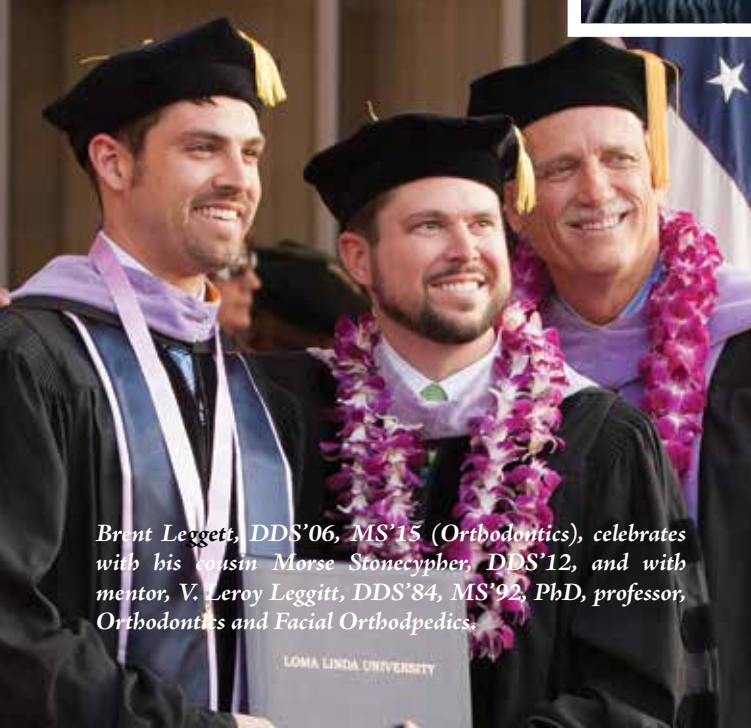
John Won, DDS'05, MS'13, head, Division of General Dentistry, is congratulated by Ronald Forde, DDS'83, recent past chair, Department of Restorative Dentistry, for his membership in Omicron Kappa Upsilon.



Shivali Gobel Garg, DDS, MSD'15 (periodontics)



Wendy Gregorius, DDS'07, MSD'11, assistant professor, Department of Prosthodontics, receives membership in Omicron Kappa Upsilon (OKU).



Brent Leggett, DDS'06, MS'15 (Orthodontics), celebrates with his cousin Morse Stonecypher, DDS'12, and with mentor, V. Leroy Leggitt, DDS'84, MS'92, PhD, professor, Orthodontics and Facial Orthopedics.



Seven IDP graduates toss their hats in jubilation.

Dental hygiene students pinned

Forty-six graduating dental hygiene students from the BS and AS programs, 39 and 7 respectively, participated in the School of Dentistry's annual dental hygiene pinning ceremony. Pictured below, the class of 2015 dental hygiene students anticipate their pinning in front of the Loma Linda Campus Hill SDA Church.



Dental hygiene student awards—2015

American Association of Public Health Dentistry
Stephanie Rodriguez, BS'15

Bates Award
Carolyn Gharabeki, BS'15, Sonia Torres, AS'15

**California Dental Hygienists' Association
Outstanding Leadership Award**
Kristen Schwieterman, BS'15

Clinician's Award
BradyLyn Fonville, AS'15

Colgate STAR Award
Desirae Houck, BS'15

David Lee Anderson Tuition Scholarship
Angelica Daksla, BS'15

Dean's Award
Kira Merritt, BS'15

Joni Stephen's Preventive Dentistry Award for Research
Kelsey Johnson, BS'15, Brittney Koepsell, BS'15, Emily Pool, BS'15

Klooster Humanitarian Award
Jennifer Gruzensky, BS'15

Middleton Award
Jennifer Gruzensky, BS'15, Jenny Reyes, AS'15

Mitchell Award
Susannah Diaz, BS'15, Mary Harrison, AS'15

Service Learning Award
Kelsey Johnson, BS'15, Brittney Koepsell, BS'15

Sigma Phi Alpha Award
BradyLyn Fonville, AS'15, Kelsey Johnson, BS'15,
Jaek Kim BS'15, Brittney Koepsell, BS'15, Kira
Merritt, BS'15

Student of the Year Award
Stephanie Karn, BS'15

Tri-County Dental Hygienist's Society Award
Kristen Schwieterman, BS'15

Western Society of Periodontology Award
Denise Delgado, AS'15

Student achievement awards 2015

During the School's annual awards ceremony at the Damazo Amphitheater in the Jetton Pavilion of Loma Linda University's Centennial Complex, May 22, 2015, 57 students were presented awards or recognized for awards received elsewhere. The total of 61 awards and their recipients are listed below alphabetically.

Academy of Dentistry International Student Servant Leadership Award

Kyle Poulsen, DDS'15

Academy of General Dentistry Award

Mi Hyeon Park, DDS'15

Academy of Operative Dentistry Award

Tyler Utley, DDS'15

Academy of Osseointegration Implant Dentistry Outstanding Dental Student

Lydia Park, DDS'15

Alpha Omega Certificate of Academic Achievement

Irene Cruz, DDS'15

Alumni Association Award

Russell Challenger, DDS'15

American Academy of Gold Foil Operators

Thomas Schaffer, DDS'15

American Academy of Implant Dentistry

Erin Lam, DDS'15

American Academy of Oral and Maxillofacial Pathology Award

William Verlinden, DDS'15

American Academy of Oral and Maxillofacial Radiology Award

Irene Cruz, DDS'15

American Academy of Oral Medicine Award

Michael Martins, DDS'15

American Academy of Orofacial Pain Award

Jonathan Vandenburg, DDS'15

American Academy of Pediatric Dentistry

Hanieh Hassani, DDS'15 (IDP)

American Academy of Periodontology

Taylor Bingham, DDS'15

American Association of Endodontists

Diane Liang, DDS'15

American Association of Oral and Maxillofacial Surgeons Award

William Verlinden, DDS'15

American Association of Oral and Maxillofacial Surgeons Dental Implant Student Award

Estela Murillo, DDS'15 (IDP)

American Association of Oral Biologists

Yvette Carillo, DDS'15; Rachelle Kim, DDS'14; Jillian LeBard, DDS'15

American Association of Orthodontists Award

Taylor Bingham, DDS'15

American College of Dentists, Southern California Section

Andrey Gaiduchik, DDS'15

American College of Prosthodontists Award

Justin Terrill, DDS'15

American Dental Association Foundation

E. Bud Tarrson Award

Kyle Poulsen, DDS'15

Thomas J. Zwemer Award

Jason Joo, DDS'15

American Student Dental Association

Thomas Schaffer, DDS'15

Ben W. Oesterling Award

Laura Sherwin, DDS'15

Boyko Award for Christ-like Service

Jason Joo, DDS'15

California Association of Oral and Maxillofacial Surgeons Award

Jeffrey Paxman, DDS'15

California Dental Association Senior Award

Erica Becker, DDS'15

CDA Student Research Awards (DDS'16)

3rd Place: Alvina Choi, Daniel Choi, Andrew Correces, Ga Yeun Lee, Steven Sohn, Gaetan Tchamba

Honorable Mention: John Buie, Michael Cervantes, Michael Cooley, Greg McEwen, Douglas Nyakundi, Brian Park, Paul Quinto

Clinic Awards (DDS'15)

Rami Ammoun (IDP), Ryan Becker, Adam Kutzner, Michael Martins, Lydia Park, Kyle Poulsen

David Lee Anderson Departmental Award

Kyle Poulsen, DDS'15

David Lee Anderson Tuition Scholarship

Johathan Ruminson, DDS'15

Delta Dental Student Leadership Award

Thomas Schaffer, DDS'15

Excellence In Prosthodontics Award (LLU)

Ryan Becker, DDS'15

Fixed Prosthodontics Department Award

Ryan Williams, DDS'15

G. Hartzell & Son Clinician Award

Sarah Goodacre, DDS'15

Graduate Implant Dentistry

Justin Terrill, DDS'15

International College of Dentists Award

Hanieh Hassani, DDS'15 (IDP)www

ICOI/Dentsply Pre-doctoral Student Achievement Award

Ashley Chung, DDS'15

Kenneth Wical Award

Ovidiu Brinzeiu, DDS'15

LLU Center for Dental Research Basic Science Award

Meryl Liu, DDS'16

LLU International Dentist Program Fixed Prosthodontics Award

Rami Ammoun, DDS'15 (IDP)

LLU International Dentist Program Removable Prosthodontics Award

Muno Koro, DDS'15 (IDP)

National Association of Seventh-day Adventist Dentists

Laura Sherwin, DDS'15

Omicron Kappa Upsilon (OKU) Awards (DDS'15)

Erica Becker, Taylor Bingham, Irene Cruz, Michael Martins, Derrick Nelson, Won Sur Park, Jeffrey Paxman, Tyler Utley, Jonathan VanDenburgh, William Verlinden, Ryan Williams, Victoria Geren (IDP), Muno Koro (IDP)

Omicron Kappa Upsilon, William S. Kramer Award for Excellence

Brandon Soelberg, DDS'16

Oral and Maxillofacial Surgery Department Award

Derrick Nelson, DDS'15

Pierre Fauchard Academy Award

Jillian LeBard, DDS'15

Pierre Fauchard Academy Scholarship

James Fedusenko, DDS'16

President's Award

Laura Sherwin, DDS'15

Prince Award

Derrick Nelson, DDS'15

Restorative Esthetic Award

Lawryn Ask, DDS'15

Service Learning Awards (DDS'15)

Michael Cho, Erin Lam, Joshua Massilamoni, Clara Mendez (IDP)

Southern California Academy of Oral Pathology Award

Erica Becker DDS'15

Southern California Society of Dentistry for Children

Jonathan Stephens, DDS'15

Terry Tanaka Student Humanitarian Award

Robert Perry, DDS'16

Western Society of Periodontology Award

Eunice Choi, DDS'15

Wil Alexander Whole Person Care Award

Sarah Goodacre, DDS'15

Wilfred A. Nation Award

Jason Joo, DDS'15

Honors Program Recognition

Graduates recognized for Elective Program completion

Lawryn Ask, DDS'15

Esthetic Dentistry

Taylor Bingham, DDS'15

Orthodontics and Dentofacial Orthopedics

Eunice Choi, DDS'15

Orthodontics and Dentofacial Orthopedics

Victoria Geren, DDS'15 (IDP)

Orthodontics and Dentofacial Orthopedics

Carlos King, DDS'15

Orthodontics and Dentofacial Orthopedics

Adam Kutzner, DDS'15

Dental Anesthesiology

Jason Lane, SD'15

Esthetic Dentistry

Sepehr Nassiripour, DDS'15

Pediatric Dentistry

Derrick Nelson, DDS'15

Orthodontics and Dentofacial Orthopedics

Lydia Park, DDS'15

Pediatric Dentistry

Mi Hyeon Park, DDS'15 (IDP)

Orthodontics and Dentofacial Orthopedics

Jeffrey Paxman, DDS'15

Implant dentistry

Prematee Sarwan, DDS'15 (IDP)

Pediatric Dentistry

Laurita Siu, DDS'15

Pediatric Dentistry

Jonathan Stephens, DDS'15

Pediatric Dentistry

Reema Younan, DDS'15 (IDP)

Endodontics

Effects of Preparation Design on the Compressive Strength of Primary Anterior Zirconia Crowns, an In-Vitro Study

Morris Jose De Leon, DDS, and Jung-Wei Chen, DDS, MS, PhD

ABSTRACT

PURPOSE: The purpose of this study was to evaluate if line angles of the tooth preparation had an effect on the compressive strength of primary anterior zirconia crowns.

METHODS: Two different preparations of primary typodont teeth were performed: sharp or rounded. Thirty upper-right monolithic zirconia crowns were used for each group. All crowns were cemented with Fuji II LC resin modified glass ionomer cement to replicate dies of the replicated preparations. Each die with the cemented crown was placed into a universal testing machine to measure compressive strength at the point at which the crown partially or completely fractured. Results were analyzed with a t-test with a significance level set at $P < .05$.

RESULTS: The compression strength of zirconia crown with sharp and rounded preparation groups are 645.23 ± 123.67 N and 618.37 ± 135.13 N. The t-test indicated that the tooth preparation line angles did not cause a significant difference in compression strength in fracturing the anterior primary zirconia crowns. ($P = .425$)

CONCLUSIONS: The preparation design has no effect on the amount of compressive strength necessary to fracture the anterior zirconia crowns. The force necessary to fracture the anterior zirconia crowns was greater than the force that a child exerts on the anterior dental segment.

For many years, stainless steel crowns have been the restoration of choice for pediatric patients with early childhood caries, with multi-faceted decay and teeth with developmental defects. Tooth restoration has been facilitated by ease of use, reliability, durability, and low costs. However, in recent years, the demand for a more esthetically pleasing restoration in the pediatric population has increased.¹ There is currently a desire for a full coverage metal-free restoration, in which the restorative material has optimal esthetics and characteristics such as resistance to wear, color stability, biocompatibility, and resistance to fracture.² Monolithic Zirconia Crowns (ZrC) were recently introduced to the market to address the demand for an esthetic full-coverage restoration. However, their success may be limited as marginal adaptation of these crowns is poor (as they cannot be crimped) and they thus require a passive fit. Additionally, a more aggressive preparation design is required, and crown fracture is a major concern compared to traditional pre-veneered crowns.^{3,4,5}

Currently, ceramics are used in the dental porcelain in fillings, crowns, veneers, implants and orthodontic brackets. Dental ceramics can be divided into two major categories: 1) those that contain crystals in a glass matrix and 2) those that are pure polycrystalline ceramics with little or no glass content.⁶ An additional ceramic has been developed by the name of Zirconium dioxide (ZrO₂), also known as Zirconia. Zirconia is a ceramic that was first discovered by German chemist Martin Klaproth, and has been reported to have desirable qualities for use in dentistry. Zirconia is a type of ceramic that adopts a monoclinic crystal structure at room temperature and at higher temperatures can transition into a tetragonal and cubic Zirconia. In order to stabilize the Zirconia, a small percentage of yttria is added. This results in a material with superior thermal and mechanical properties such as high-flexural strength that ranges from 800 to 1500 MPa.⁷ Zirconia has recently been introduced in the dental profession as primary tooth all-ceramic crowns, such as EZ Pedo, NuSmile ZR, Cheng Crown, etc.

The ability of all-ceramic restorations to withstand forces during masticatory function can be compromised by the presence of defects that occur during the fabrication process, or as a result of clenching and grinding.⁵ Some other factors that may influence the fracture resistance of all-ceramic crowns are the type and direction of loading force, the type of luting agent used, the modulus of elasticity, and the preparation design.

As full-ceramic crowns cannot be crimped and require passive fit as recommended by the manufacturer, all-ceramic crowns typically lack mechanical retention and are primarily held in place by the luting agent. However, the retention created by the luting agent is limited.²² In the pediatric dental profession and as recommended by the manufacturers of all ceramic crowns, the luting agent of choice is glass ionomer cement (GIC) due to its ability to release fluoride, its coefficient of thermal expansion which is similar to that of tooth structure, its ability to bond to dentin, and its lower technique sensitivity to that of other cements.⁸ However, while GIC bonding to enamel is very successful and predictable, bonding to dentin is highly variable. Dentin is highly heterogeneous and conformed by organic and inorganic substances that vary greatly. This variation in the quality of the dentin lowers the bonding strength of GIC.⁶ Additionally, although there is variable chemical bond strength created between the GIC and the dentin tooth structure, typically no chemical bond is formed between the all-ceramic crown and the cement. In order to create a true chemical bond between the all-ceramic crown and the cement, adhesive resin cement is required.¹⁵ However, adhesive resin cements are highly technique sensitive.²³

As previously mentioned, this type of crown is kept in place by the interaction of the internal structure of the crown, the cement and the tooth structure. In an effort to increase the internal surface area, EZ-Pedo (EZ-Pedo, Inc., Loomis, Calif.) has included in the design of its crowns what it calls Zir-Lock. (Figure 1). Zir-Lock™ is an internal pattern or grooving that in addition to increasing the surface area, also acts as a mechanical retention between the crown and the cement.



