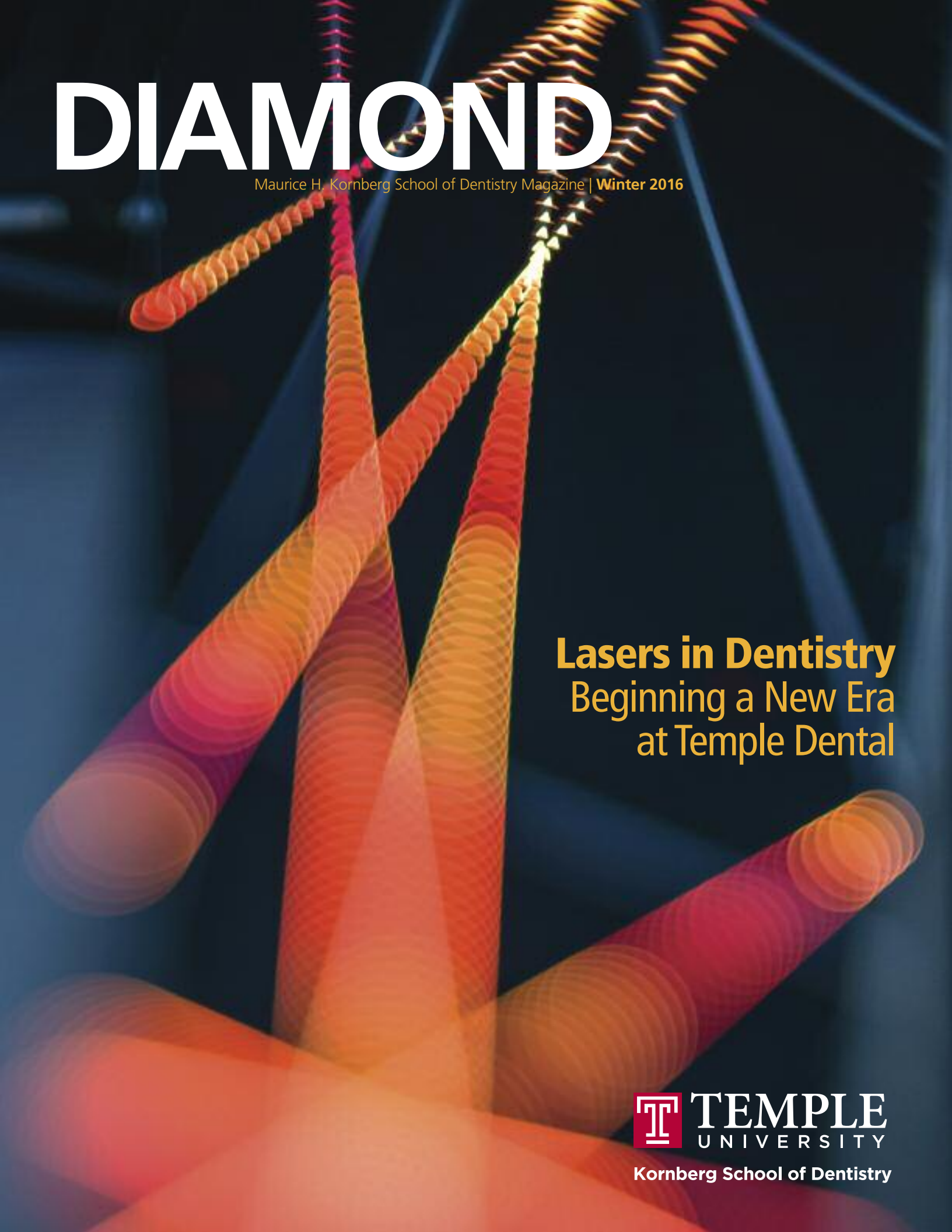
DIAMOND

Maurice H. Kornberg School of Dentistry Magazine | **Winter 2016**



Lasers in Dentistry
Beginning a New Era at Temple Dental

TEMPLE UNIVERSITY
Kornberg School of Dentistry

DIAMOND

Maurice H. Kornberg School of Dentistry Magazine | **Winter 2016**

Contents


Page 7


Page 12


Page 34

MESSAGE FROM **DEAN AMID I. ISMAIL**

Our Brand Is Transforming Oral Health

Temple Dental cannot be just like any other dental school. We have a long history, a legacy of clinical education and a presence in a strong community that is underserved.

So this week we will start a discussion about our brand. It will direct all our activities and define our image with all our partners, students, faculty, staff, alumni and the world.

We will determine our future. To do that, we must be innovative to focus on patients and students. We must reduce operations costs and ensure that resources are wisely used to promote our mission.

Already, innovations introduced in our school have improved our financial outlook, patient flow and, consequently, the education of our students. Yet, to meet our mission, Temple Dental in 2016 is charting a new path of major changes.

In May, we will open a new medical clinic with three examination rooms and a lab so we can provide primary care to our community and patients. A nurse practitioner will manage the lab and also teach our students how to interact with other primary care providers. Another major development benefiting students and patients will be the opening of a new sedation center for intravenous sedation or general anesthesia.

In addition, we are moving ahead with clinical implementation of digital dentistry. Starting on March 3, all predoctoral clinics and the

Dean Amid I. Ismail
Laura H. Carnell Professor

Our Mission:
To promote health through education, research and service

Our Brand:
Excellence in clinical dental education and patient care

"We will determine our future. To do that, we must be innovative to focus on patients and students. We must reduce operations costs and ensure that resources are wisely used to promote our mission."

— Dean Amid I. Ismail

Advanced Education in General Dentistry (AEGD) clinic were equipped to take digital impressions, design crowns and upload the images to a milling lab. We know digital practice will be a core model in specialty and general practices. To stay in step, over the next few years we also will expand the digital systems we use for more complex fixed and removable prostheses.

In this issue of *Diamond*, we cover an old technology—lasers—that will soon emerge as a core technology for dental practice. They will be a central part of everything, from cutting cavities to removing soft tissue lesions to treatment of periodontal diseases. Laser handpieces will replace current handpiece technology. I predict we will need handpieces with burs for finishing restorations, polishing teeth and some minor work. As a result of all this technology, the noise, smell and pain associated with dental care will undergo positive and significant change in less than a decade.

We are seeing a revolution in dental practice that makes us all anxious about the pace and impact of change. However, excellence in dental education and patient care cannot be achieved by doing what we now do well. Rather, excellence must be achieved by developing new technologies and practice models that will meet the demands and needs of people in the future.

Temple Dental is moving to be at the cutting edge of innovation. For that, I thank our community as we embrace the many milestones achieved at our dental school.

Please come for a visit and participate in shaping the future of dental education and practice.

"Temple Dental is moving to be at the cutting edge of innovation."

— Dean Amid I. Ismail

CO2 Laser: Its Applications and Possibilities in Regenerative Dentistry

By Keisuke Wada, DMD, DMSc, PhD
Associate Professor, Interim Chair and Director of Graduate Program, Periodontology and Oral Implantology

Is the laser effective and safe in clinical dentistry? The answer is "yes," according to many published studies since the first laser was introduced. In fact, studies have shown its successful use in a wide variety of applications.

That means the laser is a good tool for gingivectomy, frenectomy, biopsies and tumor removal. The laser also has been FDA approved for more disease-targeted procedures such as aphthous ulcer treatment, sulcular debridement for gingivitis and periodontitis.

In addition, many studies have indicated the great potential of laser irradiation to enhance wound healing. One recent systematic review showed that laser irradiation modulates gene expression plus the release of growth factors and cytokines from cells in culture.

Different Wavelengths

With a much longer wavelength than other FDA-approved lasers, the CO2 laser has a range between 9.4 and 10.6 micrometers. Either water or air-cooled gas discharge (carbon dioxide, nitrogen, hydrogen, xenon, helium) produces the infrared beam, and the different wavelengths of these methods cause different tissue interactions. Either one's long wavelength, however, enables clinicians to work on significantly shallow layers such as carbonized layers because water in the tissue absorbs most of the laser (Fig 2).

"Many studies have indicated the great potential of laser irradiation to enhance wound healing."

