25th Annual Conference & Exhibition Program Guide
Orlando, FL

www.laserdentistry.org
Welcome to Orlando!

It is our honor to welcome you to Dentistry’s Laser meeting, our Academy of Laser Dentistry’s 25th Annual Conference and Exhibition. We invite you to join ALD’s commitment to oral health through laser technology.

As dedicated healthcare professionals, we are here to evaluate and enhance the science of light technology and to further our collective knowledge on the benefits and potential enhancements that light and laser energy can bring to the quality of life for patients globally. Our mission as ALD members is to share this knowledge with our colleagues and use it to enhance patient care on a daily basis throughout the profession.

Keeping with our mission to facilitate education and research, we are excited about expanding this year’s conference theme, “Innovation, Illumination and Imagination, Celebrating Lasers 25 Years and Beyond” with programs on laser use in periodontology, hygiene, implants, endodontics, restorative dentistry, and oral surgery applications. We’ve added the importance of early oral cancer detection with Eva Grayzel, our keynote speaker on Thursday. Additionally, Annette Quinn, RN, will show progress on Photobiomodulation (PBM) treatment of oral mucositis along with several PBM presentations designed to provide insight on the use of light energy to aid in prevention, diagnosis, pain management, and healing of a multitude of oral and systemic conditions that did not seem possible at our first conference over 25 years ago.

All of us, as members of the ALD, should be proud of our collective efforts for the progress that is being made to include laser technologies into mainstream everyday patient care. So don’t sit back; join in to relax, interact, share, learn, and most importantly enjoy your conference and camaraderie with your peers.

We sincerely welcome you to Dentistry’s Laser Meeting!

Sincerely,

Gail Siminovsky, CAE
Executive Director

Dr. Charles Hoopingarner
President
Dear Fellow Colleagues, Friends, Supporters

On behalf of the Academy of Laser Dentistry and the Conference and General and Scientific Session Committees, we are pleased to welcome you to ALD’s 25th Anniversary Annual Conference and Exhibition.

We have purposefully chosen the very epicenter of imagination, Orlando, to host our iconic 25th Celebration of Lasers and Beyond! The ambition of this conference is to illuminate the science and clinical rationale for the amazing innovation that unites us all, the laser.

The aim of the conference is to offer a multidisciplinary perspective for the adjunctive uses of the laser. The conference will feature internationally recognized experts in tracks focused on improving the health and well-being of our patients by addressing such topics as oral mucositis treatments and obstructive airway concerns. We are excited to have expanded our tracks dedicated to the current research and developments in photobiomodulation (PBM), and other topics on nonsurgical as well as surgical approaches to light-based therapies utilized in dentistry.

We continue to strive to nurture our symbiotic relationship between clinicians and scientists/researchers as we delve deeper to understand laser-tissue interaction and the overall effects on healing. Through open conversations, together, we can continue on the road to further improvements not only in our clinical protocols, but also in technological advancements.

The three-day program includes concurrent sessions to accommodate the diverse interests and experience levels of our membership, panel discussion sessions in advanced laser topics, a comprehensive course in laser safety officer training, scientific presentations addressing recent studies and new developments to help members stay current and cutting-edge in their practices, and a treasure trove of clinical applications through participation workshops during all three days of the conference. We invite you to take advantage of all of these opportunities to work closely with experts – it’s all included with your conference registration.

The success of this conference will be measured by your level of interaction and participation both through the scientific sessions and the receptions offering opportunities for networking and friendships. Together we are the beacon shining a bright light on the future of dentistry.

Prepare to be inspired!!

Sincerely,

Raminta Mastis, DDS
ALD President-Elect and 2018 Conference Chair

Arun Darbar, BDS
ALD Secretary and 2018 General and Scientific Sessions Chair
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Mission of Our ALD 2018 Conference
To provide attendees with a positive educational and recreational experience that will leave them better equipped to provide improved patient care with increased provider satisfaction.

Academy Mission
The Academy of Laser Dentistry is committed to oral health through laser technology.

About the Academy
The Academy of Laser Dentistry (ALD) is an international, professional membership association of dental practitioners and supporting organizations dedicated to improving the health and well-being of patients through the proper use of laser technology. ALD is one of the largest nonprofit international organizations devoted to lasers in dentistry and includes leading clinicians, academicians, and researchers in all laser wavelengths. The Academy is devoted to clinical education, research, and development of standards and guidelines for the safe and effective use of dental laser technology. The Academy actively supports education and research through its program, fosters dialogue and seeks to build community among its members and dental organizations, educational institutions, researchers, industry representatives, and others who share our mission.

The Academy’s official incorporation took place in 1993, following the merger of the American Academy of Laser Dentistry, the International Academy of Laser Dentistry, and the North American Academy of Laser Dentistry.

General Information

Conference Design and Educational Methods
ALD 2018 Dentistry’s Laser Meeting is the Academy of Laser Dentistry’s 25th Annual Conference and Exhibition. It is intended for educational and informational purposes to improve dental education, clinical practice, and dental research in the use of lasers in dentistry. Educational methods include lecture, discussion, demonstration, and supervised hands-on participation activities. The theme of for 2018 is “Innovation, Illumination and Imagination: Celebrating Lasers 25 years and Beyond.”

Expected Learner Outcomes
Expected learner outcomes include a broad overview of the research and clinical aspects of lasers in dentistry. Presentations encompass applications in virtually all laser wavelengths for general dentistry, periodontics, aesthetic dentistry, restorative dentistry, pediatric dentistry, implantology, endodontics, and oral surgery. Practice management topics are also offered. By means of didactic lectures, panel discussions, and participation courses, all attendees will have exposure to basic science and clinical laser use in many areas of dentistry. In addition, the specialty nature of this conference provides a networking between practitioners, researchers, and academicians leading to new interest and scientific breakthroughs in the fields of dentistry.

Laser Certification Program
The educational objective of the Academy’s Laser Certification Program is to provide candidates with an overview of the scientific fundamentals of lasers, the instruments themselves, safety issues, and clinical guidelines in accordance with the Curriculum Guidelines and Standards for Dental Laser Education. Four levels of certification are available.

Intended Audience and Background Requirements
The intended audience includes dentists in all disciplines, hygienists, dental assistants, office staff, industry representatives, government professionals, and anyone interested in learning about lasers in dentistry. The meeting is geared toward both novice and experienced laser practitioners who will share information about the use of lasers in dentistry. Unless specified otherwise for certain sessions, individuals attending the conference are not required to have any previous knowledge or experience in laser dentistry, medicine, or surgery.

Responsibility of Program Selection
The Academy’s General and Scientific Sessions Committee is solely responsible for the review of submitted abstracts, selection of faculty and presenters, and approving the specific content of all continuing education (CE) activities.

Continuing Education Credit
Continuing education credit is available to all eligible participants. The Academy of Laser Dentistry is an ADA CERP Recognized Provider. ADA CERP is a service of the American Dental Association to assist dental professionals in identifying quality providers of continuing dental education. The Academy of Laser Dentistry and ADA CERP do not approve or endorse individual courses or instructors, nor does it imply acceptance of credit hours by boards of dentistry. The amount of CE credit to be granted is determined according to the individual educational content of each presentation and course. Up to approximately 33 CEUs are possible for the duration of this meeting.

Up to approximately 32.75 CEUs are possible:

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The Academy of Laser Dentistry and ADA CERP do not approve or endorse individual courses or instructors, nor does it imply acceptance of credit hours by boards of dentistry.

Concerns or complaints about a CE provider may be directed to the provider or to ADA CERP at ADA.org/CERP.
Disclosure of Speaker and Faculty Commercial Relationships  
According to the Academy’s Conflict of Interest and Disclosure Policy, faculty and speakers for this conference are expected to disclose any economic support, personal interests, or potential bias that may be perceived as creating a conflict related to the material being presented. Disclosure statements are printed in the conference program and announced by moderators or individual speakers at the beginning of each presentation. This policy is intended to alert the audience to any potential bias or conflict so that participants may form their own judgments about the material being presented.

Disclaimer  
The views expressed and materials presented represent the personal views of the individual participants and do not necessarily represent the opinion of the Academy of Laser Dentistry. While the General and Scientific Sessions Committee of the ALD is responsible for the selection of faculty and presenters and approving the specific content of all CE activities, the Academy assumes no responsibility for the content of the presentations made by individual participants or groups of participants. Selected presentations may include exploratory research or experimental procedures and are intended for informational purposes that may lead to new interest and scientific breakthroughs in the fields of dentistry.

Copyright  
All proceedings of the Conference are intended solely for dissemination of knowledge relative to the art and science of lasers in dentistry. Any statement of presentation made is to be regarded as limited publication only and all property rights in the material presented, including common law copyright, are expressly reserved to the speaker or to the ALD. Any sound reproduction, transcript, or other use of the materials presented in the conference without written permission of the Academy of Laser Dentistry or the individual speaker is prohibited to the full extent of common law copyright in such material. Audio and video taping is strictly prohibited unless prior permission is given by the Academy of Laser Dentistry.

Name Badges (Mandatory)  
Registrants are required to wear name badges at all times to all conference events, both educational and social receptions, with the exception of the optional guest activities that are off the property. This badge serves as verification of your paid conference registration.

Tickets  
Your badge is your ticket to lectures, social events and Friday’s 25th Anniversary Big Party. Registrants are required to sign up for workshops. Rosters for each workshop will be available on-site at the registration desk based upon attendee sign-up. Onsite workshop space is available as space allows. Badges are required to receive meals during the 3 conference days.

Attire  
You will want to be comfortable while your mind is abuzz; so resort casual dress is highly recommended for all educational sessions. Speakers should wear professional business attire while presenting. Dress for the Friday evening Big Party is cocktail festive cocktail attire.

Conference Children’s Policy  
Children are not allowed in the lecture hall or exhibit hall. Tickets for optional events and activities may be purchased at the registration desk. Childcare, nanny, or companion services may be arranged through Guest Services.

Spouse and Guest Breakfast  
Thursday, Friday, & Saturday  
8:00 a.m. – 9:00 a.m.  
Grand Sierra Ballroom DE  
Gather each morning for a light breakfast, catch up with long-time friends, meet new friends, discuss activities and select something fun to do together. There’s so much to do within walking distance or just a short drive. Come on down and greet fellow attendees!
Be sure not to miss!

Wednesday, April 25, 7:00 pm – 7:30 pm • Antiqua 2-3
Conference Orientation:
How to Get the Most Knowledge and Enjoyment as a First-Time Attendee
Raminta Mastis, DDS, John G. Sulewski, MA
This presentation provides a guide to help attendees maximize their experience over the course of the conference and exhibition. It is designed for all participants, whether you are attending the conference for the first time, a new Academy of Laser Dentistry (ALD) member, considering purchasing your first laser, or a veteran user wishing to keep up with the latest developments. No previous knowledge of lasers is necessary. Maximize your experience during the annual conference and exhibition by targeting your attendance and participation in programs that meet your specific needs.

Wednesday, April 25, 7:30 pm – 9:00 pm • Atrium East
International Reception (by Invitation)
We look forward to welcoming all of our international attendees on Wednesday evening.

Thursday, Friday & Saturday 8:00 a.m. – 9:00 a.m.
Grand Sierra Foyer & Exhibit Hall
Spouse and Guest Breakfast
Spouse/Guest Continental Breakfast in the Grand Sierra Foyer & Exhibit Hall. Meet and Greet with spouses and guests daily. Gather each morning for a light breakfast, catch up with long-time friends, meet new friends, discuss activities, and select something fun to do together. There’s so much to do in Orlando!

Thursday, April 26, 7:00 pm – 8:30 pm • Grand Sierra Ballroom DE
Welcome Reception
Welcome reception honoring first-time attendees is a “Must-Attend” event. Everyone is welcome. The opening night reception is your chance to meet our exhibiting vendors, enjoy food, friendships galore, and camaraderie ALD-style. Come early while the energy is high!

Thursday, April 26, 12:30 pm – Friday, April 27, 4:00 pm
Grand Sierra Ballroom DE
Silent Auction to Benefit ALD’s Dr. Eugene Seidner Charity Appeal
ALD 2018 Silent Auction funds the Dr. Eugene M. Seidner Student Scholarship and Research Grants Programs to support basic and applied scientific investigation in the field of laser dentistry. Great items will be available for bid – get ready to browse the auction tables in the Exhibit Hall and place your bid. Bid high and bid often!

Friday, April 27, 9:30 am – 10:00 • Grand Sierra AB
ALD General Membership Meeting
The Academy of Laser Dentistry will conduct its general membership business meeting on April 27, 2018, during the Annual Conference. Dr. Raminta Mastis, Nominations Chair and President-Elect, will provide an update on the Academy programs, and explain the selection process for ALD directors and officers as well as the organizational committee structure. Eligible voting members present will be asked to vote to accept the nominees who will serve in the elective leadership positions for the Academy of Laser Dentistry.

Friday, April 27, 6:00 pm – 7:30 pm • Bonaire 2-4
President’s Awards
Ceremony & Installation
Everyone is welcome to honor our 2018 ALD members of distinction with continuing education honors for Fellowship and Mastership, our Dr. Eugene Seidner Student Scholars, certification candidates, ALD’s Leon Goldman Award for clinical excellence honorees Dr. John Graeber and Mary Lynn Smith, RDH, and our John G. Sulewski Distinguished Service Award honoree Dr. Scott Benjamin. Installation of Officers and honors for outgoing and incoming board members will take place in our 1-hour ceremony. Come and enjoy a glass of champagne with your ALD friends.

FEATURED SOCIAL EVENT
Friday, April 27, 7:30 pm – 10:00pm
The Big 25th Party
Celebrate the 25th Anniversary of the Academy of Laser Dentistry at the Big Party. Make sure to be on time at 7:30 pm to toast the future of the ALD in the Grand Sierra Ballroom ABC. Enjoy drinks, food, dancing and music. Cocktail party attire.
General Membership Meeting
Caribe Royale All Suites Resort, Friday, April 27, 2018 • Grand Sierra AB • 9:30 am

The Academy of Laser Dentistry will conduct its general membership business meeting on April 27, 2018, during the Annual Conference. Academy President Dr. Charles Hoopingarner will provide an update on the Academy programs and financial position. Dr. Raminta Mastis, Nominations Chair and President-Elect, will explain the selection process for ALD directors and officers and conduct the election. Eligible voting members present will be asked to vote to accept the nominees who will serve in the elective leadership positions for the Academy of Laser Dentistry.

Agenda
Call to Order, Dr. Charles Hoopingarner, President
Establish Quorum, Gail Siminovsky, CAE, Executive Director
Presidential Remarks & Introduction of Current Board and Chairs
Academy Financial Report
Election of Officers and Board of Directors, Dr. Raminta Mastis, Nominations Chair

The Nominations Committee has nominated these ALD members to serve as elected leaders:

Nominated Officers 2018-19
Mel Burchman, DDS, President-Elect
Ed Kusek, DDS, Treasurer
Arun Darbar, BDS, Secretary

Nominated Board Members
Heather Angers, RDH, 2018-2021
Keith Brewster, DDS, 2018-2021
Samuel Low, DDS, 2018-2021
Gerald Ross, DDS, 2018-2021

The President and Immediate Past President, as follows, pass automatically into these seats.
Raminta Mastis, DDS, President
Charles Hoopingarner, DDS, Immediate Past President

Continuing Directors-at-Large
Walid Altayeb, DDS, 2016-2019
Charles Carpenter, DDS, 2017-2020
James Carreiro, DMD, 2016-2019
Stuart Coleton, DDS, Editor
Rishita Jaju, DMD, 2016-2019
Craig Sanford, DDS, 2017-2020
Grace Sun, DDS, 2017-2020

• New Business
• Adjournment
ALD Award Recipients 2018

Many of the members of the Academy of Laser Dentistry (ALD) submerge themselves in the dynamics of laser dentistry on a day-by-day basis. They put in long days at the office serving their patients, and in their “free time” dedicate themselves in even deeper ways. They spend time in research, developing new treatment techniques, write journal articles, teach at seminars, mentor colleagues, and spend countless hours volunteering on Academy committees. They do this without the thought of being given an award. The ALD has three awards to celebrate the hard work of its members: the T.H. Maiman Award for Excellence in Dental Laser Research, the Leon Goldman Award for Clinical Excellence, and the John G. Sulewski Distinguished Service Award for Outstanding Commitment and Contributions to the Academy. Because of the level of sacrifice our members are committed to, they understand the criteria required when nominating another member for one of these prestigious awards. Their nominees are above the standard and show such dedication and passion. Not every award is given each year.

In 2018, ALD honors Ms. Mary Lynn Smith, RDH and Dr. John Graeber as the 2018 recipients of the Leon Goldman Award for Clinical Excellence and Dr. Scott Benjamin as the recipient of the 2018 John G. Sulewski Distinguished Service Award.

The Leon Goldman Award for Clinical Excellence
Mary Lynn Smith, RDH

About Mary Lynn Smith
Mary Lynn Smith is a registered dental hygienist, working clinically for 23 years. Practicing with lasers daily since 2000, she has persisted in advancing her knowledge and expertise. Mary Lynn holds both standard and advanced proficiencies in multiple laser wavelengths. She is currently recognized by the Academy of Laser Dentistry as an educator of lasers in dentistry. Her involvement with ALD has included serving as an instructor for the annual conference’s standard proficiency course on several occasions and, at other conferences, serving as a certification examiner. She has also shared her knowledge by presenting lectures on various topics specifically related to lasers and dental hygiene. Through her years of membership, she has been involved with various committee projects to advance laser education and use.

Outside of the Academy, Mary Lynn has contributed to the dental community through speaking at both national conferences and small groups on subjects including care of implants, periodontal therapies, laser-assisted hygiene techniques and principles. She presented dental hygiene laser education for DEKA Laser Technologies of El. En. 2006-2012. She has had the privilege to provide treatment for a study with TRAC research for Dr. Rella Christensen and has volunteered as a university guest lecturer on more than one occasion. She has authored published articles and a chapter on laser-assisted non-surgical periodontal therapy in the text book Principles and Practices of Laser Dentistry by Dr. Robert Convissar, 1st edition.

Mary Lynn’s passion for sharing her knowledge, developing other clinician’s skills, and inspiring them to work with excellence is evident in her teaching. She currently resides in McPherson, Kansas, where she is employed at McPherson Dental Care. She is the owner and CEO of Aspiring Dental Hygiene, LLC, and may be reached by e-mail at marylynnrdh@gmail.com.

What does this award mean to me?
The Leon Goldman award is such an incredible honor. To be named among the clinicians who are regarded so highly in laser dentistry is more than I would have ever imagined. When I think about the progression of my career and my never-ending quest to learn about dentistry including lasers, I have to give credit to many members of the Academy of Laser Dentistry who shared their expertise and encouraged me as an individual. Actually seeing the benefits of the laser applications I used in patient care made the value of my education skyrocket. It has magnified my passion as well. Having the opportunity to participate in relevant and yet progressive education is essential. This enriching experience has made my daily practice exceptional. Receiving this award inspires me to learn more and share more, to ask more questions and find answers, to practice, practice, practice!
The Leon Goldman Award for Clinical Excellence

Dr. John Graeber

About Dr. John Graeber

Dr. John Graeber has maintained his private practice for 43 years in East Hanover, New Jersey. His goal has always been to provide his patients with a comprehensive approach to care based on solid preventive principles. After graduating from the New Jersey Dental School in 1972, he entered the Dental Corps of the United States Army. During his service, he was appointed Resource Training Officer with the responsibility of training Expanded Duty personnel for which he was awarded the Army Commendation Medal. During the early years of Practice, he earned fellowship in the Academy of General Dentistry and completed Training in Intravenous Sedation and a certificate in Orthodontics and Facial Orthopedics. By 1990, he realized the limitations of practicing conventional dentistry and incorporated an Nd:YAG laser into his practice. He helped form the first study club in lasers along with future ALD Presidents, Dr. Art Levy, Dr. Eugene Seidner, and Dr. Lester Burman. It became apparent to Dr. Graeber and his fellow colleagues that only by collaborating and continued study could the value of lasers be fully utilized for the benefit of patients. By 1993, the New Jersey laser study club played a central part in the formation of the Academy of Laser Dentistry. The world of lasers began to grow much larger.

The first few years of practicing with a laser were challenging as well as incredibly horizon-widening. Being able to provide patients with much improved outcomes fans the flames of desiring to learn. In 1996, Dr. Graeber was asked to begin teaching others by becoming a standard course provider for programs sponsored by the American Dental Laser Company. He has continued providing standard and diode laser training around the world. Since the first laser, he has added all of the diode wavelengths, erbium, diagnostics, and photobiomodulation. He is widely recognized for his Microscopic procedural videos and diode laser workshops. He maintains a comprehensive diode laser training Web site: www.softtouchseminars.com.

Dr. Graeber completed Standard Proficiency at the first-ever meeting of the Academy, and followed with Advanced Proficiency in Nd:YAG, and Educator Status. He has attained Fellowship and Mastership Status. A member of the Board of Directors since 2003, he has chaired the Annual Meeting, Education, Certification, and Strategic Planning Committees, among others. He has served through the Executive Committee Officer positions and was elected ALD President 2015-2016.

Since 1996, he has presented on lasers and minimally invasive operative techniques at the Academy meetings and worldwide. Currently he is writing and editing a book Micro-invasive Dentistry to be published in the spring of 2018. The book will be based on light-based diagnostics, laser and abrasive preparations, and microbiology and remineralization of early lesions. Many of his fellow Academy Members are joining him in this important endeavor.

Anyone who presents his work to colleagues knows the challenge of constantly improving techniques and outcomes: the essence of the word “Practice.”

I would like to express my gratitude to the entire Academy membership, both present and past, for being the catalyst in inspiration to always seek improvement. In particular, to John Sulewski, for encouraging my early trials of presenting, to Terry Myers for his confidence in my clinical ability, to Glenn van As for showing me the incredible value of microscopic dentistry, to Don Coluzzi for being a positive mentor and colleague, and to Art Levy for his 27 years of positive influence.

I wish to express my thanks to the Awards Committee for honoring me with the Leon Goldman award for Clinical Excellence. To my friend and mentee, Mel Burchman, and the other members of the Awards Committee, laser pioneers: Gabi Kesler, Larry Kotlow, Gerry Ross, and John Sulewski, I am truly honored. To take my place alongside the past honorees is one of the most important milestones in my nearly 50-year dental career.
The John G. Sulewski Distinguished Service Award

Dr. Scott Benjamin

About Scott Benjamin
Dr. Scott Benjamin is a graduate of SUNY Buffalo, School of Dental Medicine and has been in full-time private practice in rural upstate New York for over 35 years. Dr. Benjamin is an Adjunct Professor at Midwestern University, College of Dental Medicine, an Associate Professor of Clinical Dentistry at Eastman Institute for Oral Health at the University of Rochester Medical Center, an Associate Professor at Roseman University of Health Sciences, College of Dental Medicine, and a Clinical Lecturer at the Laser and Health Academy. He has been an internationally recognized leader in dental lasers and computerized dental technology since its infancy. Scott is actively leading the development of the laser curriculum for dental and hygiene schools with ADEA’s Laser in Dentistry-Special Interest Group (LiD-SIG) where is presently serves as an officer.

He has presented internationally at major dental meetings, universities, workshops, study clubs, and user meetings around the world and has authored more than 300 articles, textbook chapters, and ADA and ANSI Technical Reports on topics ranging from Oral Cancer and enhanced diagnostic modalities to computerization, lasers, and other advanced dental technologies. Dr. Benjamin is presently the Technology Section Editor for The Compendium of Continuing Education in Dentistry, and was the Technology Editor of The Journal of Practical Hygiene, and the Section Editor of Advanced Technologies for The Journal of Practical Procedures & Aesthetic Dentistry, and is currently on the editorial board of Inside Dentistry and, Dentistry Today.

Dr. Benjamin is an active member of ADA Standards Committees on Dental Products (ADA-SCDP) and Dental Informatics (ADA-SCDI). He serves as Chairman on five separate of their Working Groups of these committees: WG-6.58 on Dental Lasers WG-10.4 on Data Redundancy, Archiving, and Storage, WG-12.1 on Digital Imaging, Photography and Digital Imaging and Communication in Medicine (DICOM), and WG-11.2 The Electronic Patient Dental Record. Dr. Benjamin also is the co-chairman of the Joint Working Group of both the ADA-SCDP and ADA-SCDI that acts as the liaison that connects the two standards committees together especially in the areas of CAD-CAM dentistry and terminology and was appointed to the Task Force on the National Healthcare Information Infrastructure (NHII). He is a past member of the National Dental Electronic Data Interchange Council (NDEDIC) Board of Trustees. He is also a Past-President of the Academy of Laser Dentistry (ALD), a member of ANSI Committee Z-136 on Laser Safety. Scott is President of the Tri-County Dental Society and is a past President of the Sixth District Dental Society of the New York State Dental Association. He has served as the Scientific Program Chairman for the Academy of Laser Dentistry in 2007 and 2010. In 2014 Dr. Benjamin was honored by the ADA as “The Outstanding Volunteer” for his dedication to dentistry, especially as it relates to his efforts in the development of the ADA/ANSI Standards.

Additionally, Dr. Benjamin is an internationally recognized authority and lecturer on Oral Cancer and its early detection and diagnosis. He was a participant at the World Health Organizations (WHO) Collaborating Centre for Oral Cancer and Precancer Closed Session Working Group on “Potentially Malignant Oral Mucosal Lesions and Conditions Terminology, Classification, Diagnosis and Prognosis”.

Dr. Benjamin’s interest in technology and advancing its proper utilization in dentistry began with his first computerized practice management system, in the early 1980’s, and was instrumental in the development and implementation of electronic communication and insurance submittals, in the mid 1980’s and is continuing to assist in the progression of digital communication, electronic patient records, and advanced technologies of many types into mainstream dentistry.

His interest continues today on a much broader scale with his involvement in the development of dental lasers, clinical screening, diagnostic, and treatment modalities and incorporating the appropriate utilization of advanced technologies into the everyday clinical dental practice. Dr. Benjamin is a consultant and advisor for many dental practices and several dental technology companies utilizing his expertise in clinical dentistry and oral health, oral cancer, lasers, digital radiography, imaging, practice management, dental computerization, diagnostics, ergonomics, and workflow.
What Do You Know That We Should?

Help Your Fellow Members and the Dental Community by Sharing Your Knowledge

We’re looking for members willing to:

• Write blog posts
• Interview other dental thought leaders
• Be interviewed
• Share tips
• Share success or case studies

Each of our members holds a wealth of knowledge.

When we share – we all benefit

If you have any ideas or questions, contact Gail Siminovsky
siminovsky@laserdentistry.org • 954.346.3776
Workshops

The 2018 Annual Conference includes 9 Workshops that are designed to allow participants to acquire didactic information and an opportunity to actually try a new method or device in an educational setting before either buying it or using it on a patient. Some workshops have limited attendance. Please refer to page 76-78 for a more detailed description.