Figure 1. The inner surface and "ZirLock" design of the zirconia crown

The compressive strength of any restorative material is of the utmost importance.¹⁰ If the material is not resistant enough, the restoration may be compromised and fracture even under normal bite forces. Gupta et al.²⁰ reported a bite force in children ages 5 to 10 years to be in the range of 293 N to 421 N. Owais et al.¹¹ reported an average maximal masticatory force under normal circumstances in the range of 176 N to 527 N. In patients with parafunctional habits, bite forces can be up to 1221 N.¹² Several factors have been suggested that could affect biting forces, such as age, gender and dental development.¹¹ On average the maximum bite force for the early primary dentition and early mixed dentition, under normal circumstances, ranges from 176 N to 527 N.^{11, 20}

Zirconia crowns, are biocompatible, esthetic, and function as a full-coverage restoration. The EZ-Pedo crowns are composed of monolithic Zirconia that is milled by the manufacturer from a single block of ceramic. These crowns tend to be dense in appearance with a high value in color and lack of translucency. Monolithic Zirconia crowns can be autoclaved without compromising their color, strength, or structural integrity. As EZ-Pedo crowns are milled from a single block of Zirconia, the typical ceramic layering is avoided. This process eliminates chipping and fracturing of

ceramic facings and allows for a strong crown that is highly resistant to compression.

Many dental practitioners hesitate to use full-ceramic crowns⁵ in children either due to the possibility of wear²¹ on the opposing natural tooth, cost, amount of tooth reduction needed, and technique sensitivity or fear of fracture of the restoration. The tooth preparation design plays a decisive role in the success of all restorations but especially for all-ceramic crowns. Accurate knowledge of the stress distribution within the tooth-restoration complex is important.¹⁴ Geometric and mechanical basic guidelines of tooth preparation are important and should be followed.¹⁶ The theoretical concept behind round line angles is to minimize the concentration of internal stress and the subsequent crack propagation in ceramics which can result in a failed restoration.¹³

The purpose of this in-vitro study was to evaluate the effect of rounding line angles of the tooth preparation on the compressive strength of anterior primary ZrC. The clinical significance of this study is to help the dental practitioner determine the best preparation design for teeth restored with full-ceramic crowns. Additionally, it provides a basis for future clinical studies that can help determine the best overall preparation design for primary teeth ZrC.

MATERIALS AND METHODS

Sixty E2 anterior EZ-Pedo Zirconia crowns (EZ-Pedo, Inc., Loomis, CA) were used for this study. Two right-central Ivorine™ incisor teeth from a pediatric Columbia Dentoform™ (Columbia Dentoform Corp, Long Island City, N.Y.) were prepared for the placement of EZ-Pedo Zirconia crowns. Manufacturer recommendations for crown preparation and fitting were followed for one of the teeth. The manufacturer's recommendations resulted in the following line angles: bucco incisal angle 171 degrees, bucco/inciso lingual 93 degrees, linguo/inciso 148 degrees, right facial angle 111 degrees and left facial angle 105 degrees (Figures 3, 4), this preparation was defined as the sharp preparation. The other was prepared with the same initial manufacturer recommendations, but all the sharp line angles were replaced with rounded line angles resulting in the preparation (Figure 2) that was defined as the rounded preparation.

The internal space of the EZ-Pedo Zirconia crown was filled using PVS impression material. The crown was fitted so that the incisal edge was aligned with the contra lateral typodont tooth in order to simulate an in-vivo situation. This process was done for both sharp and rounded



Figure 2. The sharp preparation (left) and the round preparation (right)

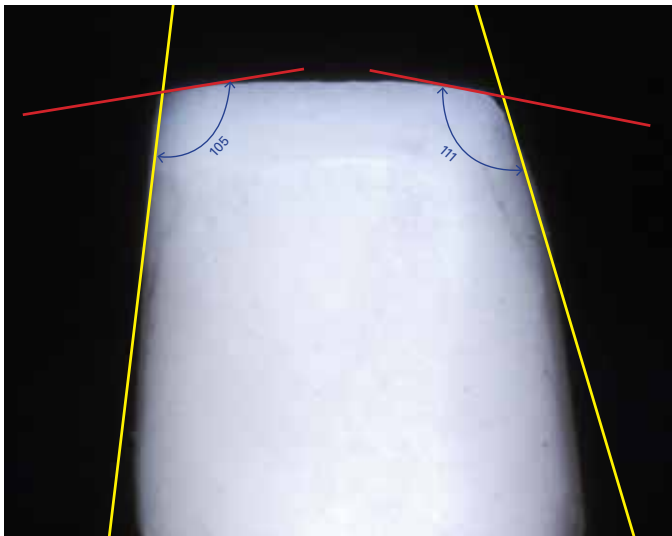


Figure 3. The front view of the sharp presentation

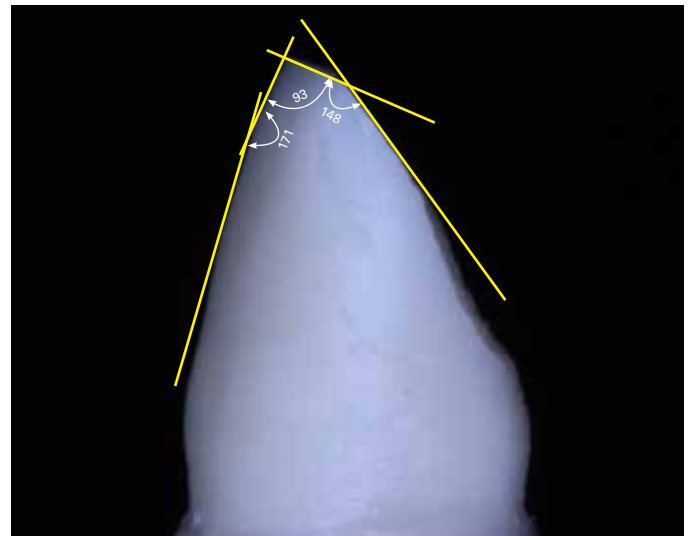


Figure 4. The lateral view of the sharp presentation

prepared teeth. After the PVS material was set, the tooth was removed from the typodont, and the radicular portion of the typodont tooth was fitted into a cylindrical aluminum tube with an external diameter of 3/16" of an inch. Following this, a jig was fabricated in order to ensure that all the crowns were cemented consistently in the same position. It is important to know that the jigs were two parts with an insertion key. Both prepped central incisors were replicated using silicone casting rubber (from S&W Plastics, CA) to make silicone molds. A total of 30 acrylic replicas of each type of preparation were fabricated out of clear DuraLay II™ (Reliance Dental Mfg. Co., Worth Ill.). Each one of the replicas was inspected for voids, internal bubbles and lenth. The replicas were placed on their previously made jigs, and the EZX-Pedo Zirconia Crowns were cemented. This was done to ensure consistency and uniformity in positioning and cementation throughout the process.

Fuji II LC A2 pre-dosified capsule cement was used for cementation, and the manufacturer mixing recommendations were followed. The cement was extruded into each of the crowns to fully fill the crown, and the two piece jigs were put together. After 3.5 minutes the jigs were separated, and the crowns were light cured for 20 seconds each on the facial and lingual surfaces. The dies with the cemented crowns were stored in distilled water for 24 hours and then placed in a therocycling machine for 20 seconds, in a water bath at 5°C and for 20 seconds, in a water bath at 55°C with an interval of 10 seconds in between, for 1000 cycles.¹⁹ A universal base was fabricated to place the individual dies with the crowns vertically on the Instron universal testing machine, which measures the compression forces required to fracture the crown. The machine ran at a speed of 1 mm per minute until the crown fractured. At this point the amount of force necessary to fracture the crown was recorded in pounds and later converted into Newtons (N). All the crowns were cemented and positioned in the Instron testing machine by the same operator.

Statistical package for the Social Sciences (SPSS) 20.0 computer software was used for descriptive and interferential statistics. Descriptive statistics for the compressive strength included: mean, standard deviation, and frequency. An independent t-test was used to detect any significant differences in the amount of compressive strength required to fracture the anterior primary Zirconia crowns among the two preparation design groups. The significance level was set at P<0.05.

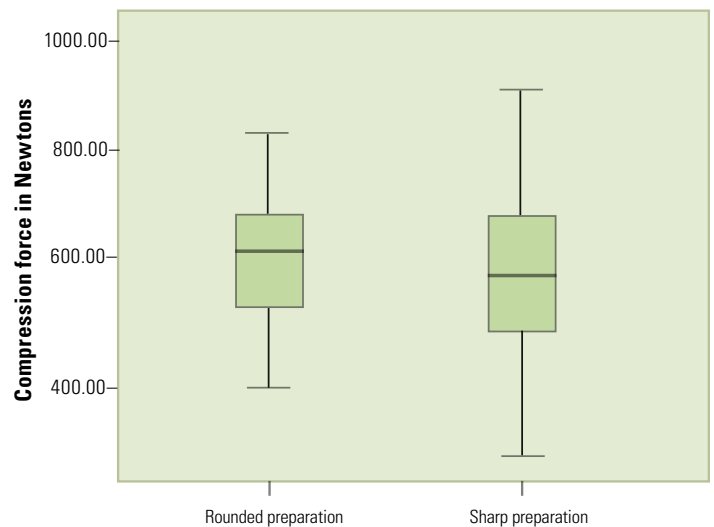
RESULTS

Table 1 presents the mean amount of compressive force required to fracture the 30 crowns for each design group. The mean compressive force required to fracture the EZ-Pedo Zirconia crowns was 618.38 N (\pm 135.13) and 645.23 N (\pm 123.67) for the rounded preparation and the sharp preparation, respectively. The independent t-test showed that there was no statistically significant difference between the two preparation designs in the amount of force required to fracture the EZ-Pedo Zirconia crowns ($p = .489$).

Table 2 presents the five extreme high and low values for each group. The box plot graph shows the distributions of the data. Note that the sharp preparation group is more widely distributed than the round group (Graph 1).

DISCUSSION

Esthetic pediatric dental restorative options are requested more and more frequently by patients when stainless steel crowns are indicated, especially for the anterior dental segment. EZ-Pedo Zirconia crowns are a feasible esthetic option for the anterior segment in case of early



Graph 1. Box plot of compressive strength

Table 1. Summary of descriptive statistic of compressive force required to fracture the EZ-Pedo anterior Zirconia crowns.

	N	Min (N)	Max (N)	Mean compressive force (N) ± SD	95% Confidence Lower : Upper Bound (N)
Round Preparation	30	321.16	934.57	618.37 ± 135.13	567.91 – 668.83
Sharp preparation	30	319.83	920.34	645.23 ± 123.67	599.05 – 691.41
P value	.425				

fragments. The overall compressive force required to fracture the EZ-Pedo anterior Zirconia crowns when preparation design was not taken into account, was 631.66 N. Renters et al reported that the mean bite forces in children ages 3 – 5.5 years is 234.66 N, and Gupta et al report a bite force of children 5-10 years to be 357 ± 64 N. Therefore, we can conclude that the compressive strength necessary to fracture the crowns is well above the typical forces exerted by children ages 3-10 years. A recent study from the University of Indiana, “Comparison of the fracture resistance of

childhood caries, multi-surface decay and developmental anomalies.

two full-ceramic primary crowns vs. one type of primary esthetic stainless steel crown” reported the mean values of compressive strength as 1099 N.

Although there were no significant differences in the compressive strengths of both test groups, the sharp angled preparation group showed a slightly greater amount of force needed to fracture the crowns (618.37 ± 135.13 N vs. 645.23 ± 123.67N). Both groups contained several outliers. However, when these outliers were accounted for, the t-test results still showed no statistically significant difference between the two groups, $p > 0.05$.

As previously mentioned, retention of Zirconia-based ceramic restoration depends on mechanical retention through roughening of the internal crown surface and through chemical bonding between cements and dentin.^{17, 18, 21} In order to attain bonding between the Zirconia crowns and the cement, the cement needs to be adhesive resin cement, and the surface of the crown needs to be pre-tested with a silane coupling agent.¹⁴ In this study, adhesive failure in the failed crowns was observed between the Zirconia crowns and the GI cement. Based upon these observations and the information that is known regarding chemical bonding with ceramics, one can conclude that there was not true chemical adhesion (bond) between the GI cement and the Zirconia crowns. It is probable that the retention of the crowns was mechanical in nature through the Zir-Lock™ groove mechanism. Thus, it would appear that Zirconia-based ceramics can be cemented with traditional cements or bonded with adhesive resin cements.

The variables and limitations of this study that may influence the results include possible variations in the thickness of the crown that may have occurred during the milling process and/or the differences in the modulus of elasticity of the die material and that of natural dentin.⁹ One benefit of using EZ-Pedo crowns for this study is that they are made of monolithic Zirconia. This ceramic has the advantage over traditional ceramics in that it is not a layered material; Zirconia crowns are milled from single blocks of ceramic. This allows for increased uniformity in the process of fabrication and reduces the potential for variations in crown thickness. In the effort to simulate a true clinical scenario in this study, DuraLay dies were used as they closely resemble the physical properties of natural dentin. DuraLay is reported to have a modulus of elasticity of 2.3 GPa, while that of dentin is 14.7 GPa.²⁴ Based upon the results of this study, primary Zirconia crowns may have a promising future for use in cosmetic pediatric dentistry. However, the material is relatively new to the dental market and needs additional studies to completely assess its other physical properties, durability, and longevity. This study investigated anterior crowns exclusively, and future studies should be conducted on all ceramic crowns used in the posterior dental segments.

Table 2. The highest and lowest five values of the two groups

Preparation type	Values in N
Rounded preparation highest	935.57
	830.04
	745.08
	745.08
	736.63
Rounded preparation lowest	321.16
	325.65
	403.01
	450.16
	479.52
Sharp preparation highest	920.34
	848.72
	778.88
	772.66
	760.65
Sharp preparation lowest	319.83
	424.81
	510.21
	532.01
	535.12

CONCLUSIONS

There is no evidence that the rounded preparation design affects the amount of compressive force necessary to fracture EZ-Pedo anterior Zirconia crowns as tested in the protocol. Additionally, the

compressive strength necessary to fracture EZ-Pedo anterior Zirconia crowns is greater than the typical bite force in children. However, caution should still be used when prescribing this type of crown due to limited research available.

ACKNOWLEDGMENTS

The authors would like to express the appreciation to EZ-Pedo in donating the crowns for this study. The authors also would like to thank Drs. Lauren Gutenberg, Jeff Fisher and Larry Trapp for their help in editing and reviewing the paper.

REFERENCES

- Shah PV, Lee JY, Wright JT. Clinical success and parental satisfaction with anterior pre veneered primary stainless steel crowns. *Pediatr Dent*. 2004 Sep-Oct; 26(5): 391-5.
- Ku CW, Park SW, Yang HS. Comparison of the fracture strength of metal ceramic crowns and three ceromer crowns. *J Prosthet Dent*. 2002 Aug; 88(2): 170-5.
- Anusavice KJ. Standardizing failure, success, and survival decisions in clinical studies of ceramic and metal ceramic fixed dental prostheses. *Dent Mater*. 2012 Jan; 28(1):102-11.
- Goodacre CJ, Campagni WV, Aquilino SA. Tooth preparations for complete crowns: an art form based on scientific principles. *J Prosthet Dent*. 2001 Apr; 85(4):363-76.
- Zahran M, El-Mowafy O, Tam L, Watson PA, Finer Y. Fracture strength and fatigue resistance of all ceramic molar crowns manufactured with CAD/CAM technology. *J Prosthodont*. 2008 Jul; 17(5):370-7.
- Peter P. All-ceramic crowns: bonding or cementing? *Clin Oral Invest*. 2002(6): 189-97.
- Hjerpe J. The influence of certain processing factors on the durability of yttrium stabilized Zirconia used as dental biomaterial. *Univ Turku, Turku, Finland*. 2010.
- Pinkham J., Cassamassimo P., Fields H., McTigue D., Nowak A. *Pediatric dentistry: infancy through adolescence*. Elsevier Saunders 4111 edition 2005: chapter 20.
- Yucel MT, Yondem I, Aykent F, Eraslan O. Influence of the supporting die structures on the fracture strength of all ceramic materials. *Clin Oral Investig*. 2012 Aug; 16(4): 1105- 10.
- The dental advisor: biomaterials research center. Glossary of properties. Available at www.dentaladvisor.com/research-development/biomaterials-lab/glossary. Accessed at 9/11/2015.
- Owais AL, Shaweesh M, Abu-Alhainya ES. Maximum occlusal bite force for children in different dentition stages. *Eur J Orthod*. 2012 April 19:1-7.
- Yilmaz H, Aydin C, Gul BE. Flexural strength and fracture toughness of dental core ceramics. *J Prosthet Dent*. 2007 Aug; 98(2): 120-8.
- Mahler DB, Peyton FA. Photo elasticity as a research technique for analyzing stresses in dental structures. *J Dent Res*. 1955 Dec; 34(6): 831-8.
- Pascal M., Urs B. Bonded porcelain restorations in the anterior dentition: a biomimetic approach. Quintessence Publishing Co. Chapter 1 and 6.
- Martinez-Rus F, Suarez MJ, Rivera B, Pradies G. Influence of CAD/CAM systems and cement selection on marginal discrepancy of Zirconia-based ceramic crowns. *Am J Dent*. 2012 Apr; 25(2):67-72.
- Friedlander LD, Munoz CA, Goodacre CJ, Doyle MG, Moore BK. The effects of tooth preparation design on the breaking strength of Dicor Crowns Part 1. *Int J Prosthodont*. 1990 Mar-Apr; 3(2):159-68.
- Spear F, Holloway J. Which all-ceramic system is optimal for anterior esthetics? *JAm Dent Assoc*. 2008 Sep; 139 Suppl:19S-24S.
- Donovan TE. Factors essential for successful all-ceramic restorations. *JAm Dent Assoc*. 2008 Sep; 139 Suppl:14S-18S.
- Vult von SP, Ebbesson S, Holmgren J, Haag P, Nilner K. Fracture strength of two oxide ceramic crown systems after cyclic pre-loading and thermocycling. *J Oral Rehabil*. 2006 Sep; 33(9):682-9.
- Gupta M, Chen JW, Ontiveros JC. Veneer retention of veneered primary stainless steel crowns after crimping. *J Dent Child*. 2008 Jan-Apr; 75(1):44-7.
- Jung YS, Lee JW, Choi YJ, Ahn JS, Shin SW, Huh JB. A study on the in-vitro wear of the natural tooth structure by opposing Zirconia or dental porcelain. *J Adv Prosthodont*. 2010 Sep; 2(3):111-5.
- Behr M, Rosentritt M, Mangelkramer M, Handel G. The influence of different cements on the fracture resistance and marginal adaptation of all-ceramic and fiber-reinforced crowns. *Int J Prosthodont*. 2003 Awp-Oct; 16(5):538-42.
- Bernal G, Ioner RM, Brown DT, Munoz CA, Goodacre CJ. The effect of finish line form and luting agent on the breaking strength of Dicor crowns. *Int J Prosthodont*. 1993 May Jun; 6(3): 286-90.
- Sano H, Ciucchi B, Matthews W, Pashley D. Tensile properties of mineralized and demineralized human and bovine dentin. *J. Dent. Rest*. 73;1205-11:1994.