— Dr. Keisuke Wada

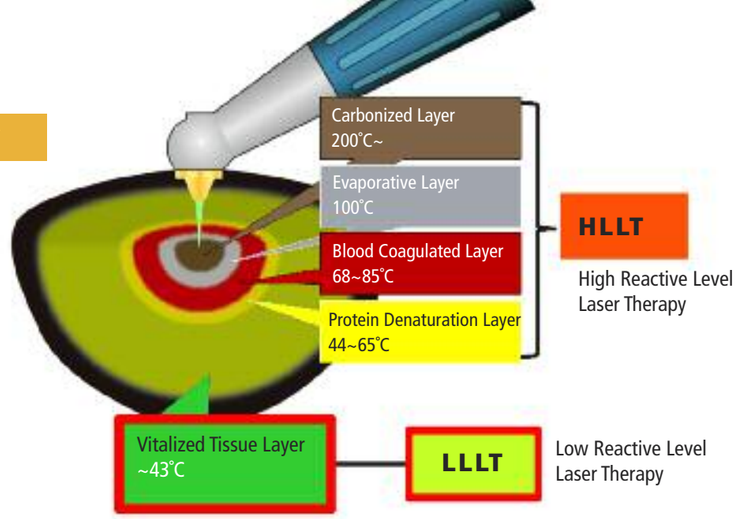


Figure 1. Biological effect of CO2 laser.

Because laser wavelengths are highly absorbed in apatite minerals of hard tissue, some difficulties arise when working on hard tissues. Included are a variety of structural and ultrasonic changes in the hard tooth structure, such as cracking, flaking, crater formation, charring, melting, and recrystallization on tooth structure. Combined with a lack of tactile sensation, the laser's use in hard tissue applications should be carried out with caution.

Although thermal damage to the surrounding tissue has been a main concern when using a continuous mode, new technologies have provided shorter pulse durations. Now marketed for soft tissue intraoral procedures, the pulses are as short as 0.5 sec to 30 msec. Also helping to achieve minimal thermal damage is the function for cooling tissues between pulses.

Clinical Advantages

According to the FDA website, proper use of lasers allows surgeons "to accomplish more complex tasks, reduce blood loss, decrease postoperative discomfort, reduce the chance of wound infection and achieve better wound healing."

Due to the bloodless surgical field, less postoperative discomfort, and tissue coagulation, surgeons have better accessibility than with conventional scalpel surgery. Other advantages to avoiding a scalpel wound are:

- Ability to sterilize laser incision and excision fields
- Minimal swelling due to the good hemostatic field
- Less requirement for suturing, resulting in shorter operative time, decreased local anesthesia and little or less postoperative pain.

However, with increased use of lasers come reports of the tool's chemical and thermal interaction with surrounding tissue.

LLLT and HLLT Lasers

Clinical applications of lasers are largely divided into low reactive level laser therapy (LLLT) and high reactive level laser therapy (HLLT). LLLT provides photobiological and photochemical effects, which enhance soft tissue healing of gingivectomy procedures, ulcers and other types of wounds (Fig. 1).

According to recent studies in animals, LLLT also could enhance bone mineralization around dental implants. That could mean an implant might be able to be loaded after a shorter period, reducing treatment time. In addition, an animal study and clinical case reports have shown a positive effect of LLLT on bone formation in the extraction socket.

CO2 LASERS: CLINICAL APPLICATION

Area of Dentistry	Procedure
Oral Surgery	Tumor removal (fibroma, mucocele, papilloma), tooth exposure (non-errupted or half-erupted), implant second stage, vestibuloplasty, frenectomy, abcess drainage, hemosthesis
Periodontics	Gingivectomy, gingivoplasty, hemosthesis, crown lenghtening (soft tissue), sulcular debridement
Prosthodontics	Crown lengthing (soft tissue), marginal tissue retraction (abrasion) and hemosthesis for impression
Oral Medicine	Apthous ulcer treatment (abrasion for tissue bandage to reduce contact pain), incisional and excisional biopsies
Esthetics Dentistry	Melanin pigmentation removal

HLLT use on bone tissue, however, has been strictly limited. That 's because HLLT can produce coagulation necrosis in target tissues with a subsequent reaction in surrounding tissue. For instance, after HLLT was used on rat tibia, osteocytes disappeared and shrank within the lacunae. The cause could be HLLT thermal damage and then extensive cell-mediated resorption of bone or sequestration of dead bone.

Tissue Engineering

Although the CO2 laser is commonly used in dental clinics with positive effects, most of the procedures are restricted to soft tissue. However, considering evidence that the laser can possibly change gene expression on cultured stem cells, it is worthwhile to think about using this natural, less expensive, less invasive and reproducible procedure for tissue engineering.

One clinical case took a radiograph to see the consolidation of the extraction socket. What was revealed was more radiopaque on the laser site than on the non-irradiated site. Now, we are testing the hypothesis that bone formation in the extraction socket irradiated with LLLT will accelerate the bone healing process and reduce healing time.

> *"It is worthwhile to think about using this natural, less expensive, less invasive and reproducible procedure for tissue engineering."*
>
> — Dr. Keisuke Wada

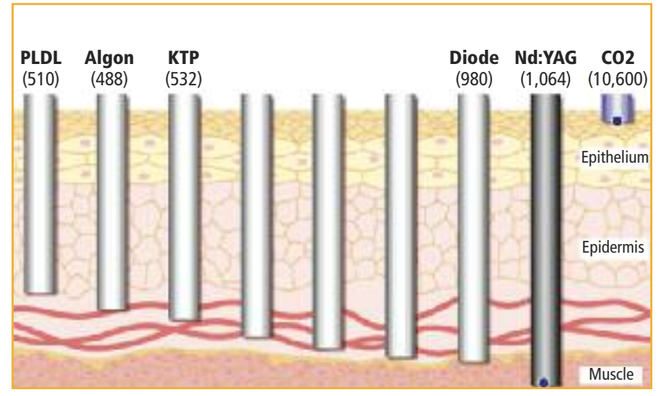


Figure 2. The degree of laser penetration into the soft tissue.
Figures 1 and 2 courtesy of The Yoshida Dental Manufacturing Co., Ltd., with some author revisions to Figure 2. Used by permission.

HOW IT'S DONE
EXAMPLES OF VARIOUS CO2 PROCEDURES

Working with Soft Tissue

Excising the oral mucocele

Working in highly vascularized tissue to remove a mucocele, the surgeon palpated it, then performed boundary marking with the laser in repeat-pulse mode of 3.0 W, 30 msec. Then the excision was done with 2.0 W continuous mode. The complete hemostasis enabled precise excision of the mucocele right above the muscle layer. The surface of the wound was vaporized to facilitate epithelialization, and the complete wound closure was observed at three weeks follow-up.

Completion of lingual frenectomy for 5-year-old boy

When told that a boy, who had never had a dental procedure before, should undergo one under general anesthesia with conventional scalpel, the mother refused. Instead, the surgeon used lasers to safely remove the lingual frenum under a minimum amount of local anesthesia with minimal bleeding. No scalpel or sutures were used, and the patient was told to start eating normally within a couple of days.

Vestibuloplasty

As the edentulous mandible with shallow vestibule was treated with the laser, the field of incision had perfect hemostasis. That helped precise dissection of the periosteum on the buccal aspect with a laser in 2.0 W continuous wave. No suture on the buccal flap was required. The result was a significant reduction in both procedure time and patient discomfort during healing.

Restorative Applications

Implant uncovery

The soft tissue right above the implants could be excised with a laser in 2.0 W continuous mode. Precision resulted in minimal invasion with no suture required. Also, an impression could be performed the same day, significantly reducing chair time.

Gingivectomy

The patient complained about excessive gingival tissue showing when smiling and requested a longer tooth length in the final prosthesis. After confirming a sound biologic width on all required teeth, the surgeon used a laser in 2.0 W continuous mode for esthetic crown lengthening. Precise resection of marginal tissue was performed with complete hemostasis. Also on the same day, tooth preparation plus relining the margin of temporary crowns could be done. That resulted in significantly less chair time and postoperative discomfort during healing.

Periodontic Procedures

Gingival recession

The cause of recession was high frenum attachment on the lower central incisors. After local anesthesia, frenectomy and vestibuloplasty were performed with a laser in 2.0 W continuous mode. In addition to the laser's usual advantages, the widened vestibule healed with dense connective tissue regeneration and clinical attachment gain (root coverage). The result was similar to what a periodontist would see with a free gingival graft procedure.

Esthetic Dentistry

Pigmentation removal

Due to the location of melanocyte within the epithelial layer above the basal membrane, a laser in 3.0 W repeat pulse 30 msec can penetrate the soft tissue at shallow depth. That removes the melanocyte safely and effectively without any local anesthetic injection in most cases.

My Practice with the **Nd:YAG Laser**

By Kevan S. Green, DMD
Adjunct Assistant Professor, Graduate Periodontology/Oral Implantology

"Regeneration of lost periodontium has been the Holy Grail of periodontics since the 1980s."
— Dr. Kevan Green

When Theodore Maiman inserted a ruby rod into a photographic flash lamp in 1960 and demonstrated LASER, his published account opened the door to using the new technology in a vast number of ways. Periodontics was one of them.