Thursday, 5:00 pm – 6:00 pm

**PBM Cancer Workshop**

*Oral Physician-The Role of Dentists in Diagnosis & Management of Mucositis & Other Cancer-Related Oral Complications* (Sign up required. Attendance is limited to 20)

Dr. Arun Darbar, Annette Quinn, RN, MSN, Dr. Joel Epstein, James Carroll, AMInstM, FRSM

Friday, 10:30 am - 12:30 pm

**Practice Management**

*How An All-Tissue Laser Can Revolutionize Your Practice Workshop: A Hands-On Experience With The 9.3 Mm CO₂ Laser* (Sign up required. Attendance is limited to 20)

Tony Hewlett, DDS

Friday, 10:30 am - 12:30 pm

**Advanced Diode Laser** (Sign up required. Attendance is limited to 20)

Dr. John Graeber

Friday, 1:30 pm - 2:30 pm

**Hygiene/Auxiliary Workshop**

*The Team Approach to Laser Use: Lasers and the Dental Assistant* (Sign up required. Attendance is limited to 20)

Jeanette Miranda, RDH, Angie Wallace, RDH

Saturday, 8:30 am - 10:00 am

**Hygiene Hands-On Workshop**

*Give ’Em a Hand: Hygiene Workshop* (Sign up required. Attendance is limited to 20)

Jeanette Miranda, RDH, Angie Wallace, RDH, Mary Lynn Smith, RDH, Gloria Monzon, RDH, Heather Angers, RDH & Shannon Richkowski, RDH

Saturday, 10:15 am – 12:30 pm

**Digital Occlusion** (Sign up required)

Dr. Robert Supple

Saturday, 11:15 am – 12:30 pm

**Pediatric Hands-On Tech Talk Showcase** (Sign up required)

Dr. Larry Kotlow, et al

Saturday, 1:30 pm – 3:30 pm

**Photobiomodulation** (Sign up required. Attendance is limited to 20)

Gerry Ross, DDS; Arun Darbar, BDS
Waterlase Express™ treats all tissue types giving you the versatility to deliver minimally invasive Restorative, Periodontic, Implant and Esthetic procedures.

**Restorative**
Provide a gentler patient experience by removing cavities with little to no anesthesia.

**Periodontitis**
Perform flap-less, suture-less procedures with minimal recession, less post-operative discomfort, and faster healing.

**Implants & Peri-implantitis**
Remove >98% of biofilm on infected titanium implants without reflecting a flap or significantly affecting surface temperature.¹

**Esthetics**
Perform patient-friendly, minimally invasive esthetic procedures, such as Closed Flap Osseous Crown Lengthening and Gingival Recontouring, with less recession and greater predictability.

Easy to Learn and Use!
Waterlase Express features a familiar tablet interface. Each treatment category has several procedure options and HD, step-by-step animations are easily accessible for every procedure.

Visit us at **BOOTH #401** to learn more!

¹ Data on file. ©2018 BIOLASE, Inc. 18-1280
As of April 13, 2018 – Schedule Subject to Changes

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>12:00 noon – 2:00 pm</td>
<td>2018 Orlando and 2019 Dallas Conference Committee Meetings (Antigua 2-3)</td>
</tr>
<tr>
<td>2:30 pm – 5:00 pm</td>
<td>2017-2018 Executive Committee Meeting (Antigua 2-3)</td>
</tr>
<tr>
<td>5:30 pm – 6:30 pm</td>
<td>Certification Examiners Meeting (Antigua 2-3)</td>
</tr>
<tr>
<td>6:30 pm – 8:00 pm</td>
<td>President’s Meet &amp; Greet for Board, Chairs, and Volunteers (Calypso)</td>
</tr>
<tr>
<td>6:30 pm – 5:00 pm</td>
<td>ALD Standard Proficiency Certification Course Hands-On Clinical Simulation Lab (Grand Sierra FGH)</td>
</tr>
<tr>
<td>7:00 pm – 7:30 pm</td>
<td>Conference Orientation: How to Get the Most Knowledge &amp; Enjoyment as a First-Time Attendee</td>
</tr>
<tr>
<td>8:00 am – 5:00 pm</td>
<td>Exhibits Setup (Grand Sierra DE)</td>
</tr>
<tr>
<td>8:00 am – 5:00 pm</td>
<td>THOR Photomedicine Program (Bonaire 5-8)</td>
</tr>
<tr>
<td>8:00 am – 3:00 pm</td>
<td>ALD Standard Proficiency Certification Course Part 1 of 2 (Bonaire 2)</td>
</tr>
<tr>
<td>12:00 noon – 1:00 pm</td>
<td>Lunch for Standard &amp; Advanced Proficiency Certification, Board of Directors</td>
</tr>
<tr>
<td>3:30 pm – 6:00 pm</td>
<td>Advanced Proficiency Part 1 Online Examination (Bonaire 2)</td>
</tr>
<tr>
<td>3:30 pm – 6:00 pm</td>
<td>Advanced Proficiency Part 3 Online Examination Presentations (Bonaire 3)</td>
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<tr>
<td>5:30 pm – 6:30 pm</td>
<td>Certification Open (Grand Sierra Registration Desk)</td>
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<td>6:30 pm – 9:00 pm</td>
<td>International Reception – International Attendees Welcome By Invitation (Atrium East)</td>
</tr>
<tr>
<td>7:30 pm – 7:00 pm</td>
<td>Registration Open (Grand Sierra Registration Foyer)</td>
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<tr>
<td>7:30 pm – 9:00 pm</td>
<td>International Reception – International Attendees Welcome By Invitation (Atrium East)</td>
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**Monday, April 23, 2018 – Pre-Conference**

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<tr>
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<td>ALD Standard Proficiency Certification Course Part 1 of 2 (Bonaire 2)</td>
</tr>
<tr>
<td>8:00 pm – 10:00 pm</td>
<td>Academy of Laser Dentistry Board of Directors Meeting (Antigua C)</td>
</tr>
<tr>
<td>3:30 pm – 6:30 pm</td>
<td>ALD Standard Proficiency Certification Course Part 1 of 2 (Bonaire 2)</td>
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<td>7:00 pm – 9:00 pm</td>
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**Tuesday, April 24, 2018 – Pre-Conference**

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<tr>
<td>6:30 pm – 8:00 pm</td>
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<td>7:00 pm – 9:00 pm</td>
<td>International Reception – International Attendees Welcome By Invitation (Atrium East)</td>
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**Wednesday, April 25, 2018 – Pre-Conference**

<table>
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<tr>
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**Thursday, April 26, 2018**

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<td>Event – Room Location</td>
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**Friday, April 27, 2018**

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**Saturday, April 28, 2018**

<table>
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<td>Event – Room Location</td>
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**Sunday, April 29, 2018**

<table>
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<th>Time</th>
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<tbody>
<tr>
<td>12:00 noon – 2:00 pm</td>
<td>Event – Room Location</td>
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</table>
As of April 13, 2018 – Schedule Subject to Changes

**Thursday, April 26, 2018**

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>6:30 am</td>
<td>Conference Committee Meeting (Bonaire 1)</td>
</tr>
<tr>
<td>7:00 am – 5:00 pm</td>
<td>Speaker Ready Lounge (Antigua 1)</td>
</tr>
<tr>
<td>7:00 am – 4:00 pm</td>
<td>Registration Open (Grand Sierra Registration Foyer)</td>
</tr>
<tr>
<td>7:30 am – 8:00 am</td>
<td>General Session (Grand Sierra AB)</td>
</tr>
<tr>
<td>8:00 am – 9:15 am</td>
<td>Eva Grayzel: keynote: A Story NOT Stilled by Stage IV Oral Cancer</td>
</tr>
<tr>
<td>8:45 am – 9:30 am</td>
<td>Light Years Ahead: Use of Photobiomodulation in Oral Mucositis</td>
</tr>
</tbody>
</table>

**Morning Session (Grand Sierra AB)**

- Standard Proficiency Course (Part 2 of 2)
  - 1:30 pm – 2:30 pm
  - Standard Proficiency Clinical Simulation Exam (Antigua 3-4)
  - Standard Proficiency Program Lecture (Antigua 3-4)
  - Standard Proficiency Clinical Simulation Lab (Grand Sierra FGH)
  - Standard Proficiency Lecture, Dr. David Roskind (Bonaire 5-6)
  - Standard Proficiency Clinical Simulation Exam (Bonaire 5-6)
  - Standard Proficiency Clinical Simulation Exam (Grand Sierra FGH)

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<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>9:00 am – 11:00 am</td>
<td>12th Annual Proficiency Certification Program (Grand Sierra DE Exhibit Hall)</td>
</tr>
<tr>
<td>11:00 am – 12:00 pm</td>
<td>Lunch in Exhibit Hall (Grand Sierra DE Exhibit Hall)</td>
</tr>
<tr>
<td>12:00 pm – 5:30 pm</td>
<td>ALD Standard Proficiency Certification Course (Part 2 of 2) (Dr. David Roskind, Mary Lynn Smith, RCH)</td>
</tr>
<tr>
<td>6:30 pm – 8:30 pm</td>
<td>Welcome Reception in Exhibit Hall</td>
</tr>
<tr>
<td>8:00 pm – 10:30 pm</td>
<td>Evening Auction to Benefit Research Grants Program</td>
</tr>
</tbody>
</table>

**General Session (Grand Sierra AB)**

- 8:00 am – 9:15 am
  - Eva Grayzel: Keynote: A Story NOT Stilled by Stage IV Oral Cancer
  - Light Years Ahead: Use of Photobiomodulation in Oral Mucositis

**Educational Sessions**

- 8:00 am – 10:30 am
  - General Session (Grand Sierra AB)
  - Morning Session (Grand Sierra AB)

**Conference Committee Meeting (Bonaire 1)**

- 6:30 am
### Thursday, April 26, 2018 (continued)

**Photobiomodulation (PBM)**
- **Cancer**
  - Grand Sierra B
  - 10:30 am – 11:15 am
  - Joel Epstein, DMD, MSD
  - Photobiomodulation in Oral Oncology
- **Implantology**
  - Grand Sierra A
  - 10:30 am – 11:15 am
  - Jerome Ingber, DDS
  - The Effects of Photobiomodulation Therapy on the Immune Response
- **Laser Safety / Laser Fundamentals**
  - Bonaire 2-3
  - 10:30 am – 11:15 am
  - James Carroll, AMInstP, FRSM
  - Joules and Joules per cm², Watts, It All About? A Little-Understood Area of PBM
  - 11:15 am – 11:45 am
  - Jerri-Anne Lyons, PhD
  - The Effects of Photobiomodulation Therapy on the Immune Response

**Practice Management**
- Grand Sierra B
  - 10:30 am – 12:00 pm
  - Nancy Fitzgerald, DMD, BSDH
  - Laser Safety Officer Training – Laser Fundamentals and Why They Matter
  - 11:30 am – 12:00 pm
  - Corey Auger
  - Growing Your Patient Base Through Effective Digital Marketing

**Implantology**
- Grand Sierra A
  - 10:30 am – 12:30 pm
  - Nancy Fitzgerald, DMD, BSDH
  - Laser Safety Officer Training – Laser Fundamentals and Why They Matter
  - 11:30 am – 12:30 pm
  - Corey Auger
  - Growing Your Patient Base Through Effective Digital Marketing

**Practice Management**
- Grand Sierra B
  - 1:30 pm – 2:15 pm
  - Dr. David Roshkind, RDH
  - Treatment of Periimplantitis with an Er:YAG Laser
  - 2:15 pm – 3:15 pm
  - Ingmar Ingenegeren, DDS
  - The Value of an Erbium Scanner in Implant Surgery

### Afternoon program continues on next page
<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
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<tbody>
<tr>
<td>3:00 pm</td>
<td>James Carroll, AMInstP, FRSM</td>
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<tr>
<td>3:30 pm</td>
<td>Juliana Barros, DDS, MS</td>
</tr>
</tbody>
</table>

**Thursday, April 26, 2018**

- **As of April 13, 2018 – Schedule Subject to Changes**

- **Welcome Reception in Exhibit Hall – Everyone Welcome (badge required)**
  - 4:30 pm – 6:30 pm (Grand Sierra DE Exhibit Hall)

- **PBM Cancer Protocol Development Workshop/Seminar**
  - 5:30 pm – 6:00 pm (Bonaire 2-3)

- **ADEA Lasers in Dentistry Special Interest Group**
  - 6:00 pm (Grand Sierra DE Exhibit Hall)

- **Practice Management (grand Sierra DE Exhibit Hall)**
  - 4:30 pm – 5:00 pm (Bonaire 2-3)

- **Laser Safety Laser Fundamentals (Grand Sierra DE Exhibit Hall)**
  - 5:00 pm – 5:30 pm (Bonaire 2-3)

- **Implantology (Grand Sierra DE Exhibit Hall)**
  - 5:30 pm – 6:00 pm (Bonaire 2-3)

**Contact:** [www.laserdentistry.org](http://www.laserdentistry.org)

Academy of Laser Dentistry

**Dentistry’s Laser Meeting**

25th Anniversary Celebration

April 26-28, 2018

Orlando, Florida
As of April 13, 2018 – Schedule Subject to Changes

Friday, April 27, 2018

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
</tr>
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<tbody>
<tr>
<td>6:30 am</td>
<td>Conference Committee Meeting</td>
<td>Bonaire 1 (Grand Sierra)</td>
</tr>
<tr>
<td>6:30 am – 8:00 am</td>
<td>Advanced Proficiency Part 2 Examination (Clinical Simulation Lab Grand Sierra FGH)</td>
<td>Grand Sierra FGH</td>
</tr>
<tr>
<td>6:30 am – 8:00 am</td>
<td>Standard Procedure Online Examination</td>
<td>Antigua 2-3</td>
</tr>
<tr>
<td>7:00 am – 7:30 am</td>
<td>Registration Open (Grand Sierra Registration Center)</td>
<td>Grand Sierra DE</td>
</tr>
<tr>
<td>7:00 am – 9:00 am</td>
<td>Hygiene/ Auxiliary Membership Meeting</td>
<td>(Grand Sierra C)</td>
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<tr>
<td>7:00 am – 9:00 am</td>
<td>Speaker Ready Lounge (1)</td>
<td>Grand Sierra DE</td>
</tr>
<tr>
<td>7:30 am – 10:00 am</td>
<td>President’s Luncheon (Curacao 1)</td>
<td>Curacao 1</td>
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<tr>
<td>7:30 am – 10:00 am</td>
<td>Educational Sessions</td>
<td>Grand Sierra C</td>
</tr>
<tr>
<td>8:00 am – 8:15 am</td>
<td>Continental Breakfast Meet and Greet in Exhibit Hall</td>
<td>Grand Sierra DE</td>
</tr>
<tr>
<td>8:00 am – 9:45 am</td>
<td>Silent Auction to Benefit the Research Grants Program Auction - Closes at 4:00 pm</td>
<td>Grand Sierra DE</td>
</tr>
<tr>
<td>8:30 am – 10:00 am</td>
<td>Hygiene/ Auxiliary Membership Meeting</td>
<td>Grand Sierra C</td>
</tr>
<tr>
<td>9:00 am – 10:00 am</td>
<td>General Membership Meeting</td>
<td>Grand Sierra ABC</td>
</tr>
<tr>
<td>9:30 am – 10:45 am</td>
<td>ALD General Membership Meeting</td>
<td>Grand Sierra DE</td>
</tr>
<tr>
<td>6:00 pm – 7:30 pm</td>
<td>Presidential Awards Recognition Reception - All Welcome (Bonaire 2-4)</td>
<td>Bonaire 2-4</td>
</tr>
<tr>
<td>7:30 pm – 10:00 pm</td>
<td>ALD 25th Anniversary Big Party Celebration All Welcome (Grand Sierra AB)</td>
<td>Grand Sierra AB</td>
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Morning Break in Exhibit Hall (Grand Sierra DE)

General Session

8:00 am – 9:30 am
- Keynote: The Dentist’s and Oral Surgeon’s Role in the Management of Sleep Apnea
- Robert Strauss, DDS, MD: "The Dentist’s and Oral Surgeon’s Role in the Management of Sleep Apnea"

Morning program continues on next page
# 25th Annual Conference and Exhibition Program Schedule

As of April 13, 2018 – Schedule Subject to Changes

## Friday, April 27, 2018 (continued)

<table>
<thead>
<tr>
<th>Time</th>
<th>Panel/Session</th>
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</table>
| 10:45 am – 11:15 am | Kyoju Nakajima, DDSc, PhD  
Treatment of Periodontitis with a 980-nm Diode Laser: Assessment of Bone Regeneration and Periodontal Pocket Reduction Using LPM and LIPAS |
| 11:15 am – 11:45 am | Tunç Berge, DDS, MSc  
Comparison of Using a 980-nm Diode Laser and a 2780-nm Er,Cr:YSGG Laser in Esthetic Crown Lengthening for Gummy Smile Correction |
| 10:45 – 11:30 am | Lawrence Kotlow, DDS  
We Can Make a Difference: The Merger of Medicine and Dentistry |
| 11:30 am – 12:15 pm | Dmitri Boutoussov, PhD  
What Would Be the “Perfect Laser” for Dentistry? |
| 12:15 pm – 12:30 pm | Georgios Romanos, DDS, PhD, Prof. Dr. med. dent.  
The Ice-Cube Technique for Coagulation of Vascular Tumors in the Oral and Perioral Tissues |
| 10:45 – 11:45 am | Heather Angers, RDH  
Laser Use During Implant Care |
| 11:45 am – 12:30 pm | Mary Lynn Smith, RDH  
Photobiomodulation: Applications and Results |
| 10:30 – 12:30 pm (Bonaire 5-6) | Tony Hewlett, DDS  
How an All-Tissue Laser Can Revolutionize Your Practice: A Hands-On Experience with the 9.3-\(\mu\)m CO2 Laser (Limited to 20 participants) |
| 10:30 – 12:30 pm (Bonaire 7-8) | John Graeber, DMD  
Advanced Diode Laser Workshop (Limited to 20 dentist participants) |
| 1:30 pm – 2:15 pm | Beatrijs Deruyter, DDS  
The Use of FRP Lasers: A Necessity in Long-Term Periodontal Care |
| 1:30 pm – 2:00 pm | Annette Skowronski, DDS  
| 2:00 pm – 2:30 pm | Saadia Mohammed, DDS  
Is Tongue-Tie the Root Cause of Childhood Chronic Disease? |
| 1:30 pm – 2:15 pm | Andreas Moritz, MD, DMD  
Latest Scientific Results in Dental Hard Tissue Preparation |
| 2:15 pm – 2:45 pm | Kyoju Nakajima, DDSc, PhD  
Two Case Reports: Treatment of Large Cyst-Like Mandibular Bone Defects with 980-nm and 910-nm Lasers |
| 1:30 pm – 2:30 pm | Jeanette Miranda, RDH  
Angie Wallace, RDH  
The Team Approach to Laser Use: Lasers and the Dental Assistant  
Hands-On |
| 2:30 pm – 3:00 pm | Closed Flap Laser Periodontal Surgery: A Workshop (Hands-On) (Limited to 20 participants) |
| 2:30 pm – 3:00 pm | Closed Flap Laser Periodontal Surgery: A Workshop (Hands-On) (Limited to 20 participants) |
| 2:45 – 3:30 pm | Samuel Low, DDS, MS, MEd  
Closed Flap Laser Periodontal Surgery: A Workshop (Limited to 20 participants) |

---

**CANCELLED**

### Additional Notes:
- **Breaks**
  - 12:30 pm – 1:30 pm Lunch Break in Exhibit Hall (Grand Sierra DE)  
    - Afternoon program continues on next page
    - 2:30 pm – 3:00 pm Afternoon break in Exhibit Hall (Grand Sierra DE)
Friday, April 27, 2018 (continued)

7:30 pm – 10:00 pm

ALD 25th Anniversary Big Party Celebration – All Welcome (Grand Sierra A/B/C)

6:00 pm – 7:30 pm

Presidential Awards Recognition Reception – All Welcome (Bonaire 2-A)

3:45 pm – 5:00 pm

Invited Talk on Diode Lasers: Scientific and Practical Rationale for Clinical Dentistry – 25 Years of Laser-Tissue Interactions

3:00 pm – 3:45 pm

Markolf Niemz, PhD

General Session

3:00 pm – 3:45 pm

Markolf Niemz, PhD: Invited Speaker: Small Steps for Photons, One Giant Leap for Dentistry – 25 Years of Laser-Tissue Interactions

2:00 pm – 2:45 pm

Moderator: Georgios E. Romanos, DDS, PhD, Prof. Dr. med. dent. Panelists: Gregory Altshuler, PhD; Dmitri Boutousov, PhD; Markolf Niemz, PhD

2:00 pm – 2:45 pm

Roundtable Discussion: Straight Talk on Diode Lasers: Scientific and Practical Rationale for Clinical Dentistry

2:00 pm – 2:45 pm

Georgios E. Romanos, DDS, PhD, Prof. Dr. med. dent.

2:00 pm – 2:45 pm

Gregory Altshuler, PhD

2:00 pm – 2:45 pm

Dmitri Boutousov, PhD

2:00 pm – 2:45 pm

Markolf Niemz, PhD

Friday, April 27, 2018 (continued)
As of April 13, 2018 – Schedule Subject to Changes

At a Glance

8:00 am – 9:30 am (Grand Sierra C)
Hygiene Discussion Panel
1:30 pm – 2:00 pm (Grand Sierra B)
Endodontics

8:30 am – 10:00 am (Grand Sierra B)
Pediatric Dentistry (Grand Sierra DE)

Education and Exhibits

8:00 am – 2:00 pm (Grand Sierra C)
Registration Open (Grand Sierra Registration Foyer)

End of Day

9:45 am – 10:15 am
ACLD Board of Directors Meeting (Bonaire 7-8)

Daily Schedule

6:30 am – 7:00 am
Speaker’s Ready Lounge (Antigua 1)

7:00 am – 8:00 am
Continental Breakfast in Exhibit Hall (Grand Sierra DE)

6:45 am – 7:15 am
Early Bird Breakfast in Exhibit Hall (Grand Sierra DE)

9:30 am – 10:00 am
General Session (Grand Sierra DE)

Alfredo De Jesús – The Next Generation of Laser Dentistry

9:00 am – 10:00 am
Exhibits Open (Grand Sierra C)

10:15 am – 11:15 am
Lawrence Kotlow, DDS, et al.
Pediatric Hands-On Tech Talk Showcase Workshop (409)

11:15 am – 12:00 pm
Robert Supple, DMD
Digital Occlusion Workshop

12:00 pm – 12:30 pm
Hygiene Discussion Panel

1:30 pm – 2:00 pm
Endodontics

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### Saturday, April 28, 2018 (continued)

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<td>Marina Polonsky, DDS, MSc Laser Dentistry: Laser Bleaching: The Past, Present, and Future.</td>
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<td>Gerald Ross, DDS: Digital Dentistry.</td>
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*As of April 13, 2018 – Schedule Subject to Changes*
Special Programs
Conference Orientation and Academia

Oral Cancer
Photobiomodulation – Treating Oral Mucositis
Airway Obstruction
Laser-Tissue Interaction
Roundtable Discussion Diode Lasers
Dr. Eugene Seidner Student Scholarship and Research Grants

Wednesday, 7:00 PM - 7:30 PM

Special Program
Conference Orientation: How to Get the Most Knowledge and Enjoyment as a First-Time Attendee (101)

Raminta Mastis, DDS¹, John G. Sulewski, MA²
¹Private Practice, St. Clair Shores, Michigan, USA
²Institute for Advanced Dental Technologies, Huntington Woods, Michigan, USA

This presentation provides a guide to help attendees maximize their experience over the course of the conference and exhibition. What are the new attractions for 2018? What are the types of educational programs available on-site? Which ones offer an interactive, hands-on experience? Which ones present experimental usage, scientific findings, practice integration issues? What questions should you ask about instruments before purchasing? What opportunities are available for more casual and individualized interaction? What exactly does laser certification involve? For an objective view of these and other questions, plan to attend this informal session. It is designed for all participants, whether you are attending the conference for the first time, a new Academy of Laser Dentistry (ALD) member, considering purchasing your first laser, or a veteran user wishing to keep up with the latest developments. No previous knowledge of lasers is necessary.

Educational Objectives

- Maximize your experience during the annual conference and exhibition by targeting your attendance and participation in programs that meet your specific needs.
- Gain access to a Conference Orientation document that contains a checklist for evaluating lasers, resources for evaluating dental literature, and a list of U.S. FDA marketing clearances in laser dentistry.
Implementing Laser Technology in the Dental Curriculum (228)

Juliana A. Barros, DDS, MS
The University of Texas School of Dentistry at Houston, Department of Restorative Dentistry and Prosthodontics, Houston, Texas, USA

The practice of dentistry is constantly evolving. Part of the mission of most dental educational institutions is to prepare the professional of tomorrow for dental practice, but the pace of the evolution of dental practice makes this challenging. It is especially challenging for dental schools to remain at the cutting edge of training their students in the appropriate usage of emerging treatment technologies. Lasers, with their diversity of applications, increased accessibility, and apparent usage in the private practice sector, are an example of a technology that is here to stay. Can dental schools successfully prepare our students for a practice context that will include lasers?

The presenter will share observations based on the involvement with the laser curriculum at the University of Texas School of Dentistry. Participants will understand human resource considerations, ranging from training to credentialing, that accompany the implementation of a laser curriculum. And logistical considerations, such as curricular infrastructure requirements and equipment needs, will also be addressed. Throughout, potential pitfalls and opportunities will be highlighted. The overall aim will be that the presenter and participants together will be primed to bring lasers to dental education.

Educational Objectives

• Specify the human resources needed to implement a laser curriculum in a dental school.
• Identify the curriculum and facility-related resources needed to implement a laser curriculum in a dental school.
• Appreciate challenges and opportunities related to implementing a laser curriculum in a dental school.

General Session Oral Cancer Early Detection

Thursday, April 26 ~ 8:00 AM - 9:15 AM

Keynote: A Story NOT Silenced by Stage IV Oral Cancer: The Value in Patient Education, Accurate Diagnosis, Adequate Follow-Up, and Specialist Referrals (200)

Eva Grayzel
Eva Grayzel and Six-Step Screening™, Jacksonville Beach, Florida, USA

One American dies every hour of every day from oral cancer. Eva came close to being one in this statistic. The details of her delayed diagnosis, intensive treatment, and residual side effects bring to life a real patient story, driving home the importance of effective communication and patient education. Putting a face to the disease, Eva inspires audiences with her firsthand account of hardships unanticipated and overcome; courage unknown and discovered; a mother’s love tested and triumphant. The personal and emotional content motivates change. Audiences don’t just hear her story, they experience it. Become a more vigilant and aware clinician as you improve your oral cancer screening technique along with educating your patients about the disease’s signs and symptoms.

Educational Objectives

• Integrate oral cancer screenings with education.
• Optimize screening techniques and patient care.
• Take responsibility for early detection.
Keynote: Light Years Ahead: Use of Photobiomodulation in Oral Mucositis (201)

Annette Quinn, RN, MSN
University of Pittsburgh Cancer Center, Mars, Pennsylvania, USA

Introduction: Oral mucositis (OM) continues to remain a challenge in the oncology care arena with an overall incidence of 30-40% for all patients. Even patients with solid tumors receiving standard chemotherapy and considered low risk for the development of OM report this debilitating side effect in 37% of their treatment cycles. Up to 100% of patients undergoing radiation therapy for head and neck cancers and 90% of patients receiving hematopoietic stem cell transplantation (HSCT) develop OM due to the mucotoxicity of the treatment. To date treatment for OM remains palliative with narcotics often the first line of therapy to mask the pain. Photobiomodulation has emerged as a promising technique to both help prevent the development of OM as well as alleviate the pain associated with this devastating side effect of cancer therapy. At the University of Pittsburgh Cancer Center, we have implemented a photobiomodulation program to help decrease the incidence and severity of OM in our oncology population. To date, more than 400 patients have been treated with this therapy in both the solid tumor and stem cell transplant population.