Jung-Wei Chen, DDS, MS, PhD, professor and director, Advanced Specialty Education Program in Pediatric Dentistry, Loma Linda University School of Dentistry



Morris Jose De Leon, DDS, private practitioner, former resident, Advanced Specialty Education Program in Pediatric Dentistry, Loma Linda University School of Dentistry

Preparation options and anterior ceramic crowns

Circle the letters of the correct answers.

- For early childhood primary teeth caries with multiple surfaces decay, which was the traditional treatment of choice?
 - Composite resin multiple surface filling
 - SSC
 - Strip crown
 - Extraction
- What is the advantage of anterior primary teeth Stainless Steel Crown?
 - Full coverable
 - Low costs
 - Durable
 - Easy to use
 - All of the above
- What is a correct description of "Zirconia" that is used in dentistry?
 - Zirconia is Zirconium dioxide (ZrO_2)
 - Zirconia is a ceramic that was first discovered by German chemist Martin Klaproth.
 - Zirconia is a type of ceramic that adopts a monoclinic crystal structure at room temperature and at higher temperatures can transition into a tetragonal and cubic form.
 - Zirconia has high-flexural strength that ranges from 800 – 1500 MPa.
 - all of the above.
- Why do dentists hesitate to use full ceramic crowns in children?
 - Possibility of wear on opposing natural teeth
 - Cost
 - Amount of tooth reduction required
 - All of the above
- What is the correct statement about this study?
 - There are 30 samples in each experimental group.
 - The two experimental groups are: sharp and rounded preparation.
 - The main test is for compressive strength.
 - The samples were placed in the 5-55°C cycle for 1000 times.
 - All of the above
- What is the finding of the study?
 - The sharp preparation group demonstrated higher compressive strength.
 - The rounded preparation group exhibited higher compressive strength.
 - There was no significant difference in compressive strength between these two groups.
 - no conclusion
 - all of the above.
- According to the finding of this study, can Zirconia primary molar crowns withstand the occlusal force of children?
 - Yes
 - No
 - I don't know.
 - It was not mentioned in the paper.
- Which one of the following is a correct statement?
 - EZ Pedo crown has a ZirLock feature to increase retention of the crown.
 - Zirconia primary crowns require pre-treatment before cementing a crown.
 - Using Zirconia primary crown requires pre-treatment before cementing a crown.
 - No special caution is needed when using Zirconia primary crowns.
 - all of the above

Name _____ DDS/DH Lic.# _____

Date _____ Mailing address _____ / _____ / _____
Street City State Zip code

Phone _____

After answering the questions and completing this form, mail the entire sheet (or photocopy) to:

LOMA LINDA UNIVERSITY Continuing Dental Education, 11245 Anderson Street,
 Suite 120, Loma Linda, CA 92354, or you may fax a completed form to (909) 558-4858.

For questions please call: (909) 558-4685

Cost \$25.⁰⁰ Please circle: MASTERCARD VISA DISCOVER Credit Card No: _____

Expiration date _____ CVS No: _____

NOTE: LOMA LINDA UNIVERSITY SCHOOL OF DENTISTRY IS AUTHORIZED TO CONFER 2 HOURS OF CALIFORNIA CONTINUING DENTAL EDUCATION CREDIT FOR THIS HOME STUDY COURSE.



Sterilization Assurance Service (SAS) & Dental Unit Waterlines Testing Service (DUWLs)

Sterilization Assurance Service (SAS) was established in 1998 and provides biological monitoring of sterilizers for more than 700 dental offices, community colleges, and other institutions in more than 30 states.

What are some of the advantages of using LLU School of Dentistry's SAS?

- More than 15 years of experience
- Choice of Basic, BasicPlus, and Intensive spore testing services to help you meet infection control requirements within your budget
- Courtesy envelopes or prepaid return envelopes are included
- Option of weekly or monthly reports (Certificate of Participation is available)
- Online test results will be available soon
- Failure notification by phone

Contact Information

Tel: (909) 558-8176 (909) 558-8794

Fax: (909) 558-0307 E-mail: sas@llu.edu

Web: <http://www.llu.edu/dentistry/sas.html>

Dental Unit Waterlines Testing Service (DUWLs) opened in 2000 and evaluates microbial contamination of dental unit waterlines. Over 500 dental offices, a number of universities, Veterans hospitals, and other agencies use this service.

What are the advantages of using LLU School of Dentistry's DUWLs service?

- More than 12 years experience
- Consultations by our experienced staff members
- Detailed instructions, sample tubes, a foam container, and ice packs in each test package
- We use the heterotrophic plate count by membrane filtration (Method 9215D), the gold standard for examining microorganism effluent, as published by the American Public Health Association
- Multiple dilutions to detect heterotrophic bacteria counts up to 20,000 CFU/mL
- Test reports sent after the seven day incubation period
- Local customers may deliver samples directly to our laboratory



Sterilization Assurance Service (SAS)

ORDER FORM Date ____/____/____
 Dr. Name (Last) _____ (First) _____
 Name of office _____
 E-mail _____
 Customer ID# (for current customers) _____
 Address _____
 City _____ State _____ Zip _____
 Phone () _____ Fax () _____

Sterilizer Type/Number/Model: _____

(Supplies for each sterilizer must be kept separate for identification purposes)

Steam Chemical Vapor Dry Heat

Basic (1) One test strip and one control strip per test (2) Return envelopes
 (3) Monthly report (4) Binder for reports (5) Failure notification via phone

Price	Quantity	Amount
\$79/12	tests _____	\$ _____
\$109/24	tests _____	\$ _____
\$159/52	tests _____	\$ _____

Optional: Certificate of participation \$12/ea \$ _____

Basic Plus (1) One test strip and one control strip per test (2) Return envelopes
 (3) Weekly report (4) Binder for reports (5) Failure notification via phone

Price	Quantity	Amount
\$209/52	tests _____	\$ _____

Intensive (1) Two test strips and one control strip per test (2) Prepaid return envelopes (3) Certificate of Participation (4) Report on each test (5) Binder for reports (6) Failure notification via phone

Price	Quantity	Amount
\$108/12	tests _____	\$ _____
\$298/52	tests _____	\$ _____

Dental Unit Waterline Testing (DUWT)

ORDER FORM Date ____/____/____
 Dr. Name (Last) _____ (First) _____
 Name of office _____
 E-mail _____
 Customer ID# (for current customers) _____
 Address _____
 City _____ State _____ Zip _____
 Phone () _____ Fax () _____

- Full dilutions indicate exact Heterotrophic bacteria counts
- Containers and ice pack for DUW testing are provided
- Ship DUW samples via Express Mail to SAS Laboratory

Price / Kits	Amount	Price / Kits	Amount
\$68/3 tests	\$ _____	\$125/6 tests	\$ _____
\$190/10 tests	\$ _____	\$360/20 tests	\$ _____

Optional: Certificate \$12/ea. \$ _____

Add \$10.00 per box for shipping and handling

Check enclosed \$ _____ payable to SAS-LLU



Charge: Total \$ _____

Card number _____

Exp. Date ____/____ CCV# _____

Mail to: Sterilization Assurance Service
 Chan Shun Pavilion, Suite A1005
 Loma Linda University School of Dentistry
 11175 Campus Street, Loma Linda, CA 92350
 Tel: (909) 558-8176 (909) 558-8794
 Fax: (909) 558-0307 E-mail: sas@llu.edu
 Web: <http://www.llu.edu/dentistry/sas.html>

FEATURE

How to treat a lion and other wild animals

As a child, Scott Campbell, DDS'66, lived for a time on a houseboat, while his father worked from a two-story barge as a logger in Alaska. He'll tell you he was raised by a collie dog in a Huck Finn existence, although he admits to having parental support for pursuing his education. Provided with his own boat at an early age, Dr. Campbell plied the nearby river with his beloved pet, Lassie. While practicing dentistry for 40 years, he says that animals have always been a significant part of his life. He raised donkeys and goats for 35 of those years. He has also become a licensed pilot, built ship models, flown radio control model airplanes, and received a National Model Railroading award for his creation of a massive diorama depicting the railways of Washington state and the Seattle area.

Entering dental school after three years and two summers of college, Dr. Campbell admits he didn't learn to dance with his patients, but it became necessary when he was treating a wayward adolescent named Chi. Chi's guardian asked Dr. Campbell if he was willing to treat her without anesthetic. It would have been risky to administer anesthesia to Chi, because she was an elephant. She would lie down when anesthetized, and in that condition would readily be subject to pneumonia.

How did Dr. Campbell get into this predicament? His hygienist had introduced him to her brother, a veterinarian at Seattle's Woodland Park Zoo, who immediately enlisted him, "We are having a problem with a macaque [Asiatic baboon]," he explained. "It's gone berserk over being locked up." The macaque had injured his mate and killed the pair's offspring.

"That's not allowed," Dr. Campbell comments, "when you are trying to have a breeding program." The macaque's fangs (small daggers) were so massive that if removed, his jaws would sink in, utterly defacing him.

Agreeing to treat the patient, Dr. Campbell recalls, "We decided to cut the fangs off level with his back teeth, rounding

them off so they were like marbles. Then we could do a root canal procedure on the two upper and two lower fangs [cuspids]." It was fascinating to observe that after his weapons were taken away, the macaque was no longer aggressive.

Because he wasn't a veterinarian, Dr. Campbell worked under the "supervision" of the zoo's veterinarian, who administered anesthesia while Dr. Campbell stepped in to do the dental work. He reports, "The procedures were successful" and repre-

sented the beginning of an extended pro bono service—"my community service," Dr. Campbell comments.

The day came when he received an urgent call from the zoo. His patients would be a pair of African lions. Earlier in the day they had been anesthetized prior to a scheduled visit to the veterinarian's clinic for their annual check up and shots. Anesthetizing lions can be tricky. They are

super sensitive to sedation. Too much can end their lives. On this day, the anesthetist had conservatively erred on the light side. Both lions woke up en-route to the clinic. In a panic, they attacked the bars of the mobile cages, breaking all eight of their fangs, exposing the nerves. They would need root canal procedures.

How long are lions' fangs, Dr. Campbell wondered. This topic hadn't been covered in his anatomy course. He resorted to Jonas Brothers' taxidermy studio in Seattle. There he borrowed an African lion's skull. After studying and x-raying it, he determined that a fully grown African male's fang can be up to six inches long from cusp to apex of the root. The nerve canals were about 3 mm in diameter. (Human nerve canals are about .5 mm.) The length of the cuspid: 28 to 30 mm.

Propping the lions' jaws open was necessary. Dr. Campbell resorted to using a 2 x 4 to secure an open jaw. "We did all eight root canal procedures and extracted two molars shattered on the bars," says Dr. Campbell. "The canals worked; the animals were asymptomatic."



With the assistance of a two by four, Dr. Campbell restored the fangs of two unhappy lions.



Chi dwarfs her dentist.

His favorite patients had to be the elephants. Take the case of Chi. Born in the zoo, Chi had entertained herself by putting her tusks on the metal zoo fence to hoist herself up. Rubbing her tusks on the metal bars became a habit. She continued elevating herself at the fence until the tusks broke off.

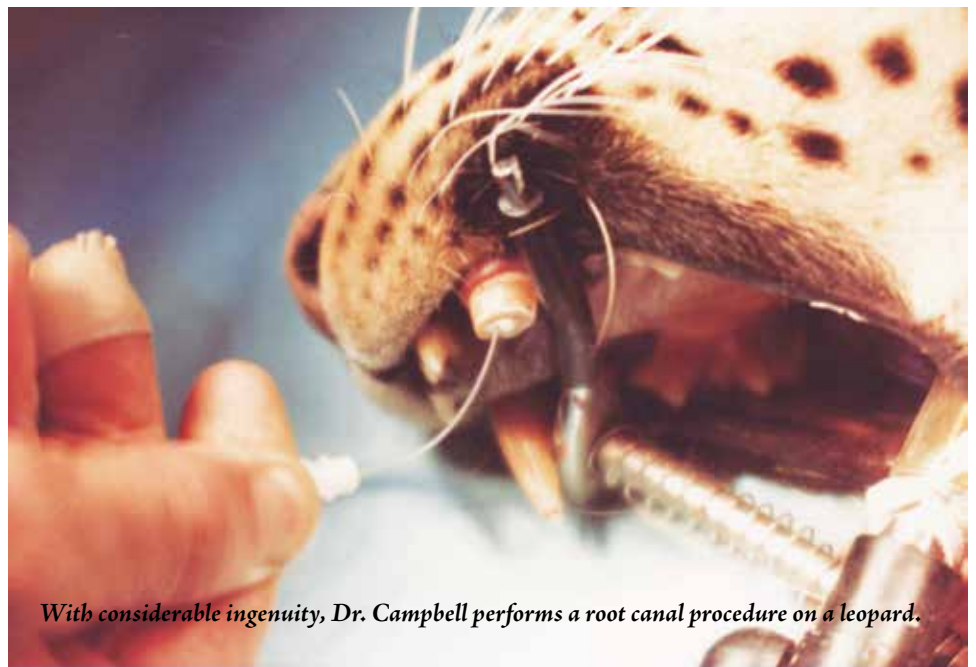
Elephant tusks, Dr. Campbell explains, are incredibly strong. Comparable to human beings' lateral incisors, they are a big tooth that encases a nerve. Elephants have no central incisors and no bicuspid. In addition to their lateral incisors (tusks) they have molars. An adult elephant's molar is the size of a man's fist. The molars are packed together; they move slowly forward; new molars form behind. As old molars in the front wear out, they are lost. In a lifetime an elephant will have four to six sets of molars, which they subject to harsh treatment. If they have no molars, they die from starvation.

Treating Chi without assistance of anesthesia would be challenging. The trunk can be very busy, accommodating the animal's inquisitive nature. The attendants agreed to chain Chi's feet and tranquilize her; the trainers would be petting her and controlling her trunk. Dr. Campbell prepared a custom-made instrument. For a high speed drill he used a portable tank of compressed air. "I drilled necrotic nerve tissue until I reached healthy, red bleeding tissue," he explains. Controlling the bleeding, he planned to put calcium hydroxide over it and then apply a silver filling.