Our ability to reach pathogens, cut tissue, penetrate water and blood, affect specifically colored bacteria and other substances without causing collateral damage to adjacent tissue is all due to the laser device. It allows us to modulate the stimulated source material.

Treatment of periodontitis involves removing bacterial toxins from root surfaces, altering the host environment to reduce sites that favor pathogenic bacterial flora development, and modifying and controlling occlusal forces and tooth mobility. Historically, treatment has been through mechanical instrumentation. That can include scaling and root planing and, if warranted in moderate to severe cases, flap elevation to see and access the area for root debridement. Mechanical treatment also can include osteoplasty and ostectomy to create a parabolic bony architecture so periodontal pockets are reduced.

But regeneration of lost periodontium has been the Holy Grail of periodontics since the 1980s. The challenge: to predictably create new periodontal attachment on a previously disease-exposed root surface. We knew that guided bone regeneration procedures could predictably correct sites with horizontal and vertical ridge defects and permit placement and restoration of dental implants. But the contaminated root surface continued to be a problem.

Today, periodontal surgery usually includes hard and/or soft tissue regeneration. Periodontists also do some degree of bone recontouring, sometimes to aid flap adaptation and closure, depending on the clinical preference of the

Dr. Kevan S. Green uses the Nd:YAG laser for his periodontics and dental implant practice in Clifton Heights, Pa.

doctor (and patient). In fact, now periodontists can turn back the hands of time on disease and help maintain the natural human dentition. But major drawbacks include post-surgical discomfort, gingival recession and dentinal hypersensitivity.

Alternative to Conventional Surgery

To give patients in my practice an alternative to conventional surgical treatment, we have begun using a free-running pulsed 1064nm Nd:YAG laser (neodymium-doped yttrium aluminum garnet). Of course, we first went through hands-on and interactive didactic training.

Terry Meyers, a general dentist in Michigan, was the first to use Nd:YAG for dental purposes. It was originally designed for ophthalmology. In the late 1990s, two general dentists from California refined a laser protocol to deliver several important benefits: eliminate active periodontal disease and allow the body to grow new bone and periodontal ligament attachment as well as provide strong, effective anti-infective properties.

The Nd:YAG free-running pulsed laser emits 1064nm energy delivered through fibers of various diameters from 300–400 microns in a contact mode. Held in a handpiece with a cannula that projects them for use, the fibers are narrow enough to direct into the periodontal pocket. They then deliver light energy that translates to thermal energy in a very controlled way.

Dark or black colors selectively absorb the 1064nm wavelength. That's important because several periodontal pathogens are black in color, making them good targets for the laser.

We also get good visibility for access and thorough root debridement because the periodontal soft tissue is easily reflected. For flap closure we just gently compress for clot and fibrin formation, avoiding sutures. Calculus, too, is easier to remove through instrumentation and irrigation when the fiber tip is inserted into the periodontal defect. The reason is that exposing the root surface to collateral laser energy seems to alter the consistency of the calculus.

The most impressive effect is finding the Holy Grail, or periodontal regeneration. We can now form a functionally oriented ligamentous attachment on a previously disease-exposed root surface. A clot forms between the gingival margin and the root surface, sometimes protruding above it. The fibrin and clot, with the mechanically instrumented root surface on one side and the exposed connective tissue on the other, act as a guided tissue regeneration barrier. The process impedes epithelial downgrowth, which in turn permits slower migrating osteoblasts, cementoblasts and PDL fibroblasts to populate the space. Histological observation of this osseous deposition with the formation of root cementum and inserting ligament fibers has been published in the periodontal literature.

In addition, laser-assisted treatment using this wavelength frequently eliminates osseous defects, due to the regenerative and anti-infective effects. Using this modality also may eliminate the need for conventional flap surgical access, which involves osseous grafting and guided tissue regeneration barriers to help regenerate alveolar osseous defects.

Those are all of the reasons that a growing number of practitioners, including myself, consider Nd:YAG laser an important component of a multidisciplinary treatment protocol for periodontitis.

Growing Body of Literature

Obviously, patients only benefit from new alternative devices and techniques when they are safe and consistently yield successful results that can be objectively evaluated over time. To that end, the body of literature about laser use in dentistry is growing.

Because Kornberg embraces promising new technology, training with diode and CO2 lasers is part of our program for periodontology/oral implantology residents. In fact, we have been using the CO2 lasers frequently for various procedures, including tissue removal and recontouring, as well as for anti-infective periodontitis treatment.

Such clinical experiences provide good information until large-scale studies are out there comparing conventional to laser therapies.

The Beginning of LASER Development

Niels Bohr's and Albert Einstein's work was profound when they showed us our ability to harness the atom. Now we could alter the ultra-structural fabric of our tangible world. Einstein also demonstrated that portions of an electromagnetic field could be stimulated to emit amplified light.

Then, in the early 1950s, Charles H. Townes, an American physicist, amplified microwave frequencies by a stimulated emission process known as MASER (microwave amplification by stimulated emission of radiation). Later, in 1958, he and another physicist, Arthur Schawlow, published work that proposed extending MASER to the optical part of the electromagnetic field.

Not long after that, Maiman produced the first LASER (light amplification by stimulated emission of radiation).

The Basics

As we know, what many refer to as simply the laser is a man-made form of coherent bright monochromatic, collimated light in any active medium. Yet, how the light appears (it may be invisible) and behaves when applied clinically depends on the element or combinations of elements used as fuel for the laser.

5 Questions: WHAT'S THE FUTURE OF LASERS IN DENTISTRY?

Drs. Keisuke Wada and Kevan Green on what to look for in clinical practice and education

1. We read the sky's the limit when thinking about future laser uses. What do you think are the top advances ahead?

Dr. Wada: Looking ahead to the potential of bone tissue engineering therapy in the near future, a clinical study using histological and radiographical analysis has been planned. The goal is to confirm that low reactive level laser therapy (LLLT) enhances bone and to find the most appropriate setting for laser irradiation on bone tissue.

Lasers will be treating specific diseases, and each laser will have different features. For example, more information about using shorter wavelength with higher peak power CO2 lasers in the near future will make them more popular for wider applications. Also, as more studies indicate the enhanced wound healing by laser irradiation, we may not need to use expensive growth factors and other medicines. With less invasive procedures we'll have less pain. It will be evidence-based therapy. We'll have specific protocol to enhance results.

Dr. Green: We've developed computer-automated imaging, and I foresee that being incorporated into robotics for treatment. Especially for crowns, fillings and restorations, robotics shows a lot of promise. A surgeon could put the mechanism in a mouth, and the laser would properly prepare the tooth.

2. What will be the main advantages of new developments for dentists? For patients?

Dr. Wada: Dentists will be able to focus more on the procedure and a clean surgical field. Now, bleeding control eats up a lot of time. The quality of the procedure will be improved. When working with caries, for instance, the surgeon can depend on a bacteria-free surface with no anesthesia needed.

Dr. Green: Just like when fluoride was introduced, and it stopped one of the most insidious health problems, inventions coming up can be game changing. Any of the new developments could make the dentist's job easier and faster with fewer visits and less chair time. Also, more predictability of outcomes will mean less morbidity and failure. The value to the patient will be better care at less cost. Patient benefits of laser therapy include shorter treatment time, little if any post–treatment discomfort and hypersensitivity, relatively rapid return to function and less post-surgical unesthetic root exposure.

3. How far do we have to go before we have the wide-scale studies needed for more step-by-step protocols?

Dr. Wada: Within five years, we'll have evidence in scientific papers of laser use benefits. What we've had isn't science or research. We've had dentists with personal experience saying laser use is effective. Because there are so few highly evidenced studies, the clinical significance of lasers has been a controversial subject. We'll know if a protocol is best for the patient or not. We'll be able to get producible results.

As we objectively look at what happens with cell changes when using lasers, we'll expand clinical applications. More clinical research and technical advancement of laser apparatus will help improve the practice guidelines. Well-designed clinical studies with randomized trials are needed to provide a specific protocol for parameter settings, delivery mode and other guidelines for soft- and bone-tissue engineering.

Dr. Green: The success of proprietary comprehensive laser protocols may be underestimated by conventional study designs comparing treatment modalities and a control in different quadrants of the same mouth.

Until the results of meaningful comparative studies are available, clinicians will perform laser-assisted variations of conventional periodontal treatment and, assuming patient compliance, observe their results.