Design and Methods: Patients undergoing cancer chemotherapy or radiation therapy at risk for OM were submitted to receive low-level laser therapy (LLLT) using a photobiomodulation device (LX2, THOR Photomedicine Ltd, Chasham, United Kingdom). Patients received treatments to bilateral cheeks and the dorsal surface of the tongue for 1 minute utilizing the 810-nm light-emitting diode (LED) cluster and for 1 minute to the soft palate using the intraoral 660-nm diode laser. Treatment started on day 1 of chemotherapy and/or radiation therapy and continued for radiation patients until their last treatment and for stem cell transplant patients until their absolute neutrophil count (ANC) reached 500. Nurses administered the treatment once they were certified to perform an adequate oral assessment and demonstrate proper grading of OM.

Results: To date there has not been one reported side effect, nor one patient who has discontinued therapy once it was commenced. In the radiation arena, we have significantly reduced the incidence of Grades 3-4 oral mucositis as well as feeding tube placement. We have also seen a reduction in treatment breaks due to OM. The success in the stem cell transplant population has led to the purchase of two more devices for the unit and reduction of patient-controlled analgesia.

Conclusion: Implementing a photobiomodulation program to both help prevent and decrease the severity of OM in the oncology population is feasible and safe. In our facility, we have successfully implemented this technology into our daily routine of caring for patients who are at risk for this debilitating side effect.

Educational Objectives

• Comprehend the use of photobiomodulation in the oncology population.
• List the appropriate oncology patient populations who can benefit for photobiomodulation.
• Discuss how to collaborate with the oncology team to successfully implement photobiomodulation into practice.

Note: This presentation discusses investigational devices that have not yet received U.S. FDA approval or clearance for the specified clinical indications, or describes off-label uses.
The purpose of the Dr. Eugene Seidner Research Grants Program is to support basic and applied scientific investigation in the field of laser dentistry. A primary purpose of this grant is for pilot data to generate interest in future major grant funding. The Dr. Eugene M. Seidner Research Grant is intended to promote the advancement of dental laser technology education and clinical research. Up to $20,000.00 (twenty thousand dollars) may be awarded annually to individuals to promote basic and applied clinical research for the uses of lasers in dentistry. This could be for a student research project and/or a clinical grant. These include, but are not limited to, biological responses to light, novel or innovative clinical protocols and procedures, laser device development, novel approaches to lasers in dentistry education, initiatives to enhance public acceptance of lasers, and behavioral approaches to using lasers in clinics. The project has to broadly assess the role of lasers in dentistry, irrespective of the nature of laser use for surgical, diagnostic, antimicrobial, photobiomodulation, photodynamic therapy, imaging, or biomaterials applications.

Introduction: Erbium laser cavity preparation has become a viable treatment option. The purpose of this study was to evaluate cavity preparation time and pulp chamber temperature changes using different Er,Cr:YSGG laser parameters compared to the factory-recommended settings. All of these adjustments were completed while monitoring intrapulpal temperature so as not to exceed a net rise of more than 5.5°C.

Methods: 60 extracted human premolars were used for this study. Each tooth was prepared by amputating the roots, leaving 5 mm of root intact, attached to the crown of each tooth. A cylindrical post prep bur was then used to enlarge the root canal into the pulp chamber, allowing adequate space for the thermocouple probe to reach the roof of each pulp chamber.

An Er,Cr:YSGG dental laser (iPlus, Biolase, Irvine, Calif., USA) was fitted with a handpiece and laser fiber tip (600-µm diameter, 6 mm in length). Control parameters were 250 mJ/pulse, 15 Hz, (3.75 Watts), 50% water, 100% air. A Class II cavity was prepared into each of 10 teeth. Each preparation included a proximal box which was 3 mm x 4 mm, with a depth of at least 3 mm, into the dentin. An occlusal extension was also prepared. This was used as the control. Five more samples of 10 teeth each were also prepared, with adjustments to the energy per pulse, the pulses per second, or the air/water spray combination.

Results: At the parameters for the control, a Class II cavity preparation made in human premolar teeth averaged 52.2 ± 2.8 seconds and resulted in a decrease in intrapulpal temperature (-1.1°C ± 0.93°C). In comparison, when the water spray was increased, preparation time increased to 59.2 ± 4.5 seconds, however the intrapulpal temperature decreased (-1.59°C ± 0.77°C). With settings of, 250 mJ/pulse at 25 Hz (6.25 W), the increase in intrapulpal temperature was 0.45 ± 0.61°C. This increase could be reduced to 0.32 ± 0.26°C by increasing the water spray. At 400 mJ/pulse and 15 Hz (6.0 W), the maximum pulpal temperature increase was 1.01 ± 1.33 °C, however the average preparation time of 36.7 ± 3.3 seconds was 30% faster than the control. Increasing the water spray resulted in a more manageable increase in pulpal temperature (0.38 ± 0.45 °C).
Conclusions: Within the limitations of this study, it can be concluded that using an Er,Cr:YSGG dental laser is a safe and efficient method to prepare Class II cavity preparations in human premolars. At the highest pulse energy tested (400 mJ), preparation time averaged 37.8 ± 4.2 seconds, and caused a maximum increase in intrapulpal temperature of 1.01 ± 1.33°C. Lower pulse energies resulted in slightly longer preparation times, and as much as -1.6 ± 0.8°C decrease in pulpal temperatures compared to the control. Increasing the water spray resulted in decreasing pulpal temperature by 50% across all samples, while increasing preparation time by a modest 11%.

Educational Objectives
- Compare cavity preparation time and pulp chamber temperature changes using different Er,Cr:YSGG laser parameters.
- Explain the effect of water spray on pulpal temperature and preparation time.

General Session Dr. Seidner Student Scholarship

Thursday, April 26 ~ 4:50 PM – 5:00 PM

Photothermal Effects of Er:YAG Laser Irradiation on the Proliferation of Human Gingival Fibroblasts (225)

Sophannary Kong, DDS
Tokyo Medical and Dental University, Tokyo, Japan

Background: To date, despite the knowledge that the erbium-doped yttrium-aluminum-garnet (Er:YAG) laser is a thermal laser and that it can be effectively utilized for ablation of both soft and hard tissues with minimal thermal side effects, the detailed heat-related cellular responses following the irradiation remained elusive. Therefore, the aim of this study was to investigate photothermal effects of Er:YAG laser irradiation on the promotion of cell proliferation of human gingival fibroblasts.

Materials and Methods: Primary human gingival fibroblasts (HGFs) isolated from gingival connective tissue samples, and commercially available as HGF-1 (ATCC® CRL-2014™ (American Type Culture Collection, Manassas, Va., USA) were investigated. The cells were seeded into 35-mm dishes at 3.0 × 10^4 cells per dish. At 24 h after seeding, the cells were serum-starved by replacement of the complete growth medium with the medium containing 0.5% fetal bovine serum (FBS) for an additional 24 h to induce cell cycle synchronization prior to laser irradiation. An Er:YAG apparatus (2,940-nm wavelength, DELight®, HOYA ConBio, Fremont, Calif, USA) was employed in a defocused mode of 20-cm distance perpendicularly to the cell dish at fluences of 2.3, 4.3, 6.3, and 8.3 J/cm^2 at 30 Hz for 30 s. Supernatants of the cell cultures were temporarily removed to expose the cell monolayers to laser irradiation, and then returned to the cell culture dishes immediately afterwards. Control dishes were treated in the same manner without laser irradiation. The study protocol was approved by the Ethical Committee of Tokyo Medical and Dental University (TMDU) (#1127).

Results: Irradiation at 6.3 J/cm^2 promoted maximal HGF proliferation, determined by WST-8 assay and crystal violet staining, but was accompanied by lactate dehydrogenase (LDH) release, on day 3 following the irradiation. Similar finding was also observed in HGF-1. Elevation of adenosine triphosphate (ATP) level, Ki67-positive cell number, and cyclin-A2 mRNA expression confirmed that Er:YAG laser irradiation affected the cell cycle and increased the number of proliferating HGFs. Cell surface temperature was proportional to the irradiation energy level. Irradiation at 6.3 J/cm^2 generated heat (40.9 °C after irradiation). Microarray analysis (|fold change| > 1.5 and false discovery rate (FDR) <0.1) of irradiated HGFs at 8 h revealed up-regulation of 181 genes involved in heat-related biological responses, angiogenesis, negative regulation of apoptotic process, and positive regulation of cell migration. The mRNA expressions of heat shock protein 70 (HSP70) family were up-regulated, validated by real-time polymerase chain reaction (PCR). The laser-induced proliferation was suppressed by the inhibitions of heat shock factor (HSF), thermosensory transient receptor potential vanilloid 1 (TRPV-1), and cooling treatment.
Conclusion: Er:YAG laser irradiation at 6.3 J/cm² strongly potentiated proliferation of human gingival fibroblasts by photothermal stress that elicited various biological responses, including activation of TRPV-1 and HSP70 family.

Educational Objectives

- Determine the biostimulation effects of Er:YAG laser irradiation on human gingival fibroblasts.
- Explain the mechanism of photothermal effects on the proliferation of human gingival fibroblasts.

General Session Dr. Seidner Student Scholarship

Thursday, April 26 ~ 5:00 PM – 5:10 PM

Photobiomodulation Therapy in Treating Side Effects of Cancer Brachytherapy (226)

Rodrigo C. Mosca, DDS, MSc, PhD, Postdoctoral
Oral Biology & Biomedical Engineering, School of Dental Medicine and School of Engineering and Applied Sciences, University at Buffalo, The State University of New York, Buffalo, New York, USA

Introduction: The malignant cancer incidence has increased significantly in recent years and the treatment usually consists of individual or combined use of chemotherapy, surgery and radiotherapy, depending on the etiology of the tumor. In cases where radiotherapy is used, and considering the therapeutic effects of radiation, specific severe complications can occur, ranging from erythema to radionecrosis. Photobiomodulation (PBM) therapy is widely used for tissue repair but has not been used on ionizing radiation wounds. Further, the molecular pathway mediating its therapeutic effects in this context has not been fully investigated. The aim of this study was to evaluate the efficacy and molecular pathways of PBM therapy for management of cutaneous radionecrosis healing induced by sustained ionizing radiation emitted by ¹²⁵I seeds implanted in athymic mice.

Study Design/Methods and Methods: A 60-day pilot study was performed with 24 athymic mice divided into four groups: Surgical Control Group (no radiation and no PBM treatments); Radiation Control Group (¹²⁵I seed 0.4252 mCi, no PBM); Red-PBM Control Group (Red PBM alone, light-emitting diode (LED) at 660 nm) (BlackBox Mini LEDSabr, BioLambda, São Paulo, SP, Brazil); Radiation-Red PBM Group. Following 21 days, radiation-induced wounds are evident. PBM treatment (output power 40 mW for 20 s, fluence 20 J/cm² on top of implantation site) was performed every week up to 60 days. Wounds were evaluated every 7 days with digital imaging, laser Doppler flowmetry (LDF), and tissue temperature with a thermographic camera. Micro-positron emission tomography-computer tomography (µPET-CT) imaging was also performed using radioactive fluodeoxiglucose (¹⁸F-FDG) at 51 and 81 days post-implantation. Animals were sacrifices progressively at each time point to correlate clinical observations with imaging and molecular tissue analyses. Tissues were collected to analyze molecular pathways correlating with inflammation, immune response, wound healing, and angiogenesis using mRNA quantitative reverse transcription polymerase chain reaction (qRT-PCR) technique and protein expression (immunostaining).

The PBM-treated group demonstrated significant (P < 0.05) improvements in skin radiation wound healing as compared to the radiation group. Distinct improvements were observed in clinical wound size and closure, improved tissue perfusion, and reduced inflammation as evidenced by decreased wound thermal images. These wounds were also noted to have significant differences in the cytokine profiles (transforming growth factor beta (TGF-β), vascular endothelial growth factor (VEGF) and platelet-derived growth factor (PDGF)) correlating with better healing responses. Radiation damage reduces brown fat composition that can potentially contribute to additional radiation-associated morbidities. The µPET-CT imaging noted significant preservation of brown fat composition in PBM-treated radiation alone groups. Further validation of these pathways is ongoing.
Discussion/Conclusion: Within the parameters of this study, PBM treatments demonstrated improved healing following radionecroses from ionizing radiation from $^{125}$I seeds. The resulting changes in the molecular pathways will enable a better understanding of the therapeutic pathways and optimize this treatment further as an innovative therapy for radiation protection.

Financial Support: This work was prepared with financial support from Fundação de Amparo à Pesquisa do Estado de São Paulo (FAPESP) (São Paulo Research Fundation) (Brazil) through the fellowship grants #2014/18268-2 (R.C.M.) and #2016/22349-3 (R.C.M.); CNPq Universal Project # 404424/2016-3 (R.C.M.) and University at Buffalo start-up funds (P.R.A).

Educational Objectives

• Describe the side effects of brachytherapy in athymic mice.
• Evaluate the efficacy and molecular pathways of PBM therapy for management of cutaneous radionecrosis healing.

General Session Airway Obstruction

Friday, April 27 ~ 8:00 AM - 9:30 AM

Keynote: The Dentist’s and Oral Surgeon’s Role in the Management of Sleep Apnea (300)

Robert Strauss, DDS, MD, FACS
Virginia Commonwealth University Medical Center, Richmond, Virginia, USA

Obstructive sleep apnea (OSA) is a common disease affecting millions of people. It has a range of effect that spans from simple annoyance to a potentially fatal outcome. Dentists and oral and maxillofacial surgeons are gaining a significant role in the management of this serious condition. However, our knowledge of this disease is changing rapidly and an understanding of the pathophysiology, diagnosis and management options for the disease is imperative to providing the best care to these patients and limiting morbidity. This presentation will discuss the basic etiology of the disease, an understanding of the diagnostic protocols, and a thorough review of the current nonsurgical and surgical options ranging from oral appliance therapy (OAT) to hypoglossal nerve stimulation.

Educational Objectives

• Learn the basic pathophysiology of sleep apnea.
• Understand the important diagnostic protocols for OSA.
• Summarize the current surgical and nonsurgical modalities available.
General Session Laser-Tissue Interaction

Friday, April 27 ~ 3:00 PM - Friday, April 27 ~ 3:45 PM

Keynote: Small Steps for Photons, One Giant Leap for Dentistry – 25 Years of Laser-Tissue Interactions (322)

Markolf Niemz, PhD
Mannheim Biomedical Engineering Laboratories, Heidelberg University, Mannheim, Germany

The past 25 years have been extremely productive for laser dentistry. In the first part of this talk, the vital milestones of this terrific development are highlighted such as photoactivated dyes, biophotomodulation and ultrashort laser pulses. In the second part, the basics of the underlying laser-tissue interactions are discussed with a focus on photochemical and photothermal effects induced by diode lasers. Special emphasis is placed on understanding the significance of various laser parameters. The presentation will culminate in a message that we shall never forget: “The keys to any successful laser treatment are color, exposure time and fluence.”

Educational Objectives

• Understand the significance of laser parameters.
• Know the keys to any successful laser treatment.

General Session Diode Lasers

Friday, April 27 ~ 3:45 PM – 5:00 PM

Roundtable Discussion: Straight Talk on Diode Lasers: Scientific and Practical Rationale for Clinical Dentistry (323)

Georgios Romanos, DDS, PhD, Prof. Dr. med. dent.; Gregory Altshuler, ScD, PhD; Dmitri Boutoussov, PhD; Markolf Niemz, PhD
1Stony Brook University, School of Dental Medicine, Stony Brook, New York, USA
2IPG Medical Corporation, Marlborough, Massachusetts, USA
3Biolase, Irvine, California, USA
4Mannheim Biomedical Engineering Laboratories, Heidelberg University, Mannheim, Germany

Different diode lasers have been used extensively in clinical dental fields and many clinicians ask for scientific evidence. This panel discusses the efficacy of diode lasers, the strengths and weaknesses of different wavelengths, and the best therapeutic protocols for the daily practice.

Capture the knowledge, experiences, and findings of some of the leading experts in laser physics, laboratory and clinical research, biomedical engineering, laser-tissue interaction, and laser product development as they address many of the thorniest questions and everyday practical applications involving diode lasers.

The format will be a question-and-answer panel discussion guided by moderator and host Dr. Georgios Romanos.

Panelists are Dr. Gregory Altshuler, Dr. Dmitri Boutoussov, and Dr. Markolf Niemz.

Educational Objectives

• Summarize the uses of diode lasers in the dental practice.
• Improve the safety and effectiveness of protocols of diode lasers in clinical dentistry.
Keynote: Airway and the Envelope of Force Distribution (400)

Robert Supple, DMD
Private Practice, Albuquerque, New Mexico, USA

This will be a motivational, TED-Talk style presentation about the growth and development of the airway and the envelope of force distribution as a first step in cracking the “Occlusion Confusion” code.

This lecture will present cases that demonstrate detection, assessment, and management of force engagement. An early adopter of the digital occlusion analysis system technology (T-Scan™, Tekscan, Inc., South Boston, Mass., USA), Dr. Supple has 30 years' experience scanning 25 patients a day, on average, virtually tracking mandibular and maxillary relationships.

Assessment of force distribution is a new science that establishes the prognosis of oral anatomy under stress. Occlusal management becomes increasingly simpler as we learn to measure digital force and interpret force distribution patterns.

Bites develop, function and adapt in predictable patterns which can not only be measured, but also modified and monitored. The envelope of force distribution is the key metric which empowers dental professionals to successfully care for physiologic and pathologic occlusions.

Educational Objectives

• Understand how growth and airway development set the maxillary plane of occlusion.
• Define an envelope of force distribution by measuring the dynamic relationship of the mandible to the cranium with the T-Scan.
• Appreciate how our technological choices define our professional mind-set.

Note: A workshop on airway obstruction follows this general session. See Workshops and Airway Obstruction for details.
Noninvasive Laser Treatment for Sleep-Disordered Breathing (402)

Jason Pang, BDS
Cosmic Smile Laser Dental, Neutral Bay, New South Wales, Australia

An innovative Er:YAG laser procedure (NightLase®, LightWalker, Fotona d.o.o., Ljubljana, Slovenia) is used to improve the quality of a patient’s sleep by reducing snoring and improving mild obstructive sleep apnea (OSA). It is noninvasive, patient-friendly, and performed without anesthetic.

Snoring and OSA can present in many forms including muscle and joint pain, excessive grinding and wear of teeth, erosion, and tooth decay. Treatment of OSA is important as it can cause impaired cognitive function and quality of life, daytime sleepiness, diabetes, hypertension, and cardiovascular disease, among other disorders.

This treatment can also be used for a continuum of sleep-disordered breathing conditions not characterized by either snoring or mild apnea. Upper airway resistance syndrome, hypopnea, and even severe sleep apnea can, with treatment, display marked reduction of all indices, and dramatically improve the quality of a patient’s sleep.

Using strict recording protocols pre-, during and post-treatment, we were able to quantify and monitor the improvements as a result of this noninvasive treatment. A more intensive protocol – when combined with adjunctive exercises, treatments and appliances – was also able to treat severe snorers and those afflicted with apnea with improved success.

Educational Objectives

• Describe an Er:YAG laser-based noninvasive laser treatment for snoring.
• Explain how the procedure can also be used to treat a range of sleep disorders including upper airway resistance syndrome, hypopnea, and mild obstructive sleep apnoa.
• Elaborate on how intensive protocols appear to help severe snorers and those with severe sleep apnea sleep better.

Digital Occlusion Workshop (405)

Robert Supple, DMD
Private Practice, Albuquerque, New Mexico, USA

This hands-on workshop will dive more into the technologies discussed in the morning keynote presentation and will provide a hands-on experience in digital occlusion. Participants will leave with a better understanding of how to help diagnose and treat their patients while also building their practice. Assessment of force distribution is a new science that establishes the prognosis of oral anatomy under stress. Occlusal management becomes increasingly simpler as we learn to measure digital force and interpret force distribution patterns.

Educational Objectives

• Gain hands-on experience with digital occlusal analysis to gain a better understanding of how to diagnose and treat patients.
• Learn practice implementation techniques to help foster happy and healthy patients.
Advanced Laser Technology in Noninvasive Diagnostic Approaches (410)

Darinca C. Todea, DMD, PhD, Professor
University of Medicine and Pharmacy, Timișoara, Romania

This lecture presents the most important noninvasive laser-based methods for diagnostics in different fields of dentistry. In orthodontics, 3-D laser scanners are increasingly being used to establish databases for normative population and cross-sectional growth changes and also to assess clinical outcomes in orthognatic surgical and nonsurgical treatments. In prevention, the main methods for diagnosis of demineralization and caries detection in early stages are represented by laser fluorescence – quantitative light fluorescence (QLF); 655-nm laser fluorescence caries detection (DIAGNODent®, KaVo Dental GmbH, Biberach, Germany); fiber-optic transillumination (FOTI); digital imaging fiber-optic transillumination (DIFOTI); and optical coherence tomography (OCT). In pediatric dentistry and odontology, laser doppler flowmetry (LDF) is a noninvasive, real-time method used for determining tooth vitality by monitoring the pulp microcirculation in traumatized teeth, fractured teeth, and teeth undergoing different conservative treatments. In periodontology, recent studies show the ability of LDF to evaluate the health of gingival tissue in periodontal diseases and also the outcome after different periodontal treatments. In the oral pathway, OCT and fluorescence seem to be highly promising imaging modalities influencing the screening decisions for oral malignant lesions.

Educational Objectives

• Realize the importance of noninvasive diagnostic approaches in dentistry.
• Recognize the connection between early diagnosis and proper treatment.

Lasers for Treating Sleep Disorders (412)

Kyoju Nakajima, DDSc, PhD
Oarai Dental Office, Ibaraki, Japan

Introduction: Conventional treatments for obstructive sleep apnea syndrome (OSAS) have involved the use of oral or dental appliances that open the upper airway. Recently, a new Er:YAG laser-based method for the treatment of snoring and OSAS has been developed. But these cases have not reported on the laser’s effect on changes in reference values such as the apnea-hypopnea index (AHI) and partial pressure of oxygen (PO2). Our investigation attempted to measure reference values and determine how conventional nonsurgical treatment alone, or conventional treatment along with 10,600-nm CO2 laser and 980-nm diode laser treatments, affected these values.

Materials and Methods: Eleven patients diagnosed with OSAS by a hospital department of sleep disorders were included in this study. Chief complaints included abnormal discomfort of tissues adjacent to the teeth and bruxism.

Diagnosis and Treatment Plan: A definite diagnosis for OSAS was obtained by a simple examination. A sleep splint was fabricated with the use of a George Gauge for those patients found to have an occlusal abnormality. The use of a laser was explained to those patients selected for laser treatment and informed consent was obtained.
Treatment: A 10,600-nm CO2 laser scanner (SmartXide, DEKA, Calenzano, Italy; 9 W, spacing 300 μm spacing, 300 ms dwell time, stack 2 mode) was used to irradiate the nasopharynx and uvula of selected patients. A 980-nm diode laser (Alta, Dental Photonics, Walpole, Mass., USA; 25 W, 5 microsec on/45 microsec off, 400-micron fiber, noninitiated tip, noncontact, 1-2 mm/sec motion) was used to treat the oral cavity (floor of the mouth and back of the tongue). Laser treatments occurred over the period of one month.

Results: All 11 patients used a sleep splint and achieved improved inspection values after treatment. Not all patients received laser treatment. One patient, evaluated with magnetic resonance imaging (MRI), showed an increase in airway space. In 4 of 6 patients with continuous positive airway pressure (CPAP) appliances, inspection values improved. CPAP patients using dental appliance showed better values. Patients with high body mass index (BMI) values were indicated for continued use of CPAP. Patients with severe bruxism (95%) were found to exhibit other disorders (including gastrointestinal and cardiovascular disorders and cancer).

Conclusion: The key to the good results was rehabilitation and use of the sleep splint with laser treatment.

Educational Objectives

• Summarize the findings of a study investigating 10,600-nm and 980-nm laser approaches to treating obstructive sleep apnea syndrome.
• Compare the effectiveness of laser treatment with conventional modalities.

Endodontics

Saturday, April 28 ~ 10:15 AM - 11:15 AM

Lasers and Emerging Trends in Endodontics (403)

Justin R. Kolnick, DDS
Advanced Endodontics of Westchester, White Plains, New York, USA

For many years, endodontic therapy has enjoyed a high success rate. However, with the introduction of cone beam computed tomography (CBCT) many 2-D “successes,” as seen on standard periapical radiography, have been shown to still have evidence of apical periodontitis in 3-D. These 3-D failures have not only led to a re-evaluation of our definition of success but also to a reassessment of current treatment protocols. The recent introduction of minimally invasive treatment concepts has further complicated the situation. While it is generally accepted that preservation of more tooth structure is desirable and will improve the longevity of endodontically treated teeth, the more conservative access cavity preparations, minimally tapered canal preparations, and smaller apical sizes have restricted access to the most critical part of the canal system, the apical third. The use of lasers in endodontics is now emerging as one of the most efficacious treatment modalities available to manage the complexities of the apical third of root canal systems, especially within the confines of minimally invasive treatment protocols. The recent release of a more compact and less expensive all-tissue laser unit has made this technology readily available to dentists. Successful integration of lasers into endodontic protocols requires not only a grasp of advanced endodontic principles but also an understanding of the advantages and limitations of lasers themselves. This lecture will review basic and advanced laser applications in endodontics and help build confidence in the management of more complex cases. Topics covered will include laser-activated irrigation and disinfection as well as clinical issues such as loss of patency, perforations, resorption, and management of the apical canal.

Educational Objectives

• Understand emerging trends in endodontics.
• Enumerate basic and advanced laser applications in endodontics.
• Relate how lasers can improve endodontic productivity in your practice.
How ‘The Bubble’ Has Changed Root Canal Cleaning and Disinfection (407)

Roeland De Moor, DDS, PhD, MSc; Maarten Meire, DDS, PhD, MSc
Ghent University Dental School, Ghent Dental Laser Centre, Ghent, Belgium

The activation of root canal irrigants with erbium lasers was introduced in the beginning of this century. More insight has been gained into the phenomenon of erbium laser-activated irrigation (LAI), the associated laser-induced cavitation and agitation/activation of the irrigant. Whereas in the beginning the laser fiber (flat-ending fiber tip or conical tip) was positioned in the apical region of the root canal and was used with long pulses and high energy, we have evolved to their use in the pulp chamber in the region of the canal orifice (and not in the root canal), relying on short pulse duration and low energy. For the latter, also called the photon-induced photoacoustic streaming (PIPS) approach, a conically shaped fiber tip is used and activation is performed respecting specific settings, i.e., 20 mJ, 15 Hz, and 50-µsec pulses. In the meantime, a sufficient number of investigations have demonstrated the value of added cleaning and disinfection, and also a better interaction with the biofilm and deeper penetration in dentinal tubules than with ultrasonic irrigation and other dental laser wavelengths. It became clear that the effects of LAI and PIPS were related to vigorous dynamics in the irrigation solution. Hence, questions were raised regarding their safe use. Recent investigations, in this respect, have demonstrated that the risk of extrusion is in the same order as with other agitation techniques. Moreover, depending on the settings used, even negative pressures were registered. A recent development with still far shorter pulse duration led to the introduction of the shockwave enhanced emission photoacoustic streaming (SWEEPS™ approach, Fotona d.o.o., Ljubljana, Slovenia), which is expected to be more powerful than the PIPS approach. Other wavelengths have also been used to induce cavitation in endodontic irrigants (e.g., 980-nm diode and 1340-nm Nd:YAP lasers). It is a question whether the bubbles created with these wavelengths are indeed cavitation bubbles and not just boiling-bubbles.