But during the drilling, Chi started swinging her head and shuffling her feet, left to right, left to right. Dr. Campbell leaned his cheek against Patsy's cheek, steadied his hold on her tusk, and got into the rhythm of the elephant's dance. He was moving back and forth with her as he drilled and applied the calcium hydroxide and silver filling. It was a successful procedure. The tusk continued to grow and in a few years, Chi became a mother.

Dr. Campbell names other animals that became his patients: wolves, baboons, lowland guerillas, a snow leopard ("great to touch with the finest of hair"), llamas, a Kodiak bear, a Himalayan sun bear, a red panda bear. There followed some non-zoo inhabitants. Luxor, a champion Frisbee-catching black Labrador retriever, submitted to root canal procedures and crowns so that he could continue performing exhibitions for his owner. The crowns had his name engraved on them. And Dr. Campbell treated a police dog that broke its fang off in the line of duty. "I did crowns on his fangs," says the dentist. He adds with satisfaction, "When he snarled, the fangs glinted in the sun."

Today, as his beautiful Airedale, Mollie, rests her head on Dr. Campbell's knee, she can be assured of dental healthcare provided by a dentist whose expertise began at LLUSD and was ultimately honed in the Seattle zoo.



With considerable ingenuity, Dr. Campbell performs a root canal procedure on a leopard.

LLUSD NEWS

Noah's cleft cookies

Five-year-old Noah Thronson wanted to do something special for his mother Margaret's birthday. Being a bright and creative youngster, he turned to the World Wide Web for possibilities.

He determined on cookies with an icing face. What made Noah's cookies unique was that he drew the icing faces with a cleft smile. He revised the smiles on his cookies that way because he was born with a cleft lip/palate that was repaired by specialists at the Loma Linda University School of Dentistry's Department of Pediatric Dentistry Pre-surgical Nasal Alveolar Molding (PNAM) program under the direction of Jung-Wei Chen, DDS, MS, PhD.

Noah wanted to extend the surprise for his mother to show appreciation for his oral healthcare professionals as well. So on October 8, 2015, he and his mother delivered a basket of cleft smile cookies to Dr. Chen, his second-year pediatric dentistry resident, Ryan Baker, DMD, and the LLUSD Pediatric Dentistry Clinic team.

As an LLUSD PNAM alumnus, Noah is one of many youngsters whose cleft lip/palate repairs have been greatly enhanced and attenuated by the relatively new procedure that the School's Advanced Education Program in Pediatric Dentistry residents are taught to perform.

PNAM utilizes a device reminiscent of retainers used by orthodontists to maintain the appropriate positioning of properly aligned teeth to mold the particularly soft oral and maxilla tissues of infants and toddlers that help to minimize the number of surgeries required in cleft palate/lip repairs to achieve an esthetically pleasing and properly functioning mouth.

Noah was one of 84 PNAM alumni who gathered for a five-year reunion at the LLUH Centennial Complex in October of 2014.

During last year's PNAM reunion, Noah shared a moment with LLUH president Richard Hart (see photo), and has since gotten a haircut and glasses that, along with his creative cookies, make one think of a budding entrepreneur.

The delivery of Noah's cookies is the Thronson's way of thanking Dr. Chen and her residents for their tender loving PNAM procedures and care.

It is easy to see why Dr. Chen and her residents find their work so rewarding.



Noah Thronson presents his cleft cookies to LLUSD's pediatric dentistry team.



L-R: Amanda Zenthoefer, DDS'14, second year pediatric dentistry resident; Steven Morrow, DDS'60, assistant dean, Office of Advanced Education; Samah Omar, DDS'07, associate professor, Department of Pediatric Dentistry; Noah Thronson; JungWei Chen; and Margaret Thronson



Noah Thronson visits with LLUH president Dick Hart, MD, DrPH

LLUSD Ironman races to provide cleft lip/palate surgeries to underprivileged children

Class of 2016 LLUSD dental student Brandon Soelberg finished his first Ironman race November 15, 2015, competing in the Arizona IRONMAN competition in Tempe—2.4-mile open water swim, 112-mile bike ride, and 26.2-mile run.

Among the 2,681 racers from 56 countries and all 50 states, Brandon finished number 1,309, right in the middle of the pack. Among males age 25-29 he finished 60th.

Brandon's time was 13:33:57—swim (1:36:48), bike (6:27:38), run (4:41:27). To put this ironman initiate's experience into perspective, the winner of the event was Lionel Sanders, a professional athlete whose overall time was 7:58:22.

Since 2009, Brandon had run a number of marathons and half marathons in Utah and California, many of them connected to charities.

During the summer of 2015, while he was preparing for the ironman effort, he said, "Many of my prior races have been linked to charities," but "with the exponentially greater mental and physical taxation this event requires, I hope to use it as an opportunity to serve others through a children's cleft lip and palate charity: Smile Train."

Smile Train is an international children's charity dedicated to a single, solvable problem: cleft lip and palate. Millions of children in developing countries with unrepaired clefts live in shame; but more importantly, they have difficulty eating, breathing, and speaking. The dramatic and immediate improvement in function and appearance enabled by cleft lip/palate repair surgeries is immediate and transforming. Smile Train provides training and funding to empower local doctors in more than 85 developing countries to provide cleft repair surgery for no charge to those communities' recipients.

In order to motivate himself (and potential donors), Brandon registered for a spot in the Tempe Arizona IRONMAN race that depended on achieving his donation goal of \$5,000. "In this way," he says, "my training efforts throughout this year, coupled with your kind donations, will result in a race day dedicated to blessing the lives of others."

His training amounted to roughly sixteen hours a week (swimming, biking, running), beyond whatever it took to be a dental student and husband.

Arizona IRONMAN, organizer and producer of the race in Tempe, reserved 100 spots for racers whose commitment and determination raise money for Smile Train's charity purposes and retains no money from contributions raised by Smile Train's IRONMAN racers.

Brandon met all of his goals. He reached the \$5,000 minimum for the opportunity to race, he finished the race in a respectable time, and, "We were successful in fully funding 20 cleft lip/palate surgeries."

"The need" for cleft lip/palate surgeries "is great; and the gift is life changing," says Brandon. "This is my way of contributing until I have the appropriate training to perform these surgeries pro bono on my own."

A glutton for punishment, Brandon plans to compete in future ironman events, but says, "I won't do so until after my oral and maxillofacial surgery residency, during which period I won't have sufficient time to train."



Brandon works on the Ironman second stage—112-mile bike ride.

Mission accomplished; Brandon crosses the finish line.

Time on the digital clock represents time from when the pro racers began. Brandon started some eighteen minutes later.



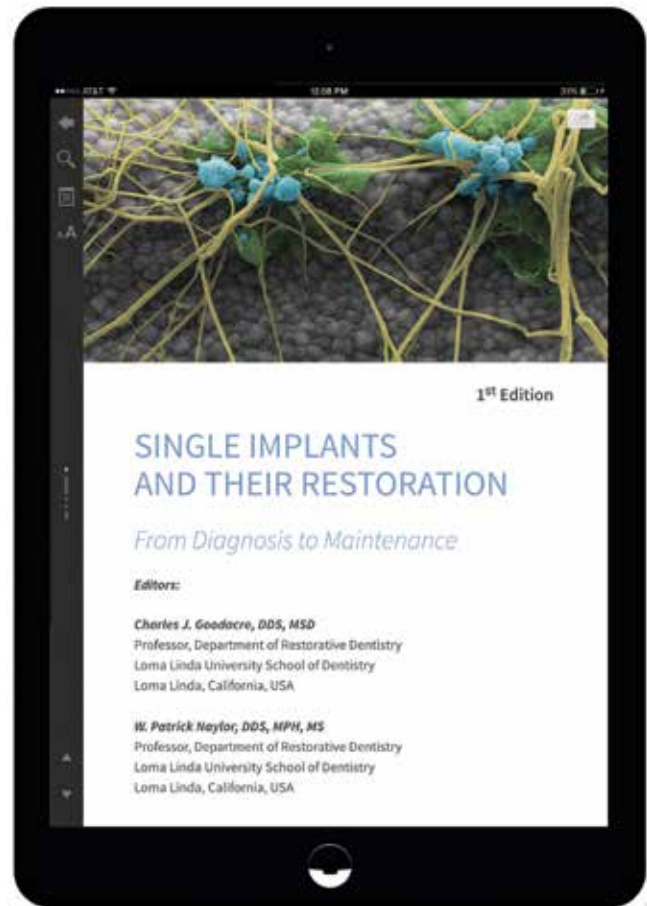
LLUSD professors produce major eBook contributions to single implant pedagogy and the temporomandibular joint

Loma Linda University School of Dentistry prosthodontists—Distinguished Professor Charles J. Goodacre, DDS, MSD, and faculty colleague, Professor W. Patrick Naylor, DDS, MPH, MS—are co-editors of *Single Implants and Their Restoration: From Diagnosis to Maintenance*, the first eBook published (February 2015) by the Foundation for Oral Rehabilitation (FOR) of Lucerne, Switzerland.

In *Single Implants and Their Restoration*, hundreds of years of clinical experience are compiled from 27 authors into 18 chapters that take the reader from initial diagnosis, through treatment planning, augmentation, implant placement, restoration, potential risks, and oral hygiene maintenance.

With over 900 images, more than 40 videos, and in excess of a thousand scientific literature references, *Single Implants and Their Restoration* is a comprehensive primer that provides clinicians with well-researched information on the best practices for single implant placement and restoration. Opportunities for self-assessment are planted throughout the text, including a quiz at the conclusion of each chapter.

“Educational resources need to provide a synthesis of



available knowledge and clinical procedures, be richly illustrated, scientifically up-to-date, contain videos when appropriate, and enable users to assess their knowledge acquisition,” says Dr. Goodacre, FOR global education chair and Foundation trustee, who spent more than a year on the project.

Single Implants and Their Restoration represents the culmination of a vision conceived jointly by the FOR board of



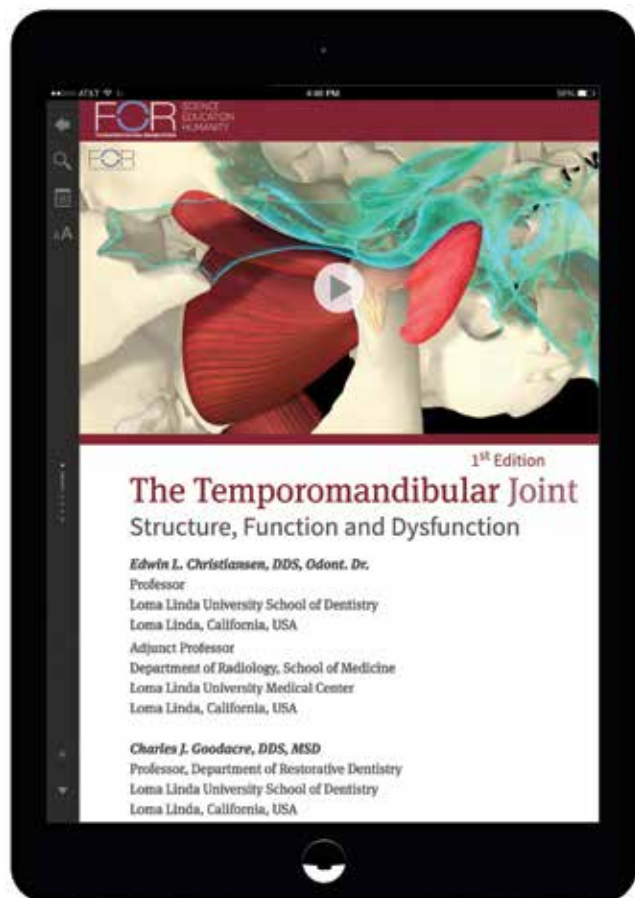
Dr. Patrick Naylor



Dr. Charles Goodacre



Dr. Edwin Christiansen



trustees and its education council to produce a comprehensive, contemporary digital learning resource addressing the topic. The eBook is intended to serve as a model for the teaching of single implant therapy for educational institutions as well as professional groups or the self-instruction of individual practitioners who choose to explore contemporary implant treatment.

Single Implants and Their Restoration meets the contemporary expectation for “anytime-anywhere” access to textual and visual information. The work can be viewed in its entirety by registering as an associate fellow on the FOR website, then downloading it to either an IOS or Android device. Review a chapter at: <http://tinyurl.com/pgvxm2u>

The Foundation for Oral Rehabilitation (FOR) is an independent, international initiative that unites professionals from various disciplines to improve oral health care and support humanitarian leadership.

The *Temporomandibular Joint: Structure, Function and Dysfunction* is a comprehensive, evidence-based synthesis of scientific knowledge regarding the joint formed by the lower jaw and the temporal bone of the skull written by Loma Linda University School of Dentistry faculty Edwin L. Christiansen, DDS,

Odont. Dr, and Charles J. Goodacre, DDS, MSD. Contributing authors, Kenneth Abramovitch, DDS, MSD, and Dwight D. Rice, DDS, added a generously illustrated chapter entitled, “Temporomandibular Joint Advanced Imaging” that includes MRI movies of normal and abnormal joint function.

Published as an eBook by FOR, this interactive resource provides a valuable understanding of TMJ macro- micro-anatomy, function, and dysfunction. Its collection of 650 images and anatomic sections vividly illustrate the joint’s intricate structure and characteristics.

Written by experienced dental instructors and practitioners, *The Temporomandibular Joint* is the ideal textbook—with richly illustrated diagnostic imaging of the TMJ that reveals normal and abnormal characteristics, a review of the symptoms exhibited by patients with temporomandibular disorders, nine animations of the joint and muscles, 12 videos, 325 scientific literature references, a comprehensive glossary, and many self assessment opportunities.

The original intent of the project was to compile an illustrated TMJ teaching library for dental students and faculty. Outstanding color images were obtained through the photographic expertise of Robert (Bob) Rearick (1927-2011), chief medical photographer, Loma Linda University Medical Center. The arduous and protracted image acquisition and compiling that began over 30 years ago, backed by 19 years of diagnosing and treating TMJ patients, ultimately formed the core of this eBook.

In the year 2011, the lead author’s wife persuaded him to donate his complete collection of TMJ-related color slides to the LLU School of Dentistry. Dr. Goodacre, then dean of the School, urged him “to write everything you know about the temporomandibular joint,” after which Dr. Christiansen emerged from retirement to three years of writing and rewriting supplemented by additional sectioning and the continual, invaluable editorial contributions of Dr. Goodacre.

Students, researchers, and practitioners who utilize this digital compendium will enlarge their appreciation for the joint, enhance their ability to visualize its 3D complexity, and augment their competence to diagnose and treat TMD patients.

Dr. Christiansen’s preparation of correlated computed tomography and anatomic sections illustrating normal and abnormal temporomandibular joints was adapted and modified from the work of Drs. Joseph Thompson and Anton N. Hasso.

With *The Temporomandibular Joint*, FOR’s second digital textbook, the foundation continues its production of interactive, electronic, pedagogical tools calculated to improve the quality of oral healthcare everywhere.

Good Vibrations: CDA San Francisco

As is its practice, the School of Dentistry sent a contingent to the annual “California Dental Association Presents” in San Francisco (August 20-22). Representing the School at the city’s Moscone Center event were Dean Ronald Dailey, PhD, Viviane Haber, DDS’85, assistant professor, Division of General Dentistry; Marlise Perry, assistant director, Office of Admissions and Recruitment; Sam Sadanala, multimedia specialist, Office of Marketing; and Krista Weymar, MBA, director, Office of Marketing.

Lots of “good vibrations” resulted from visits by well over 100 alumni to the School’s booth and another 40-plus who attended the Thursday evening reception hosted by Dean Dailey at Jillian’s eatery so conveniently close to the Moscone Center.

The Class of 1986, including Mark Romanelli, DDS, Dennis Zingler, DDS, and Charles McKelvey, DDS (and others included among the accompanying photos), was disproportionately represented among LLUSD alumni who attended the Expo and reception. Perhaps that is because their class has members in positions of responsibility at the CDA, most notably Kenneth Wallis, DDS’86, president-elect of the CDA board of trustees. The Eighty-Sixers informed Dean Dailey, their class sponsor, that they have been bundling a substantial class contribution to the School in preparation for their 30th anniversary reunion at the 2016 Alumni Student convention.

At least 600 CDA Presents Expo attendees showed an interest in applying to one of LLUSD’s several oral healthcare education programs for their training—the DDS/DH programs, the advanced specialty education programs, continuing education options, and the new RDA Orthodontic Assisting Permit Program—pretty much depleting the School’s representatives of all their program related literature.