Critical evaluations of treatment results are usually based upon sequential measurements of clinical attachment levels, plaque and soft tissue indices, radiographic bone levels and sometimes—microbial cultures, DNA probes and assays.

4. How will lasers change dental practice?

Dr. Wada: We'll have more effective protocol, more efficiency as we expand our clinical applications. A laser is quiet with no odor. The patient is more comfortable. That should mean dentists will have an even better reputation with patients, benefiting the practice.

Dr. Green: I hear fewer post-treatment complaints, write fewer prescriptions for strong analgesics, and require fewer (though longer) treatment appointments for the laser-assisted cases than for the conventional staged approach cases.

Peri-implantitis cases that would ordinarily be treated by flap access, implant surface decontamination and sometimes modification, osseous grafting, guided bone regeneration barrier placement, addition of growth factors (or some autologous blood fraction) and flap closure, are treated with success by many practitioners with controlled flapless application of light energy around the fixture.

Nd:YAG laser-assisted periodontal treatment can be utilized safely for some medically compromised patients who would otherwise not be candidates for conventional surgical approaches. Patients taking anticoagulants can be treated without withdrawing their medications due to the inherent hemostatic effect of some lasers (with clearance by medical consultation).

Anti-infective Nd:YAG laser-mediated periodontal treatment to expedite orthopedic joint replacement procedures, organ transplants and cardiac valve replacements has been of great benefit to patients who present with surgical clearance deadlines.

5. How will lasers change dental curriculum?

Dr. Wada: Education in laser dentistry will be required in a university-based setting as part of a dental curriculum. Right now, industry-based seminars are the main source of learning. Only a limited number of dentists have a certificate. But lasers will be an increasing part of dentistry. They are becoming more and more popular. The problem is the expense of the machines. So providing enough equipment for all the dental students is a challenge.

However, Kornberg will be incorporating more lasers in its clinical curriculum in Graduate Periodontology and increasing the opportunity for lasers in clinical use. Continuing education is already provided once a year.

Dr. Green: Before I could use the Nd:YAG, I attended lectures about the history of lasers, their properties, how they work and how to do what you want to do. Dental schools need to design didactic courses covering laser development and laser physics, laser-related histology, periodontal concepts, and microbiology. Preclinical training and clinical experience using various lasers on actual patients also need to be developed. Case presentations by practitioners with laser experience will help disseminate laser capabilities and potential treatment benefits.

Reflections on a Career of Innovation and Leadership

Dan Boston, DMD

Retired in July from full-time work as associate dean for comprehensive clinical care, associate professor of restorative dentistry and the Laura H. Carnell professor of restorative dentistry, Dr. Dan Boston has served in many leadership positions inside and outside the school. He currently is adjunct clinical associate professor and associate professor emeritus in restorative dentistry.

When he came to Temple Dental School 26 years ago, Dr. Dan Boston "wanted a better focus." Working part time in two places, a hospital and a practice, and fitting research in when he could, he felt he couldn't accomplish what he wanted: to make a difference in his profession and in healthcare.

Now, decades later, that has certainly happened.

Describing his career during one of his days on campus as a semi-retired, highly respected faculty member, Boston considered some highlights.

One was starting the general dentistry residency program AEGD. Support, he recalled, came from all the departments and faculty, who were more than willing to get the program off the ground. When the program expanded through a grant, it was a big moment.

Next, in 1997, came the challenge to build another program. By then, he was chair of operative dentistry. However, that department was combining with prosthodontics to create restorative dentistry, and he became the new chair, leading the design and development for a logical flow of curriculum.

Then, because as he put it, "I'm always thinking of ideas," he started developing products at Temple and commercializing them.

First was the Fissurotomy® Bur through work with SS White Burs, Inc. The tool lets dentists make a small conservative cut for minimally entering teeth. That avoids using air abrasion, an expensive and messy alternative.

Not stopping there, he also created SmartBurs® II with SS White. Rather than feeling how hard the tissue is or trying to see how it looks, the tool selects soft decay from teeth. "Now," he said, "you have a more objective endpoint."

Asked about other patents, he mentioned one for assessing early carious lesions and said it's not quite ready for the market.

How difficult is taking a concept from research to development, then to licensing and business development? It's quite a process, he noted. "Many don't realize what's involved. Products have to be produced in a way that makes financial sense and at a high level of precision." Fortunately, he said, he had SS White's excellent resources and expertise.

Meanwhile, research, grants and publishing occupied any of Boston's leftover time. Delving into the areas of comprehensive care, advanced general dentistry, restorative dentistry and instrumentation, and new diagnostic modalities, he has written 25 scholarly articles and continues to publish.

That notable background helped Boston with another high point in his Temple career. When schoolwide accreditation required a team effort, he became part of it. However, an even bigger challenge was yet ahead.

In 2013, Dean Ismail tapped Boston to lead a major renovation. Far from easy, the project involved taking the general dentistry preclinical lab and turning it into the largest simulation lab in the country. The job required 18 phases and 18 moves, all while ensuring that the school kept running at top speed.

ADVANCING DENTISTRY BEYOND TEMPLE

In addition to leading several dental departments and a major initiative, developing patents and capping rigorous research with published articles, Dr. Dan Boston has been busy on a national scale as former dental anatomy test constructor of the Joint Commission on National Dental Examinations, consultant examiner for the Northeast Regional Board of Dental Examiners, chair of the American Dental Education Association's Section on Comprehensive Care and Dentistry, and Temple University's faculty representative to the Council of Faculties. In addition, he is a fellow of the American College of Dentists, the International College of Dentists and the College of Physicians of Philadelphia.

With as much enthusiasm as he felt when he started using the technology, Boston said, "It's evidence-based dentistry, a chance for students to learn and make decisions about real products early in their career. It's what they have to do in their practice, to choose products and decide about technology."

"I learned about organization and about working with people," he said modestly. "We had a good result." In fact, the work produced what Ismail envisioned. It showed the community and patients that Kornberg has a high-quality dental center, one of the best clinics in the city.

Innovation with Technology

Because new ideas intrigue him, in 2006 Boston decided to investigate Temple's Blackboard for interactive teaching. After working with the school's Technical Support Center and Instructional Support Center and then consulting with other faculty using Blackboard, he was convinced of the advantages.

"I had a large class of freshmen in a dental materials class and wanted active involvement in learning. So I asked the students to work in groups of five or six and set up wiki sites evaluating a dental product. Once the sites were set up, everyone in the class had to read them and make comments on five of the sites."

With as much enthusiasm as he felt when he started using the technology, Boston said, "It's evidence-based dentistry, a chance for students to learn and make decisions about real products early in their career. It's what they have to do in their practice, to choose products and decide about technology."

In consistently positive feedback, students say the online interaction and group work help them get to know each other, acclimate to the culture of peer feedback and enhance their critical-thinking skills.

But for his senior capstone course, Boston found a different way to use Blackboard. The class is completely online and requires students to answer 15 questions about one of their oral healthcare cases with complex dental management needs. Then faculty graders, each one working with about eight students, provide feedback.

Pointing out the benefits, Boston said the online platform not only allows faculty graders to be consistent in their assessment and to work from different geographic sites, but the process also gives seniors "an opportunity to present a case they're proud of." In addition, "It's very rewarding for faculty to see how far the students have come and that they're professionals ready for independent practice."

Reviewing his career, Boston credits the support of two deans for much of his success. "Both Dean Tansy and Dean Ismail have consistently given me opportunities to make a difference in my internal and external activities," he said. In fact, recently Dean Ismail encouraged Boston to attend the Lean Healthcare Course at the University of Michigan as well as a value-based healthcare course at Harvard and to lecture at a one-day symposium in China. The dean originated and facilitated the event and also was lead lecturer.

Considering it all, he said, "I've worked with wonderful people and couldn't have done any of this without them. It's all a team effort."

> **"I've worked with wonderful people and couldn't have done any of this without them. It's all a team effort."**
>
> — Dr. Dan Boston

Why Do Dental Schools Need a Team of Behavioral Scientists?