Educational Objectives

• Explain that erbium laser irradiation in endodontic irrigation solutions may induce expanding and imploding vapor bubbles, referred to as cavitation.
• Recognize that expanding and imploding cavitation bubbles are responsible for vigorous irrigant dynamics and surface stresses.
• Understand that boiling is not cavitation.

Laser-Assisted Disinfection of the Root Canal: A Possible Method in Achieving Quick and Reliable 3-D Disinfection (411)

Roy George, BDS, MDS, MRACDS (Endo), GCHE, PhD
Griffith University, Gold Coast, Queensland, Australia

Inadequate bacterial and bacterial biofilm eradication from the canal space during chemo-mechanical preparation is one major contributor to poor clinical outcome following root canal therapy. There is a need for techniques that could effectively disinfect contaminated root canal spaces and dentinal tubules reliably and across the length and thickness of the root canal space. There is also a need to examine techniques that can reliably confirm the presence or absence of bacteria. This presentation will deal with current and future techniques that could assist in ensuring reliable and verifiable 3-D disinfection of the root canal system.

Educational Objectives

• Summarize laser-assisted techniques for disinfection of the root canal system.
• Identify lasers used for disinfection of root canals.
Aptness of Diode Lasers for Soft Tissue Procedures (413)
Sana Farista, MDS (Periodontist); Shanin Farista, MDS (Endodontist)
Consultant, Rajnandgaon, India

The overall goal of this presentation is to provide dental professionals with an insight into different soft-tissue laser procedures using a diode laser that will make their practice more convenient and uneventful. Dental lasers are used for multiple dental procedures, including soft-tissue procedures. Soft-tissue lasers are available in varying wavelengths and wattages and can be used for procedures that would otherwise be performed using a scalpel or possibly an electrosurgical unit. Diode lasers enable safe and effective removal of soft tissue when guidelines are followed and can be used for depigmentation, gingival troughing, operculectomy, frenectomy, frenotomy, vestibuloplasty, tongue-tie, lip repositioning, removal of soft-tissue lesions, and other periodontal procedures. The diode laser offers patient advantages like less pain, less need of anesthetic injections and sutures, low chances of postoperative edema, and at the same time provides the clinician with a bloodless surgical field and better patient compliance. The use of lasers in dentistry has contributed to an increase in patient comfort and uneventful healing, has offered safe and effective treatment, and should be used in everyday dentistry.

Educational Objectives
- Specify various applications of diode lasers in oral soft tissue procedures.
- Compare conventional and laser techniques.

Laser Bleaching: The Past, Present, and Future (420)
Marina Polonsky, DDS, MSc Laser Dentistry
Canadian Dental Laser Institute, Ottawa, Ontario, Canada

In our fast-moving lives, in-office bleaching is becoming more popular due to quick results and avoidance of patient noncompliance with at-home treatment protocols. High-intensity light has been used since the early 20th century to accelerate the action of hydrogen peroxide during dental bleaching procedures. With the incorporation of diode, Nd:YAG, CO2, and KTP lasers into the dental practice in the ‘80s and ‘90s, they have all been shown to be successful in laser-assisted in-office bleaching, to varying degrees. Their thermal safety, with proper application, has also been proven. More recently, all-tissue lasers, such as Er:YAG and Er,Cr:YSGG, have also been investigated for possible uses with in-office bleaching procedures. This lecture will review the evidence in the scientific literature supporting laser-assisted bleaching abilities of various wavelengths.

Educational Objectives
- Review the benefits of laser bleaching.
- Ascertain which laser wavelengths are appropriate for laser-assisted bleaching.

Note: This presentation discusses investigational devices that have not yet received U.S. FDA approval or clearance for the specified clinical indications, or describes off-label uses.
Hygiene / Auxiliary

Friday, April 27 ~  8:30 AM - 10:00 AM

What to SAY to Get the PAY (301)

Karen S. Parker, RDH, BSDH
Private Practice, Edmonds, Washington, USA

This presentation will provide you with the information necessary to bridge the gap between treatment acceptance and insurance payment. It will take the hygiene periodontal treatment plan to the next level through documentation, appropriate narratives, and current dental terminology (CDT) codes. Strategically providing the insurance companies with what they want enables your patients to receive the maximum benefit and you to obtain the compensation you deserve.

Educational Objectives

• Develop proper data collection.
• Utilize the appropriate codes to enhance the treatment plan.
• Create applicable narratives to diminish claim denials.

Friday, April 27 ~  10:45 AM - 11:45 AM

Laser Use During Implant Care (307)

Heather Angers, RDH
Belmar Park Dental Care, PC, Lakewood, Colorado, USA

Lasers are utilized for many applications in dental hygiene, one of which is the use of lasers around dental implants. This lecture will visit how to recognize disease vs. health and how to effectively and safely use lasers around dental implants in the day-to-day routine.

Educational Objectives

• Review basic laser safety around implants, i.e., angulation, time spent, and power levels.
• List the types of lasers that are most safe and the lasers that are least safe for implant care.
• Define a diseased pocket versus a healthy pocket around implants.
Photobiomodulation (PBM) is being used increasingly in various areas of medicine to assist with reduction of inflammation, relief of pain, and stimulation of healing. Dentistry is a prime setting to employ this therapy and benefit patients who are seeking care. This presentation will convey the basic concepts of photobiomodulation therapy through discussion of dental applications including treatment of aphthous or herpetic lesions, temporomandibular joint (TMJ) discomfort, and tooth sensitivity. The importance of case selection will be emphasized. Cases involving the use of a 808/633-nm diode laser (Oralase, Medx Health Corp., Mississauga, Ontario, Canada), 200 mW with a 10-mm spot size, will be described. Patient responses to therapies rendered were generally favorable. Using the appropriate device and treatment parameters is critical to treatment outcome. No negative effects of PBM have been reported.

Being fully aware of the treatment objective is essential. One must determine the treatment site’s location and depth as well as whether stimulation or inhibition is indicated. Both factors are required to choose the appropriate wavelength and treatment parameter for the case. When appropriately administered, photobiomodulation can be beneficial in reducing patient discomfort associated with inflammation and improving healing through promotion of circulation.

**Educational Objectives**

- Specify the objective and mechanisms of PBM.
- List criteria for case selection.
- Review the factors necessary to optimize PBM patient outcomes.

**Note:** This presentation discusses investigational devices that have not yet received U.S. FDA approval or clearance for the specified clinical indications, or describes off-label uses.

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**The Team Approach to Laser Use: Lasers and the Dental Assistant (Hands-On) (318)**

Jeanette Miranda, RDH, BSDH¹; Angie Wallace, RDH²  
¹Private Practice, Sioux Falls, South Dakota, USA  
²Owasso, Oklahoma, USA

This course is designed to demonstrate different laser procedures and the role the dental assistant plays. The first segment will consist of information on laser procedures, set-up and disinfection protocols, laser safety, and a review of dialogue for patient education. The second segment of the course will be a hands-on workshop with photobiomodulation lasers.

**Educational Objectives**

- Review basic set-up and disinfection protocol.
- Relate laser safety knowledge.
- Develop oral skills for discussing laser procedures with patients.
- Demonstrate photobiomodulation procedures.

**Note:** This presentation discusses investigational devices that have not yet received U.S. FDA approval or clearance for the specified clinical indications, or describes off-label uses.
Saturday, April 28 ~  8:30 AM - 10:00 AM

**Give 'Em a Hand: Hygiene Hands-On (401)**

Jeanette Miranda, RDH¹; Angie Wallace, RDH²; Mary Lynn Smith, RDH³; Gloria Monzon, RDH⁴; Heather Angers, RDH⁵; Shannon Richkowski, RDH⁶

¹Private Practice, Sioux Falls, South Dakota, USA
²Owasso, Oklahoma, USA
³Private Practice, McPherson, Kansas, USA
⁴Private Practice, Milpitas, California, USA
⁵Private Practice, Lakewood, Colorado, USA
⁶Hygiene Mastery, Alexandria, Virginia, USA

This hands-on workshop will allow hygienists the opportunity to try a variety of soft-tissue lasers (diodes, CO₂, erbiums), spend time working on techniques (Laser-Assisted Periodontal Therapy, Laser Bacterial Reduction, Photobiomodulation), and be able to get answers to their questions from experienced laser hygienists.

**Educational Objectives**

- Utilize a variety of soft tissue lasers on tissue specimens in a laboratory setting under controlled supervision for procedures typically performed in the hygiene department.
- Compare clinical techniques and tips with fellow hygienists.

**NOTE:** This presentation discusses investigational devices that have not yet received U.S. approval or clearance for the specified clinical indications, or describes off-label uses.

Saturday, April 28 ~  10:15 AM - 11:15 AM

**Understanding the State Board Role in Policymaking and What That Means to Us (408)**

Angie Wallace, RDH¹; Gail Siminovsky, CAE²

¹Owasso, Oklahoma, USA
²Academy of Laser Dentistry, Coral Springs, Florida, USA

With this course we intend to help attendees become aware of the changes that occur with State Boards and the use of lasers with dentists and dental hygienists. We will address the rules and regulations and interpret what each State allows in their State Practice Act.

**Educational Objectives**

- Understand what the rules and regulation mean in each State’s Practice Act.
- Determine which States allow hygienists to use lasers and to what level of practice.
- Discover how to keep up with changes that occur with your State Practice Act.
- Determine what your State may require from you if you use lasers in your State.
Lasers are continuing to be used successfully in nonsurgical periodontal therapy throughout the world. A frequently asked question is, “What treatment design gives the best results?” The answer is: not all patients are the same, not all practices are the same, and not all clinicians are the same; therefore, treatment designs require flexibility. The good news is nonsurgical periodontal treatment planning has a variety of options to obtain great results. Learn several different styles of treatment design from clinicians who have used lasers extensively in nonsurgical periodontal therapy for almost 20 years. Take these principles and develop what works in your practice for the patient you are treating.

**Educational Objectives**

- Define the biologic rationale for laser-assisted nonsurgical periodontal treatment protocol.
- List the criteria for case type used to formulate a customized treatment plan.
- Practice creating a treatment plan based on presented case information.

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Oral Implantology is the fastest-growing discipline in dentistry. It is performed by many specialty groups and represents a complex interaction of many paradigms across this base. As treatment options become more comprehensive and procedural steps are combined, there exists a greater possibility of complications or failure. This lecture will cover the current procedure base for the use of ablative lasers in implant surgery, including extraction/immediate implant placement, placement of implants in the infected osteotomy, and the treatment of periimplantitis.

**Educational Objectives**

- Identify treatment options for the compromised or infected implant site.
- Specify treatment of periimplantitis for maximum tissue regeneration.
- Review how to prepare the osteotomy for safe and predictable implant placement in extraction sites.
Predictable Implantology Using a New Minimally Invasive Techniques Strategy (207)

Gilles P. Chaumanet, Prof. MSc
International Institute of Laser Education, Villeneuve-Loubet, France

Minimally invasive surgery (MIS) is fully recognized and widely used in many fields of surgery. Various laser-assisted procedures have been validated, showing their superiority over the traditional techniques. What are the possibilities of lasers in implantology? Can flapless procedures performed in healed sites and in immediate postextractive implantology be routine treatments? What are the evolutions? In minimally invasive implant therapy, the use of different laser wavelength is determinant of a coherent surgical protocol. Based on scientific research that applies to reasonable and innovative procedures, these concepts will allow one to simplify implant treatment, reduce the time of healing and loss of tissues, avoid the use of potentially dangerous biomaterials, and therefore diminish drastically the costs and the time of the implant process.

Educational Objectives

• Understand the importance of lasers in minimally invasive implant surgery.
• Describe a full surgical laser implant procedure.
• Relate the physical and biological effects of different laser wavelengths.

Treatment of Periimplantitis with an Er:YAG Laser (210)

Tosun Tosun, PhD
Istanbul Aydin University, Istanbul, Turkey

Infectious diseases around dental implants are classified in two main stages: periimplant mucositis and periimplantitis. Periimplant mucositis is an inflammatory lesion of soft tissues surrounding an implant which does not include bone tissue and it is clinically detectable with a bleeding-on-probing index. Periimplantitis is an inflammatory lesion which involves both soft and hard tissues around an implant. Although a high number of studies are present regarding different aspects of dental implants, there is still a lack of a common protocol for the treatment of periimplant mucositis and periimplantitis. Roughly periodontal treatment modalities are extrapolated to overcome periimplant infections. Thus antimicrobial treatment strategies are gaining importance to heal lesions. Because of the weak natural immune structures around implants infections can develop faster in comparison to teeth. In these instances early diagnosis and faster anti-infectious tools are needed. Dental lasers are proven to be highly effective for immediate bacterial reduction. Various laser wavelengths could be used to obtain tissue disinfection and treat periimplant infections. The usage of soft and hard tissue lasers in the treatment of periimplantitis will be explained.

Educational Objectives

• Summarize the characteristics of periimplant infections.
• Describe periimplant infection treatment strategies.
The Value of an Erbium Scanner in Implant Surgery (215)

Ingmar Ingenegeren, DDS
Private Dental Laser Clinic, Bottrop, Germany

**Introduction:** Laser scanners have the reputation of working accurately and precisely. As erbium lasers work efficiently on bone, this study investigated whether an Er:YAG laser handpiece scanner can help to produce a more defined preparation in bone that had already been achieved by lasing, with tip, through a surgical guide, for subsequent insertion of a dental implant.

**Materials and Methods:** Round and square patterns were first produced *in vitro* on extracted teeth, eggs, and pig bone for analysis. Then *in vivo* at the spot of a removed pontic, after anesthesia, a 2940-nm Er:YAG laser scanner (LightWalker, Fontona d.o.o., Ljubljana, Slovenia) was inserted in the oral cavity. The laser settings were 600 mJ and 20 Hz. The scanner handpiece is tipless and works in noncontact mode. It was repeatedly activated in focus at a distance for 5 seconds until no further progress could be observed. Interruptions were employed to check the progress and clean the spot.

**Results:** The *in vitro* examination showed a clear cavity, but the borders were not as precise as shown in the company brochure due to manipulation of the handpiece by hand. The maximum depth was about 2 mm. *In vivo* no desired pattern could be achieved because of the interference of blood, saliva, and debris.

**Discussion/Conclusion:** In laboratory settings, with careful manipulation, the laser scanner may be able to produce cavities as shown in the brochure. *In vivo*, the large and heavy handpiece and movements of the patient and surgeon make focusing and handling very difficult, and holding it at the same spot is impossible. *In vivo*, the cavity will always be filled with blood. Therefore, the tipless erbium laser scanner cannot ablate in depth, as its energy will be absorbed at the water-containing surface. We can conclude that the scanner handpiece can be useful in dermatology and superficial enamel ablation for orthodontics, but cannot contribute to any laser implant bed preparation.

**Educational Objectives**
- Explain the absorption characteristics of erbium lasers.
- Review the capabilities of handpiece scanners.

Cone Beam Technology for Dental Practice (220)

Keith Brewster, DDS, FALD
Private Practice, Dallas, Texas, USA

Cone beam radiology can be used in the dental practice to facilitate diagnosis, treatment planning, and determination of treatment options. This presentation will include case descriptions and patient scans that demonstrate the capabilities and versatility of cone beam technology in treatment planning for cases ranging from simple to complex multiple implant surgeries. Also planned is a discussion of how the cone beam can be used for guided anterior implant placement, tissue guidance, and supernumerary extractions.

**Educational Objectives**
- Specify how cone beam technology can be used beneficially in the dental practice.
- Describe diagnosing, treatment planning, and patient outcomes of treatment using 3-D technology.
- Review cases used for demonstration with 3-D software working in real time.
For more than 50 years since its invention (1960), the laser has found a wide range of applications in medicine. It took more than 25 years to see the first dental laser (with very limited use) in our office. But since then, various types of lasers for dental treatments (Nd:YAG, CO₂, diode, Er,Cr:YSGG and Er:YAG) have been developed and applied clinically. More and more dentists show interest in the possibilities that lasers may open to treat soft tissues as well as hard tissues. This interest primarily is based on the research conducted in the past years by the dental community in different universities worldwide (Brazil, France, Germany, Italy, Israel, Japan, U.S.A.) and where the efficiency of such devices has been proven on oral tissues. As lasers continue to gain acceptance and recognition within the dental community, they are becoming an instrumental part of the everyday practice.

Parallel to the common scalpel surgery, laser systems today allow many clinical applications in oral surgical procedures. According to the tissue quality (inflamed, hyperplastic, filled with fluid or blood) and the laser parameters, it is now possible to accomplish a complication-free surgical procedures without any scar tissue formation.

Effective cutting, sufficient coagulation, shortened operating time, and good-to-excellent hemostasis are the aims of laser therapy. The laser operations are rapid and bloodless and have excellent cosmetic and functional results in the oral cavity. From our first step into laser dentistry to the present, the future is bright and will lead us to innovation.

Educational Objectives

- Learn the basic principles of laser wavelengths.
- Differentiate the capabilities of all laser wavelengths.
- Explain why laser dentistry is such a value-added service to our patients’ well-being.
Friday, April 27 ~ 11:30 AM - 12:15 PM

**What Would Be the “Perfect Laser” for Dentistry? (310)**

Dmitri Boutoussov, PhD
Biolase, Irvine, California, USA

We will analyze the answer from multiple perspectives:
- Clinical requirements
- Laser-tissue interaction on all levels: surgical, therapeutic, diagnostic
- Costs and benefits (for the dentist and the patient)
- System design and ergonomics
- Education and support.

We will try to be very objective, “build” one, and see how far we are today from this “ideal” model, both from clinical applications and product design standpoints. During this presentation, we will review about 30 years of laser history in dentistry, address benefits and shortcomings of different laser wavelengths and other critical operation parameters, advantages of various design concepts, and the history of different manufacturers of dental lasers.

**Educational Objectives**

- Summarize the role of lasers in the dental practice.
- Enumerate the benefits of different laser wavelengths and other operation parameters.
- Identify where to focus clinical research.
- Determine on which areas to focus product design considerations.

Friday, April 27 ~ 12:15 AM - 12:30 PM

**The Ice-Cube Technique for Coagulation of Vascular Tumors in the Oral and Perioral Tissues (321)**

Georgios Romanos, DDS, PhD, Prof. Dr. med. dent.
Stony Brook University, School of Dental Medicine, Stony Brook, New York, USA

Vascular lesions are not rare in the oral cavity and may lead to complications during periodontal and/or restorative procedures. In addition, such lesions in perioral tissues are associated with esthetic and functional demands. The lecture presents the use of a relatively easy and friendly-in-use coagulation method for treating hemangiomas and vascular lesions of various sizes (from mm to cm), using an ice cube placed on the lesion during laser irradiation. This technique was developed in order to cool and control scattering of the laser light with wavelengths in the near-infrared region. In addition, postoperative pain and scarring are minimized. The lecture will describe this concept of treatment step-by-step and provide the postoperative clinical experience over the last 20 years in the treatment of more than 100 cases using diode and Nd:YAG lasers.

**Educational Objectives**

- Outline a new laser-based technique for coagulation of vascular lesions.
- Summarize long-term data after coagulation of vascular lesions using diode or Nd:YAG lasers.
- Explain the methodology in order to avoid complications.
Among many other indications for the use of lasers in dentistry, there is a field of application where the laser has brought major proceedings and specific advantages: the dental hard tissue preparation. The erbium laser can ablate enamel and dentin without thermal side effects due to the photoablative impact of this wavelength. The laser light is absorbed by water within the hydroxyapatite; the water is heated and evaporates instantly. Due to the volume change, particles of the dental hard substance are blown out of the tissue and a cavity is created. The whole procedure is almost painless and therefore well accepted by patients. Composite restorations can be placed without acid etching because of the retentive surface delivered by the laser. To find the right power settings and the optimal handling of the laser fiber, a comprehensive scanning electron microscopy (SEM) study has been performed. In addition, different bonding systems have been compared and an optimal quality of bonding has been evaluated. The investigations showed that through the optimization of different influence factors results can be achieved which are far superior to those achieved by the use of traditional preparation techniques. The latest results of the influence of lasers on the collagen fibrils will be described.

CO₂, diode, and erbium lasers are widely used in dentistry and produce very satisfying results. Another application for these laser wavelengths in conservative dentistry is the treatment of hypersensitive dental necks. The laser is applied at rather low energy settings in conjunction with fluoride gel. In most cases, one appointment is sufficient to achieve permanent freedom from pain even in patients who suffer from severe symptoms.

**Educational Objectives**

- Explain the mechanism of erbium laser ablation of hard dental tissue.
- Describe the factors influencing bond strengths to laser-prepared tooth structure.
- Review techniques for laser treatment of hypersensitive teeth.

**Note:** This presentation discusses investigational devices that have not yet received U.S. FDA approval or clearance for the specified clinical indications, or describes off-label uses.
Two Case Reports: Treatment of Large Cyst-Like Mandibular Bone Defects with 980-nm and 910-nm Lasers (313)

Kyoju Nakajima, DDS, PhD
Oarai Dental Office, Ibaraki, Japan

Purpose: In cases of large, egg-sized mandibular cysts, conventional treatment involves the creation of open wounds that delays epithelialization and bone regeneration. The purpose of this case presentation is to demonstrate the effectiveness of an alternative laser-based technique using small surgical wounds to enable removal of the internal diseased tissue and thereby create opportunities for normal tissue reconstruction.

Materials and Methods: In this special and rare case, two conditions in one patient are presented, one involving a residual cyst on the right side of the mandible, and the other a fibroma tumor on the left side of the mandible. Both cysts were the size of an egg. Both conditions had been diagnosed by a university hospital as requiring extraction of adjacent teeth to remove the cysts. The patient sought a second opinion from our dental clinic and wanted to know whether laser dentistry could be used for his conditions.

Diagnoses: (1) Root granuloma at tooth site #21, occurring after tooth extraction at another dental clinic. (2) Fibroma at tooth sites #33-34, where teeth were lost several years prior.

Treatment: The tip of a 980-nm diode laser (Alta, Dental Photonics, Walpole, Mass., USA) was used to drill a small (1 mm or less) hole through the buccal gingiva into the cortical plate at a spot near the center of the lesion. The fiber tip was then inserted through the hole into the cystic cavity, and, prior to irradiation, was manipulated to determine the distance to the bone of the surrounding wall. Without touching the bone with the tip, the laser was activated to destroy bleeding tissue in the internal space, while care was taken to avoid inappropriate temperature rise. After completion of the laser procedure, the inner space was irrigated with physiological saline and solution diluted with antibiotic.

From one week after the surgical procedure, irradiation of the site with a 910-nm photobiomodulation laser (Lumix 2, USA Laser Biotech, Inc., Richmond, Va., USA) was started, and continued once every 2 weeks for 3 months. After completion of that regimen, healing progress was observed and photobiomodulation was performed once a month.

Results: Bone regeneration was shown in this and several other clinical cases involving the described laser-assisted technique.

Conclusion: In cases of mandibular cysts, the use of a minimally invasive technique using two lasers to remove granulation tissue and preserve the tissue walls enable minimization of bone loss and promotion of bone regeneration.

Educational Objectives
• Describe a technique using two diode lasers to treat mandibular cysts.
• Relate the advantages of the laser-assisted technique compared to conventional treatment methodologies.

Note: This presentation discusses investigational devices that have not yet received U.S. FDA approval or clearance for the specified clinical indications, or describes off-label uses.
This two-day program provides a standard proficiency course according to the Curriculum Guidelines and Standards for Dental Laser Education. This course contains both lecture and hands-on learning opportunities and includes a comprehensive overview and basic understanding of all dental laser devices, laser-tissue interactions, and safety and operation of a variety of dental lasers. The full range of diagnostic and therapeutic applications for soft tissue and hard tissue will be discussed. The most frequent specific indications for use with sound scientific and clinical rationale for dental laser use will be addressed. There is 75-question multiple-choice online examination plus a hands-on clinical simulation proficiency examination. A variety of dental lasers will be utilized with support from dental manufacturers. A detailed course schedule is provided in the Standard Proficiency Course Manual at the beginning of the course. Successful candidates will be announced during the Awards Ceremony on Friday evening. Upon completion of this course, participants successfully completing both the written and clinical simulation proficiency examinations will be recognized as having completed the certification program for a standard proficiency dental laser course. A certificate of successful completion for specific dental laser devices will be sent to current or new ALD members. Visit the Web site for more information: http://www.laserdentistry.org/index.cfm/conference/Conference%20Certification#cert2.

Educational Objectives

• Understand the basic principles of laser physics and laser-tissue interaction.
• Explain how variations in the laser’s wavelength, power, and temporal modes can be used to alter desired clinical outcomes.
• Demonstrate an understanding of laser operation and safety features in a hands-on learning assessment exercise.
• Practice laser-assisted clinical procedures on porcine tissue under controlled supervision.
Laser Safety Officer Training – Laser Fundamentals and Why They Matter (Module 1 of 2) (204)

Nancy M. Fitzgerald, DMD, BSDH
Midwestern University, College of Dental Medicine, Glendale, Arizona, USA

A good understanding of the scientific fundamentals of lasers provides a fresh appreciation of the technological advancements in this field and how this affects applications. Laser technology is expanding: new wavelengths are being introduced to the marketplace, a wider range of parameters are available than ever before, and photobiomodulation (PBM) is becoming more prevalent. A solid understanding of the physics is central to absolutely knowing what is happening on and inside the tissue being treated, how to manipulate parameters for various conditions and results, and why preset parameters are not always the best option.

This is a crash course in laser physics focused on filling a need for a basic understanding of laser-tissue interactions, but it also presents more advanced topics in the key principles of the physical and biophysical part of laser dentistry.

This course will cover from how a laser is constructed (and we are light years ahead of Maiman’s first ruby laser) to what determines the laser’s power, intensity, energy, wavelength, spot size, laser pulses, beam divergence, and efficiency. Topics include the transmission of light, its effect on tissues, and unique characteristics of various lasers.

NOTE: The Laser Fundamentals Module 1 or Standard Proficiency Certification serves as a prerequisite for the Laser Safety Officer Training - Implementing a Laser Safety Program. A basic understanding of how a laser operates helps in understanding the hazards when using a laser device.

Included in conference registration.

Educational Objectives

• Convey sufficient fundamental knowledge in order to more appropriately assess a laser’s usefulness for a specific purpose and to understand its limitations.
• Provide some basic information on many of the latest types of lasers.
• Illuminate the minds of attendees with the science of illumination.

Laser Safety Officer Training – Implementing a Laser Safety Program (Module 2 of 2) (213)

Nancy M. Fitzgerald, DMD, BSDH; Pamela Galarza; Talita Sizemore
Midwestern University, College of Dental Medicine, Glendale, Arizona, USA

This course will address the specific duties of a Laser Safety Officer (LSO) as described in the ANSI Z136.1 American National Standard for Safe Use of Lasers and Z136.3 American National Standard for Safe Use of Lasers in Health Care as they relate to dentistry. This course is designed specifically for dental care settings and will help guide participants in developing and implementing a laser safety program. It emphasizes hazard identification and safe work practices that apply to all laser operators and includes the changes in the latest revision of the standards. This type of educational program must be completed by the practice’s LSO to enable the mandated registration of their Class 4 laser devices with various state regulatory agencies that may require specific laser safety officer training.

NOTE: Laser Fundamentals and Why They Matter is a required prerequisite for this course.