Marlise Perry, Krista Weymar, and Viviane Haber share LLUSD’s CDA Expo booth.



Dean Ronald Dailey visits with Michael Simmons, DDS’94.



Viviane Haber, DDS’85, and Nick Marongiu, DDS’10, flash well-maintained smiles.

Dean Dailey said it was a bracing two days for him as he met with alumni friends and potential students, and spent a day working with his fellow California dental school deans at nearby University of the Pacific Arthur A. Dugoni School of Dentistry.

The gathering of deans, together with the CDA Executive Committee, discussed the implementation of the California State Board Portfolio Model to Licensure (tests in seven clinical areas on patients of record), as well as the request of ADEX, a licensing board for 40 states, that is seeking recognition from the State of California.

“I was buoyed in San Francisco by the enjoyable social engagement with old friends and alumni, along with some hard work with my fellow deans, all of which affirmed my profound confidence in organized dentistry,” Dean Dailey said in a post-CDA conversation.

When not answering the questions of prospective students at the LLUSD booth, Marlise Perry spent much of Friday at University of the Pacific, serving as the LLUSD representative on three CDA steering committees for ADEA’s online application system that facilitates the matriculation of students applying for dentistry (AADSAS), international dentistry programs (CAAPID), and dental hygiene (DHCAS).

San Francisco’s cooler climate and cultural kaleidoscope enhanced the School of Dentistry’s representatives’ appreciation for the opportunity to visit with alumni and to encourage so many prospective students to join the LLUSD family.

LLU designates Charles Goodacre Distinguished Professor

Colleagues, friends, and family gathered July 9, 2015, in the Santa Barbara Room of Riverside’s Mission Inn to celebrate with Charles Goodacre, DDS’71, MSD, his designation by Loma Linda University as Distinguished Professor at the School of Dentistry. The special merit rank is awarded to a full-time faculty member who has made distinguished contributions in teaching, research, publication, or creative work.

In approving Dr. Goodacre’s appointment as distinguished

professor in May (effective July 1), the LLU Board of Trustees made official what was already fact.

Dean Ronald Dailey led the happy occasion with warmth and wit as colleagues gave testimony to Dr. Goodacre’s effect on their professional lives interspersed with small, collegial servings of roast.

Dr. Goodacre is the first School of Dentistry faculty member to receive Loma Linda University’s distinguished professor appellation.



L-R: Joseph Kan, DDS, MS’96, professor, Advanced Education Program in Implant Dentistry; Dr. Goodacre; Nadim Baba, DMD, MS, professor and director, Hugh Love Center for Research and Education in Technology; and Mathew Kattadiyil, BDS, MDS, MS, director, Advanced Specialty Education Program in Prosthodontics



Dr. Dailey and Dr. Goodacre share a laugh.



L-R: Robert Handysides, DDS’93, associate dean, Academic Affairs; Douglass Roberts, DDS’66, MS’72, emeritus professor, Restorative Dentistry; Paul Richardson, DDS’72, MED, associate dean, Clinic Administration; and Mrs. Minnie Handysides.



L-R: Dr. Goodacre; Mrs. Ruthy Goodacre; Brian Goodacre, DDS’13; and Sarah Goodacre, DDS’15

Patrick Naylor receives Gustav O. Kruger Award



Dr. Alfred LaPorta, DDS, national chair, Georgetown University Dental Alumni Board, presented the award to Dr. Naylor.

W. Patrick Naylor, DDS, MPH, MS, professor of restorative dentistry and former associate dean for Advanced Specialty Dental Education at the Loma Linda University School of Dentistry, was honored May 30, 2015, to receive the Gustav O. Kruger Lifetime Achievement in Dentistry Award from the Dental Alumni Board of Georgetown University at the 2015 Dental Alumni Reunion and Awards Dinner held at the Mayflower Hotel in Washington, DC. The award is "conferred upon an alumna/us or faculty member of the Georgetown University School of Dentistry who has rendered outstanding and exemplary community or professional service in support of the profession of dentistry."

Dr. Naylor is a 1978 graduate of the Georgetown University School of Dentistry. He earned a certificate in prosthodontics from the Harvard School of Dental Medicine, a master of public health degree from the Harvard School of Public Health, and a master of science degree in dental materials from Indiana University. He served twice in the U.S. Air Force, first as a Russian linguist during a tour at the National Security Agency, and then as a prosthodontist until he retired at the rank of colonel.

Dr. Naylor has written five books (in dentistry and personal finance) and authored or coauthored numerous abstracts, articles, and textbook chapters. The second edition of his dental textbook, *Introduction to Metal-Ceramic Technology*, was released by the

Quintessence Publishing Company in 2009 and published in eBook format in 2014.

His financial texts include *10 Steps to Financial Success, A Beginner's Guide to Saving and Investing* (John Wiley & Sons) and *Personal Finance for Healthcare Professionals* (Loma Linda University Press). At the School of Dentistry Dr. Naylor founded an investment study club to educate dental students and residents on educational debt management, saving, and investing. He is co-editor of the eBook, *Single Tooth Implants: From Diagnosis to Maintenance*, released by the Foundation for Oral Rehabilitation, Lucerne, Switzerland, in February 2015.

Dr. Naylor visited the Democratic Peoples Republic of Korea (aka North Korea) twice as part of dental missions with Samaritan's Purse. In 2010 he taught a two-week course in metal-ceramic technology, lectured, and treated patients in the dental department of the Pyongyang Medical University Hospital. He returned to Pyongyang with a second Samaritan's Purse delegation in 2011.

Although he now resides in Keswick, Virginia, Dr. Naylor continues a part-time teaching position at the LLU School of Dentistry, writes in the areas of dentistry and personal finance, and serves as a consultant and editor for the Foundation for Oral Rehabilitation.

Five LLUSD alumni achieve Master of General Dentistry



Five LLUSD alumni were awarded the Academy of General Dentistry's highest honor—Master of General Dentistry—June 19, 2015, at Moscone West Convention Center in San Francisco. The five new MAGD recipients (L-R):

- Peter Young, DDS'88
- Roger Sohn, DDS'75A
- Darryl Tkachyk, DDS'02
- Benjamin Seaton, DDS'02
- Jason Ballou, DDS'02.

In a statistical oddity, all five LLUSD awardees practice dentistry in the Golden State.

The Master of General Dentistry is the highest award offered by the Academy of General Dentistry (AGD). It is a professional designation beyond AGD "Fellowship" that reflects a general dentist's ongoing commitment to provide quality care through continuing education.

To achieve the Mastership, a dentist must earn the AGD Fellowship Award and complete 1,100 hours of dental continuing education. The LLUSD alumni recipients were among 144 dentists to be honored in 2015 with the Mastership Award.

Healing Hands recognized by grateful patients

Zina Johnston, DDS'00, assistant professor, Division of General Dentistry, and Daniel Tapia, BS'09, dental hygienist at LLUSD Faculty Dental Practices, each were presented *Healing Hands* silver pins by Dean Ronald Dailey, PhD, during his Brown



Dr. Johnston with Dean Dailey at the presentation of her Healing Hands silver pin.

Bag sessions with the LLUSD faculty—Dr. Johnston on May 7 and Mr. Tapia on July 15.

The *Healing Hands Grateful Patient Program* affirms LLUH healthcare providers and support staff whose patients have made a point to formally and tangibly acknowledge appreciation for their compassionate care. Regardless of size, the gift amount is not disclosed to the honoree. But such donations are very instrumental in supporting the caregiving entity and for the encouragement they provide caregivers who have devoted their careers to competent and compassionate professionalism.

Dr. Johnston's appreciative patient contributed a gift anonymously but included a note about what inspired the donation: "Dr. Johnston is very gentle and compassionate and always professional. I have been treated by some very talented dentists, and the quality of Dr. Johnston's work is the best I have seen. Loma Linda University is fortunate to have someone of her caliber on its faculty."

Mr. Tapia was recognized for his compassionate, professional dental hygiene services to patient Alexandra Blasy who made a contribution in his honor to the *LLUH Vision 2020 campaign for a*

whole tomorrow. Ms. Blasy wrote, "Daniel, thank you for being an example of healing hands. You have shown me many times that you truly care about what you do. Thank you for making me feel special and for truly caring about my care."



Mr. Tapia receives his Healing Hands silver pin from Dean Dailey.

Dr. Johnston and Mr. Tapia join Wesley Okumura, DDS'94, assistant professor, Department of Pediatric Dentistry, the first School of Dentistry faculty clinician to receive the *Healing Hands* silver pin.

Since the LLUH *Healing Hands* program began in the fall of 2013, more than 350 patients have made gifts of appreciation for their treatment from 359 different caregivers. Since the program's inception, contributions from patients to LLUH caregivers has exceeded \$8.1 million.

The School of Dentistry *Healing Hands Grateful Patient Program* is officially launching this month (January 2016), with *Healing Hands* brochures branded to the School by its signature purple color and dental care-specific language and gift options. When a contribution is made, the honored caregiver is sent a *Healing Hands* recognition card that may have a signed (or anonymous) message, to let the honoree know that their special care was appreciated.

More information is available from the LLUSD Office of Development at 909-558-4754.

Or visit lluhealth.org/giving/dentistry

LLUSD senior receives Terry Tanaka Award

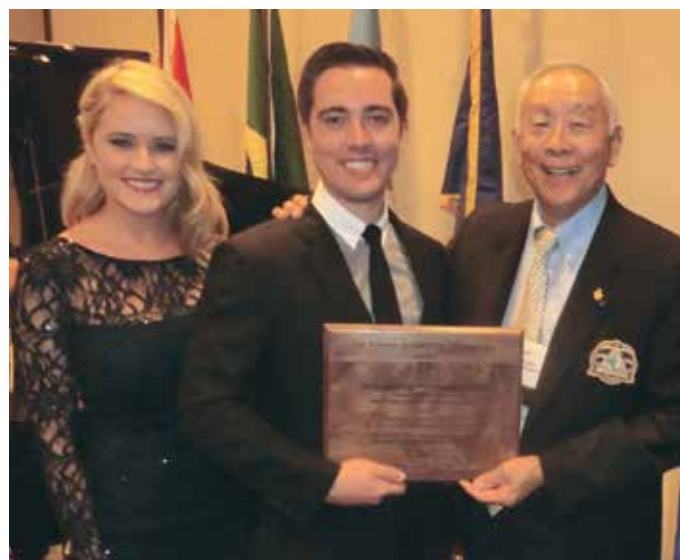
LLUSD senior dental student Robert Perry was presented the Academy of Dentistry International's prestigious Terry Tanaka Award at ADI's annual banquet, November 4, 2015, at Washington DC's Hyatt Regency.

The award is conferred on a dental student who best exemplifies the charitable and humanitarian spirit of Dr. Tanaka. The award is given to one senior dental student each year in recognition of outstanding, exemplary volunteer services during the first three years in dental school.

Robert Perry had participated in more than 1600 hours of service before even entering dental school and exceeded that involvement as a dental student. He found meaningful experiences working with the Foundation for Worldwide Health while at Loma Linda University. Through this organization he was able to volunteer locally and internationally and learn from some of the best faculty LLU has to offer. Given the extent of Robert's volunteerism, it was not difficult for Dr. Tanaka to decide to whom the award should be given.

As Dr. Tanaka presented the award to Robert, he referred to Loma Linda's "culture of service," a description that seems justified by the fact that he is the fourth consecutive LLUSD dental student to receive the award and the seventh LLUSD recipient in the award's fourteen-year history.

Previous LLUSD Terry Tanaka Student Humanitarian Award recipients are Dean Brewer, DDS'04 (2003), Bradley Szutz,



Robert Perry enjoys the award with his wife Tricia Perry and Dr. Terry Tanaka.

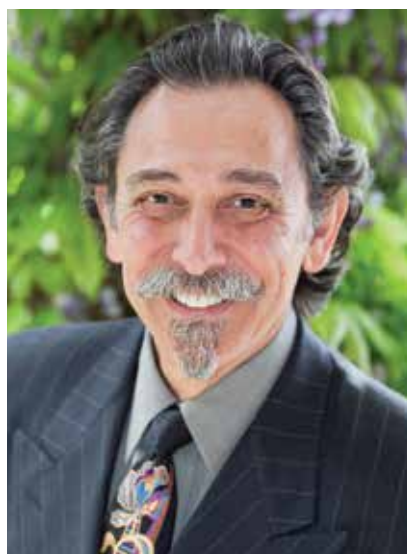
DDS'05 (2004), Vincent Drouin, DDS'09 (2008), Jason Mashni, DDS'13 (2012), Matthew Enns, DDS'14 (2013), and Jason Joo, DDS'15 (2014).

Present at the banquet from LLU School of Dentistry were Dean Ronald J. Dailey, PhD, and Ronald E. Fritz, DDS, current vice chair of the USA Section of ADI.

Alumnus earns prestigious fellow accreditation

LLU School of Dentistry alumnus Nicholas C. Davis, DDS'73, recently earned the Accredited Fellow certification from the American Academy of Cosmetic Dentistry (AACD) and was recognized for the achievement on May 9 at the AACD 2015 Annual Scientific Session in San Francisco. Dr. Davis is one of only two dentists in Orange County to achieve board certification in cosmetic dentistry.

The AACD is the world's largest non-profit member organization dedicated to advancing excellence in comprehensive oral care that combines art and science to optimally improve dental health, esthetics, and function. Comprised of more than 6,500 cosmetic dental professionals in 80 countries, the purpose of fellowship is to provide



Dr. Nicholas Davis

the highest level of achievement for members in accordance with the AACD's mission of education and excellence.

An LLUSD teaching alumnus, Dr. Davis remained with the School as an instructor with the Department of Restorative Dentistry for a year before opening a private practice in Newport Beach.

Dr. Davis is a pioneer in the art of lip enhancement and smile design, and frequently lectures both nationally and internationally at dental conventions and universities. He has also published numerous cosmetic-related articles in the *Journal of Cosmetic Dentistry* and other professional publications.

Since establishing his private practice, Dr. Davis has returned frequently to his alma mater as a popular guest and continuing education lecturer.

Laura Sherwin receives Charles E. Weniger Society Scholarship Award

Laura Sherwin, DDS'15, was one of three annual recipients of the Charles E. Weniger Society Scholarship Award.

The Society awards annual Weniger Student Scholarships to attendees of accredited North American Seventh-day Adventist colleges and universities who have demonstrated excellence in spirituality, academics, civic service, and leadership. The scholarship is matched or exceeded by the recipient's school.

Before receiving her DDS degree in May 2015, Dr. Sherwin graduated magna cum laude from Southern Adventist University (SAU) and continued her academic excellence by making the dean's list each quarter at the School of Dentistry.

As early as the summer of 2002, Dr. Sherwin, as an early teen, experienced the joys of service as a Maranatha volunteer, helping to build a church in the Dominican Republic and assisting with Vacation Bible School. While at SAU, she served as a student missionary in Peru with Ambassadors Medical Outreach & Relief (AMOR), and she preached a two-week evangelistic series while on a mission trip to Managua, Nicaragua, in July of 2009, sponsored by SAU's Evangelism Resource Center, the Carolina Conference's ShareHim program, and Quiet Hour Ministries.



Dr. Laura Sherwin

With the accumulating skills of a dental student, Dr. Sherwin continued her volunteerism in South America with the support of the LLUSD Class of 2015 Outreach Project to Valle De Angeles, Honduras, in 2013, and again on a mission trip to Roatán, Honduras, in 2014, with the Calimesa SDA Church where she also served as pianist for children's Sabbath School from November 2012 until completing her dental education in May of 2015.

Her local mission service experience included four years' participation in the School of Dentistry's annual Clinic With A Heart, volunteer dentistry at the Redlands, California, Compassion Clinic (November of 2011 and May of 2013), and work in 2011 and 2012 with the Healthy

Neighborhoods Project, Kids Rock, in Loma Linda.

Dr. Sherwin's leadership tendencies were first exhibited in college during which she was for one year editor of the Student Missions Club Publication (2008-2009), secretary and president of her college Pre-Dental Club (2009 and 2010), and in dental school where she was for four years Class of 2015 representative to the National Association of Seventh-day Adventist Dentists, her class representative to the School's Professional Standards Committee (2012-2015), and dental student representative to the LLU Mission Interest Group (2013-2015).

CDA Presents

BE SURE TO STOP BY OUR

LLUSD Booth #872

- Continuing education courses
- Implant Maxicourse
- Admission requirements
- Admissions representatives
- Careers in Dentistry

Please plan to join Dean Dailey for Thursday evening's reception.
Watch your mailbox for details.