By Shannon Myers Virtue, PsyD
Assistant Professor of Behavioral Sciences
Department of Pediatric Dentistry and Community Oral Health Sciences

As a behavioral scientist and licensed clinical psychologist working at a dental school, I am frequently asked, "What exactly do you do?" That question, seemingly simple on the surface, highlights the need for a better understanding of the importance of behavioral science to dentistry and dental education. Behind that question is another question: Why do dental schools need a team of behavioral scientists? The answer to that question starts with a definition of behavioral science. Behavioral science is the study of human behavior. It is a multidisciplinary field that includes expertise in psychology, sociology, anthropology, epidemiology and public health. It is not a new field, nor is it new to dentistry. The application of psychological concepts to dentistry emerged as early as 1946 when Edward J. Ryan, a practicing dentist, published the book *Psychobiologic Foundations in Dentistry*. Over the next several decades, the evolving field of behavioral science played various roles within dentistry. In the 1950s and 1960s, researchers from the aforementioned disciplines investigated the topic of fluoridation and variables influencing the implementation of fluoridation programs. In 1968, an organization called Behavioral Scientists in Dental Research was established which eventually became part of the American Association of Dental Research and the International Association of Dental Research (AADR/IADR). The 1970s saw research on areas such as dental fear, pain, epidemiology of oral health and health behavior change. In the 1980s, behavioral scientists emphasized the behavioral and social factors that impact oral health. Continuing from the 1990s to today, behavioral science research has continued to provide valuable knowledge on the behavioral and social factors that influence oral health, as well as introduce new topics, such as oral health disparities, oral health-related quality of life and bio-behavioral approaches to disease. So, why do dental schools need a team of behavioral scientists? Put simply, oral health exists within the context

of human behavior. Good oral hygiene, for example, involves multiple behaviors, including better brushing, regular flossing and healthy dietary habits. The dental visit involves multiple behavioral-based factors, including patients showing up for the appointment, dentist-patient communication and managing anxiety. Behavioral scientists possess expertise in human behavior that has been useful when navigating these behaviors and situations.

Benefits of Behavioral Scientists to Dental Programs

Behavioral scientists can contribute to dental programs in numerous ways. First, they can provide education on the various psychological, social and cultural factors that impact oral healthcare. On any given day, a dentist may treat a patient with severe dental anxiety, discuss the importance of taking care of a child's 'baby teeth' with a parent, have difficulty explaining treatment recommendations to a new patient due to language barriers, receive a cancellation from a patient who cannot afford to pay the co-pay for the visit and have concerns about a patient's tobacco use and their periodontitis. All these scenarios require some knowledge and application of behavioral science principles. Behavioral scientists can teach dental students skills to navigate these situations by sharing their expertise in topics such as behavior management, behavior change theory, motivational interviewing, dental anxiety and other psychological conditions, public health issues and cultural competency. When behavioral science is integrated into the dental school curriculum, dental students can learn about effective ways to communicate with a diverse group of patients, recognize and manage patient anxiety or other psychological issues that may impact dental treatment, assist patients with behavior change efforts, utilize behavior management strategies, recognize and address social and cultural barriers to oral healthcare and engage in professional communication and behavior. Didactic behavioral science material can be further applied during clinical training. This requires dental faculty to be comfortable in guiding dental students in applying such skills during their clinical work. Behavioral scientists can be a valuable resource for helping the dental faculty with this role.

“By integrating behavioral science into dental school curriculum, dental students can learn about effective ways to communicate with a diverse group of patients, recognize and manage patient anxiety or other psychological issues that may impact dental treatment, assist patients with behavior change efforts, utilize behavior management strategies, recognize and address social and cultural barriers to oral healthcare and engage in professional communication and behavior.”

— Dr. Shannon Meyers Virtue

Second, behavioral scientists can assist dental schools on a broader level through program development efforts aimed at enhancing oral healthcare within the dental school. Behavioral scientists have the knowledge and experience to lead efforts to develop programs and interventions such as dental anxiety treatment interventions and tobacco cessation programs. Finally, behavioral scientists are trained researchers and can contribute to research efforts within a dental school. The National Institute of Dental and Craniofacial Research (NIDCR) has an entire Behavioral and Social Sciences Research Branch. This may sound like a lot of work, but this is why I say that there is a need for a team of behavioral scientists. Behavioral science, as I mentioned, is multidisciplinary. In order to develop an effective behavioral science program, dental schools need faculty with expertise in psychology, sociology, epidemiology and public health. Creating a team with expertise in these areas provides dental schools with great potential in regard to education, program development and research.

My Role at Temple

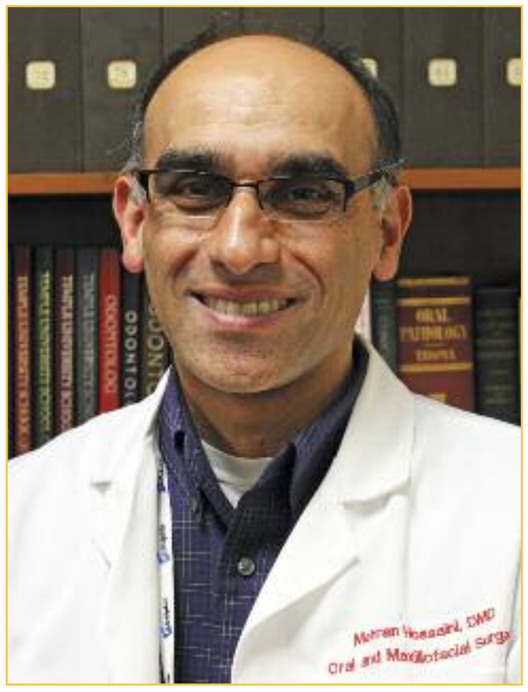
What exactly do I do as a behavioral scientist at a dental school? Since joining Temple University's Maurice H. Kornberg School of Dentistry in 2014, I have had the opportunity to be a part of many exciting behavioral science ventures and initiatives. I have designed curriculum that teaches dental students communication skills, motivational interviewing skills and management of dental anxiety and psychological conditions through didactic lectures, video vignettes and clinical case-based projects. I have also worked on incorporating behavioral science topics, such as tobacco cessation and child behavior management, into existing courses. By working with a great team of faculty members, I have assisted in developing programs such as a tobacco cessation program and a dental-pharmacy student interprofessional education program. I have joined a research program focused on a computer-based tool for the treatment of dental anxiety. Additionally, I have conducted various research projects on topics such as dental student attitudes toward tobacco cessation, non-cognitive skills, identifying reasons for patient no-shows to appointments and a dentist-patient working alliance. It is my hope that we continue to build the behavioral sciences in order to strengthen the already excellent dental education program at Temple University.

“It is my hope that we continue to build the behavioral sciences in order to strengthen the already excellent dental education program at Temple University.”

— Dr. Shannon Myers Virtue

OUR NEWEST FACULTY LEADERS:

FURTHERING TEMPLE'S VISION FOR DENTAL EDUCATION



Dr. Mehran Hossaini

Professor, Oral and Maxillofacial Pathology, Medicine and Surgery

Dr. Hossaini obtained his dental degree from the Oregon Health Sciences University and completed his training in oral and maxillofacial surgery at the Brooklyn Hospital Center in New York. He is a diplomate of the American Board of Oral and Maxillofacial Surgery.

His clinical expertise includes maxillofacial trauma, facial reconstruction, dental implantology and outpatient anesthesia. His areas of interest include curriculum development for various levels of learners, outcome assessment and integration of technology in education. He maintains an active practice in Temple's Faculty Practice Clinic and lectures on the state, national and international levels.

> **"Dr. Hossaini, formerly a professor and chair of the Faculty Collegial Assembly at the University of California, San Francisco, and Dr. Wada, a highly respected educator, elected to join Temple Dental because we have infused exceptional education and patient care with a uniquely humanistic, compassionate and ethical culture."**
>
> — Dean Amid I. Ismail

Dr. Keisuke Wada

Associate Professor, Periodontology and Oral Implantology, and Director, Graduate Program in Periodontology and Oral Implantology

After receiving his DDS and PhD/oral and maxillofacial surgery training in Japan, Dr. Wada earned his DMSc and certificate in periodontology from Harvard University in 2008 and his DMD at the University of Pennsylvania in 2012. Dr. Wada is a diplomate of the American Board of Periodontology and serves on the Editorial Board of the *International Journal of Oral and Maxillofacial Implants* (IJOMI) and the *International Journal of Periodontics and Restorative Dentistry* (IJPRD).

Before coming to Temple, Dr. Wada was an assistant professor and assistant director of postgraduate periodontics at the University of Pennsylvania. In addition to his major commitment to clinical teaching, he performed basic science research, focusing on bone tissue engineering using biodegradable polymers for wider application of dental implant reconstruction. He also ran several clinical research projects, including work on laser dentistry for bone regeneration, prevention of peri-implantitis and the development of periodontal diagnostics with cone-beam computed tomography systems (CBCT). Because of these activities, Dr. Wada was recently profiled by the American Academy of Periodontology Foundation as one of 25 past award Cone-beam computed tomography systems recipients whose research is shaping the future of the periodontology specialty.