Educational Objectives

• Summarize the responsibilities of the Laser Safety Officer and provide specific guidelines for developing a laser safety program.
• Provide the required knowledge and understanding of laser systems, nominal hazard zone (NHZ), maximum permissible exposure (MPE), and the optical density (OD) of protective eyewear.
• Examine laser hazard class details and discuss laser hazard evaluations.
• Provide guidance for appropriate audit and record keeping requirements, including training.
Pediatric Dentistry

Friday, April 27 ~ 10:45 AM – 12:30 PM

We Can Make a Difference: The Merger of Medicine and Dentistry (308)

Lawrence Kotlow, DDS
Private Practice, Albany, New York, USA

Dentistry and medicine are more than ever merging. Breastfeeding is the beginning of this merger. Diagnosing common problems related to this beginning will be discussed. Physicians such as family practice doctors, ear, nose, and throat (ENT) doctors and pediatricians are often asked to diagnose and/or treat infants presenting with signs of infant acid reflux and in extreme cases gastroesophageal reflux disease (GERD). The infants are often left to work out their pain and vomiting until they apparently outgrow the symptoms or are forced to undergo expensive, invasive or surgical procedures in the operating room under general anesthesia. Others are placed on adult acid reflux drugs, which have little actual benefits such as an H₂ blocker such as ranitidine (Zantac), a proton pump inhibitor such as omeprazole (Prilosec) or lansoprazole (Prevacid), even if the reflux and symptoms are in fact due primarily to swallowing air or aerophagia. During the differential diagnosis, tethered oral tissues (TOTs) such as tongue- and lip-ties as a potential cause are ignored. Revising an infant’s tongue-tie and lip-tie may not only be beneficial to eliminating a vast majority of mother-infant symptoms, the release also provides significant improvements of the infant’s latch on the mother’s breast and, in a short, simple, in-office procedure using the state-of-the-art laser surgery, eliminates the problems of infant reflux. Sleep apnea has become an important discussion on how infants who have airway blockage may develop behavior problems as they grow and mature.

Educational Objectives

• Recognize and diagnose tethered oral tissues in infants.
• Recognize and diagnose air-induced reflux in infants.
• Elaborate on how tethered oral tissues can be treated in the dental office with lasers.

Annette M. Skowronsiki, DDS, FAGD, DABLS
Private Practice, Shelby Township, Michigan, USA

From a general dentist’s perspective, treating infants and small children can be the enjoyment and life blood of a family practice. After the purchase of an Er:YAG laser in 2003, my professional world was forever changed. Transitioning from 2940-nm to 810-nm diode and in 2016 to 10,600-nm CO₂ laser wavelengths has given me the opportunity to observe the difference in each wavelength tissue response and healing.

Educational Objectives
• Discuss the variety of traditional surgical techniques and laser wavelengths used for release of oral frena.
• Compare the advantages and disadvantages of each technique.
• Enumerate considerations for changing instruments to improve outcomes.

Is Tongue Tie the Root Cause of Childhood Chronic Disease? (320)

Saadia Mohammed, DDS
Private Practice, Boca Raton, Florida, USA

According to the American Academy of Pediatrics, ten to twenty million children and adolescents in the United States have some form of chronic illness or disability. ‘Chronic’ refers to a health condition that lasts anywhere from three months to a lifetime. Dental caries is the number-one childhood chronic disease. As laser dentists we are going to be treating these children, and in the absence of typical factors which promote tooth decay it behooves us to look under the tongue. With the use of the functional medicine matrix to look at common chronic childhood diseases of gastrointestinal and airway-sleep disorders, obvious linkages to ankyloglossia become apparent. The International Affiliation of Tongue-tie Professionals (IATP) defines ankyloglossia as an embryological remnant of tissue in the midline between the undersurface of the tongue and the floor of the mouth that restricts normal tongue movement. In the presence of ankyloglossia which interferes or impacts normal function, we need to collaborate with the medical community to develop a simple protocol which is consistent and enables diagnosis of the aberrant anatomy and to devise a plan for rehabilitation and restoration of optimal lingual function.

Educational Objectives
• Recognize the relationship between chronic childhood disease and tongue-tie.
• Understand that tongue-ties rarely exist in isolation, that most tongue ties are missed by the medical professionals, and that the manifestations of the tie are treated with increasing burden placed on both the patient and the health care system as the patient continues to grow and compensate for the tie.
Saturday, April 28 ~  10:15 AM - 11:15 AM

Using a 9300-nm Laser in a Pediatric Dental Practice (404)

Lawrence Kotlow, DDS
Private Practice, Albany, New York, USA

This presentation will give the attendees an overview of the mechanism of action of a 9300-nm CO₂ laser (Solea, Convergent Dental, Needham, Mass., USA) and how it is used for both hard and soft tissue procedures on the pediatric patient without the need for local anesthesia in the vast majority of cases.

Educational Objectives

• Specify the mechanism of action for the 9300-nm laser.
• Relate how to achieve anesthetic-free operative dentistry.
• Enumerate soft tissue procedures which can be completed using the 9300-nm laser.

Note: This presentation discusses investigational devices that have not yet received U.S. FDA approval or clearance for the specified clinical indications, or describes off-label uses.

Saturday, April 28 ~  1:30 PM - 2:00 PM

The Tongue and How It’s Tied to Your Health (417)

Grace Sun, DDS, MALD, MAGD, FAACD, MICOI
Private Practice, Los Angeles, California, USA

The importance of the tongue cannot be overlooked. From a dentist’s point of view, the immediate issues with the tongue include tongue thrust, tongue-tie, malocclusion, and oral cancers. From a broader view, these issues include temporomandibular joint (TMJ), obstructive sleep apnea (OSA), insufficient craniofacial development, and physical strain. For health care providers, orofacial myofunctional therapy (OMT), laser-assisted frenectomy, speech therapy, and orthodontics will often become part of the services that can be provided to improve the patient’s health. This presentation will cover a review of the anatomy, physiology, etiology, adverse effects, and treatment options regarding the tongue complex.

Educational Objectives

• Identify how the tongue is tied to overall health.
• Assess oral and tongue posture.
• Discuss the principles of orofacial myofunctional therapy.
Sleep-Disordered Breathing in the Pediatric Population (419)

Diana A. Batoon, DMD
Bonita Dental, Scottsdale, Arizona, USA

Summary: Each year a large population of children with symptoms of mouth-breathing, snoring, bruxism, bed-wetting, and attention deficit disorder (ADD) / attention deficit hyperactivity disorder (ADHD) go untreated and misdiagnosed. Unaware that sleep-disordered breathing (SDB) is the root cause of their troubles, parents and children pursue treatments that make their situation worse, both in the present and the long run. It is more important than ever for the dental community to empower families to heal this condition instead of just cope with it.

Problem Statement: Untreated or misdiagnosed sleep-disordered breathing in the pediatric population has a significant impact on the deterioration of health, development, and self-confidence in young lives.

Motivation: Create a movement in the dental community to proactively diagnose SDB to:

• Save children from misdiagnosis
• Keep children off unneeded medication
• Improve school performance and self-confidence
• Correct the condition to alleviate and prevent the symptoms (crooked teeth, insomnia, malocclusions, speech issues, allergies and inflammations, sleep apnea, and more).

Results:
1. Identify the outward symptoms and root causes of SDB in children.
2. Develop action steps to integrate an SDB identification process in your practice.
3. Generate growth within your practice by partnering with the medical community and parents to improve the lives of their children.

Conclusion: Maximum oxygen during sleep is necessary for the body to take care of itself, repair itself, and have all the biological systems function normally. Every child should sleep soundly and sleep well. Let’s help them get there.

Educational Objectives

• Identify outward signs and symptoms and root causes of SDB.
• Evaluate for tongue-tie.
• Create action steps in dental practice to identify SDB.
• Partner with parents and the medical community to collaboratively help children who may have SDB.
Periodontology

Friday, April 27 ~ 10:45 AM – 11:15 AM

**Treatment of Periodontitis with a 980-nm Diode Laser: Assessment of Bone Regeneration and Periodontal Pocket Reduction Using LPM and LIPAS (309)**

Kyoju Nakajima, DDS, PhD
Oarai Dental Office, Ibaraki, Japan

**Introduction and Purpose:** The laser-assisted new attachment procedure (LANAP) has been developed for sulcular debridement of periodontal pockets with the goal of obtaining new attachment. Laser patterned microcoagulation (LPM) and laser-induced photoacoustic streaming (LIPAS) have been reported to achieve better results. The aim of this study was to investigate whether LPM and LIPAS were able to provide improved results using a 980-nm diode laser with either noninitiated tips or tips initiated with titanium dioxide (TiO₂).

**Materials and Methods:** Three patients with moderate-to-severe periodontitis who wanted laser therapy were chosen for treatment. Periodontal pockets of 4 mm or more were treated with conventional ultrasonic scaling and root planing prior to laser treatment; periodontal pockets of 6 mm or more were treated with LPM and LIPAS. A 980-nm diode laser (Alta, Dental Photonics, Walpole, Mass., USA) with a 400-micron fiber was used for the laser treatment. For LPM, settings of 25 W, timer 100-150 ms, time on 1 ms, time off 25 μs, pulsed mode were utilized. For LIPAS, settings of 25 W (3 W average power), time on 3 ms, time off 22 ms, pulsed mode were used with water irrigation. The fiber tip was pointed slightly toward the root and was moved vertically at a rate of about 2 mm/s, up and over the gingival cuff. Three to four vertical passes were made per facial and lingual sites. One circular coronal movement was then made at a depth of 2-8 mm with a speed of 2-3 mm/s. Total treatment time was 10 to 15 sec per anterior tooth and 20 to 30 sec per posterior tooth.

**Results:** Radiographs at 6 months post-treatment showed evidence of bone regeneration or bone healing. Periodontal pockets of 6 to 10 mm were reduced to less than 4 mm.

**Conclusion:** The results of this study indicate the presence or absence of laser tip initiation has an effect on treatment effectiveness. LPM and LIPAS are shown to provide positive outcomes for deep periodontal pockets.

**Educational Objectives**

- Differentiate the effects that noninitiated tips vs. initiated tips have on the success of laser treatment of periodontitis with a diode laser.
- Describe the effect of LPM and LIPAS on treatment of periodontal disease.

Friday, April 27 ~ 11:15 AM – 11:45 AM

**Comparison of Using a 980-nm Diode Laser and a 2780-nm Er,Cr:YSGG Laser in Esthetic Crown Lengthening for Gummy Smile Correction (312)**

Tunç Berge, DDS, MSc
Private Practice, Istanbul, Turkey

Providing a pleasant smile is one of the main concerns in cosmetic dentistry. Perfection of smiles is becoming an everyday requirement in dental practice. Apart from teeth, the gingiva also plays an important role in smile esthetics. In the case of gummy smile, more than the required amount of gingival tissue is exposed upon smiling. A wide variety of treatment options are available for correction of excessive gum. The use of a laser as a treatment modality is considered to be a promising option for such cases with excellent patient satisfaction and minimal postoperative problems. We aim to explain the effects of using two different wavelengths of lasers (980-nm diode and 2780-nm Er,Cr:YSGG) on the gingiva and discuss their advantages and disadvantages both during treatment and after the healing period.
Educational Objectives

• Discuss usage of lasers in crown lengthening procedures.
• Differentiate diode and Er,Cr:YSGG lasers and their advantages and disadvantages during the crown lengthening operation and after the healing period.
• Identify laser settings and techniques for laser-assisted crown lengthening.

Friday, April 27 ~ 1:30 PM - 2:15 PM

The Use of FRP Lasers: A Necessity in Long-Term Periodontal Care (316)

Beatrijs Deruyter, DDS
Private Practice, Liedekerke, Belgium

Introduction: Because of the high prevalence, worldwide, of periodontitis and periimplantitis, both proven to contribute to and/or exacerbate systemic diseases, they are becoming a major concern in general health care. The search for finding a cost-effective and repeatable therapy for the majority of the population, without causing detrimental side effects, to treat or prevent these medical conditions is a necessity and has been a question mark for many years.

Objectives: Sadly, traditional treatment protocols cannot meet all expectations. Scaling and root planing, even antibiotics, have their limitations and certainly contraindications. The use of free-running pulsed (FRP) lasers might provide a solution to this question and solve this problem, even for medically compromised patients. The use of lasers in periodontal care has taken an eminent place in the last two decades. The aim of the treatment of periodontitis and periimplantitis is to prevent the loss of hard and soft tissue by removal of the biofilm. Several treatment modalities are only achievable by free-running pulsed lasers. The reason behind this is the way FRP lasers, by their very short bursts of energy, are able to deliver enough energy to destroy biofilm, and by dissipation of that energy have the capability to have other beneficial effects that can contribute to regeneration of tissue in a cost-effective way.

Materials and Methods: A standard protocol of One-stage Full-Mouth Desinfection (OFMD) with an Nd:YAG laser as adjunctive to scaling will be described. In the case of periimplantitis, both Nd:YAG and Er:YAG lasers are used.

Results: This standard protocol, employed for many years, results in resolving most periodontal conditions in a nontraumatic way, or creates good preconditions for further periodontal surgery.

Discussion and Conclusion: The principle of OFMD and laser use is still seen as controversial in spite of all clinical evidence for many years.

Educational Objectives

• Present standard protocols for periodontal care.
• Describe the importance of free-running pulsed lasers in providing effective periodontal treatment.
A Novel Blue Light Diode Laser (445 nm) for Nonablative Melanin Depigmentation of Gingiva – A High-Speed Procedure (414)

Kenneth Luk, BDS, MSc Laser Dentistry
Private Practice, Hong Kong, China

Melanin depigmentation of gingiva using various laser wavelengths has been reported for over 10 years. Such procedures normally will take 10 to 15 minutes to complete. With their particular optical properties and absorption characteristics, 445-nm laser wavelengths can perform depigmentation in a fast, nonablative manner within a few minutes. A 445-nm diode laser (SIROLaser Blue, Dentsply Sirona, Bensheim, Germany) was used at 1 W in continuous wave (CW) mode, delivered through a 320-µm fiber. With the patient under local anesthesia, the fiber delivered the energy at a distance of 2 mm from the pigmented area, with constant movement. Immediate coagulation was observed. There was no direct ablation of the pigmented mucosa and lip. The procedures took around 1 minute and 5 minutes, respectively. The high absorption of melanin and hemoglobin by the 445-nm blue diode laser allowed a nonablative depigmentation approach with 1 W, continuous wave. An 810-nm diode laser (Claros, elexxion AG, Singen, Germany) delivering 30 W at 16 µsec and 20 kHz compensates for its lower absorption of melanin and hemoglobin, achieving the same high-speed result. A 445-nm diode laser with the appropriate laser parameters is fast and effective in nonablative depigmentation of the gingiva and lip. To the author’s knowledge, this is the first case presented using the 445-nm diode laser for nonablative melanin depigmentation.

Educational Objectives

• Relate patient cosmetic concerns over pigmented gingival tissues.
• Recognize the optical properties of a 445-nm blue diode laser that enable its use for depigmentation procedures.
• Differentiate between ablative and nonablative depigmentation techniques.
**Pink Aesthetics: Gingival Depigmentation with Different Laser Techniques (421)**

Walid Altayeb, DDS, MSc, PhD  
Private Practice, Abu Dhabi, United Arab Emirates

**Introduction:** Various laser treatment modalities have been made for cosmetic removal of dark gingival pigmentation including laser ablation and nonsurgical laser treatment which both are considered to be one of the most effective, agreeable, and reliable techniques for treating gingival hyperpigmentation.

**Overall Objective:** The purpose of this investigation was to evaluate and compare clinical efficiency of different laser protocols in removal of gingival melanin pigmentation by direct ablation of the pigmented layer (surgical laser) or indirect effect on melanocytes (nonsurgical laser).

**Methods and Materials:** Thirty patients who presented themselves with a chief complaint of having dark-brown to black gingival hyperpigmentation were randomly divided into 3 groups of 10 patients each (6 females and 4 males). Group A and B followed the surgical laser approach while Group C followed the nonsurgical laser technique. Group A was treated by an 2780-nm Er,Cr:YSGG laser (Waterlase iPlus, Biolase, Irvine, Calif., USA). Group B was treated with diode a 940-nm diode laser (Epic 10, Biolase) in contact mode. Group C was treated with an 810-nm diode laser (Claros, elexxion AG, Singen, Germany) in noncontact mode. Clinical parameters, such as bleeding, swelling, redness, and healing, were evaluated immediately after the surgery and 1 week and 1 month later. Patients were asked to evaluate the procedure by using a self-administered questionnaire.

**Results:** The total procedure time was shorter in groups A and B. Mild pain or itching was common during the first week in all groups with less postoperative discomfort in group C. Group A (Er,Cr:YSGG) required no anesthesia and showed faster healing and immediate aesthetic results 1 week after treatment. Treatment was reported as generally pleasant in all groups. After 1 month, complete healing was observed with normal gingival appearance and without morphologic abnormalities, scarring, or infection in all groups. No other problems were reported by any group except the need for anesthesia in groups B and C, a burning smell during laser ablation in group B, and a little hemorrhaging in the Er,Cr:YSGG group.

**Conclusions:** Both surgical and nonsurgical laser techniques were reliable and effective for removal of melanin pigments. Patients’ evaluations of postoperative pain and healing found the nonsurgical laser technique superior to the surgical one, whereas the immediate aesthetic results and complete elimination of pigments were superior with the surgical laser technique.

**Educational Objectives**

- Evaluate and compare two different laser treatment techniques (surgical / nonsurgical) to perform gingival melanin depigmentation.
- Evaluate and compare the efficacy of three different laser wavelengths in removal of gingival pigments with different laser settings.
- Understand the color of the gingiva is an important component of overall esthetics.
Photobiomodulation (PBM) is receiving increasing attention in care of cancer patients. The goals of this presentation are to review the broad range of potential applications of PBM in oral oncology care and to furnish guidance that may allow attendees to provide oral care for patients receiving cancer therapy and following therapy. In oncology care the documentation of safety is important in delivery of PBM to this patient population. Increasing interest in the anti-inflammatory, repair and analgesic effects have a number of potential applications in patients undergoing cancer care. In addition potential PBM effects on fibrosis and lymphedema have been examined. The conditions that will be addressed include oral mucositis, repair of chronic wounds, inflammatory mucosal conditions including lichenoid graft-versus-host disease, hyposalivation, oral soft tissue necrosis, fibrosis in oncology care, hyposalivation, and neuropathic pain. PBM is a developing modality with a potentially important role in oncology, including during cancer care and in management of potential adverse events following cancer therapy and throughout survivorship.

**Educational Objectives**

- Discuss the role of PBM in acute complications of cancer care.
- Outline the role of PBM in survivorship issues following oncology care.
- Review safety issues of PBM in oncology care.

**Note:** This presentation discusses investigational devices that have not yet received U.S. FDA approval or clearance for the specified clinical indications, or describes off-label uses.
The Effects of Photobiomodulation Therapy on the Immune Response (205)

Jeri-Anne Lyons, PhD
University of Wisconsin-Milwaukee, College of Health Sciences, Milwaukee, Wisconsin, USA

Introduction: It is accepted that light at various wavelengths can elicit biological responses. Photobiomodulation Therapy (PBMT) with visible or near-infrared light (VIS/NIR) is a promising therapeutic strategy for a variety of disease states, including chronic wound healing, neurodegeneration, traumatic brain injury, and mitochondrial dysfunction. However, the mechanisms of action of PBMT are not well understood, hindering its general acceptance as a therapeutic modality. Studies in an animal model of autoimmunity demonstrated profound effects on the immune response leading to improved disease course in autoimmunity and implicated in wound healing. Likewise, these mechanisms can be invoked when VIS/NIR light is used for clinical applications.

Objective: The purpose of this presentation is to introduce the audience to the mechanisms of action of VIS/NIR PBMT on the immune response to better utilize lasers in the clinical setting.

Materials and Methods: Studies in the experimental autoimmune encephalomyelitis (EAE) model of multiple sclerosis (MS) were conducted using C57BL/6 (B6) mice immunized with myelin oligodendrocyte glycoprotein (MOG) to activate the immune response. Draining lymph nodes was covered over the course of disease and single cell suspensions were prepared. Cells were cultured in vitro and exposed to 670-nm light (visible red), 728/735 nm light (far-visible red), or 830 nm (near-infrared) light from a light-emitting diode (LED) device (Spectralife™, Quantum Devices Inc., Barneveld, Wisc., USA) in 24-hour intervals for 96 hours using LED heads specifically calibrated at each wavelength. Treatment was conducted for 88 seconds at 4 J/cm². Supernatants were recovered at 24-hour intervals and analyzed for cytokine expression by enzyme-linked immunosorbent assay (ELISA). In separate experiments, mice similarly immunized were treated with the same device over the course of disease and the spinal cord was removed. Cytokine gene expression was analyzed by quantitative polymerase chain reaction (PCR). In a third series of experiments, human peripheral blood was recovered via venipuncture and cells similarly treated in vitro using the same protocol as that which was used for the mouse cell culture. Cell culture supernatants were recovered and analyzed by ELISA for cytokine gene expression.

Results: We demonstrated that light treatment resulted in the up-regulation of anti-inflammatory cytokines and the down-regulation of pro-inflammatory cytokines.

Discussion and Conclusion: The pathogenesis of many autoimmune conditions, including MS, and chronic wound healing are due to disruption of the immune response: prolonged or extensive expression of a pro-inflammatory immune response, which leads to extensive tissue destruction. Light in the VIS/NIR region of the spectrum is effective in the resolution of these conditions at least in part due to the up-regulation of anti-inflammatory mechanisms and the down-regulation of pro-inflammatory mechanisms. Likewise, when lasers at these wavelengths are used in the dental setting, similar effects on wound healing and resolution of chronic infection can be noted. In addition, lasers at these wavelengths may be expected to promote healing.

Educational Objectives

• Understand the effects of visible and near-infrared light on the immune response.
• Apply this knowledge to understand or predict possible ancillary outcomes to the use of lasers in the clinical setting.

Note: This presentation discusses investigational devices that have not yet received U.S. FDA approval or clearance for the specified clinical indications, or describes off-label uses.
The effects of photobiomodulation (PBM Therapy), formerly known as Low-Level Laser Therapy (LLLT), are often reported to be “dose dependent,” but did you know that there is also a “dose rate”? To complicate matters further, light measurement is hard to get right and the expression and calculation of dose is often performed incorrectly. What are the common errors in beam measurement and dose calculation, what is the difference between power, power density, Joules and J/cm², and how much dose is enough, how much is too much?

**Educational Objectives**

- Learn how to measure laser beams.
- Learn how to calculate dose.
- Specify common errors in dose calculation
- Determine how much dose is enough and how much is too much.

**Note:** This presentation discusses investigational devices that have not yet received U.S. FDA approval or clearance for the specified clinical indications, or describes off-label uses.
Oral mucositis (OM) is one of the most debilitating toxicities of cancer therapy. Nearly all patients with head and neck tumors treated with chemoradiotherapy, and 75% of patients undergoing stem cell transplantation with total body irradiation, experience some degree of OM. Treatment is still essentially palliative, utilizing pain medications to mask the effects of concurrent chemoradiotherapy. As a result, there are essentially no effective treatments that focus on this toxicity. A recent Cochrane Review analyzed the prospective data assessing the management of OM. Here, 32 prospective trials including 1505 patients were analyzed. Three comparisons for mucositis treatment including two or more trials were assessed: benzydamine HCl versus placebo, sucralfate versus placebo, and photobiomodulation (PBM) versus sham procedure. Interestingly, only PBM showed a reduction in severe mucositis when compared with the sham procedure. OM leads to severe pain, increased risk of infection, increased rates of hospitalization, and breaks in therapy resulting in reduced cancer treatment efficacy. OM leads to diet modification and in oncology can prevent oral intake leading to weight loss, and may lead to the need for artificial feeding.

Symptoms of OM include pain and dysphagia. Signs include erythema, ulceration typically involving nonkeratinized mucosa, along with increased risk of subsequent bacterial and fungal infections.

Photobiomodulation has been shown to significantly reduce pain, severity and duration of symptoms in OM patients, in over 40 published randomized controlled trials (RCTs). As a treatment methodology, PBM has a “recommendation” statement from the Multinational Association for Supportive Care in Cancer for treatment of mucositis in bone marrow transplant patients and a “suggestion for use” in head and neck cancer (HNC) patients.

Educational Objectives

- Summarize the grading and classification of oral mucositis.
- Relate treatment doses and how, when and why each methodology demonstrated effectiveness.
- Identify essential documentation of treatment and management.
- Review guidance on coding and reimbursement.
- Appreciate case studies and testimonials from patients.

Note: This presentation discusses investigational devices that have not yet received U.S. FDA approval or clearance for the specified clinical indications, or describes off-label uses.

This protocol development seminar is limited to 20 participants.
Photobiomodulation (PBM) Pain Management

Thursday, April 26 ~ 1:30 PM - 2:00 PM

History of PBM Research in Australia and Its Relevance to Dentistry, Including Headache and Pain (211)

Ann Liebert, PhD
Australasian Research Institute, Wahroonga, New South Wales, Australia

There has been a long history of photobiomodulation (PBM) in Australia, including light-box treatment at the San Hospital from 1903 for smallpox scars, under the regime of Nils Finsen (Nobel Laureate). Early uptake by anesthetists during the 1980s as laser acupuncture, due to the human immunodeficiency virus (HIV) epidemic and the trepidation of the use of needles, was followed by increased uptake of laser therapy, following a visit by Dr Tiina Karu. Tiina explained the therapeutic use of PBM in the treatment of nonhealing radiation burns and ulcers that were a result of the Chernobyl nuclear disaster in the Ukraine. Since the 1980s, several researchers have taken up the challenge of PBM research in both bench and bedside studies in all Australian states. This has resulted in many publications, concentrated in the areas of analgesic effects, anti-inflammatory effects, and lymphatic modulation effects as well as more recently in the modulation of diseases of neurodegeneration. These have been published in both laser journals and in wider scientific journals, including The Lancet and Scientific Reports. My own research on unresponsive cervicogenic headache in a retrospective familial trial will be discussed. The contribution of Australian research will be discussed with its importance to unresponsive pain syndromes involved in dental practice including sympathetic mediated pain, including most particularly orofacial pain, temporomandibular disorder (TMD) pain, oral mucositis and headache and concomitant cervicogenic headache and migraine. In addition, the importance of basic PBM research as to mechanisms of action will be stressed, because continued uptake of PBM therapy in standard care will require an answer to the question, “But how does it work?”. Interesting emerging research on ion channel homeostasis, signal transduction pathways including newly discovered phototransduction pathways, the importance of functional and dysfunctional amyloid and the “Dark Proteome” will be explored.

Educational Objectives

• Outline the history of photobiomodulation research in Australia.
• Discuss the importance of PBM in the treatment of unresponsive pain syndromes including orofacial pain.
• Relate some of the mechanisms of action of PBM therapy.

Note: This presentation discusses investigational devices that have not yet received U.S. FDA approval or clearance for the specified clinical indications, or describes off-label uses.
A Review of the Nd:YAG Laser for Photobiomodulation and Practical Application of a Flat-Top Handpiece in Dentistry (216)

Jason Pang, BDS
Cosmic Smile Laser Dental, Neutral Bay, New South Wales, Australia

The use of low-level laser therapy or more appropriately photobiomodulation (PBM) has been investigated for more than 30 years. The effects have been improved wound healing, reduction of inflammation, and pain relief. Research into its benefit in veterinary and medical settings has been well documented using a range of laser wavelengths. Limiting factors to its more widespread use have been the long exposure time and operator variability.