We look forward to seeing you!



LOMA LINDA
UNIVERSITY

School of Dentistry

Anaheim

May 12-14

2016

dentistry.llu.edu

Home Vent patients treated by LLUSD pediatric residents

Shortly before last year's May 2015 commencement exercises, Dr. Mariam Ischander, MD, pediatric pulmonologist and director of the LLUH Home Vent Clinic, asked Bonnie Nelson, DDS '88, chair, Department of Pediatric Dentistry, if the Advanced Specialty Education Program in Pediatric Dentistry residents could provide her special needs patients with dental care. (Approximately one third of the compromised Home Vent patients are on MediCal and are School of Dentistry pediatric patients.)

Since 1995, LLUH Home Vent has been a pulmonary oriented



Faculty, residents, and assistants from the Pediatric Dental Clinic

team now under the direction (since 2013) of Dr. Ischander. The home ventilator program patients suffer from a cross-section of debilitating conditions that include chronic lung disease of prematurity, bronchopulmonary dysplasia, interstitial lung disease, pulmonary hypoplasia, neuromuscular disease (Duchenne muscular dystrophy, SMA, diaphragm paralysis), central hypoventilation syndromes, congenital airways abnormalities, spinal cord injury, obstructive sleep apnea, severe scoliosis and abnormal thorax, severe congenital heart disease, and central nervous system diseases that include head trauma, asphyxia infections, and severe cerebral palsy.

Ordinarily these patients face a long wait, but with Dr. Nelson's facilitation, all eight of the pediatric dentistry residents, along with nurses, program coordinators, respiratory therapists, and clinical instructors, spent four Wednesday mornings (May 10, May 27, June 3, and June 10) providing all 143 of Dr. Ischander's patients dental care that included teeth



"Here is what you get when you are finished" (all stuffed animals courtesy of Dr. Ischander).

cleanings, scaling, restorations, and extractions. "We have nurses, coordinators, and respiratory therapists here to help and we have a lot of fun," said Dr. Nelson, as she held a bored and distracted young patient sibling. "The experience helps our residents acquire experience treating special needs patients."

These Advanced Specialty Education in Pediatric Dentistry residents treated the Home Vent patients were—

3rd-year pediatric residents:

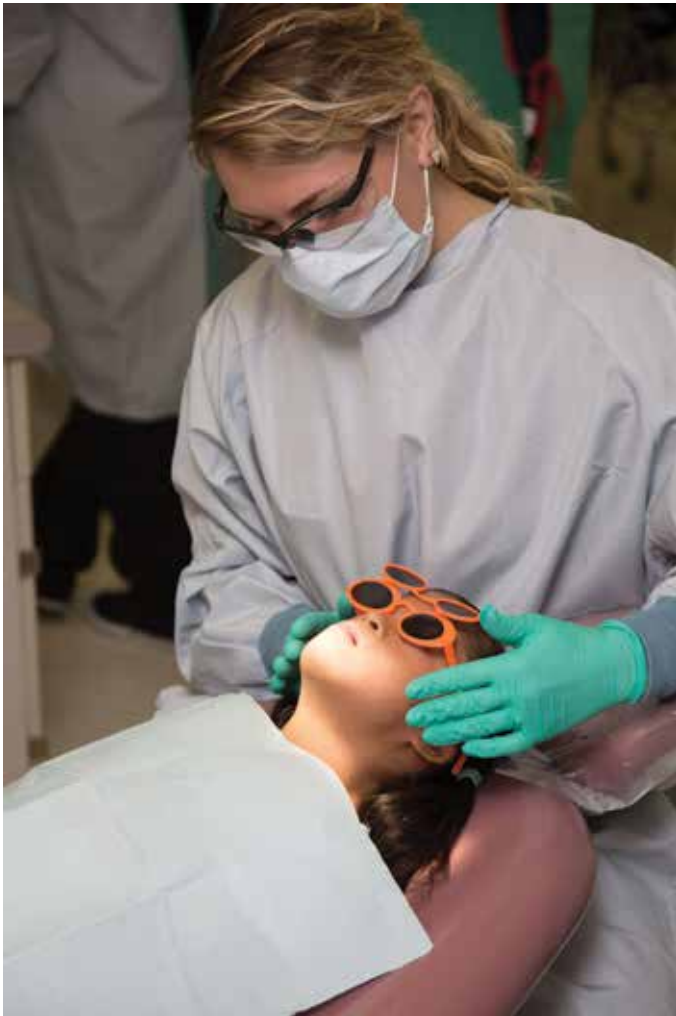
- Minh-Ky Young, DDS
- Adi Genish, DDS
- Pooyan Nasibi, DDS
- Ava Chung, DDS



Dr. Nelson preoccupies a patient's sibling.

2nd year pediatric dentistry residents

- Ryan Baker, DMD
- Xuan Lam, DMD
- Amanda Zenthoefer, DDS
- Adriana Cuellar, DDS



Amanda Zenthoefer, DDS'14, first-year resident, Advanced Specialty Education Program in Pediatric Dentistry, treats a special needs youngster from the Home Vent program.

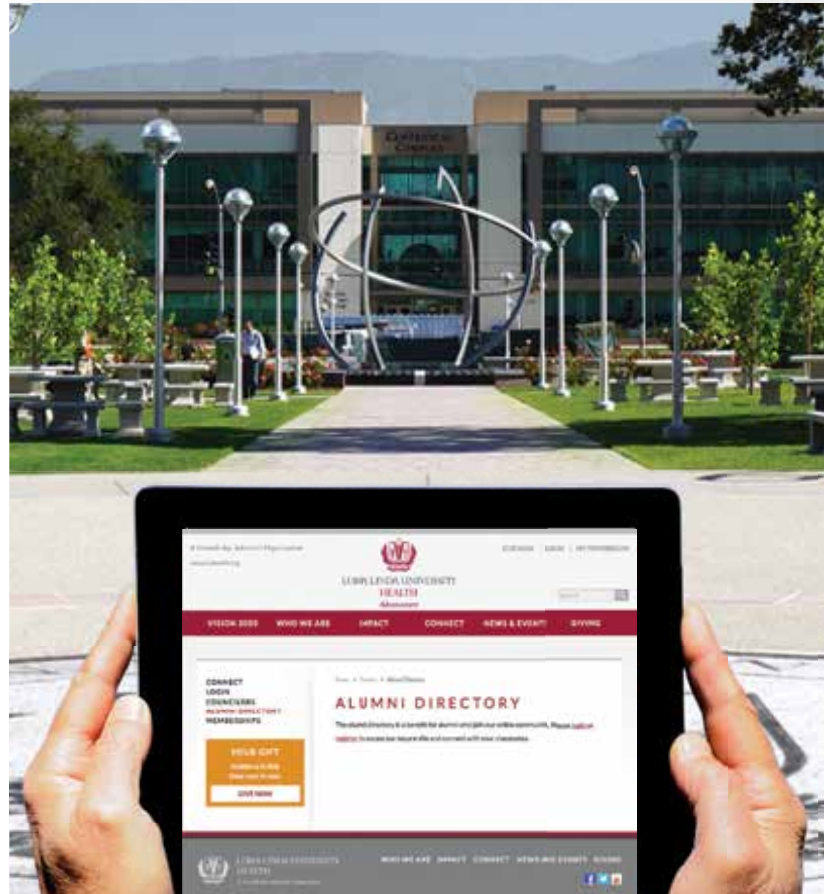
Along with many parents, Dr. Ischander is effusive in her thanks to Dr. Nelson and the pediatric dentistry residents "for the amazing love and care that was provided for our Home Ventilator patients."

VISIT US ONLINE!

lluhealth.org/alumni

Log in to our new online directory and reconnect with your classmates!

- Gain access to our private, password-protected alumni community.
- Search our extensive, easy-to-use alumni database.
- Learn about Loma Linda University Health's latest updates and events.



LOMA LINDA UNIVERSITY HEALTH

CMS recertifies Special Care Dentistry's deemed status

The Special Care Dentistry team is proud to announce that it recently received its "deemed status" re-certification from the Centers for Medicare and Medicaid Services following on-site surveys by both The Joint Commission (TJC) and Center for Medicare and Medicaid Services (CMS).



Department of Dental Anesthesiology Special Care Dentistry Team (L-R): Kathy Respicio, assistant manager, clinic; Esther Cash, nurse manager; John Leyman, DDS, chair; and Dezireh Sevanesian, DDS, assistant professor and acting program director

"Deemed Status" is required for healthcare delivery organizations that participate in and receive payment from the Medicare and Medicaid programs. "Deemed Status" certification is based on a survey conducted by a state agency or a national accrediting organization (TJC) that has been approved by CMS as having standards and a survey process that meets or exceeds CMS's requirements.

On April 7-8, 2015, following a two-day survey, that included a Life/Fire Safety Code Survey, Koppel Special Care Dentistry Center received its third triennial Joint Commission re-accreditation site visit since its initial accreditation in 2006. The site survey was conducted by three Joint Commission surveyors: two dentists and one engineer, a "CMS life safety code specialist." The Joint Commission is recognized nationwide as a symbol of quality that reflects a healthcare organization's commitment to meeting certain performance standards.

Each year CMS randomly chooses five percent of the facilities that had been surveyed sometime during that same year by the Joint Commission to undergo a "validation survey," which is conducted by the California Department of Public Health. This year, the Koppel Special Care Dentistry Center was among the "lucky" five percent. The Koppel Center survived this unannounced, grueling survey, which took place on May 27-29, 2015, and involved three days of close shadowing by two experienced nurse surveyors from the California Department of Public Health. They evaluated every aspect of the Center's services in great detail. On July 11,



2015, a CMS Life/Fire Safety Code engineer from the California Department of Public Health arrived and analyzed the Center's physical environment including central sterilization, fire response and equipment, ambient temperature and humidity, back-up generator power and the emergency command center, along with myriad other details.

Although CMS surveyors do not answer questions about the particulars of their assessment, the Koppel Special Care Dentistry Center passed its survey and will maintain its federal "deemed status" and state recognition for the healthcare services it provides. The Center has been accredited since 2006 with Joint Commission, and CMS-certification since 2009. The SCD provides complete oral and dental rehabilitation services under general anesthesia for the special needs population and small children who are too young to undergo conventional dental treatment.

The Special Care Dentistry accreditation team is grateful to these School of Dentistry and LLU Health employees who provided a great deal of support leading up to the surveys and for the follow-up documentation phase of the survey, including all the residents and employees who were subjected to many policy changes in short periods of time:

- Alisa Wilson, manager, Infection Control/Safety
- Mary Hartwell, manager, Dental Clinics
- Stan Lillard, supervisor, Dental Maintenance and his team
- Sonjia Thompkins, supervisor, and her dental office team
- Preston Brown, fire safety technician, Environmental Health & Safety
- Joe Bruno, emergency management specialist, Environmental Health & Safety
- Brett McPherson, director, Environmental Health & Safety and his team
- Randy Stevens, director, LLU Campus Engineering

LLUSD pediatric dentistry team advocates for California kids oral healthcare

Jung-Wei Chen, DDS, MS, PhD, program director, Advanced Education Program in Pediatric Dentistry, along with four of her pediatric dentistry residents, Xuan Lam, DMD (2nd year); Linda Ngo, DDS (1st year); Jessica Machado, DMD (1st year); and Ryan Baker, DMD (2nd year); met with Congressman Peter Rey Aguilar, U.S. Representative for California's 31st congressional district, at his office on August 13, 2015.

To facilitate the fulfillment of a CODA mandate that requires pediatric dental residents to engage in the fundamental domain of child advocacy, Gregory Olson, DDS'96, MS'11, associate professor, Department of Orthodontics and Dentofacial Orthopedics and Department of Pediatric Dentistry, along with Dr. Chen helped to arrange the meeting with Congressman Aguilar.

Dr. Chen and her residents shared with Representative Aguilar their experiences treating patients in San Bernardino County—the challenges of access to care, the need for pediatric dentists, the complicating changes in oral healthcare that arrived with the Affordable Care Act, and the inadequate reimbursement rates allotted by Denti-Cal.

Dr. Chen and her residents spoke to Congressman Aguilar about the Section 748 HRSA Title VII Pediatric Dentistry Appropriations Grant. The grant has helped pediatric dental residency programs to expand in various ways that have ultimately increased the number of underserved children treated.

The LLUSD quintet encouraged Representative Aguilar to persuade the Health Resources and Services Administration to initiate a new grant cycle, based on \$10 million that Congress has designated under Title VII's dental component Sec. 748, for pediatric dentistry programs to provide



Dr. Chen advocates with Rep. Aguilar for California's pediatric dental patients.

funding for faculty loan repayment programs that will help to increase the number of pediatric dentists available to care for newly insured children.

Congressman Aguilar assured Dr. Chen and her residents that he will do what he can to help increase grant funds so that these pediatric dental programs can continue to grow and treat children in need of dental care.



L-R: Dr. Ryan Baker, Dr. Linda Ngo, Rep. Pete Aguilar, Dr. Jung-Wei Chen, Dr. Xuan Lam, and Dr. Jessica Machado

Elmer Kelln: LLUSD pioneer

At 88, Elmer Kelln, DDS, AMS, greets a visitor in his Orange Tree Villa home overlooking the San Bernardino Mountains. “The top of Mount Baldy to the west,” he’ll tell you, “and Mt. San Gorgonio to the east. At night,” he adds, “we see the city lights of San Bernardino, and during the day I can watch the fire engines and helicopters.” Before retirement, he served for 15 years as LLU School of Dentistry’s academic dean, during the nascent organization’s rapid development of programs.

In his tidy garage, pictures on the wall memorialize his automobiles. There’s a 1953 M.G.T.D. that he restored, and an impressive yellow 1963 Porsche Speedster (3A Replicar) that arrived in a crate plus a half dozen boxes containing perhaps a hundred pieces. Under his construction, it became a classy vehicle. Shelves in the garage nearby contain early dental instruments. He allows that with the unmistakably dental instruments installed in the garage, he could still perform dental hygiene procedures.

His birth certificate mentions no town, but merely indicates the square mile in Saskatchewan, Canada, where Dr. Kelln arrived at the family farm. Ten years later, when two successive cyclones wiped out the Kelln home, the family moved to Chilliwack, British Columbia.

Educated in the Canadian school system for nine years, when Dr. Kelln crossed the Canadian border to enter Auburn Academy in Washington State he learned that his transcript was a challenge to the principal. Here was a high school sophomore with credits in algebra, geometry, and language studies. The young Canadian’s major deficit: United States history. It was obvious he needed to enter the school’s accelerated program.

Acceleration was a key word in the early 1940s. The American World War II military draft included Canadian males, such as Dr.



Dr. Kelln receives the Professor of the Year Award in 1984 from LLU President Norm Woods, PhD.

Kelln, who lived in the United States. Draftees entered the army as privates; however, a shortage of dental care in the armed services provided an alternative. Those already in dental school could complete their education and enter the service as officers. Dr. Kelln accepted the challenge: enter dental school before reaching draft age.

During his childhood, Dr. Kelln hadn’t imagined becoming a dentist. Geography lessons introduced him to Hudson Bay fur traders and explorers—Simon Fraser, Alexander McKenzie, and David Thompson became his heroes. He envisioned himself exploring the vast reaches of the Canadian provinces. Instead, he found himself, post

high school, at Walla Walla College, College Place, Washington, in a pre-dental program. After two school years and three summer schools, he received acceptance to the University of Nebraska’s dental program. The day after college graduation, still exempt from the draft because of his age (17), Dr. Kelln headed for Nebraska. Hitchhiking with a single suitcase, he arrived in Lincoln, thankful for three long distance drivers who picked him up.

“This was a time,” says Dr. Kelln, “when banks didn’t offer student loans.” He had collected initial help from his parents. Knowing he would need to align employment with his school schedule, Dr. Kelln soon found a full-time bellhop job at a local hotel. He shared the job with Ed Collins, DDS, a classmate who later became LLUSD’s assistant dean for finance. The two worked alternating shifts, one taking a late afternoon with the other on the job all night, then reversing the hours each one worked the next day.

Dental school provided a positive surprise for Dr. Kelln. His passion for exploration and discovery was fulfilled in his study of pathology. “I fell in love with the microscope,” he says with obvious enthusiasm.



Dr. Kelln with his 1963 Porsche Speedster (3A Replicar).