Dr. Jennifer Hill

Associate Professor and Chair, Department of Pediatric Dentistry and Community Oral Health Sciences

Dr. Hill received her DDS from the University of Iowa College of Dentistry and received postgraduate training in and a certificate in orthodontics and received her DMD from the University of Ulm in Germany. She also earned a certificate in advanced education in general dentistry at the University of Iowa. Dr. Hill went on to be a postdoctoral fellow at the Dows Institute for Dental Research at the University of Iowa, from which she earned her PhD in oral biology research and a certificate in pediatric dentistry. She held a postdoctoral fellowship at the Minnesota Craniofacial Research Training Program in the Minnesota Masonic Cancer Center at the University of Minnesota. While at the University of Minnesota, Dr. Hill participated in courses designed to prepare future faculty at their Graduate School and the Center for Teaching and Learning. Dr. Hill has held academic appointments at the Academy for Dental Postgraduate Education in Germany, the University of Iowa, the University of Minnesota and the University of Texas. Her additional academic appointments have included several leadership and administrative roles. She was the chair of the Department of Pediatric Dentistry at Georgia Regents University and most recently she served as chair of the Department of Pediatric Dentistry at West Virginia University. She has also held research administration responsibilities (including accreditation compliance activities and supervision of student and resident research) and conducted her own research into genetic aspects of head and neck cancers.

Dr. Aaron G. Segal

Associate Professor, Department of Restorative Dentistry

Dr. Segal received his DDS from Columbia University School of Dental and Oral Surgery. After a one-year general practice residency, he completed a residency in fixed, removable and maxillofacial prosthodontics at the VA Medical Center in Wilmington, Delaware. For the next 25 years, Dr. Segal maintained a private practice on Long Island, New York, as well as a part-time teaching appointment at the Stony Brook University School of Dental Medicine. In 2014, Dr. Segal accepted a full-time appointment as assistant professor in the Department of Prosthodontics and Digital Technology at Stony Brook, where he was later promoted to associate professor and also served as director of the Advanced Education Program in Prosthodontics. He is a diplomate of the American Board of Prosthodontics.

Dr. Vinodh Bhoopathi

Assistant Professor, Pediatric Dentistry and Community Oral Health Sciences

Dr. Bhoopathi graduated with a bachelor's in dental surgery from the Tamil Nadu Dr. MGR University (India). He holds a master's degree in public health (MPH) from East Tennessee State University, an advanced residency degree in dental public health (CAGS) and a doctorate of science in dentistry in dental public health degree (DScD) from Boston University Henry M. Goldman School of Dental Medicine. He is a diplomate of the Board of Dental Public Health. Dr. Bhoopathi's specific research interests include access to dental care and health disparities in the pediatric population, dental workforce issues and dental education.

Dr. Fathi Elgaddari

Assistant Professor, Periodontology and Oral Implantology

Dr. Elgaddari earned his dental degree from Al-Arab Medical Sciences University in Benghazi, Libya. He completed the six years of postdoctoral training at New York University's College of Dentistry, including the Advanced Program in Implant Dentistry, the Advanced Education Program in Periodontics and a fellowship in Implant Dentistry. He holds an unrestricted dental license in Texas and a teaching license from the Pennsylvania State Board of Dentistry. Dr. Elgaddari has strong experience as a clinical instructor through his work as a teaching assistant at Al-Arab Medical Sciences University and as a teaching fellow at New York University's College of Dentistry. In his new role, Dr. Elgaddari will teach in the undergraduate clinics and Advanced Education in General Dentistry (AEGD) program.

Dr. Chinhua Hsiao

Assistant Professor, Periodontology and Oral Implantology

Dr. Hsiao earned her dental degree from YMT Dental College and Hospital (India). She completed a postgraduate residency in periodontology and oral implantology and received her master's degree in oral health at Temple University in 2015. She is a diplomate of the International Congress of Implantologists (ICOI).

Dr. Chizobam Idahosa

Assistant Professor, Oral and Maxillofacial Pathology, Medicine and Surgery

Dr. Idahosa earned her BDS at the University of Benin (Nigeria). She came to the United States to earn her DDS from New York University and completed two graduate residencies, one in oral medicine from the University of Pennsylvania (from which she also received a master of science in oral biology) and another in general practice from Rutgers University.

Dr. Idahosa received the Robert Schattner Award as Outstanding Oral Medicine Resident from the University of Pennsylvania, where she taught third- and fourth-year dental students oral diagnosis, oral radiology emergency care and treatment of medically compromised patients. She also taught oral medicine to medicine externs at the Hospital of the University of Pennsylvania and assisted in orientation and supervision of first-year graduate residents in oral medicine.

Mr. John V. Moore III

Assistant Professor, Pediatric Dentistry and Community Oral Health Sciences, and Director, Outcomes Assessment and Accreditation

Mr. Moore received a bachelor's degree in psychobiology and English from Drew University, a master's in education (MEd) in college student affairs from the University of South Florida and a Graduate Certificate in institutional research from Indiana University, where he also completed doctoral coursework in inquiry methodology and higher education administration. Mr. Moore is responsible for managing the dental school's 2018 accreditation review, as well as ongoing outcomes assessments conducted for all programs. He also teaches statistics, critical thinking and educational methods in the postbaccalaureate, predoctoral and postgraduate programs.

Mr. Moore previously worked at University of the Sciences in Philadelphia, the Center for Postsecondary Research at Indiana University, Temple University and the Community College of Philadelphia in both teaching and administrative roles.

Dr. Jon Suzuki Retires from Temple Dental

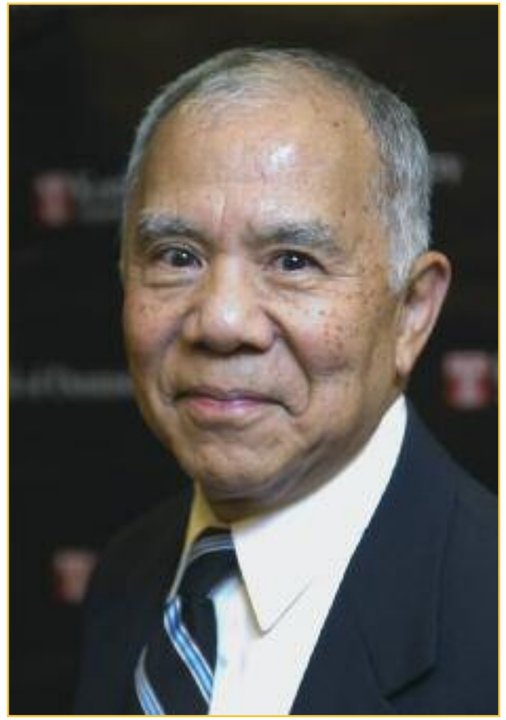
Temple University bids a fond farewell to Dr. Jon Suzuki, who leaves behind a strong legacy as he retires. He was a presidential appointment as professor of microbiology and immunology in the School of Medicine and was chairman and director of graduate periodontology and oral implantology. He has been dean at the University of Pittsburgh, chief of hospital dentistry, Presbyterian University Hospital and CEO of the Faculty Dental Practice Plan.

Dr. Suzuki received his DDS from Loyola University of Chicago and PhD in microbiology from the Illinois Institute of Technology, an N.I.H. fellowship in immunology at the University of Washington in Seattle, a clinical certificate in periodontics at the University of Maryland and an MBA from the University of Pittsburgh. He is a current chairman of the Food and Drug Administration Dental Products Panel, is on the faculty of the U.S. Navy National Naval Medical Center and holds professorships at Nova Southeastern University, the University of Maryland and the University of Oklahoma.

He served as chairman of the American Dental Association Council on Scientific Affairs and is an ADA consultant on the Scientific Council, Dental Practice Council and the Commission on Dental Accreditation, Chicago. Dr. Suzuki served on the NIH National Dental Advisory Research Council and on numerous NIH Study Sections and has hospital appointments at Temple Episcopal Hospital and the Veterans' Affairs Medical Centers.

Dr. Suzuki is a fellow of the American and International College of Dentists, a specialist microbiologist of the American College of Medical Microbiology, a diplomate and board examiner of the International Congress of Oral Implantology and a Implantology and a diplomate of the American Board of Periodontology. He has won numerous honors and awards and has published extensively. He is in private practice limited to periodontics in Philadelphia.

We wish to thank Dr. Suzuki for his enduring contributions to Temple Dental!