The 1064-nm Nd:YAG laser penetrates deeply into cellular tissues and has been shown to be a suitable wavelength for biostimulation. The use of PBM in dentistry has been underutilized, and research into the use of the Nd:YAG laser for PBM in dentistry has been limited. However, there have been cellular studies, clinical cases, and case reports indicating that there is enormous potential for its use. A unique handpiece design with a collimated flat-top radiance profile (Genova for LightWalker, Fotona d.o.o., Ljubljana, Slovenia) has been developed. The uniform delivery of high peak power, low-level laser energy allows us to minimize exposure time and simplify delivery. The advantages of this handpiece compared to other available handpieces and defocused output will be explained.

A review of current research using the Nd:YAG laser for PBM will be presented along with rationale for use of the flat top handpiece at this wavelength in dentistry.

Dental uses for PBM include acute and chronic oral lesions, post-surgery/implant placement and extraction, restorative, orthodontic, endodontic, periodontal, and in combination with an Er:YAG laser.

Educational Objectives

• Describe the use of the 1064-nm Nd:YAG laser wavelength for photobiomodulation.
• Specify the advantages in using a flat-top profile handpiece for photobiomodulation.
• Enumerate the dental uses for PBM with the Nd:YAG laser.

Note: This presentation discusses investigational devices that have not yet received U.S. FDA approval or clearance for the specified clinical indications, or describes off-label uses.

4-Year Follow-Up of Clinical Cases Involving Healing of Soft and Hard Tissues by Stimulating Stem Cells Using Nd:YAG and Diode Lasers at the Lowest Level (219)

Nuran Çulcuoğlu, DDS, MSc
Private Practice, Istanbul, Turkey

The use of photobiomodulation can help achieve faster and better healing during treatment of oral diseases. In addition, the ease and success of treating gingivitis and other oral lesions that occur in children undergoing orthodontic therapy is enabled through the use of dental lasers. This presentation describes how Nd:YAG and diode lasers (PulseMaster 1064-nm Nd:YAG laser, American Dental Technologies, Corpus Christi, Texas, USA; 1064XLASE 1064-nm diode laser, A.R.C. Laser GmbH, Nuremberg, Germany) can be used to stimulate stem cells and facilitate intraoral healing. Four cases with 4-year follow-up results will be presented.
Case 1: Using bone marrow stem cells to strengthen the maxilla and mandible of a 38-year-old patient who lost all of her teeth due to malnutrition.

Case 2: Treatment of a cystic lesion covering #37 and 38 teeth germs located in the lower jaw of a 12-year-old patient undergoing orthodontic treatment. Nd:YAG and diode lasers were used at the lowest level to stimulate the tissue stem cells.

Case 3: Endodontic treatment of an apical lesion supported by Nd:YAG laser application and biostimulation without performing apicoectomy.


**Educational Objectives**

- Describe how lasers can be used to stimulate stem cells and promote healing of intraoral conditions.
- Summarize long-term results of four cases involving PBM treatment of soft and hard intraoral tissues.

**Note:** This presentation discusses investigational devices that have not yet received U.S. FDA approval or clearance for the specified clinical indications, or describes off-label uses.

Thursday, April 26 ~ 3:00 PM - 3:30 PM

**Photobiomodulation Techniques and Targets for TMD (221)**

James D. J. Carroll, AMInstP, FRSM

THOR Photomedicine, Amersham, United Kingdom

Temporomandibular disorders (TMDs) are a group of conditions that result in temporomandibular joint (TMJ) pain, masticatory muscle pain, or both. Depending on the diagnosis, the pathophysiology may include inflammation, degeneration of the osseous components, disc displacement, myofascial pain, neuropathic pain, and even central sensitization. The process for how light improves tissue repair and reduces pain is now called Photobiomodulation (PBM Therapy), previously known as Low-Level Laser Therapy (LLLT). There is a dose response. Not enough light and there is little or no effect, too much light and there is little or no effect. Evidence from over 100 human randomized controlled trials (RCTs) have shown that PBM, when applied to the body at the right wavelength, intensity and time, reverses the process of many musculoskeletal pathologies including joint inflammation, myogenic/neuromuscular pain, neuropathic pain, and degenerative joint disease. Thirty-one RCTs investigating the effects of PBM report mixed results and 6 systematic reviews differ significantly in their conclusions. Most studies treated only the TMJ, a few included some trigger / tender points, none targeted the trigeminal nerve or lymphatic system. Maybe a more comprehensive treatment approach and some understanding of dose might yield more consistent results. In this presentation and demonstration, a four-step treatment method will be proposed that targets not only the joint but also the lymphatic system, analgesic points, and myofascial trigger / tender points.

**Educational Objectives**

- Identify the pathophysiology of temporomandibular disorders.
- Summarize shortcomings of randomized controlled trials of the use PBM for TMD treatment.
- Describe how a more comprehensive PBM treatment approach might yield more consistent results.

**Note:** This presentation discusses investigational devices that have not yet received U.S. FDA approval or clearance for the specified clinical indications, or describes off-label uses.
Adapting a 940-nm High-Intensity Surgical Diode Laser as an Intraoral Photobiomodulation Unit (223)

Juliana A. Barros, DDS, MS, Shalizeh Patel, DDS
The University of Texas School of Dentistry at Houston, Houston, Texas, USA

Introduction: Due to their affordability and ease of operation, diode lasers are frequently being used for simple soft tissue procedures by general dentists. A high-intensity diode laser (Epic™, Biolase, Irvine, Calif., USA) has been cleared by the U.S. Food and Drug Administration for temporary relief of pain. Due to its design, the new deep tissue handpiece is limited to extraoral use only.

Objective: The aim of this study was to design a photobiomodulation (PBM) treatment protocol where the surgical laser’s handpiece can be predictably used intraorally for healing and pain control.

Materials and Methods: A 940-nm diode laser was utilized without the disposable fiber tip. Variables such as output power (W), area (cm²), and time (s) were tested to design a treatment protocol. The following formula was applied: Energy Density (ED) = \[ P \ (W) \times t \ (s) \] / A (cm²). Three established energy densities of 4, 10, and 20 J/cm² were used respectively for biostimulation, anti-inflammation, and analgesia. The power of 0.6 W was used for all calculations. The spot size diameter was recorded at 0, 15, 20, 25, and 30 mm away from the target and used to compute the area. A power meter (PM600 Power Meter, Molectron Detector Inc, Portland, Ore., USA) was used to verify output power.

Results: Among the five predetermined distances tested in this study, a shorter noncontact distance of 15 mm appeared to be timely and practical when irradiating intraorally. For photobiostimulation effects, the laser handpiece must be held 15 mm away from the target for 52 seconds. For anti-inflammatory and analgesia effects, the time of each treatment is increased to 130 seconds and 262 seconds, respectively.

Discussion and Conclusion: In this pilot study, a tentative photobiomodulation protocol for a surgical diode laser was established. It is crucial to understand laser principles to calculate appropriate dose for each clinical treatment. Further studies should be done to validate this protocol. Meanwhile, a customized jig-stopper was designed, printed via 3-D technology, and fitted on the surgical handpiece for clinical use.

Educational Objectives

• Understand basic principles of dose calculation for PBM.
• Recognize the ability of using a high-intensity diode laser for PBM.

Note: This presentation discusses investigational devices that have not yet received U.S. FDA approval or clearance for the specified clinical indications, or describes off-label uses.
One important factor in the attractiveness of a smile is the amount of gum display. Excessive gingival display (EGD) or so-called “gummy smile” can turn a beautiful set of teeth to an unpleasant smile. A cosmetic-driven treatment plan would create a harmonious and symmetrical correlation between the position and length of upper anterior teeth, gingival zenith, and the lip line position in a relaxed and high smile. If restorations are planned to correct any hard tissue deficiency then position of the margin of the future restoration in relation to the periodontium is critical in designing the final restorations. In cases where the gummy smile can be treated with crown lengthening, such as excessive wear or altered passive eruption, crown lengthening of the affected teeth may be indicated. This procedure includes gingivectomy, gingivoplasty, or apically positioned flaps, which may include osseous resection. Performing these surgical procedures with a laser (ezlase 940-nm diode laser and Waterlase MD 2790-nm Er,Cr:YSGG laser, Biolase, Irvine, Calif., USA) compared to conventional techniques with scalpel and bur exhibits numerous advantages in planning and delivering the procedure for the patient as well as for the clinician. Ease of use, less bleeding, less pain and postoperative discomfort for the patient are a few of the advantages. In this presentation, the diagnosis and etiology of the EGD and the surgical principles will be highlighted. A step-by-step, predictable, restorative-driven approach to plan and deliver the procedure with diode and/or erbium lasers for the general dentist will be demonstrated.

**Educational Objectives**

- Summarize etiology and diagnosis of excessive gingival display and suggested treatment modalities.
- Describe restorative-driven cosmetic crown lengthening for the general/restorative dentist including proper planning, case selection, importance of diagnostic wax-up, and fabrication of surgical and restorative stents.
- Determine how to keep up with changes that occur on your State Dental Practice Act.
- Outline step-by-step clinical procedures demonstrated during two case presentations.
Bactericidal and biomodulation effects of dental lasers make them a very effective tool in dental implant applications where possible infections are detrimental for success rates and where uneventful postoperative healing is highly important. Laser energy is used in immediate implant placement thanks to its antibacterial capabilities to avoid possible contaminants inside the extraction socket and to disinfect. For the disinfection purpose many different wavelengths such as diodes, Nd:YAG, CO₂, and the erbium family of dental lasers could be used according to their tissue/bacteria interactions. Most of the dental lasers reduce bacteria by ablation or coagulation mechanisms. Erbium lasers also have photoacoustic effects which reduce bacteria through shock waves generated by short pulses. Er:YAG lasers also offer other advantages in immediate implant placements such as minimal temperature rise due to short pulse operation time and continuous irrigation of the socket by air/water spray which helps also to remove contaminants. In this presentation socket disinfection modalities by various laser wavelengths, and especially Er:YAG laser usage, will be discussed.

**Educational Objectives**

- Relate the bactericidal effects of lasers.
- Comprehend the role of lasers in immediate implant placement.

**Note:** This presentation discusses investigational devices that have not yet received U.S. FDA approval or clearance for the specified clinical indications, or describes off-label uses.

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This presentation will describe how proper use and maintenance of erbium lasers will improve their longevity and performance. Using a hands-on approach, we will be looking at the components that make up erbium lasers to better understand proper care procedures and the importance of these procedures to keep a laser running properly. Erbium lasers that are not maintained fail for many reasons. By understanding what makes an erbium laser work and how these components work together inside the device, one will have the knowledge to preserve an erbium laser and its components so that the laser performs and does not fail prematurely.

**Educational Objectives**

- Identify shared components of an erbium dental laser.
- Explain how they function in relation to each other.
- Understand why maintenance of your laser is important.
Can a Micropulsed Diode Laser Maintain the Marginal Integrity and Quality of a Specimen Needed for Histological Evaluation? (232)

Mariliza C.O. Prado, DDS, MS; Shalizeh A. Patel, DDS; Ngozi Nwizu, BDS, MMS, PhD; Charles Streckfus, DDS, MA; Denise Zezell, MS, PhD; Juliana Barros, DDS, MS

1The University of Texas School of Dentistry, Houston, Texas, USA
2Nuclear and Energy Research Institute - IPEN, São Paulo, Brazil

Diode lasers are portable and affordable surgical units with efficient and reliable benefits in soft tissue surgeries. The newer diode lasers are now equipped with a micropulse technology controlling the laser's duty cycle. This allows the laser to deliver high power in a short period of time, protecting the tissue from severe heat damage. This in vitro study clinically and microscopically evaluates the effects of different parameters such as power output, pulse duration, pulse interval, and duty cycle on pig tongues. The aim of this study was to develop a suitable protocol for the use of a diode laser to perform simple surgical excisions for adequate histopathological evaluation. Specimens were excised (1 cm in diameter) using a 940-nm diode laser with a 300-μm disposable tip fiber. Groups (n = 10) were distributed according to surgical parameters (1.0 W and 1.5 W), pulse duration, pulse interval, and duty cycle. A no. 15C scalpel blade was used as control. Thermal damage was scored using a morphometric table. Time of excision was logged. A descriptive analysis of carbonization, desiccation, and vascular changes is reported. Time, width and index of the damage zone were calculated for each treatment group. The significance level chosen for all statistical tests was $P \leq 0.05$.

Education Objectives

• Understand the concept of laser and tissue interaction and how various laser parameters can affect tissue differently.
• Recognize appropriate laser parameters to efficiently excise oral soft tissue for biopsies with minimal thermal damage.
Growing Your Patient Base Through Effective Digital Marketing (206)

Corey Auger
Crystal Clear Digital Marketing, Orlando, Florida, USA

With more than 80% of modern consumers using the Internet to find and choose their dental providers, the pressure has been increasing for practices to develop effective strategies to capture and retain valuable patients in today’s competitive marketplace and socially driven ecosystem of consumers.

Educational Objectives

• Implement consistent and frequent e-mail campaigns into your practice’s marketing strategy.
• Discover how blogging and content directly impact your organic search rankings.
• Identify the tools behind building a profitable Web site.
• Learn how to effectively implement social media to increase connectivity with your future and existing patient base.

Why Your Staff Is Your Most Important Asset (209)

Corey Auger
Crystal Clear Digital Marketing, Orlando, Florida, USA

The ultimate conversion factor for success in the laser dentistry marketplace is determined by your people, their processes, and the tools they choose to use. Discover cutting-edge management techniques to implement in your practice to create a world-class patient experience.

Educational Objectives

• Implement essential front desk protocols into the practice.
• Create an outstanding service culture for a world-class patient experience.
• Incentivize key staff members in the practice.
• Improve phone call performance and conversion of online inquiries into loyal, paying patients.
Practice Management Lunch ‘n’ Learn

Thursday, April 26 ~ 12:45 PM – 1:20 PM

Own the Internet – Own YOUR Market

Bryan Edelstein
Doctor.com, New York, New York, USA

Fact: The vast majority of doctors do not have a mobile-optimized, or even mobile-friendly, Web site. Fact: More than a third of people who search online for care do so primarily from their mobile device. This discrepancy can be your opportunity. There has never been a better time to dominate your local market and stand out from your competitors. This session will bring you up to speed on the critically important trends that are driving this shift toward mobile devices and how you can harness them to grow your practice.

Educational Objectives

• Name 5 things your Web designer can do in 5 minutes to make your existing Web site more mobile-friendly.
• Understand the psychology and demographics of "mobile-first" users and how to win their business.
• Break down your first mobile campaign - step-by-step. (Be ready to take notes!)
• Describe the mobile landscape by identifying which online directories and social sites are doing mobile right and how to win on each of them.

Thursday, April 26 ~ 1:30 PM - 2:15 PM

A Multidisciplinary Approach to Saving “Hopeless Teeth” Using an Er,Cr:YSGG Laser (212)

Marina Polonsky, DDS, MSc Laser Dentistry
Canadian Dental Laser Institute, Ottawa, Ontario, Canada

This presentation showcases assorted difficult clinical scenarios, wherein the Er,Cr:YSGG laser system (Waterlase iPlus, Biolase, Irvine, Calif., USA) proved to be the “magic wand” in otherwise hopeless situations. Included is a discussion of how all-tissue-laser systems are able to fill in the gaps left open by the conventional treatment options available in general dentistry. Emphasis is placed on the potential for practice growth by incorporating laser technology: positive outcomes, happy patients, new patient referrals.

Educational Objectives

• Realize the benefit of incorporating an Er,Cr:YSGG laser system into general practice.
• Explore multidisciplinary approaches to treating difficult cases.
• Examine how do get return on investment.
• Explain how to grow your practice with all-tissue lasers.
OMG!! I Got A Bad Review. What Do I Do? (222)

Leonard Tau, DMD
Pennsylvania Center for Dental Excellence, Philadelphia, Pennsylvania, USA

Every dental practice has seen a patient leave a bad review online on Google, Yelp, Facebook, or one of the other 120 Web sites that collect and republish feedback from your patients. A perfect dental practice isn't one with perfect reviews, it is one that deals with reviews perfectly. One of the most common questions dentists and their teams have is what do they do when they receive a bad review from a patient. Many feel like they are being attacked and their emotions vary from anger to embarrassment and perhaps even depression but don’t worry, negative reviews are going to happen. The patient may be having a bad day, a team member said the wrong thing, or the insurance did not pay as much as expected and thus the patient owed more than you anticipated. One negative review isn’t going to shut down your practice, but the way you handle negative reviews will set the stage in moving forward and improving your practice’s customer service and online reputation. In this 1-hour seminar you will learn techniques to help you solve negative reviews and earn better reviews, increase production and get more new patients.

Educational Objectives

• Appreciate why online reputation is important.
• Examine how online review Web sites work.
• Determine how to handle negative reviews.
• Discover how to create systems in your office to get patients to leave feedback for you.

The Tao of 21st Century Marketing: How Practices Can Use the Internet to Attract More New Patients (218)

Leonard Tau, DMD
Pennsylvania Center for Dental Excellence, Philadelphia, Pennsylvania, USA

Traditional marketing has gone the way of the dodo bird and dinosaurs. Dentists wanting to grow their practice must be online or become extinct. The Internet has become the main way that potential patients search for a dentist. A practice’s digital footprint needs to include a great, interactive Web site found during local search, a solid online reputation, a well-branded social media campaign, and mobile marketing.

New patients are the life blood of any practice. Around the country, dentists struggle to attract new patients post-recession as patients postpone elective treatment. Learn how to leverage online marketing to attract new patients and increase case acceptance.

Social media has changed the way businesses market themselves. This course will focus on the various factors that influence online presence and help dental practices grow their digital footprint. Dr. Tau will share his firsthand experiences and the tools that he used to exponentially grow his practice using the power of the Internet and online reputation while totally eliminating traditional marketing.

Educational Objectives

• Discover why ‘content is king’ for Google Juice.
• Learn the why and how of giving your patients a WOW experience.
• Identify the basic components of an effective interactive practice Web site.
• Specify other marketing tools available on the Internet.
Workshops

Friday, April 27 ~ 10:30 AM - 12:30 PM

How an All-Tissue Laser Can Revolutionize Your Practice: A Hands-On Experience with the 9.3-μm CO₂ Laser (303)

Tony Hewlett, DDS
Private Practice, Stanwood, Washington, USA

From enhanced patient experience to increased efficiencies, lasers in dentistry provide a wide range of benefits to both the patient and the dentist. The 9.3-μm CO₂ all-tissue laser (Solea, Convergent Dental, Needham, Mass., USA) provides a reliable analgesic effect for hard tissue procedures and virtually bloodless soft tissue performance. From restorative uses to soft tissue applications, this presentation will illustrate the variety of procedures, with case examples, that can be performed with this unique wavelength. Finally there will be a hands-on portion where attendees will be able to cut porcine mandibles and extracted teeth using this all-tissue laser.

Educational Objectives

• Convey the benefits of anesthesia-free and blood-free dentistry.
• Explore the breadth of procedures that can be performed with the 9.3-µm CO₂ laser.
• Recognize the advantages of using a 9.3-µm CO₂ laser in the practice.
• Gain experience using a 9.3-µm CO₂ laser during in vitro exercises.

Note: This presentation discusses investigational devices that have not yet received U.S. FDA approval or clearance for the specified clinical indications, or describes off-label uses.

The workshop is limited to 20 participants

Friday, April 27 ~ 10:30 AM - 12:30 PM

Advanced Diode Laser Workshop (304)

John J. Graeber, DMD
Private Practice, East Hanover, New Jersey, USA

This workshop is designed for dentists who have had basic training in diode laser techniques and now wish to expand their knowledge and perform more difficult cases. An introductory PowerPoint presentation will describe proper photoinitiation techniques, efficient use of power/pulsing choices, proper angulation of tip to tissue, efficiency of stroke length and touch forces. The procedures taught will be viewed on microvideos prior to the practical session.

Among the procedures practiced will include biopsy, lingual frenectomy, venous lake ablation, hemangioma removal, epulis excision, vestibuloplasty, laser welding, incisions for flaps, transmucosal implant placement, emergence profile creation, transseptal fiberotomy, and apicoectomy.

All of the procedures can be accomplished utilizing any surgical diode laser device.

Educational Objectives

• Practice advanced surgical procedures with diode lasers.
• Realize key techniques in diode laser usage.
• Appreciate pitfalls of advanced surgical procedures.

The workshop is limited to 20 participants
Periodontitis results in decreased attachment and eventual loss of the dentition. While traditional methodologies such as flap and osseous procedures have resulted in success, their acceptance by the lay public has been marginal. Various dental laser wavelengths utilized to manage periodontitis have demonstrated clinical success with positive patient-related outcomes and a concomitant decrease in recession. To attain success, a minimally invasive laser procedure must adhere in detail to the principles of wound healing. This workshop will identify each step and create in a workbook format the details of a closed flap laser procedure from de-epithelialization to degranulation and decortication. Each participant will perform a closed flap procedure to the level of competency. Nonlaser components will include microthin ultrasonics and innovative glycine air systems. Adjunctive steps and indications will be introduced including osseous grafting and biologic mediators to enhance regeneration. Postoperative management systems will be developed with reevaluation protocols to determine success. Case presentation and marketing will be explored along with third-party coding.

**Educational Objectives**

- Comprehend progressive periodontal pathology and the role of inflammation and how to manipulate wound healing.
- Develop in a stepwise fashion a comprehensive closed flap laser periodontal procedure resulting in decreased pocket depth and minimal recession.
- Create positive patient management from case presentation to marketing and postoperative care.

The workshop is limited to 20 participants.

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**Digital Occlusion Workshop (405)**

Robert Supple, DMD  
*Private Practice, Albuquerque, New Mexico, USA*

This hands-on workshop will dive more into the technologies discussed in the morning keynote presentation and will provide a hands-on experience in digital occlusion. Participants will leave with a better understanding of how to help diagnose and treat their patients while also building their practice. Assessment of force distribution is a new science that establishes the prognosis of oral anatomy under stress. Occlusal management becomes increasingly simpler as we learn to measure digital force and interpret force distribution patterns.

**Educational Objectives**

- Gain hands-on experience with digital occlusal analysis to gain a better understanding of how to diagnose and treat patients.
- Learn practice implementation techniques to help foster happy and healthy patients.
Saturday, April 28 ~ 11:15 AM - 12:30 PM

**Pediatric Hands-On Tech Talk Showcase Workshop (409)**

Lawrence Kotlow, DDS
*Private Practice, Albany, New York, USA*

This presentation and hands-on course will give the participant the opportunity to try various diode, erbium, and CO₂ lasers available today. This is an excellent opportunity for present and future laser users to see how various lasers work, compare their specific ablating properties, understand HOW TO USE YOUR LASER laser, and “revolutionize” your practice. Manufacturers will be given an opportunity to explain how their laser works and differs from other wavelengths. This limited-attendance workshop is intended for laser dentists who would like to learn how to excel in their knowledge and use lasers for infants and children. This session is limited to 30 dentists.

**Educational Objectives**

- Enhance one’s knowledge and practice of laser dentistry for children.
- Ascertained how to use one’s current laser(s) more efficiently and productively.
- Discover knowledge and techniques for providing better care for pediatric patients using lasers.

Saturday, April 28 ~ 1:30 PM - 3:30 PM

**Photobiomodulation Workshop (415)**

Gerald Ross, DDS¹; Arun Darbar, BDS²
¹Private practice, Tottenham, Ontario, Canada
²Private practice, Leighton Buzzard, United Kingdom

This workshop will be given by experienced photobiomodulation clinicians and is intended to illustrate the clinical conditions that can be treated with the various devices which will be illustrated and can be tried by the participants. In addition there will be time for questions as participants will be divided into small groups and will rotate around the room. The goal of the workshop is to allow experienced users to expand and improve their use of photobiomodulation and for new users to be able learn how this technology can have many applications in their dental practice.

**Educational Objectives**

- Elaborate how photobiomodulation can be used in dentistry.
- Practice photobiomodulation techniques and improve skills using different devices.
- Apply the concepts and techniques you have learned in this workshop.

**Note:** This presentation discusses investigational devices that have not yet received U.S. FDA approval or clearance for the specified clinical indications, or describes off-label uses.
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**Thursday, April 26**

- Innovative Optics 2:45 pm
- Florida Probe Voiceworks 3:00 pm
- Convergent 3:15 pm
- Crystal Clear Digital Marketing 3:30 pm
- Orascoptic 3:45 pm
- THOR Photomedicine 4:00 pm
- National Cancer Network 4:30 pm
- Probiora Health 4:45 pm
- MedX Health 5:00 pm

**Friday, April 27**

- Crystal Clear Digital Marketing 10:45 am
- Orascoptic 11:00 am
- THOR Photomedicine 11:15 am
- Florida Probe Voiceworks 11:30 am
- National Cancer Network 11:45 pm
- Probiora Health 12:00 pm
- MedX Health 12:15 pm
- Convergent 1:30 pm
- Innovative Optics 1:45 pm
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Walid Altayeb, DDS, MSc, PhD
Private Practice, Abu Dhabi, United Arab Emirates (UAE)

Dr. Altayeb received his dental degree from the Faculty of Dentistry, Damascus University, in 1998 and completed his Masters of Science in Periodontics in 2004 and Doctorate of Philosophy in Periodontics in 2007. He had been working as clinical supervisor in Department of Periodontics, Damascus University, Syria. Dr. Altayeb achieved an advanced level of knowledge in the application of lasers in dental science and patient treatment (Advanced Proficiency certificates from the Academy of Laser Dentistry in 980-nm diode and Er:YAG lasers). He has Mastership in the Academy of Laser Dentistry, is a member of the ALD Board of Directors and Speakers Bureau, and is Chair of the ALD Gulf Laser Chapter. Dr. Altayeb conducts “Pink Aesthetics & Laser Dentistry” courses with the British Academy of Implant and Restorative Dentistry in Qatar, Bahrain, Saudi Arabia, Oman, and UAE. He is working in private practice as a periodontist and implantologist in the Tamim Dental Polyclinic, Doha, Qatar, The British Lasik and Cosmetic Surgery Center, Dubai, UAE, and the Masters Dental and Aesthetic Center, Abu Dhabi, UAE.

Disclosure: Dr. Walid is a speaker in the British Academy of Implant and Restorative Dentistry and receives a modest honorarium for his educational activities.

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Gregory Altshuler, ScD, PhD
IPG Photonics Corporation, Marlborough, Massachusetts, USA

Dr. Altsuler is president of IPG Medical Corporation, a subsidiary of IPG Photonics Corporation, a leading developer and manufacturer of fiber lasers, fiber amplifiers, and diode lasers. He is involved with research, development, and manufacture of a new generation of a medical laser based on IPG laser and components. He is also the Chief Scientific Consultant, Director, and Chairman of Dental Photonics, Inc., Walpole, Mass., a start-up company that developed the Alta MLS® dental laser platform, Thermo Optically Powered surgery, and laser patterned micro-coagulation and ablation technology (LPM). Previously, he served as Senior Vice President of Research and Development for Cynosure, Inc., and Polomar Medical Technology, Inc. Dr. Altshuler received his Doctor of Science degree in quantum electronics and non-linear optics, and his PhD in optics, both from the Institute of Fine Mechanics and Optics, St. Petersburg, Russia. He is chairman of 7 and member of 24 program committees of international conferences in laser medicine and physics.

Disclosure: Dr. Altsuler receives significant compensation as the president of IPG Medical Corporation which does business through a joint development agreement with Biolase. He is the chief scientific consultant, director, and chairman of Dental Photonics, Inc.