He made another significant connection in Lincoln when visiting nearby Union College, where he spent his Sabbath hours. Thumbing through a yearbook selected at random from a collection in the men's residence hall, he paused over the picture of Jean Ackerman, whose father on occasion had been a house guest at his parents' home while serving as educational director for church schools in the area. Dr. Kelln remembered Jean from summer camp in Canada. Supplied with her address in the yearbook, he initiated correspondence. By the end of his junior year, a flurry of letter writing ended in the couple's marriage.

During his final year in dental school, many in Dr. Kelln's class were served with draft papers. With the war hostilities in decline, Dr. Kelln's citizenship then exempted him from compulsory military service.

Ready to return to Chilliwack, Dr. Kelln knew that a shortage of dentists made the move promising. Debt free, he opened a dental office in his hometown; he was immediately busy in a new medical facility recently built by local physicians.

At the age of 31, with nine and a half years of practice behind him, Dr. Kelln's quest for exploration prompted him to consider a move with his wife and three children to the University of Minnesota in Minneapolis. There he became engrossed with his study for a master's in pathology, which included a minor in oral pathology. "I really liked this," he says. "Every slide awakened the sense of discovery to me." It would provide direction for the rest of his career as inflammation and wound healing became his focus.

The learning experience led Dr. Kelln to consider teaching. Recruiters from West Virginia University persuaded Dr. Kelln and 17 of his colleagues in Minnesota to teach in the state's new medical/dental school at Morgantown.

Dr. Kelln used his academic interests to teach basic sciences. His students were in medicine, dentistry, nursing, and various other allied health pursuits. A West Virginia physician wrote in a 2014 holiday greeting, "You're the one who taught me how to use heat and cold."

Loma Linda University School of Dentistry was a mere dot on the dental horizon in 1966 when Dr. Kelln responded to an invitation to administer LLUSD's advanced education courses in maxillofacial surgery, then located in Orange County Medical Center. Two years later, the program shifted to the Loma Linda campus with Dr. Kelln teaching oral pathology. At the time there were no separate

department designations in the School, because LLU then tended to treat schools (such as medicine, dentistry, and nursing) as departments.

In 1970, LLUSD's Dean Judson Klooster, DDS, MS, appointed Dr. Kelln as associate dean for academic affairs. His province: overseeing faculty hiring, curriculum, class scheduling, and the advanced education program. During his 15-year associate deanship, Dr. Kelln addressed organization of the advanced education programs and developed core courses in the graduate school for dental specialties.

Among Dr. Kelln's major contributions was putting topics into a course called Senior Seminar. Promoting an emphasis beyond technical skills to include the professional component of dental education, he sought the assistance of several non-dental academics (Drs. William Jarvis, John Reeves, Shirou Kunihiro, Bob Sutton, and Ron Dailey). Under Dr. Kelln's leadership, the curriculum committee proposed a survey of one-year, three-year, and five-year graduates with the question: In what ways could we have given you better training?

The results of the survey included helpful suggestions: How to handle off-the-street acute problems such as acute TMJ, cracked tooth syndrome, furcation lesions, deep carious lesions (essentially saving a tooth without doing a root canal procedure). Dr. Kelln invited a recent graduate, Lane Thomsen, DDS'65, MS'74, to join him in preparing seniors for the conditions cited by the graduates. To this day he expresses great enthusiasm for the stimulation of teaching, which brought awards including Distinguished Faculty Lecturer, Loma Linda University, 1981, and Professor of the Year recognition in 1984.

Even before he became a professor, Dr. Kelln influenced dental aspirants by example. Gordon Rick, DDS'68, MS'72,

says, "I first met him as a child going alone to his private dental office in Chilliwick, BC. He definitely was the major influence in my selection of dentistry as a career, and he also significantly influenced my decision to take an oral pathology graduate program/residency and join the LLUSD faculty, where I served for over 40 years, all of it in his footsteps!" Dr. Rick describes his experience in Dr. Kelln's classroom: "He was a gifted lecturer who could simplify complicated topics and make them unforgettable. He also had a unique ability to illustrate complex subjects on the blackboard, drawing simultaneously with both hands."

Dr. Rick became the first of a very small, select group of LLUSD graduates who pursued the unusual specialty of oral and maxillofacial pathology. They include Lane Thomsen, DDS'65, MS'74, second and last in the short-lived Loma Linda program; Robert Danforth, DDS '68, of Las Vegas, Nevada; Bela Bert Toth, DDS'71, who has taught in the Department of Dental Oncology, MD Anderson Cancer Center, University of Texas, Houston; Robin Howell, DDS'75B, who has served on the oral pathology faculty, Dalhousie University, Halifax, N.S., Canada; and Susan Richards, DDS'84, LLUSD associate professor of oral and maxillofacial surgery.

Students have cited Dr. Kelln's accessibility and engagement with them. Quint Nicola, DDS '69, who would later serve in mission appointments and then direct the International Dental Affairs office, characterized Dr. Kelln: "Very intelligent and focused, while at the same time observant and empathetic. He saved my dental career and possibly my life. While in dental school I was struck with an uncommon life-threatening disease. I was in great pain and wasting away, but the student health service clinicians seemed unable to deal with it. When Dr. Kelln saw me in the hallway, he quickly surmised the problem, then gave a tentative diagnosis (Erythema Multiforme) and referral which may have saved my life! Afterwards he regularly checked on me to assure that it was going well. I want to thank him for his focus and empathy, and thank God for arranging that 'chance' meeting in the hallway."

His colleague, Leif Bakland, DDS '63, identifies Dr. Kelln's "second mile" initiation when Dr. Bakland moved from a faculty position at Harvard University to Loma Linda. Fortuitously, Dr. Kelln was selling his house. Coming from Boston where he spent as much as an hour and a half daily commuting to his job, Dr. Bakland found the Kellns' house, a three-minute drive from the School of Dentistry, a convenient residence



Dr. Kelln is rightly proud of the 1953 M.G.T.D. that he restored.

for his family. Then, Dr. Bakland recalls, "Dr. Kelln guided me through the maze of getting familiar with the School and faculty. Later when the administration asked me to organize a new department of endodontics (never before a separate department) Dr. Kelln became important in that process." Additionally, Dr. Bakland notes, Dr. Kelln was a master at chairing effectively run meetings. "I don't remember a single time we went over our assigned time." Moreover, "he had a good sense of humor, was always available, and was a straight shooter," Dr. Bakland asserts.

Lane Thomsen, DDS'65, MS'74, long-time chair of the Department of Oral Diagnosis, Radiology, and Pathology who retired in 2011, recalls being first a student, then mentee and colleague of Dr. Kelln. "Known for making diagrams with both hands when he lectured," Dr. Thomsen says, "he was one of the best lecturers, extremely organized. His office was totally organized; he never procrastinated."

Now retired but active, Dr. Kelln speaks with satisfaction as he recalls his final annual salary as full professor: \$26,000. And he nods toward an adjacent condo as he cites his major extracurricular pursuit. Since 1995 he and Jean have watched over and assisted their son, a single father, in the successful rearing of his children who have lived next door. The untimely illness and death of their mother in 1995, when the children were two and five years old, plunged Dr. Kelln into a second round of depositing children at kindergarten, grade school, and academy.

But once again, Dean/Grandparent Kelln can point with pride to the accomplishments of his students.

FOND FAREWELLS

Gerald Alderson**Dr. Gerald Alderson**

After his birth in Phoenix, Arizona, on February 7, 1938, Gerald Lee Alderson, DDS'62, MD'67, spent his youth in Washington and California. When he had completed dental and medical education at Loma Linda University, Dr. Alderson first pursued an internship at Duke University, then a pathology residency at Harbor General Hospital, an affiliate of University of California Los Angeles, in California. While fulfilling his military obligations at the Armed Forces Institute of Pathology in Washington, D.C., he became the only medical corps officer

ever to serve in the dental and oral division. He would remain four years in this assignment.

Accepting appointments in San Antonio, Texas, at the Audie Murphy Veterans Hospital and the University of Texas Health Science Center, he eventually became chair of the pathology department at Audie Murphy Hospital and director of both virology and microbiology departments at Bexar County Hospital.

Retiring in 2009, Dr. Alderson moved with his wife to Black Forest, Colorado. Survivors at the time of his death, February 11, 2015, in Colorado Springs, Colorado, include his wife, Ellen Lucile of Colorado Springs; his daughter, Rachel (husband Corey) Rackler of Evergreen, Colorado; and one grandchild, Annie Bay Rackler.

Donald Bailey**Dr. Donald Bailey**

Born in Takoma Park, Maryland, on January 20, 1939, Donald Bailey would later call his Air Force experience "life-changing." After military service, he completed pre-dental studies at Columbia Union College in Takoma Park before entering University of Maryland's dental school. There he graduated (1969) summa cum laude, serving as president of his class.

Moving his family to Guam (1968-1973), Dr. Bailey extended his professional services in a mission clinic to provide dental care in nearby

undeveloped islands with no health services. He also participated in designing projects to improve homes of senior citizens.

State-side again, Dr. Bailey practiced dentistry in Hagerstown, Maryland, for 15 years before establishing a Palm Springs, California, practice. He joined the LLUSD faculty part time (1988-2005), continuing as a volunteer in IDP through 2006. Colleagues remember him for his skill in orthodontic and full mouth reconstruction.

Dr. Bailey, who died December 16, 2015, in Frederick, Maryland, is survived by his former wife, Sylvia Rocco of Hagerstown, Maryland; three sons, William, DDS, '93, of Portland, Oregon; David, MD, LLUSM, of Loma Linda, California; and Edward (landscape architect) of Mount Airy, Maryland; brother Leonard, MD, LLUSM, of Loma Linda; sister Joan Montoya of Winchester, Virginia, and six grandchildren.

Heather Alzayat**Dr. Heather Alzayat**

Her life cut short at the age of 36, Heather Pundt Alzayat, DDS'05, had returned to Texas after completing dental education at LLUSD. She was near the site of her March 19, 1979, birth when she joined the Pundt family dental office to practice dentistry with her father, brother, and husband in Killeen, Texas.

In addition to her many interests—singing, dancing, traveling, snowboarding, scuba diving, boating, and wakeboarding—Dr. Alzayat also actively pursued mission dentistry, which took

her to a variety of countries including Belize and multiple trips to Nicaragua. More recently she and her husband welcomed a son, Ramses, who was just seven months old when she died.

Surviving Dr. Alzayat's death on December 15, 2015, are her husband, Sameh Alzayat, DDS'04, and son, Ramses Samuel, of Georgetown, Texas; her parents, Wayne, DDS'73, and Mary Ellen Pundt, of Killeen; her brother, Gary (wife Steffanie) Pundt, DDS, of Killeen; and many extended family and friends.

In Dr. Alzayat's memory, donations may be made to the schools she attended: Killeen Adventist Junior Academy; Southwestern Adventist University, and the Heather Pundt Fund at Loma Linda University School of Dentistry.

Lowell Dobyns**Dr. Lowell C. Dobyns**

A member of LLUSD's first graduating class, Lowell C. Dobyns had transferred to LLUSD after two years at the University of Washington's School of Dentistry when LLUSD first admitted students.

Born June 29, 1929, in Wenatchee, Washington, Dr. Dobyns prepared for dentistry at Wenatchee Junior College and Walla Walla College in Washington state. During his college years he worked for several summers at the Bureau of Entomology and Plant Quarantine in forest insect control in Oregon. Entering the U.S. Air Force, he attained the rank of captain

while performing dental services.

Opening a dental office in Fortuna, California, Dr. Dobyns continued practice there for 35 years, retiring in 1994. He was active in his local church as elder, school board chair, Sabbath school superintendent and teacher, and Pathfinder Club administrator. In 1971 he became a pilot with commercial and instrument ratings.

Among his many outdoor pursuits, Dr. Dobyns enjoyed backpacking, gardening, snow and water skiing, fishing, golfing, and raising horses. Surviving his death (May 29, 2015) are his wife of 58 years, Beverly (LLUSN'55) of Fortuna; daughters Sandra Rhodes of Fortuna and Cynthia Neumann (husband Peter) of Santa Rosa; and two grandchildren.

FOND FAREWELLS

Donald Dornan

An early graduate of LLUSD's periodontal program, Donald Dornan, DDS, MS '69, died June 28, 2015, at his home in Oceanside, California. Born September 11, 1939, in Versailles, Missouri, he had graduated at Coalinga (California) Union High School in 1957, completed a chemistry major on a track scholarship at Occidental College (1961), Los Angeles, and earned his dental degree at UC San Francisco in 1965.

After serving as a captain in the U.S. Army Dental Corps, Dr. Dornan completed his master's in periodontics at LLUSD in 1969 and established dental practices in Tustin and Newport Beach, California. A natural athlete, he pursued multiple sports and became an accomplished marathoner.

Mourning his death are Dr. Dornan's wife Mia of Oceanside; his children—Bryan (wife Marney) of Encinitas, California; Sean (wife Danijella) of San Luis Obispo, California, and Kimberly (husband Paul Bellis) of Portland, Oregon—and two grandchildren. Contributions in Dr. Dornan's memory can be made to Newport Harbor Academy of Dentistry in Corona Del Mar, California.



Dr. Donald Dornan

William Gray

William Gray, DDS '67, born in Delano, California, on May 10, 1942, prepared for dental school at Walla Walla College, where he met Darlene Meharry. She became his wife in 1963. Upon graduating at LLUSD in the class of '67, Dr. Gray established a practice in Modesto, California. He would practice there, focusing on full mouth restorations and dental aesthetics, until the onset of cancer in 2002, when he retired.

Dr. Gray pursued an active life. It included extensive travel. He traveled to the Swiss Alps multiple times as a tourist and later as a tour guide with Road Scholar, where he was able to enjoy what he called the best train system in the world. He also had many outdoor hobbies: backpacking, cycling, snow skiing, water skiing, and sailing. Other enthusiasms included performing in a Blue Grass group and leading Bible study groups.

When he died in Modesto on March 19, 2015, Dr. Gray left to mourn his wife, Doreen; his son Kevin (wife Ellen) of Pleasanton, California; his daughter Kristine (husband Keith) Severeson of Goleta, California; and four grandchildren, with whom he spent many happy hours.



Dr. William Gray

Daniel Frederickson

Born March 2, 1939, in Burbank, California, Daniel Frederickson, DDS '64, studied at Glendale Academy, La Sierra College, and University of California Riverside before pursuing dental education. Upon graduation at LLUSD, he entered the U.S. Air Force, serving three years in Hof, Germany, as chief of dental services. Subsequently at the University of Texas he completed a master's degree and taught in the College of Dentistry before establishing a 20-year practice in Libby, Montana.

Moving to San Francisco in 1997, Dr. Frederickson became associate professor of operative dentistry at the University of the Pacific School of Dentistry, where twice he received a teacher of the year award.

Active in choirs and barbershop quartets as a vocalist, Dr. Fredrickson also pursued a variety of sports—hunting, fishing, and skiing, as well as golf, becoming a runner up to Jack Nicklaus in a national junior golf tournament.

When after a 50-year fight with diabetes, death came on October 28, 2015, in San Francisco, Dr. Frederickson left to mourn his wife, Shirley Silvestri; his daughters—Ann Monkhouse (Scott) and Heidi Fahland Frederickson—the mother of his children, Mary Frederickson; two step children and five step grandchildren.

The family has suggested that memorial gifts go to the American Diabetes Association or to the Belvedere-Tiburon Landmarks Society.



Dr. Dan Frederickson

William Hardt

William Henry Hardt, DDS '67, died April 30, 2015, in Lindsay, California, where he had practiced dentistry from 1967 to 1993.

Born March 29, 1927, in South Bend, Indiana, Dr. Hardt became a member of the U.S. Army Band during World War II. After completing dentistry at LLUSD, Dr. Hardt established a dental office in Lindsay, where he practiced from 1967 to 1993. Upon retirement he continued dental care part time at his son's dental practice in Porterville, California.

Dr. Hardt was an avid photographer and woodworker. In Lindsay he participated actively at the Lindsay SDA Church and Lindsay Kiwanis as well as becoming a founding member of the Radio Station KARM.

Predeceased by his son, William Henry Hardt Jr., Dr. Hardt leaves to mourn his wife of 64 years, Lois Ann, of Lindsay; his daughter Donna (husband Gary) Wareham of Lindsay; his son Richard, DDS '89 (wife Teresa), of Porterville, California; his daughter-in-law, Maria Hardt of Redlands; five grandchildren and six great grandchildren.

Donations in Dr. Hardt's memory may be made to Sierra View Junior Academy in Exeter, California.