Dr. Jon B. Suzuki, DDS, PhD, MBA, FACD, FICD

> **"Dr. Suzuki has lifted our postgraduate periodontal residency program to a new level in his 11 years of tenure at Temple Dental. We will build on his strong legacy."**
>
> — Dean Amid I. Ismail

STUDENT SPOTLIGHT

From a Sports Injury to Dental School: Erin Bauerle's Journey to Become an Orthodontist

At age 10, Erin Bauerle, from Chalfont, Pa., almost lost her two front teeth due to a sports injury. Because of the severity of her injury, Bauerle spent more time than the average kid with dentists. She recovered but left the experience inspired.

From then on, Bauerle knew she wanted to one day become a dentist.

A few years later, Bauerle needed braces. Her orthodontist also happened to be her neighbor. "My orthodontist became a role model to me," Bauerle explained. "She really encouraged me to look into the field of dentistry."

Laying the Foundation

After completing her undergraduate degree in comprehensive science with a minor in Spanish at Villanova University, Bauerle decided to pursue her dream of becoming a dentist and went straight to Temple University's Kornberg School of Dentistry, starting her studies in the summer of 2008.

Dental school confirmed Bauerle's passion and while there, she fell in love with both orthodontics and pediatric dentistry. When she graduated from dental school in May 2012, she completed a general practice residency at St. Luke's Hospital in Bethlehem, Pa.

"The program was unique in that we had pediatric dentists who would come in along with orthodontists," said Bauerle. "For me, that was useful because I was torn between the two, so I had the chance to be exposed to both practice areas through the residency program."

At the conclusion of the program, Bauerle made the decision to further her education in orthodontics. She applied to become an orthodontic resident at Temple Dental, a 26-month specialty program, where she'd walk away with an orthodontic certificate and a master's degree in oral biology.

While Bauerle was waiting to hear back from Temple, she worked full-time for a well-known practice inthe Philadelphia region. "Working there was a great way to ease into my orthodontic residency. It's a high-volume practice with many young patients in the age group who need braces, so I had the opportunity to understand how to interact both with the patients and with their parents," said Bauerle.

Bauerle received the good news that she was accepted into the orthodontic residency program at Temple and began there soon after. She's now a second-year resident and will complete the program this August.

Temple Made

Bauerle was initially attracted to Temple because of its strong reputation for being a very hands-on program.

"Compared to other dental schools, Temple students see many more patients, and I found that it really helped to expose me to all the different scenarios I may encounter in my future career," she said. "I learn best by doing things myself, and I feel that the hands-on experiences I had were the strongest part of my education at Temple."

It hasn't been an easy road. While the academic and clinical work is very demanding, Bauerle says she appreciates that she was exposed to so much as a dental student and now as an orthodontic student.

"Dental school has been the most challenging yet rewarding experience I've ever had," said Bauerle. "I think it really helps to build your character."

During her time at Temple Dental, Bauerle was very involved in the pediatric dental study club, serving as president in her fourth year. She recalls memories of participating in Give Kids a Smile Day and volunteering at the Special Olympics making mouth guards for the athletes and cheering them on in their competitions. Bauerle also participated in a weeklong service trip to Jamaica, where she had the chance to help residents who otherwise might not have access to dental care.

Why Orthodontics?

Bauerle is fascinated by orthodontics.

"I love the biomechanics behind how you get teeth to move. It's kind of like a puzzle, and there's a lot more that goes into it than most people realize," she said. Building relationships and helping her patients, especially children and teens, to find their confidence also attracted Bauerle to orthodontics. "I really love this field," she said. "I think it's just so amazing what you can do to help someone with their smile."

Bauerle went on to explain that a lot of times adolescents don't have much confidence in their smile. It's an awkward phase of life and the result of wearing braces can help to build that confidence.

"When someone gets braces, the treatment time is approximately two years, so you have the chance to see your patients every month or two. You can develop a bond with them. I really love that continuity of getting to know your patients and hearing about their lives and what they are going through," said Bauerle. "It can make a big difference in someone's life."

Looking Ahead

When Bauerle completes her residency this summer, she looks forward to starting her career as an orthodontist. She hopes to stay local, finding a job in an orthodontic practice in the greater Philadelphia area.

"It takes at least 10 years after high school to become an orthodontist. I've been in school for a long time and I'm ready to start my career," she said. Bauerle is currently in the process of beginning her job search.

"I'm really grateful that Temple has given me the opportunity to first be a dentist, and now, an orthodontist," Bauerle said. "I'm so happy that I've been able to follow my dreams since I was very young."

> **"Compared to other dental schools, Temple students see many more patients, and I found that it really helped to expose me to all the different scenarios I may encounter in my future career. I learn best by doing things myself, and I feel that the hands-on experiences I had were the strongest part of my education at Temple."**
>
> — Erin Bauerle

STUDENT SPOTLIGHT

Challenges and Highlights of Dental School: Youngsook Chae's Story

Dr. Youngsook Chae, Postgraduate Endodontology Program, '17, is a unique student in many ways, says her director, Dr. Larry Koren, who suggested her for this profile.

Her voice is soft and gentle, entirely approachable. So imagining how well Youngsook Chae relates to patients is not difficult. In fact, getting to know patients is a priority for Chae, a second-year resident in endodontics, because she believes that's the way to excellent care.

"Each person has his or her story, even in dental pain, so I try to find a way to converse to find out about that story," she says.

Asked to describe her approach, Chae recalls a patient with a phobia about local anesthetic needles. "She brought in a stress ball, and I thought it could be used as a distraction device." So they talked about how she used it to play with her dog. Then Chae suggested bringing the ball and squeezing it before an injection at each appointment. "That seemed to relieve her anxiety."

She continues, "I have found it fascinating to be able to help minimize or eliminate pain immediately for patients." Of course, that outcome is also largely dependent on successful endodontic therapy. And honing those skills at Kornberg is something she highly values.

"I think of Kornberg as the birthplace of endodontology in the U.S. I sense the deep-rooted history of the program as I pass by Dr. Seltzer's old office." She's appreciative of the intense didactic training and the clinical training that's just as rigorous and knows she is fortunate "to have all this training with great mentors."

Yet, she has had challenges. One was the stress of public speaking when presenting her cases to faculty instructors and co-residents. "English is my second language," she explains.

A native of Korea, Chae came to the U.S. in 2003 to get her DMD from Tufts School of Dental Medicine. She then worked with an endodontist in private practice. "He taught me some principles in endodontics, and it started to grow my interest. I wanted to learn more." So she came to Kornberg.

Another obstacle, although a happy one, was when she discovered she was pregnant. With her husband in prosthodontic residency at the University of Maryland and her mother, sister and brother in South Korea, Chae knew caring for a baby while in school would be difficult.

However, during her pregnancy and after Iahn Choi was born in October, Chae has been able "to work to her fullest capacity," according to Dr. Larry Koren, Chae's director. "What makes her story unique," he says, "is that she has done this without much help, no complaining or excuses. In fact, she is perpetually in a good mood and even-tempered."

Chae hopes to stay on the East Coast after graduation. "I feel comfortable here at Temple because the atmosphere in the department is very family-like. They all inspire and drive me to be excellent. I cannot thank them enough."

> "I think of Kornberg as the birthplace of endodontology in the U.S."
>
> — Youngsook Chae '17

FOLLOW-UP

EDUCATION

Bringing Learning Research to the Classroom

By Maria Fornatora, DMD
Associate Dean for Academic Affairs

Classroom teachers in professional schools have long asked themselves: How can we teach so that our students will be able to apply what they've learned in the classroom to professional practice? How can we make the information "sticky," so that our students will not forget what they've learned in the classroom by the time they need to use it—when they are treating patients, in the case of dental education? For answers, the faculty at the dental school has turned to teaching resources and research in education with the help of Temple University's Teaching and Learning Center (TLC). Dr. Susan Chialastri, in the Department of Periodontology and Oral Implantology, spearheads this faculty development initiative, which includes inviting the TLC to lead sessions at the dental school. Topics of these sessions have aimed to address some of the teaching and learning challenges in the classroom and have included subjects like promoting student learning through good feedback and assessments, using cases to teach both content and professionalism, using a flipped classroom approach and designing rubrics for targeted feedback. This program provides faculty members with ongoing opportunities to learn best practices, to engage in conversations about teaching with each other and with the TLC staff and to explore the literature for practical and effective classroom-teaching strategies.