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Heather Angers, RDH
Belmar Park Dental Care, PC, Lakewood, Colorado, USA

Heather has been a registered Dental Hygienist in Colorado since 2009. She started using an 810-nm diode laser at that time. Since then she has obtained both the standard and advanced proficiencies through the Academy of Laser Dentistry (ALD). Heather is a member of the ALD, American Dental Hygienists’ Association (ADHA), and an auxiliary member of the International Congress of Implantologists. Her passion in lasers started when she was a dental assistant when she saw how they had changed the way her dentist at the time treated patients. Heather has taken that same passion into her dental hygiene career. She plans to continue to learn from the excellent sources available from the ALD and also hopes to become a course provider so she can pass that same expertise to the coming generations of laser dental hygienists.

Disclosure: Heather receives modest compensation from Forward Science for selling the OralID™ oral cancer screening device, SalivaMAX™ artificial saliva, and other products offered by them.

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Corey Auger
Crystal Clear Digital Marketing, Orlando, Florida, USA

Corey Auger is the National Executive for Crystal Clear Digital Marketing, a leader in providing innovative software, marketing, and consulting solutions for modern medical practices around the globe. As a seasoned expert on digital marketing best practices, Corey travels around the country attending 20-30 medical conferences each year, educating clinicians and staff how to effectively find, serve, and keep more patients profitably.

Disclosure: Mr. Auger receives significant compensation as a National Executive for Crystal Clear Digital Marketing, LLC.

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Dr. Batoon is an Associate Professor in the Department of Restorative Dentistry and Prosthodontics at the University of Texas School of Dentistry (UTSD) at Houston. She earned her DDS from the University of Uberaba, Brazil, in 1995. She has postgraduate training in restorative dentistry from the University of Michigan School of Dentistry. In addition, she earned a master’s degree in laser dentistry from the Nuclear and Energy Research Institute and University of São Paulo, Brazil. Recognizing great opportunities to advance knowledge and treatment in laser dentistry, she became the Director of Dental Laser Studies, and designed a didactic and laboratory-based teaching curriculum for laser education at the UTSD at Houston. She also collaborated with UTSD’s Endodontics Department where she studied the effect of indirect low-level laser irradiation on the migration and proliferation of dental follicle progenitor cells. Dr. Barros is currently collaborating with the University of Texas MD Anderson Cancer Center in studying the effectiveness of low-level laser therapy (LLLT) on oral mucositis in head and neck cancer patients. She is also working with UTSD’s Orthodontics Department in investigating the effects of LLLT on bone regeneration and healing. Dr. Barros lectures and conducts research in the fields of restorative dentistry, biomaterials, and hard/soft tissue laser applications. She developed the laser dentistry curriculum at the University of Texas Health Science Center (UTHealth) School of Dentistry at Houston and is the acting director of the laser clinic. Dr. Barros is a member of the Academy of Laser Dentistry’s University and Academia Relations Committee, American Dental Education Association, Academy of Operative Dentistry, International Association for Dental Research, and Consortium of Operative Dentistry Educators.

Disclosure: Dr. Barros has reported no commercial affiliations or personal conflicts of interest relative to this presentation.

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Dr. Barros is a graduate of Tufts University and completed a General Practice Residency at the Veterans Administration Hospital in Loma Linda, California. She has extensive training in cosmetic dentistry, full mouth rehabilitation, TMJ, and dental implant restorations. She is a member of the American Academy of Dental Sleep Medicine, Academy of General Dentistry, and an Adjunct Professor at A.T. Still University. Dr. Barros is a published author on sleep-disordered breathing in children and practice management topics. She is also a member of the Spear Faculty Club and CEREC Doctors.

Disclosure: Dr. Batoon receives modest compensation from Ortho-Tain®. She educates the dental community about the HealthyStart™ System all over the world.

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Laura D. Braswell, DDS, Board Certified Periodontics
Private Practice, Atlanta, Georgia, USA
Dr. Braswell graduated from the University of North Carolina School of Dentistry, practiced in Raleigh, North Carolina, then moved to Atlanta, Georgia, where she served on the faculty and did a Periodontal residency at Emory University. She is the owner of Buckhead Periodontics. Dr. Braswell is a Charter and Master member Academy of Laser Dentistry, a Diplomate of the American Academy Periodontology, and an Honorary Fellow in the Academy of Veterinary Dentistry.

Disclosure: Dr. Braswell receives significant research support from IPG and Biolase. They did not contribute to this presentation.

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Keith Brewster, DDS, FALD
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Dr. Brewster graduated from Baylor College of Dentistry in 1984 and maintains a private practice in Dallas, Texas, practicing General Dentistry. He has taken extensive continuing education including orthodontics, laser, implantology, occlusion, cone beam computed tomography (CBCT), and digital dentistry.

Disclosure: Dr. Brewster has received modest compensation from Sirona for individual meetings to perform live guided dental implant placement with digital crown design surgeries. He is a lecturer for Dental Aim.

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James D. J. Carroll, AMInstP, FRSM
THOR Photomedicine, Amersham, United Kingdom
James Carroll is an electronics engineer and is the founder and CEO of THOR Photomedicine Ltd. He is a recognized authority and much-published author on low-level laser therapy (LLLT) / photobiomodulation mechanisms of action, dose, dose rate effects, and the measurement and reporting of LLLT parameters.

Disclosure: Mr. Carroll is founder and CEO of THOR Photomedicine, a LLLT manufacturing company and has ownership interest in Lumithera, Inc., a developmental stage medical device company developing photobiomodulation treatment protocols for age-related macular degeneration and other ocular indications, compensation for which is significant. THOR receives significant research support from the National Institutes of Health, National Institute for Health Research, Massachusetts General Hospital, Harvard School of Public Health, Brigham and Women’s Hospital, Sydney University Dental School, Birmingham University Dental School, Tel Aviv University, and others.

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Andre Chartrand, BSc, DMD
University of Montreal, Longueuil, Quebec, Canada
Dr. Chartrand graduated from the University of Montreal Faculty of Dental Medicine in 1984. He has been in full-time private practice in Longueuil, Canada, since then. He bought his first laser in 1989 and now owns several different lasers. He is an associate professor at the University of Montreal Faculty of Dental Medicine, teaching laser dentistry to undergraduate students and doctors for the Continuing Dental Education program. Dr. Chartrand has enhanced his laser knowledge, experience and capabilities by implementing the most advanced technologies including performing routine and complex soft tissue surgical procedures in a virtually bloodless field. He has several published articles in national and international dental journals. Recognized as a renowned dental laser user, he is frequently invited as speaker to participate at numerous conferences and congress nationally and internationally.

Disclosure: Dr. Chartrand is in private dental practice and has no other commercial relationships.

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Gilles P. Chaumanet, Prof. MSc
International Institute of Laser Implantology, Villeinveuve-Loubet, France
Dr. Chaumanet graduated from the University of Nantes in 1983. He is a Clinical Associate Professor at Ludes University Malta/ Lugano/Dubai, Visiting Professor at Tapei Medical University, Professor A.C. at the University of Cagliari in Italy, Adjunct Professor at the Aachen Center for Laser Dentistry (AALZ), and visiting Professor at the University of La Plata, Buenos Aires, Argentina. He currently maintains a private practice in oral surgery and implantology in Villeneuve-Loubet, France, as well as a second practice in Verona, Italy. He holds multiple mastership-level accreditations in lasers, periodontology, implant therapy, oral surgery, radiology and anatomy from various institutions of higher learning. Dr. Chaumanet is currently serving as President for France of the Society for Oral Laser Applications, President for France of the Academy of Laser Education, President of the International Institute of Laser Implantology, member of the board of the International Institute of Laser Implantology, Ambassador of Global Oral Implant Academy, and is an active member of CENALOS, the French Society of Medical Lasers, International Academy of Periodontology, Italian Society of Oral Surgery, AGLZ Academy, International Congress of Oral Implantologists as well as participant and contributor to many different scientific committees and societies. He is researcher and author of different articles in international publications on topics like lasers and dental implants.

Disclosure: Dr. Chaumanet is in private practice in oral surgery and implantology and has no other commercial relationships.

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Nuran Culcuoglu, DDS, MSc
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Dr. Culcuoglu graduated from Ankara University Dental Faculty in 1977. She conducted research on dental-originated focal infections in the early 1980s. She achieved ALD's Standard Proficiency certification in 1994 and Advanced Proficiency in 1996. Dr. Culcuoglu completed her MSc program at Genoa University in November 2014. She is practicing as a general dentist in Istanbul.

Disclosure: Dr. Culcuoglu is in private practice in Istanbul and has no other commercial relationships.

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Dr. Arun Darbar is a multi-award-winning laser and aesthetic dentist. He serves on the certification committee of the British Academy of Cosmetic Dentistry (BACD) as an accredited member and examiner. A Master, Educator and Founder of the World Clinical Laser Institute (WCLI), he has served on their advisory board and is involved with the American Society for Laser Medicine and Surgery (ASLMS), World Association for Laser Therapy (WALT), North American Association for Photobiomodulation Therapy (NAALT), British Society for Occlusal Studies (BSOS), World Federation for Laser Dentistry (WFLD), and International Society for Oral Laser Applications (SOLA). An ex officio Board member and executive secretary of the ALD, he holds a Master's and Educator status and has served on their committees as Chair of International Relations and Co-Chair of Education and Certification Committees. He has lectured internationally on the use of lasers for over 20 years, written numerous articles and pioneered and introduced the concept of photobiomodulation with surgical lasers and preconditioning using various wavelengths. His data has been presented and published at proceedings of SPIE in 2006, 2007, and 2009/10 USA, WALT 2008 South Africa and 2012 Australia. Currently he serves as ALD Secretary and 2018 Conference General and Scientific Sessions Chair.

Disclosure: Dr. Darbar lectures for other educational organizations and receives a modest honorarium and expenses for these activities. Laser manufacturers are providing equipment for the photobiomodulation workshop. He receives discounts on devices and supplies.

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Roeland De Moor, DDS, PhD, MSc
Ghent University Dental School, Ghent Dental Laser Centre, Ghent, Belgium

Prof. Dr. Roeland De Moor is a full professor at the Ghent University, head of the research cluster and chairman of the Department of Restorative Dentistry and Endodontology, director of the three-year Master after Master program in Endodontics, and guest professor at the Medical University of Vienna, University Clinic of Dentistry. The research of his group is focused on root canal cleaning and disinfection with laser-activated irrigation and light-activated nanoparticles, the use of lasers and light in endodontics such as Laser Doppler Flowmetry, and dental laser bleaching. Research is also conducted in the field of endodontic quality, minimally invasive restorative and endodontic techniques, the use of bioactive materials in endodontics, and the build-up of root canal-treated teeth. Prof. Dr. De Moor gives lectures worldwide on the use of light and lasers in endodontics, on dental laser bleaching, and on the application of nanotechnology for endodontic purposes. He is (co)author of more than 150 international peer-reviewed articles. He has published 15 book chapters and (co)-edited three books. He is also member of the editorial board of the International Endodontic Journal, Journal of Endodontics, and Journal of Adhesive Dentistry. In the field of laser dentistry, he is a founding member of SOLA International and SOLA Benelux, member of the World Federation for Laser Dentistry (WFLD) and ALD, and reviewer for Lasers in Medical Science and Photomedicine and Laser in Surgery.

Disclosure: Prof. Dr. De Moor has lectured twice in 2016 and three times in 2017 for Fotona and received a modest honorarium for these activities.

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Beatrijs Deruyter, DDS
Private Practice, Liedekerke, Belgium

Dr. Deruyter has maintained a private dental practice for over 37 years in Liedekerke, Belgium, and has used different laser wavelengths for 27 years. She has been an ALD member for over 15 years and has served on the Laser Safety Committee and as examiner for many years. Dr. Deruyter is also a laser instructor and doctoral researcher at KU Leuven, Belgium.

Disclosure: Dr. Deruyter is in private practice in Liedekerke, Belgium, and has no other commercial relationships. She also works as an instructor at KU Leuven Belgium.

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Bryan Edelstein
Doctor.com, New York, New York, USA

Bryan Edelstein is the Vice President of Practice Development at Doctor.com, and is a seasoned entrepreneur specializing in online marketing, media, and business operations. Since 2005, Bryan has consulted for many of the most prestigious aesthetic medical practices in the United States to help them build their businesses faster, more easily, and more efficiently than ever before. He has identified and developed core strategies that the most successful doctors use to fill their waiting room and dramatically increase their take-home income – all while saving countless hours each month.

Disclosure: Mr. Edelstein is an employee of Doctor.com.

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Joel B. Epstein, DMD, MSD, FRCD(C), FDS RCS(E)
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Dr. Epstein is a Professor at the Samuel Oschin Comprehensive Cancer Institute, Cedars-Sinai Health System, Los Angeles, California, and a member of the Consulting Staff, City of Hope National Medical Center, Duarte, California. He has been highly published in the diagnosis and supportive care of cancer and in the use of photobiomodulation in oncology supportive care.

Disclosure: Dr. Epstein’s travel to the ALD conference is supported by Thor Photomedicine. They did not contribute to this presentation.

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Sana Farista, MDS Periodontist
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Dr. Farista is a periodontist and laser specialist working as a freelance consultant in the city of Mumbai, Maharashtra state, and cities of Durg, Bhilai, Rajnandgaon, Chhattisgarh state, India. She is an active member in and guest speaker for the Indian Society of Periodontology, with six years of speaking experience on lasers throughout India. Dr. Sana has numerous national and international publications on lasers.

Disclosure: Dr. Sana has received modest compensation in the form of honoraria for various companies, private academic institutes, and dental universities and colleges. She has no other commercial relationships with any of the companies.

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Nancy M. Fitzgerald, DMD, BSDH
Midwestern University College of Dental Medicine, Glendale, Arizona, USA

Dr. Fitzgerald received her Graduate Dental Hygiene degree from the University of Minnesota in 1985. After practicing as a Dental Hygienist for almost 20 years she returned to the University of Minnesota and attained her BS in Dental Hygiene Education in 2005. Dr. Fitzgerald earned her DMD degree from Midwestern College of Dental Medicine, Glendale, Arizona, in 2012. She has practiced dentistry in both Florida and Arizona. She served as a part-time Preclinical Adjunct Faculty member for Midwestern University during 2013 - 2014, then transitioned to full-time Preclinical Assistant Professor in July 2014. Dr. Fitzgerald holds certifications in Oral Sedation Dentistry, Comprehensive Orthodontics and Craniofacial Orthopedics, Epigenetic Orthodontics with the DNA Appliance®, Laser Dentistry, and the Las Vegas AAID Implant Maxicourse. She is an active member of The Academy of General Dentistry, Academy of Laser Dentistry, American Dental Education Association, and an Associate Fellow of the American Academy of Implant Dentistry.

Disclosure: Dr. Fitzgerald is an Assistant Professor at the Midwestern University College of Dental Medicine and has no commercial affiliations or personal conflicts of interest relative to this presentation.

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Pamela Galarza is a 2015 graduate from the University of Central Florida. In August of 2015, she began pursuing her D.M.D. at Midwestern University College of Dental Medicine - Arizona. Pamela’s interest in lasers originated from Dr. Nancy Fitzgerald’s lecture series on lasers in dentistry. In 2016, Pamela was part of the inaugural year of Midwestern Dental Laser Association (MDLA). She currently serves as the 2017-2018 Vice President of MDLA.

Disclosure: Ms. Galarza is a third-year dental student at Midwestern University College of Dentistry - Arizona.

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Associate Professor Roy George has been the Discipline Lead for Endodontics at the School of Dentistry and Oral Health at Griffith University since 2008. He completed his Master's in Conservative Dentistry and Endodontics, PhD in Laser applications and Graduate Certificate in Higher Education. Dr. George holds an adjunct position at The University of Queensland School of Dentistry, where he is a member of the lasers in dentistry research group. He has a particular interest in laser applications and in dental material science, and has experience with a number of hard and soft tissue lasers. He also has a keen interest in dental education research and uptake of technology. Dr. George has over 20 years of teaching experience and has published over 60 peer-reviewed articles. He was awarded an International Patent for inventing a Novel Fiberoptics tip design for applications in dentistry. He is currently the Editor-in-Chief of the *International Journal of Dental Clinics*, an associate editor of *Lasers in Medical Science*, a peer reviewer for a number of international journals, and a member of the Royal Australasian College of Dental Surgeons.

Disclosure: Dr. George is co-inventor of some of the modified fiber tips that are highlighted in his lecture. They are patented and licensed to Biolase. He currently does not have any financial interest in these products.

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John J. Graeber, DMD
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One of America’s most experienced laser dentists, Dr. Graeber maintains a full-time comprehensive cosmetic practice in East Hanover, New Jersey. He has utilized photobiomodulation (PBM), Nd:YAG, diode, Erbium:YAG, and Erbium:Cr:YSGG dental lasers since 1991. A 1972 graduate of the University of Medicine and Dentistry of New Jersey (UMDNJ), Dr. Graeber is a past president, Tri-County Dental Society and the Metropolitan Academy of Laser Dentistry. He has served as a member of the American Dental Association’s Council on Ethics, Bylaws and Judicial Affairs, and is a current Committee Chairman of the Board of Directors of the Academy of Laser Dentistry. He has lectured internationally in many dental schools, esthetic continuing, and major dental meetings for more than 20 years on both lasers and air abrasion. He has trained thousands of new owners for most of the major dental laser manufacturers. An Academy of Laser Dentistry Standard course Provider, he has served as Certified Laser Educator at the Las Vegas Institute and has written 18 nationally published articles on high-tech subjects. Dr. John Graeber is a Past President of the Academy of Laser Dentistry (2015-2016) and maintains an online diode laser training Web site, softtouchseminars.com.

Disclosure: Dr. Graeber receives significant honoraria from CAO and Ultradent Laser manufacturers, significant royalties from CAO, and serves on the advisory board for CAO.

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Eva Grayzel
Eva Grayzel and Six-Step Screening, Jacksonville Beach, Florida, USA

Eva Grayzel, a nationally recognized Master Storyteller and performance artist, was diagnosed at age 33 with stage IV oral cancer and given a 15% chance of survival. After regaining her deep vibrant voice, Eva applied her stage skills to communicate the depth of her experience in a unique and powerful way. For over a decade, Eva has captivated dental professionals worldwide using her story as a catalyst for change. She performed 'Tongue-Tied’ Off-Broadway in New York City to a sold-out audience. A champion of early detection, Eva founded the Six-Step Screening™ oral cancer awareness campaign for which she was recognized by the American Academy of Oral Medicine. Eva is the author of two children’s books, *Mr. C Plays Hide & Seek* and *Mr. C the Globetrotter* and is the creator of ‘My Story Legacy,’ an interactive format for documenting family stories, life values, and wisdom.

Disclosure: Ms. Grayzel does not have any affiliations or financial interests in a commercial organization.

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Tony Hewlett, DDS
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Dr. Hewlett has resided in Western Washington for over 30 years. After graduating from Sehome High School (located in Bellingham) in 1976, he received his undergraduate degree in biochemistry from Western Washington University in 1980. He then went on to receive his Doctorate in Dental Surgery from the University of Washington in 1984. Dr. Hewlett entered into private practice in Stanwood in 1985. He is an active member of several professional organizations, including the Academy of General Dentistry, Academy of Computerized Dentistry, American Dental Association, Washington State Dental Association, Snohomish County Dental Society, and the Academy of Laser Dentistry.

Disclosure: Dr. Hewlett receives modest honoraria from and has modest ownership interest in Convergent Dental.

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Ingmar Ingenegeren, DDS
Private Dental Laser Clinic, Bottrop, Germany

Dr. Ingenegeren has been a pioneer in laser implant surgery since 2000. He is a published author on the topic of laser bone surgery. In addition, he is a scientific co-worker at the University of Aachen Dental Laser Department, Germany.

Disclosure: Dr. Ingenegeren has reported no commercial affiliations or personal conflicts of interest relative to this presentation.

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Dr. Kong received her DDS degree in 2012 from the University of Health Sciences (UHS), Phnom Penh, Cambodia. After graduation, she worked as a general practitioner at D-One Dental Clinic, Battambang, Cambodia. In 2014, she enrolled in a PhD program in the Department of Periodontology, Tokyo Medical and Dental University (TMDU). Her research interests include periodontal phototherapy and tissue regeneration using lasers and light-emitting diodes (LEDs).

Disclosure: Dr. Kong has reported no commercial affiliations or personal conflicts of interest relative to this presentation.

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Dr. Kotlow graduated from the State University of New York (SUNY) University at Buffalo School of Dental Medicine in 1972, and received his pediatric dental training as a resident at the Children’s Hospital in Cincinnati, Ohio, from 1972-1974. He became Board Certified in Pediatric Dentistry in 1980, and is a Fellow in the American Board of Pediatric Dentistry. As a member of the ALD, Dr. Kotlow served on the Board of Directors, achieved Advanced Proficiency in Erbium lasers as well as Standard Proficiency in the use of diode, 9300-nm CO₂, and Nd: YAG lasers and ALD Mastership status. He was the 2014 recipient of ALD’s Leon Goldman Award for Clinical Excellence. He has lectured on a wide range of clinical applications using lasers on infants and children, and established the ALD one-day pediatric program at the ALD annual session. Dr. Kotlow is an internationally known expert on aiding mothers achieving a comfortable and effective latch during breastfeeding due to tongue- and lip-ties and has lectured to over 5000 health care professionals on the diagnosis, laser treatment, and postsurgical care of these infants. He has lectured on lasers and pediatric dentistry throughout the United States and internationally in Israel, Canada, Taiwan, France, England, Australia and Italy. Dr. Kotlow has contributed to textbook chapters on the use and benefits soft tissue lasers, hard tissue lasers, and photobiomodulation in Pediatric Dentistry in the Dental Clinics of North America (2004), in the Atlas of Laser Applications in Dentistry (2007), and in Principles and Practice of Laser Dentistry (2011 and 2016). He has had articles published on laser dentistry in the ALD publications (Wavelengths, Journal of the Academy of Laser Dentistry, Journal of Laser Dentistry), European Archives of Pediatric Dentistry, Journal of Human Lactation, Clinical Lactation, General Dentistry, and many others. He published a book SOS4TOTS on the diagnosis and treatment of infants with lingual and labial ties using lasers. Dr. Kotlow is involved in the development and introduction of the isotopic carbon dioxide laser operating at 9300 nm and manufactured by Convergent Dental.

Disclosure: Dr. Kotlow receives significant honoraria from Convergent Dental. He is presently a beta tester of the Solea laser, as well as a consultant to and investor in Convergent Dental. He also gives courses to new Solea users.

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Justin R. Kolnick, DDS
Advanced Endodontics of Westchester, White Plains, New York, USA
Dr. Kolnick received his dental degree, cum laude, from the University of the Witwatersrand, in Johannesburg, South Africa. He was the first dental school graduate to be awarded the prestigious University Scholarship for Overseas Postgraduate Study. In 1982, he completed his postdoctoral endodontic training at Columbia University School of Dental and Oral Surgery in the City of New York. For the past 36 years, Dr. Kolnick has been in private practice limited to endodontics in Westchester County, New York. His practice is dedicated to fostering excellence in endodontics through education and the incorporation of the latest technology. He has been committed to endodontic education. His former positions include: Associate Clinical Professor in Endodontics at Columbia University; Attending at Westchester Medical Center and Associate Clinical Professor in Endodontics at New York Medical College. He is currently an Attending at St. Barnabas Hospital, Bronx, New York, and lectures extensively on a local, national and international level. For the past 10 years, Dr. Kolnick has remained in the vanguard of lasers in endodontics and has lectured widely on this subject. He is presently a Clinical Mentor in endodontics for Biolase, Inc.

Disclosure: Dr. Kolnick is a Clinical Mentor for Biolase, Inc., and received modest compensation from Biolase for this presentation.

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Dr. Liebert is the Director of Photomolecular Research at the Australasian Research Institute, Sydney Adventist Hospital in Wahroonga. She is also a Titled Manipulative Physiotherapist and a principal in Artaersonic Musculoskeletal and Laser Phytotherapy in Artaersonic, Australia. Her current research is focused on the molecular mechanisms of photobiomodulation and she is also currently in the process of implementing a number of clinical trials to assess the effectiveness of photobiomodulation to treat cervicogenic and migraine headache, to treat and circumvent cognitive decline (including Alzheimer’s disease), and to prevent cardiac damage and cognitive decline following cardiac artery bypass graft surgery. Dr. Liebert is a member of the Scientific Advisory Board of the World Association for Laser Therapy (WALT) and Vice President of the Australian Medical Laser Association. She has published a number of manuscripts on the mechanisms of photobiomodulation and has presented at numerous international conferences.

Disclosure: Dr. Liebert is married to Dr. Brian Bicknell who is an agent for Spectra Analytic Irradia AB (Spånga, Sweden) and sells Irradia laser products exclusively in Australia. Irradia has not contributed to this presentation.

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Disclosure: Dr. Low receives significant compensation as an employee of Biolase. He also receives significant honoraria from Phillips, has significant ownership interest in Florida Probe, and receives significant compensation as a consultant for PerioScience. Biolase is contributing equipment for this workshop.

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Dr. Luk obtained his Bachelor of Dental Surgery degree at the University of Liverpool in 1987 and was awarded Diploma in General Dental Practice by the Royal College of Surgeons of England in 1994. He practiced in UK for 8 years and returned to Hong Kong in 1995. In 2008, he was awarded Membership in General Dentistry by the College of Dental Surgeons of Hong Kong. In 2013, he completed the Master of Science Degree in Lasers in Dentistry at University of RWTH Aachen, Germany. Dr. Luk is secretary and lecturer for the World Federation of Laser Dentistry Asia Pacific Division. He is a laser research postgraduate at the University of Hong Kong Faculty of Dentistry. He is a published co-author on the topic of impact of laser dentistry in management of color in aesthetic zone.

Disclosure: Dr. Luk receives modest honoraria from Elexxion and Sirona lasers.

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Jeri-Anne Lyons, PhD, completed her Bachelor of Science in Medical Technology from the University of Wisconsin-Stevens Point in 1989. She earned her PhD in Microbiology/Immunology from the Medical College of Wisconsin in 1997 under the guidance of Dr. Robert Fritz, studying T cell migration into the central nervous system in an animal model of multiple sclerosis (MS). She was a fellow of the National Multiple Sclerosis Society from 1997-2000, studying the role of B cells and antibody in MS pathogenesis under the guidance of Dr. Anne Cross at the Washington University School of Medicine in St. Louis, Missouri. She remained at Washington University until 2003, when she joined the faculty of the College of Health Sciences, Clinical Laboratory Sciences Program, at the University of Wisconsin-Milwaukee (UWM). She has investigated the mechanisms of action of photobiomodulation therapy with visible and near-infrared light in improving the clinical course of disease in an animal model of MS since 2006 and continues to study the role of the immune response in the pathogenesis of disease. Dr. Lyons is currently Professor of Biomedical Sciences and Associate Dean for the College of Health Sciences at UWM. She previously served as the Science Chair and is currently the President-Elect of the North American Association for Photobiomodulation Therapy (NAALT).

Disclosure: Dr. Lyons previously received equipment from Quantum Biomedical Devices, but they did not otherwise contribute to research or this presentation. She is currently funded by the National Multiple Sclerosis Society. She is currently supported (monetary support and equipment) by Multi Radiance Medical, but they did not otherwise contribute to research or this presentation.