Dr. William Hardt

FOND FAREWELLS

Connie Lynn Jones-Dacre**Connie Jones-Dacre**

In the early morning of December 15, 2015, Connie Lynn Jones-Dacre, DH'64, died at her home in Anderson, California, after a three-month battle with cancer. Born in Lansing, Michigan, on December 30, 1941, Mrs. Dacre attended school in Michigan, completing pre-dental hygiene studies at Emmanuel Missionary College (now Andrews University) in Berrien Springs, Michigan, before moving to Loma Linda, California, in 1962 to enter LLUSD's dental hygiene class of '64.

Upon graduation, Mrs. Dacre practiced dental hygiene for six years in San Bernardino, California, before moving with her husband to Redding, California, in 1970, where she continued to work until her retirement in 2006.

Very active in the Redding Seventh-day Adventist church, Ms. Dacre served as church treasurer for years and school board chair for the local church school.

Mrs. Dacre is survived by her husband of 51 years, Kent Dacre of Redding; her two sons, Alan (wife Celia Stenfors-Dacre, LLUSM'94) Dacre, LLUSM'94; and Lance (wife Rosarin Kriengpraphana, LLUSM'98) Dacre, JD, of San Clemente, California; her mother, Marjorie Jones of Redding, age 99; and two grandchildren.

Wayne Low**Dr. Wayne Low**

Born in Trinidad, West Indies, April 8, 1956, Wayne Ronald Low, DDS'86, arrived in Riverside, California, in 1968, and would call that city his home for the rest of his life. After graduation at Riverside Poly High School and University of California Riverside, he entered LLUSD. Upon completion of his dental education, Dr. Low interspersed a busy, 27-year practice at Low Family Dentistry with an avid pursuit of traveling around the world and a notable commitment to spending time with his family. He was also heavily involved with the Riverside Rotary Club

and the Leukemia and Lymphoma Society.

Friends are remembering Dr. Low as an upbeat person with an infectious smile that endeared him to life-long friends and patients as well. Mourning his death, which came on August 25, 2015, in Riverside, are Dr. Low's wife, Chrissy, of Riverside; his parents, Ronald and Denise of Fullerton, California; and three children—Michael, Eric, and Allison—who live in the San Francisco Bay area, California. The family has suggested that gifts in Dr. Low's memory be made to the American Cancer Society or to the Leukemia and Lymphoma Society.

Ward Gerald Kelsey Jr.**Dr. Kelsey**

A member of LLUSD's second graduating class, Ward Gerald Kelsey Jr., DDS'58, was born in Eldon, Missouri, on November 14, 1926. During his senior year in high school he enlisted in the navy (1945). He would spend most of his service time in fire control on a navy ship that did weather surveillance as far away as the South Pole.

After completing pre-dental studies at San Diego State, Dr. Kelsey enrolled at LLUSD in the class of '58. Upon graduation he opened a dental office in Cucamonga, California, where he would practice until retirement.

Beginning in 1990 Dr. Kelsey and his wife, Pat, traveled extensively in a fifth wheeler before settling in Salton City, California, a site chosen because of his enthusiasm for fishing. There death came on November 2, 2014.

Mourning his loss are Dr. Kelsey's wife Pat of Salton City; his daughter Karen (husband Pete) Davies, of Hemet, California; son Dan (wife Julie) of San Clemente, California; son Peter of Orange, California; six grandchildren, and five great grandchildren.

Dail Magee**Dr. Dail Magee**

Born in Michigan in 1932, Dail W. Magee, DDS'63, spent his childhood in Florida and New Mexico. He served as an x-ray technician in the Korean War before completing pre-dental studies at Pacific Union College and Pasadena City College, California. He would graduate with the LLUSD class of '63.

After a year's practice in Provo, Utah, and Blythe, California, Dr. Magee established a practice in Moab, Utah, where he was active in the SDA church and president of the Carbon County Dental Association (1973- 76). He was

also using his private pilot's license enroute to Monument Valley, where he provided free dental care. Avocationally he became an excellent photographer, with many of his scenic photos appearing in publications.

Although Parkinson's disease prompted retirement in 1992, Dr. Magee continued to volunteer with Air Life Medical Service while becoming also a significant part of his grandchildren's lives. He moved from Ocean Shores, Washington, to Idaho Falls, Idaho, Olympia, Washington, and Battleground, Washington, during his retirement.

When he died on March 11, 2015, his survivors included his wife of 59 years, Marlene Hansen-Magee, his son Dale Jr. (wife Chelle), his daughter Karen (husband Marlin) Mallory, and two beloved grandchildren.

FOND FAREWELLS

Todd Milledge*Dr. Todd Milledge*

J. Todd Milledge, SD'88, PG'95, associate program director of LLUSD's Advanced Specialty Education Program in pediatric dentistry, January 1997 to January 2003, died in Yakima, Washington, on May 20, 2015.

Dr. Milledge, born 51 years ago in Pasadena, California, qualified for entrance into the School of Dentistry's class of '88 after three years of study at La Sierra College (now La Sierra University).

He would become one of the first two students to complete the School's advanced specialty program in pediatric dentistry. Two years later he joined the faculty, becoming chair of the pediatric department in 1996. Dr. Milledge launched a vigorous program to provide prompt accommodation to special patients needing attention. Within four years 14 chairs had been installed in the pediatric dental clinic.

Moving to a teaching position at the University of Washington's adjunct facility in Yakima. Dr. Milledge also conducted a private practice in Yakima until his death. Mourning their loss are Dr. Milledge's wife and two sons of Yakima.

Roger Plata*Dr. Roger Plata*

A professor of prosthodontics and physiology at LLUSD, 1973-2001, Roger Plata, DDS'74, died in a car accident on August 1, 2015, in Porterville, California.

Born September 30, 1935, in Medellin, Colombia, South America, Dr. Plata pursued predoctoral studies at Southwestern Adventist College, Keene, Texas, and at Union College, Lincoln, Nebraska. After completing a master's in physiology at Loma Linda University, he joined LLUSD's class of '74. Upon graduation, he would spend his entire dental career teaching at LLUSD and practicing at the Faculty Dental Office.

Dr. Plata was active in his local church. He also enjoyed being an amateur astronomer, which he implemented by building an observatory on his nine-acre farm near Exeter, California. At other times he was an enthusiastic spelunker.

Dr. Plata is survived by his wife Shirley of Exeter, California; his four children—Roger Jr. of Exeter; Daryl (wife Kristy) of Spangle, Washington; Cheryl (husband Todd) Hubert of Thousand Oaks, California; and Doug, LLUSM/SPH'94, of Redlands, California—his brother Arnold (wife Dixie), DDS'71, of Central Park, Oregon; six grandchildren and one great-grandchild.

Delbert Parks*Dr. Delbert Parks*

Delbert Parks, DDS'58, began life in Pillager, Minnesota, October 3, 1927. He completed predoctoral studies at Walla Walla College, Washington, then put his career on hold while serving in the army. A dental laboratory course in Texas prepared him for a dental clinic assignment in Panama.

Admitted to LLUSD's first class, Dr. Parks wasn't anticipating another career interruption. A severe injury the next summer while lumberjacking left him with crushed knee, leg, and fingers. After skillful orthopedic surgeries and a year of recovery, the School of Dentistry

granted him a slot in the succeeding class of 1958.

Upon graduation, Dr. Parks practiced briefly in Durango, Colorado, and then in Garberville, the redwoods of Northern California. After repeated invitations to work with developmentally disabled patients in Sonoma, California, he visited the facility. There he saw people so needy that he reported to his family, "That is the place I need to be." It proved to be difficult but satisfying.

With the onset of Parkinson's, Dr. Parks retired in 1994, moving to Eugene, Oregon, where he died on June 20, 2015. Among his mourners are his wife Darlene of 64 years of Eugene, Oregon; his daughters—Janelle Parks of Napa, California; and Christina Lonning of Cheney, Washington—two grandchildren and two great grandchildren.

Byron Wareham*Dr. Byron Wareham*

Born May 1, 1927, in Bentley, Alberta, Canada, Byron Wareham, DDS'58, would complete high school in Portland, Oregon, and spend a year at Walla Walla College, College Place, Washington, before induction into the army, where he served as a medic on a hospital ship in Hawaii, 1945-46. Completing predoctoral studies at WWC in 1950, he pursued nutritional research at Loma Linda, California, before joining LLUSD's class of 1958.

Dr. Wareham combined a teaching role at LLUSD with six years of private practice in Vista, California (1958-1965), before moving to Redding, California, where he established a 29-year practice in nearby Anderson, serving his community as a member of Kiwanis, and his church in a host of appointments including elder, Sabbath School teacher, conference committee representative, school board chairman, and director of church property development and health ministries.

When injuries from a head-on auto accident prompted his retirement in 2003, Dr. Wareham moved with his wife to Fortuna, California, where he died on September 24, 2015.

Mourning his death are Dr. Wareham's wife, Charolette; daughter Dorothy Stockton of Loleta, California; son David of Los Angeles, California; brother Ellsworth Wareham, MD, LLUSM'42, of Loma Linda; sister Goldie Thomas, of Vancouver, Washington; three grandsons and one granddaughter.

SOUTHERN UNION

MEDICAL/DENTAL/HEALTH PROFESSIONAL CONVENTION



Welcome to our 50 year anniversary of the Southern Union Medical/Dental/Health Professional Convention! For 50 years the Southern Union has provided an extended weekend of continuing education, inspirational Sabbath programming which has touched young and old alike, and good fun and Adventist fellowship for physicians, dentists and other allied healthcare professionals. This special year continues this tradition in the beautiful new venue of Stone Mountain Park located in Stone Mountain, Georgia. We know your participation in the weekend will refresh your faith, renew old friendships, and reconnect you with your family and loved ones. Our theme this year is BALANCE. We believe by participating in this special weekend you will come closer to learning how to achieve the balance God wants each of us to experience not only in our spiritual lives but in our professional lives as well. So come, bring your family and join our Jubilee! You are sure to be blessed!



OCT. 6-9
2016

STONE MOUNTAIN
GEORGIA

WEEKEND GUEST SPEAKER

DR. DAVID SMITH

TOPICS: *“Protecting Margin”*, *“The Tyranny of the Urgent”*, *“Priming the Pump”*

David Smith has been an educator for forty years. Since 2011 he has pastored the Collegedale, Tennessee Seventh-day Adventist Church located on the campus of Southern Adventist University. David enjoys public speaking and has presented on a variety of topics to audiences worldwide.

DENTAL SPEAKER

ALAN S. HERFORD

TOPIC: *“What’s New in Oral Surgery?
A Look at How Technology Has Improved Patient Care”*

Dr. Herford is currently Professor and Chair of the Department of Oral and Maxillofacial Surgery at Loma Linda University. School of Medicine, Loma Linda University Medical Center. He currently serves on the American Board of Oral and Maxillofacial Surgery (ABOMS).

REGISTER NOW



REGISTER ONLINE AT
www.SouthernUnion.com/Medical-Dental

OR CALL PLUSLINE AT (800) 732-7587



The Art
and Science
of Dentistry

CDA Presents.
The premier dental
convention in the U.S.

- Nearly 600 exhibiting companies
- More than 100 new product introductions
- Dynamic speakers
- Exciting attractions in Anaheim and San Francisco

cdapresents.com



Like us
[facebook.com/cdafan](https://www.facebook.com/cdafan)



#cdaANA
#cdaSF



Follow us
@cda_dentists



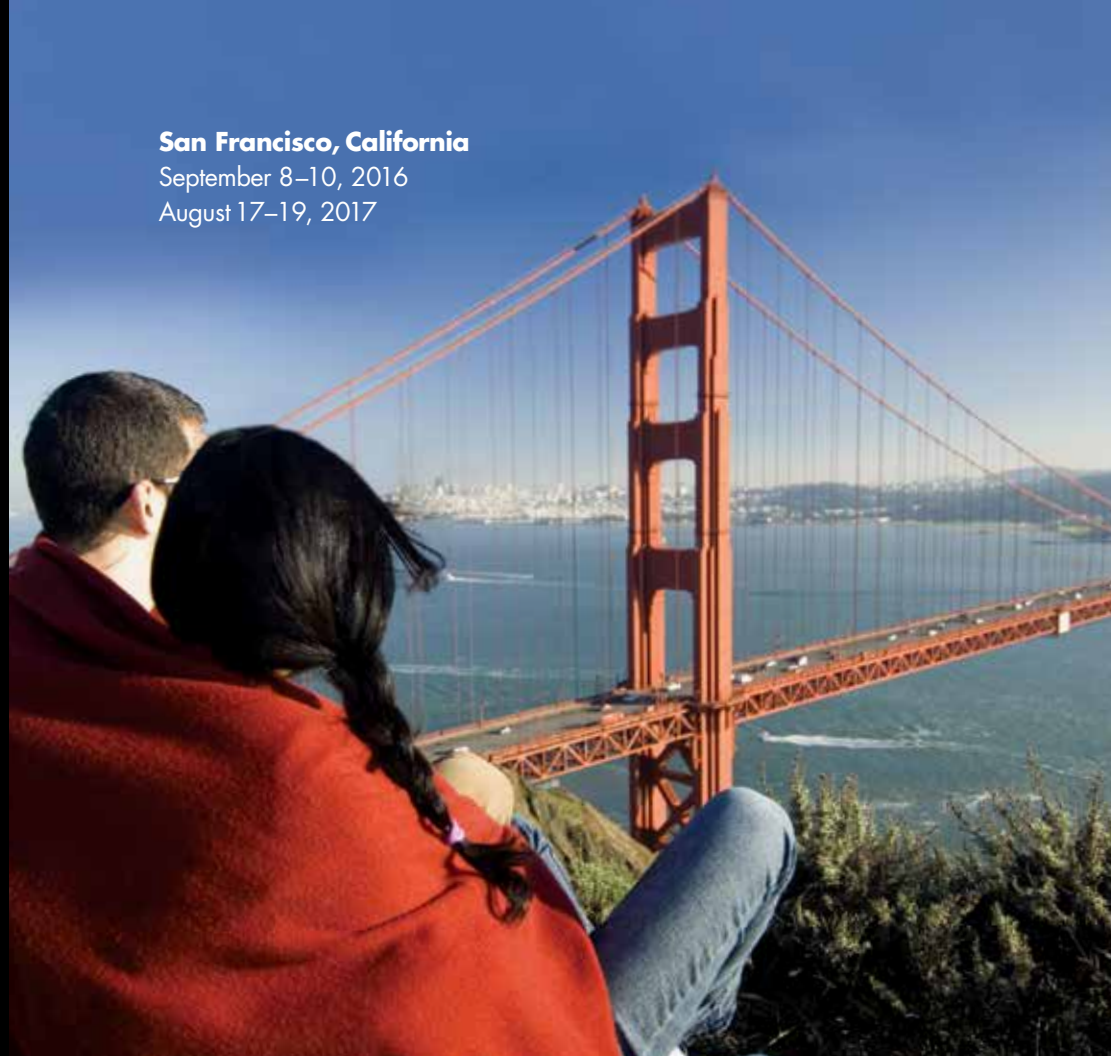
Download the
CDA app



Anaheim, California

May 12–14, 2016

May 18–20, 2017



San Francisco, California

September 8–10, 2016

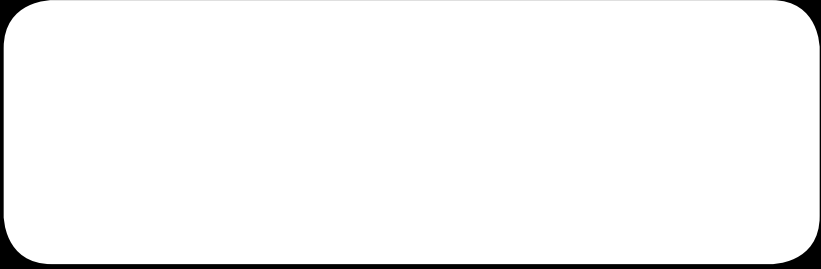
August 17–19, 2017



LOMA LINDA UNIVERSITY
School of Dentistry

NONPROFIT ORG
U.S. POSTAGE PAID
SAN BERNARDINO, CA
PERMIT NO. 1272

LOMA LINDA UNIVERSITY
11145 ANDERSON ST.
LOMA LINDA, CA 92350



List Your Practice Today!

5

%

Commission
Call for Details

(877) 377-6246



Bette Robin D.D.S. J.D.
Dentist • Attorney • Broker



LLUSD 83 Southwestern Law 95
Dental Practice Sales
Orange County | Sacramento | Los Angeles
www.BetteRobin.com

DRE# 01255928