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Dr. Mastis graduated from the University of Illinois College of Dentistry in 1987. She maintains a private dental practice, Michigan Cosmetic and Laser Dentistry, in St. Clair Shores, Michigan. She previously served as Co-Chair of ALD’s Certification and Education Committees, Chair of Laser Safety Committee, Communications Committee, and was the 2014 General & Scientific Sessions Chair of the Annual Meeting. Dr. Mastis has been using lasers since 2000, and has 18 lasers of various wavelengths in her practice. She holds Standard Proficiency certifications in Er:YAG, diode, Er,Cr:YSGG, and CO₂ laser wavelengths, and has achieved Advanced Proficiency in the Er:YAG wavelength. Her practice is highlighted by implant surgery and restoration, laser dentistry, esthetic and cosmetic dentistry, and integration of advanced technologies into practice. Dr. Mastis also holds ALD Mastership status. She is the ALD President-Elect and 2018 Conference Committee Chair.

Disclosure: Dr. Mastis has reported no commercial affiliations or personal conflicts of interest relative to this presentation.

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Dr. Miller is a Board Certified Diplomate of the American Board of Oral Implantology; Honored Fellow of the American Academy of Implant Dentistry; Diplomate of the International Congress of Oral Implantologists, and Fellow of the Academy of Osseointegration. He is acting Chairman of the Department of Oral Implantology at the Atlantic Coast Dental Research Clinic in Palm Beach, Florida; Director of The Center for Advanced Aesthetic and Implant Dentistry in Delray Beach, Florida; and Co-Director of the Pacific Institute for Advanced Dental Education.

Disclosure: Dr. Miller is a member of the Advisory Board of Biolase Technologies for which he receives modest compensation.

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Jeanette Miranda received her associate degree in dental hygiene from Indiana University South Bend (IUSB) and her bachelor degree in dental hygiene from Minnesota State University Mankato. She has practiced dental hygiene for over 35 years in four states and was a clinical hygiene instructor at IUSB. She has attained Standard Proficiency and Fellowship status in the diode laser with the World Clinical Laser Institute; Standard Proficiency, Advanced Proficiency and Mastership status with the Academy of Laser Dentistry; and Dental Hygiene Implant Certification through the International Congress of Oral Implantologists. Presently, Jeanette is employed as a clinical hygienist, serves the Academy of Laser Dentistry as co-chair of the Communications Committee and chair of the Auxiliary Committee. She is a past-president of the South Dakota Dental Hygienists’ Association and lectures on topics including dental laser, dental implants and human papillomavirus (HPV).

Disclosure: Ms. Miranda has reported no commercial affiliations or personal conflicts of interest relative to this presentation.

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Dr. Mohammed has been in private practice since 1998 with a fellowship at Yale New Haven Hospital. She is a Board-certified Pediatric Dentist. She received her pediatric dental specialty training at University of Connecticut and spent a year doing her Fellowship in Pediatric Dentistry at Yale New Haven Hospital and Children’s Medical Center in Hartford, Connecticut with the Craniofacial team there. In addition, she spent a year at Mount Sinai Medical Center, Miami Beach, in general practice residency. During her dental schooling at New York University, she was awarded the Dean’s Research Award and was in the Honors Clinic. Dr. Mohammed is a member of the Academy of Breastfeeding Medicine, American Academy of Pediatric Dentistry, American Academy of Pediatrics, International Affiliation of Tongue-tie Professionals, Academy of Applied Myofunctional Sciences, and Academy of Laser Dentistry. She is also a World Clinical Laser Institute (WCLI) Fellowship-certified Biolase trainer and a certified myofunctional therapist. She believes in evidence-based patient-specific protocol (EBSP).

Disclosure: Dr. Mohammed has reported no commercial affiliations or personal conflicts of interest relative to this presentation.

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Ms. Monzon has enjoyed 30 years in the dental hygiene profession. Her passion is to make a difference in patients’ lives. She has used lasers since 1993 and earned Advanced Proficiency in diode and Nd:YAG lasers in 1998. In 1999, Gloria achieved University of California San Francisco (UCSF)/ALD Educator Status, and in 2002 she became an ALD Recognized Course Provider. She has served as Certification Examiner and Educator for the Academy of Laser Dentistry and World Clinical Laser Institute (WCLI). She has presented abstracts and performed as a speaker for the ALD and WCLI. With more than 20 years as an educator, she has lectured throughout the United States and internationally. Gloria heads Advanced Laser Hygiene consulting. She prides herself as a “Hygienist Training Fellow Hygienists.”

Disclosure: Ms. Monzon does not have financial interests with any dental manufacturer, and she does not receive commissions for the sale of any equipment. Gloria heads Advanced Laser Hygiene Consulting where she receives an honorarium for conducting training.

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Dr. Moritz obtained his medical degree in 1989 from the University of Vienna, Austria. A few years later he received his degree in dentistry and dental surgery at the Dental School. At an early stage in his career he focused on laser dentistry, where he was very successful in the development of new techniques with various lasers. Dr. Moritz is one of the co-founders and a past president of the International Society for Oral Laser Applications (SOLA) and author of the book Oral Laser Application published in 2006. More than 100 publications have originated from his work. He is a Full Professor at the Medical University of Vienna, President of the Austrian Society of Esthetic Dentistry, past President of the Austrian Society of Endodontology, as well as Honorary President and member of many other international societies. He is Guest Professor at the University of Milano, Italy, and Guest Professor at the Peking Union Medical College Hospital, China. Since 2012, Dr. Moritz has served as the Dean of the School of Dentistry in Vienna.

Disclosure: Dr. Moritz receives significant compensation as Dean of the School of Dentistry, Medical University of Vienna, Austria.

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Dr. Mosca is a Dentist and Oral and Maxillofacial Radiology specialist through the School of Dentistry, University of São Paulo, Brazil. He received his MSc, PhD, and Post-Doctoral credentials in Biotechnology through Energetic and Nuclear Research Institute (IPEN/CNEN - SP) - CTR - Radiation Technology Center, University of São Paulo (USP) which is the Strategic Center for Cancer Treatment belonging to the Science and Technology Ministry of the Federal Government of Brazil, in which he is a researcher. His research has been funded from the International Atomic Energy Agency (IAEA) 2010-2016; National Commission on Nuclear Energy (CNEN) 2010-2014; Ministry of Science, Technology, Innovation and Communications (MCTIC) through Universal Project (2010 and 2016), and the São Paulo Research Foundation - FAPESP (2015-present). Dr. Mosca is the co-author of two textbooks, Radiologia Odontológica e Imaginologia (1st and 2nd editions); Tecnologias Endodônticas (2015). He is now a Postdoctoral Associate at the University at Buffalo, Oral Biology & Biomedical Engineering, School of Dental Medicine and School of Engineering and Applied Sciences. His research focus is using photobiomodulation therapy (PBMT) and photodynamic therapy (PDT) for cancer treatment using ionizing radiation through teletherapy and brachytherapy combined with YAG:Eu3+ and 2,2’-bipyridyl nanoparticles.

Disclosure: Dr. Mosca has reported no commercial affiliations or personal conflicts of interest relative to this presentation.

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Dr. Nakajima graduated in 1985 from Tohoku Dental College (now Ohu University) and in 1990 he acquired his DDS and PhD degrees from the Tsurumi Graduate School of Dentistry. In 1993 he opened his dental office opened in Ibaraki, Japan. He became a part-time lecturer at the Tsurumi University School of Dental Medicine in 1995. Dr. Nakajima incorporated his first laser (an Nd:YAG) for his clinic in 2003 and three years later acquired Er:YAG, diode, and CO2 lasers. He has been involved with the development of computer-controlled initiation of a diode laser tip and utilizes laser-patterned microcoagulation (LPM), similar to fractional laser irradiation, and laser-induced photoacoustic streaming (LIPAS) effect for treatment of periodontitis and peri-implantitis, obstructive sleep apnea syndrome, and cyst removal. He is currently exploring how lasers work on cells on a more molecular level, related to the concept of quantum biology. Dr. Nakajima is a Director for the Japanese Laser Dental Association and the Japanese Laser Therapy Association, a Councilor for the Japanese Laser Medical Association, a Certified Doctor in the Japanese Anti-Aging Dental Association, a Specialist in the Japanese Dental Association, and a member of the Japanese Oral Surgery Association, and Japanese Academy of Laser Dentistry.  
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Dr. Obeidi has been an ALD member since 2007, become an Academy fellow in 2009, and obtained his Advanced Proficiency certificate in 2016. He graduated from RWTH Aachen University with a master’s degree in laser dentistry in 2007.  
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Dr. Pang completed his Bachelor of Science (BSc) degree (Biomedical Science) in 1994 from the University of Technology, Sydney (UTS) with the University Medal. He completed his Bachelor of Dental Surgery from the University of Sydney in 2002. Dr. Pang is a member of the Australian Dental Association, the Australian Society of Implant Dentistry, the Australian Association of Laser Dentistry (AALD), and the Australian Chapter of the American Academy of Craniofacial Pain (AACP). He maintains a private practice in Sydney, Australia, where he has used multiple lasers since 2008. He is an educator and international speaker, and trains local and overseas dentists in the use of ozone, cone beam volumetric tomography (CBVT), and lasers for dental and aesthetic treatments. Currently the Australian trainer for Fotona lasers, he has completed a Master in Laser Dentistry from the Laser Aesthetic & Health Academy (LA&HA) in Slovenia. Dr Pang is the author of the chapter “Innovative Dentistry” in the Amazon Best-selling book Game Changers: Entrepreneurs Leading Change, about a group of business owners that are disrupting their industries by doing things differently.  
Disclosure: Dr. Pang lectures for Fotona d.o.o. and Fotona, LLC, and receives a modest honorarium for these activities. He provides education and instruction on the use of lasers to individuals and dental practices. Total annual income from these activities is significant.  
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Karen Parker is a dental consultant/clinical coach, educator, and practicing hygienist with over 35 years in the dental industry. She is a graduate of Forsyth / Northeastern University and recently earned a BSDH cum laude from Ferris State University. Karen believes in and participates in the process of life-long learning. She utilizes this philosophy in providing optimal care to her patients in private practice as well as helping her clients identify and obtain their professional goals.

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Dr. Polonsky graduated from the University of Toronto, Canada, in 1999, with the Dean’s Gold Medal of Achievement, and is a member of Omega Kappa Upsilon Honour Dental Society and Alpha Omega International Dental Fraternity. She holds a Mastership with the World Clinical Laser and Imaging (WCLI) Institute since 2012, Mastership in diode and erbium lasers from AALZ (Aachen Dental Laser Center) since 2015, Master of Science in Lasers in Dentistry degree from RWTH University in Aachen, Germany since 2016, and Fellowship with ALD (Academy of Laser Dentistry) in 2018. Since 1999, Dr. Polonsky has maintained a private general practice in Ottawa, Canada, with focus on multidisciplinary treatment utilizing lasers of different wavelengths. She has been the owner of the Alta Vista Laser Dental Centre in Ottawa, Canada, since 2006. Dr. Polonsky is actively involved in the educational aspect of lasers by teaching laser safety courses, diode and erbium certification courses throughout Canada, as well as lecturing worldwide on laser-assisted dentistry. She is a key opinion leader with Biolase Technologies Inc. and had been involved in the development of the newest all-tissue laser system Waterlase Express. Dr. Polonsky is the only certified WCLI trainer involved in the development of the newest all-tissue laser system Waterlase Express. Dr. Polonsky is the only certified WCLI trainer in Eastern Ontario and is the only one in Canada affiliated with all 3 major International Dental Laser organizations: WCLI, ALD and AALZ. She also serves on editorial advisory boards for JLD (Journal of Laser-Assisted Dentistry) and LIDS (Lasers in Dental Science) by Springer. Recently she founded the Canadian Dental Laser Institute (CDLI), an organization dedicated to providing quality continuing education in Laser Dentistry in Canada.

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Disclosure: Dr. Prado has reported no commercial affiliations or personal conflicts of interest relative to this presentation.

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Annette Quinn is the Program Manager of Radiation Oncology at the University of Pittsburgh Cancer Center. She obtained her undergraduate degree at Pennsylvania State University and her Master's in Nursing Education from Duquesne University in Pittsburgh. She has already had a strong passion for prevention and treatment of oral mucositis with numerous publications on the topic. She was instrumental in implementing the first low-level laser therapy (LLLT) oncology clinic in her practice for oncology patients at risk for mucositis.

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Under the direction of Shannon Richkowski, Hygiene Mastery has become nationally renowned for delivering the kind of detailed, progressive strategies that enable dental practices to maximize their potential. This sought-after speaker brings over 20 years of industry knowledge as a hygiene educator and dental coach, and has achieved her Advanced Proficiency certification with the ALD. Shannon finds joy in all speaking platforms ranging from one-on-one coaching, to having the honor of speaking to five thousand attendees at Siroworld dental convention. She is a member of the American Dental Education Association, ALD, American Dental Hygienists’ Association, and Directory of Dental Speakers.

Disclosure: Ms. Richkowski has no reported commercial affiliations or personal conflicts of interest relative to this presentation.

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Dr. Roshkind has been involved in the dental field for over 40
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Disclosure: Dr. Ross receives modest compensation for lecturing
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Ms. Siminovsky is a leadership professional as executive director of the Academy of Laser Dentistry (ALD) and serves the ALD Board as an advisor. She has 18 years of experience in leadership and 28 years in marketing, public relations, educational program development, and business. Gail is a graduate of the State University of New York Binghamton and maintains the credential Certified Association Executive (CAE) from the American Society of Association Executives (ASAE). She serves on ASAE’s Small Staff Advisory Committee and on the Board of Directors for the Florida Society of Association Executives (FSAE). Gail is a member of the American Dental Association’s Committee on Dental Meetings.

Disclosure: Ms. Siminovsky is a salaried employee of the Academy of Laser Dentistry. She has no other financial affiliations or personal conflicts of interest.

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Talita Sizemore is the current President of the Midwestern Dental Laser Association. She is in her third year of dental school at Midwestern University in Glendale, Arizona. Her interest in lasers began in early 2016 when laser lectures were introduced to her at Midwestern University. She earned her standard proficiency and helped launch the inaugural student laser club. Her goal is to get more students involved and comfortable with using lasers in the clinical setting.

Disclosure: Ms. Sizemore does not have any affiliation with or financial interest in commercial organizations that may have a direct or indirect interest in the subject matter of this presentation.

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Dr. Skowronski is a 1986 graduate of University of Detroit School of Dentistry. She graduated first in her class and received many academic awards, including the Omicron Kappa Upsilon Dental Honor Society as a student. Dr. Skowronski is a 2001 Fellow of the Academy of General Dentistry (AGD) and member of the Academy of Breastfeeding Medicine. A Master of the Academy of Laser Dentistry, she has achieved a Standard Proficiency Certification in the 2940-nm Er:YAG laser wavelength and Advanced Proficiency Certification in the 810-nm diode laser wavelength through the Academy. She is also a member of the North American Association for Photobiomodulation Therapy (NAALT) and utilizes low-level laser light therapy in her practice.

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Mary Lynn Smith is a registered dental hygienist, working clinically since 1994. Working with lasers in daily practice since 2000, she has persisted in advancing her knowledge and expertise. Mary Lynn holds proficiencies in multiple wavelengths and is currently recognized as an Educator of lasers in dentistry by the Academy of Laser Dentistry. She has contributed to the dental community through speaking at national conferences and small groups on care of implants, periodontal therapies, laser-assisted hygiene techniques and principles, and provides laser certification courses. She has authored published articles and a chapter on laser-assisted nonsurgical periodontal therapy in the textbook Principles and Practices of Laser Dentistry by Dr. Robert Convissar. Her passion for sharing her knowledge, developing other’s skills, and inspiring them to work with excellence is evident in her teaching.

Disclosure: Ms. Smith practices in a general dental practice in McPherson, Kansas, and has no other commercial relationships.

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Dr. Strauss is Professor of Surgery and Director of the residency training program at the Virginia Commonwealth University (VCU) Medical Center and its Schools of Dentistry and Medicine. He completed residencies in both anesthesiology and oral and maxillofacial surgery at the Michael Reese Medical Center in Chicago. In 1984 he then joined the faculty at the University of Chicago Medical School and in 1987 moved to the VCU Medical Center in Richmond, Virginia, where he is now in his 31st year of service. Dr. Strauss is an accomplished author, having published nearly 50 peer-reviewed articles in the scientific literature, has written over 25 textbook chapters, and has edited two textbooks in his field. His academic interests have primarily been in the fields of lasers in oral and maxillofacial surgery and in the surgical management of Obstructive Sleep Apnea. He has lectured on these subjects both nationally and on 5 continents. Dr. Strauss is also politically active and is a past President of the American College of Oral and Maxillofacial Surgeons (OMS), the second-largest OMS organization in the USA and is a past chair of the Major Surgery section of the American Board of Oral and Maxillofacial Surgery.

Disclosure: Dr. Strauss is a consultant to Lightsculpt Lasers, Biolase Lasers, and IPG Medical Lasers. He has received products for testing and has received modest honoraria for lectures he has given on their behalf.

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Mr. Sulewski serves as the Director of Education and Training for The Institute for Advanced Dental Technologies, and the Director of Education for Millennium Dental Technologies. He is a member of the Academy of Laser Dentistry Awards, Certification, Communications, Conference, Education, Ethics, Laser Safety, Science and Research, and Scientific Sessions Committees. Having been involved in the laser dentistry field since 1989, Mr. Sulewski is a past recipient of the Academy’s Distinguished Service Award, has obtained Advanced Proficiency in Nd:YAG and diode lasers as a Laser Safety Officer, and is a University of California Certified Dental Laser Educator. He is a member of the Academy of Laser Dentistry and the American Society for Laser Medicine and Surgery.

Disclosure: Mr. Sulewski is Director of Education and Training for the Institute for Advanced Dental Technologies. He also serves as Director of Education for Millennium Dental Technologies as a full-time employee with significant compensation. He has served as a paid consultant for American Dental Technologies; Continuum Biomedical; Convergent Dental; Incisive, LLC; and Millennium Dental Technologies.

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Grace Sun, DDS, MALD, MAGD, FAACD, MICOI  
Private Practice, Los Angeles, California, USA

Dr. Sun graduated from the University of Southern California School of Dentistry. She provides comprehensive cosmetic and laser dentistry in the Beverly Hills area. She is an author on low-level laser therapy, laser bleaching, and cosmetic and laser dentistry. Dr. Sun is also certified as Advanced Level and was awarded Educator Status by the Academy of Laser Dentistry where she is also a member of the Board of Directors and Chair of the Laser Safety Committee. She is a member of the American Academy of Cosmetic Dentistry (AACD), Academy of General Dentistry (AGD), International College of Oral Implantologists (ICOI), American Academy of Physiological Medicine & Dentistry (AAPMD), and Academy of Applied Myofunctional Sciences (AAMS).

Disclosure: Dr. Sun owns her private practice Sun Dental Group in Los Angeles and has no other commercial relationships.

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Robert Supple, DMD  
Private Practice, Albuquerque, New Mexico, USA

Dr. Supple graduated from Tufts University School of Dental Medicine in 1980. He completed the Pankey Institute’s curriculum in 1999 and pursued studies at the American Equilibration Society and at the American Academy of Craniofacial Pain. Dental occlusion has fascinated Dr. Supple throughout his 30 years in private practice. In 1990, he ventured in digital dentistry and introduced his staff and his patients to the T-Scan technology. Early on, he recognized the diagnostic value of quantitatively evaluating occlusal forces. In 1997, a thousand scans later, he developed the concepts of Habitual and Skeletal Occlusal Force Distribution Patterns which he has since tied to growth and airway development, and has presented at international meetings and annual conferences. Twenty years, three T-Scan generations, and thousands of scans later, he is determined to share his clinical findings and mentor dental professionals interested in integrating digital occlusion in their practices. With this goal in mind, Dr. Supple and his team are developing www.digitalocclusion.com since 2005. Dr. Supple has been teaching dental residents at the University of New Mexico on Occlusion and TM Disorders. He has been an active participant in multiple study clubs since 1985, and tracks patients in the 4th dimension of time.

Disclosure: Dr. Supple is in private practice in Albuquerque, New Mexico. He owns the Digital Occlusion trademark and has a modest commercial relationship with the Tekscan company in the form of transportation and accommodation during his speaking engagements. Dr. Supple has never received any compensation from Tekscan.

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**Aric Sven, AS**  
Sventech Inc., Antioch, Illinois, USA  
Mr. Sven is the founder of Sventech Inc., a partnership of the Sven brothers. Aric and his brother Aaron work with many dental laser manufacturers to help develop new lasers, repair discontinued lasers, and train doctors on dental laser use. Sventech repairs lasers of all wavelengths and is familiar with most of the dental laser devices including AMD Lasers, American Dental Technologies, Convergent Dental, Biolase, elexxion, Helios Wiser, HOYA ConBio, Millennium Dental, Opus, and Premier.  
**Disclosure:** Mr. Aric Sven is the founder and master technician of Sventech, Inc.  
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**Leonard Tau, DMD**  
Pennsylvania Center for Dental Excellence, Philadelphia, Pennsylvania, USA  
Dr. Tau maintains a full time fee-for-service practice in northeast Philadelphia focusing on general, cosmetic, reconstructive, and implant dentistry. He received his dental degree from Tufts University School of Dental Medicine in Boston, Massachusetts, and a Certificate in Advanced Education in General Dentistry at the University of Medicine and Dentistry of New Jersey (UMDNJ) in Somerdale, New Jersey. He is an active member of many dental organizations including the American Dental Association (ADA), Academy of General Dentistry (AGD), American Academy of Cosmetic Orthodontics (AACO), and DentalTown, as well as being the sponsorship chairman for the Eastern Dental Society. When he is not practicing, Dr. Tau is owner of Social Digital and General Manager of the Dental Vertical for Birdeye Reputation Marketing Software. He is the author of Reputation Matters Blog and has been published in DentalTown, American Academy of Cosmetic Orthodontics, Dentistry Today, Inside Dentistry, and various other newsletters. He lectures nationally and internationally to fellow dentists on internet marketing, social media, and reputation marketing.  
**Disclosure:** Dr. Tau receives significant compensation as the General Manager for Birdeye.  
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**Darinca C. Todea, DMD, PhD, Professor**  
University of Medicine and Pharmacy, Timisoara, Romania  
Prof. Dr. Todea is Head of the Department of Oral Rehabilitation and Dental Emergencies, "Victor Babes" University of Medicine and Pharmacy, Timisoara, Romania. She is Co-Director of the European Master Degree in Oral Laser Applications at the Timisoara University Branch and a visiting senior lecturer in the School of Physical Sciences, University of Kent, Canterbury, United Kingdom. Professor Todea’s main research interests include laser applications for dental treatment, laser photobiomodulation as a noninvasive and nondestructive treatment method, dental materials, bioengineering, biocompatibility, and optoelectronics. She has achieved Fellowship in the World Federation for Laser Dentistry (WFLD), Society for Oral Laser Applications (SOLA), World Association for Laser Therapy (WALT), American Society for Laser Medicine and Surgery (ASLMS), SPIE (the international society for optics and photonics), and is vice president of ED-WFLD (European Division of World Federation for Laser Dentistry). Since 2003 she is a Founding member and President of the SRLS (Romanian Society of Lasers in Dentistry). She was President of the congress for the past six editions of International Congress for Laser in Medicine. Prof. Todea was editor of the SPIE Proceedings for the Fifth and Sixth International Conferences on Lasers in Medicine. In the field of laser dentistry she has since 1990 a research team focused on laser application in dental medicine. She has the Advanced Proficiency Certification from ALD in the use of Er:YAG and Nd:YAG lasers.  
**Disclosure:** Prof. Dr. Todea is Full Professor at the University of Medicine and Pharmacy, Timisoara, Romania, and in private practice in Timisoara, Romania, and has no other commercial relationships.  
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Tosun Tosun, PhD
Istanbul Aydın University, Istanbul, Turkey

Dr. Tosun graduated from the Faculty of Dentistry, University of Istanbul, Turkey, in 1989. He was a Visitor Assistant at the University of Padua, Italy, and Brånemark Osseointegration Center of Treviso, Italy, between 1993 and 1994. He completed his PhD thesis on oral implantology from the University of Istanbul, Turkey, in 1997 (Comparison of free-standing implant-supported prosthesis vs tooth-connected implant prosthesis by use of FEM analysis). He took the academic title “Doç.Dr.” (Associated Professor) in 2003; Proficiency in Botulinum Toxin Applications, Reading-UK in 2009; Standard Proficiency, Academy of Laser Dentistry in 2010; Proficiency in Dermal Filler Applications, Istanbul, Turkey, in 2011; Mastership in Dental Lasers, AALZ-Aachen University, Germany 2010-11; Master of Science (MSc) in Dental Lasers, University of Genoa, Italy 2013-14. Dr.Tosun worked as Research Assistant in the Department of Oral Implantology, Faculty of Dentistry, University of Istanbul between 1990-2002. He worked part-time as Consultant surgeon in Harvard Medical International Hospitals and John Hopkins Medicine, Istanbul, from 2007 to 2009. He was a contract Professor in the Department of Surgical and Diagnostic Sciences (D.I.S.C.), Medical School, University of Genova, Italy, from 2011 to 2015. Currently he is an Ass. Prof. Dr. at the Dental School, Istanbul Aydın University. Since 2003 he has been working in his own private clinic in Istanbul. Dr.Tosun is a Fellow of the International Team for Implantology (ITI); member of the European Federation of Periodontology (EFP); reviewer for Lasers in Medical Science, co-editor of “Esthetics of Oral and Perioral Tissues” Acta Medica Eds. (book in Italian), and presents papers in international and national congresses and scientific publications in international and national journals.

Disclosure: Dr. Tosun lectures for Light Instruments which has paid for his conference registration fee and travel expenses. Light Instruments did not interfere with or contribute to the content of Dr.Tosun’s presentations.

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Angie Wallace, RDH
Owasso, Oklahoma, USA

Ms. Wallace is a laser educator for the Academy of Laser Dentistry, and has achieved her Mastership with ALD. She is currently the co-chair for ALD’s Regulatory Affairs Committee and serves on several other committees. Angie was the 2014 recipient of the John G. Sulewski Distinguished Service Award from the ALD. She has been recognized as an international speaker and provides in-office laser certification courses.

Disclosure: Ms. Wallace provides laser training and educational consulting through her company Laser Hygiene, LLC. Angie reports modest earnings from tuition for courses. She receives support with lasers for her educational programs from several laser companies. She also speaks for King Dental and Biolase and receives honoraria.

Contact Ms. Wallace by e-mail at Angie@laserrdh.com.
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The Laser-Systemic Connection
Lighting the Way Towards a Healthier Mouth and Body

ALD members have demonstrated the positive impact that laser dentistry can have on patient’s overall health. First by applying it to treating periodontal disease, and more recently, by using this technology to help patients with oral cancer, TMJ, sleep apnea and other medical conditions. Laser dentists truly are, the unsung heroes in oral-systemic health!

At ALD 2019 Learn From Speakers that Command Attention and Impart Knowledge

Charles Whitney, MD
Dr. Whitney is the nation’s leading physician advocate for bridging the oral-systemic gap via closer collaboration between physicians and dentists. He specializes in heart attack and stroke prevention. He has seen first-hand the beneficial effects of laser dentistry in his own patients.

Sara J. Ross
Sara is a speaker, leadership coach, founder and lead strategist at BrainAMPED, a research collaboration hub focused on decoding the science of work and life leadership vitality. Sara’s presentation will teach how to effectively manage your emotional brain to help influence, engage and connect with others in a more positive way.

Still More Dynamic Keynote Speakers and KOL Presenters to be Announced – Stay Tuned!

ADA CERP is a service of the American Dental Association to assist dental professionals in identifying quality providers of continuing dental education. ADA CERP does not approve or endorse individual courses or instructors, nor does it imply acceptance of credit hours by boards of dentistry. Academy of Laser Dentistry designates this activity for up to 25 continuing education credits.