As part of this initiative, the dental school held its first faculty book group in 2012. We read *How Learning Works: 7 Research-Based Principles for Smart Teaching,* by Susan A. Ambrose, et al. The principles that we studied in our TLC-led dental school book group have guided many of the changes in classroom teaching at the dental school over the last four years. For example, the curriculum management committee has paid added attention

to organization—organization of course content, organization of course series, organization of the preclinical courses to support the clinical courses. Ambrose, et al., cites research that students must connect what they are learning to what they already know and that novices, in particular, make better connections and are able to draw on them later when information is well organized. For this reason, the curriculum management committee, in concert with the department chairs, now reviews courses by course series in a discipline. That is, all didactic, laboratory and clinical courses in a discipline (e.g., restorative dentistry) are reviewed as a series to ensure consistency of content, and learning objectives that build on previous courses and ultimately prepare students well for success in clinic. If you are a teacher, you might be asking: But how can I use this research-based principle without students complaining that there is too much repetition in my course? To help with this predicament, faculty and course directors can access a syllabus repository online which houses all of the most current syllabi. By knowing what is taught in other courses, classroom teachers can deliberately and explicitly build on it. Additionally, lectures posted on Blackboard give faculty and course directors access to what has already been taught so that connections can be made to new material in order to make it "stickier," or more readily remembered.

Motivating students to care about what they are learning in the classroom is also a focus of curricular change at the dental school. "Evidence shows that unless students think that what they are learning in the classroom is interesting and relevant, they will not be motivated to learn because it has no value to them." (Ambrose, et al.) This principle of showing students relevance was a fundamental driving force for integrating clinical and basic sciences, as well as for adding early clinical experiences in each semester of the first two years of the curriculum. On the horizon are classroom courses that include experiential components to make course material more relevant. The Practice Management III course (beginning this summer) will include hands-on practice management rotations at local private dental offices, including those of our gracious and welcoming alumni. The Dental Public Health III: Community Health Engagement course (beginning this fall) will pair classroom and community outreach experiences with the aim of engendering a lifelong appreciation for community service.

> *"Evidence shows that unless students think that what they are learning in the classroom is interesting and relevant, they will not be motivated to learn because it has no value to them."*
>
> *— How Learning Works: 7 Research-Based Principles for Smart Teaching*

Ultimately, classroom teaching in dental education prepares students to enter the clinical environment, to work toward competency under the supervision of faculty, and eventually to achieve mastery in the profession. In order to develop mastery, students have to gain component skills, practice and integrate them, and finally know how and when to apply what they have learned, says Ambrose, et al. So how can we use classroom time to ensure that students gain component skills, practice them and begin to know how and when to apply what they have learned? One way more teachers at the dental school are answering this question is by using active learning in the classroom, particularly through the use of case-based learning. In case-based learning, teachers provide key foundation information and have students practice applying it to solve clinical scenarios. This is being done in several course series, like periodontology, endodontology, orthodontics, restorative dentistry, and in integrated science courses, like *Nervous System and Pain*. In my oral and maxillofacial pathology courses, active learning in the classroom takes the form of case-based learning, which is augmented by the assignment of in-class "authentic tasks." For example, a simulated clinical case of erythematous candidiasis, which developed in a patient after a course of amoxicillin, is presented in class, and students are asked to write a management plan, including an exact prescription for an antifungal agent, as an authentic task. The principle is simple: practice in the classroom and get feedback. This is the time to do it; better to write the wrong prescription in the classroom than in the clinic. As the teacher, I read the responses after class, look for patterns of misunderstanding or errors in student comprehension and provide targeted feedback to the class the next time we meet. Also included in the feedback is what my plan would be and how I arrived at it, so that students can also hear my thought process. Active learning in the classroom is happening in other ways as well, including a flipped classroom approach in the *General and Oral Histology* course, classroom laboratory sessions for learning to take vital signs in the integrated clinical and basic science curriculum, and problem-solving sessions in the first year courses.

With the help of Temple University's TLC, and their on-site sessions at the Health Science Campus, more teaching and learning research findings have been used to make decisions about the most effective strategies for teaching, including teaching in the classroom. With a valuable resource like the TLC in our teaching armamentarium as dental educators, we've been able to make decisions about what we teach and how we teach it based on the best available evidence.

Trends in Dental Practice

By Bhaskar Savani, DMD, MSc, DTC
President and CEO
Dental Group Practices of PA & NJ, USA
Savani Farms
Class of 1995

Background

Dentistry is currently in the midst of a major transition. The business environment of dentistry seems to be experiencing one of the more significant changes: the growth of large, multisite group practices.

Historically, group practices consisted of three or more partner dentists. However, the modern-day American group practice is evolving through large-scale expansion and structural changes. This transformation has attracted great interest.

According to all major statistical reports and the "Distribution of Dentists" survey conducted by the American Dental Association, the dentist in most cases is a solo practitioner, a sole owner and the only dentist in the practice treating patients. Dentists in ownership positions represent about 91% of all practicing dentists, and solo practitioners account for about two-thirds (67%) of all dentists. The report also finds a reduction in the proportion of dentists who were owners from 91% to 84.8%, and a reduction in the proportion of dentists who were solo practitioners, from 67% to 57.5%.

In recent years, not only has there been an increase in the number of group practices and the number of dentists involved, but there has also been a change in the configuration. Some group practices are seeing a shift toward having nonprofessional corporations manage practices, allowing for the acquisition of substantial funding from private equity groups.

For dental graduates

Today's graduating dentists should view these changing trends as an opportunity for immediate placement, employment and mentorship. This shift toward the group dental practice model provides a positive option for new dental grads, one that should be evaluated and considered when planning for a professional future. The next sections outline some items to consider in making future plans.

Dentistry always follows medicine—always.
Although the economic engines are somewhat different, the basic practice models are the same. With increased government oversight through regulations and mandates and as the cost of doing business increases, solo dental practices will face difficulties managing these forces. Trends in medicine show that these forces influenced physicians to band together.

Costs continue to go up.
Equipment, staffing, fixed costs, variable costs and supplies are necessary financial responsibilities of the business. As these costs increase, revenues are flat or declining. This economic scaling creates disparagement in revenue. As a result, many providers are seeking to collaborate with managed-group practices (MSOs/DSOs) for support.

Third parties will continue to exert downward pressure.
Today, PPOs make up 80% of the insurance landscape. More than 50% of the population has dental benefits. Of these 50%, 70% to 80% are patients who see a dentist. These statistics speak for themselves.

Dental industry is fragmented.
Group practice growth will continue as the dental industry is severely fragmented with the majority of dentists practicing individually. Corporate dental companies see a clear financial windfall in coalescing these individuals into group environments.

Dentistry as an industry is recession-resistant.
With the dental industry growing at an annual rate of over 5%, capital investors, entrepreneurs and professional senior executives see a tremendous opportunity to invest in it.

Dental school debt can be as high as $300,000 or more.

With the increasing financial burden of being a practice owner, the door is closing to dentists just entering the field. This may explain why fewer than 20% of graduates are seeking practice ownership. Retiring dentists are also facing retirement issues and transfer of ownership as the buyer's market is diminishing. The managed-group practice model is providing both opportunities to the emerging dentist and relief to the retiring dentist, as the group practices are financially able to hire dentists and acquire existing practices.

The new emerging dentist is faced with choices not available to predecessors: private ownership involving considerable investment of both time and resources or involvement with a group dental practice that provides numerous opportunities while eliminating additional financial strain.

Not to discourage anyone from opening a solo practitioner office—however, it is advisable to do your homework and carefully weigh the positives and negatives between a solo practice and a group practice. Consider these facts on the matter: It is extremely capital intensive to open a dental practice, as operating costs are high. For example, typically 25% to 35% of revenues remain for the sole practitioner from distributions ($18,000 per month), while holding working capital constant at $40,000 to $60,000. When one factors in the withholding of 5% to 7% reserve for depreciation and replacement of old equipment, the sole practitioner is generating a little under $600,000 of annual revenue without showing much profit.

[Distributions to himself/herself in the form of salary cannot be considered "profit," otherwise the sole practitioner is working for nothing. Distributions beyond salary would be considered "profit," but, at $600,000 per annum of revenues, the typical sole practitioner office won't have much surplus to distribute.]

"Today's graduating dentists should view these changing trends as an opportunity for immediate placement,employment and mentorship. This shift toward the group dental practice model provides a positive option for new dental grads, one that should be evaluated and considered when planning for a professional future."

— Dr. Bhaskar Savani

Work-life balance for a young dentist is a challenge.

Unless the young dentist is positioned to inherit a well-established fee-for-service practice from his or her parent, it is challenging to keep a work-life balance in today's insurance-based practice environment. The priorities of life, including repaying student loans, purchasing a new home and starting a family, can be very challenging and stressful. Therefore, many young dentists are hesitant to borrow additional funds to purchase and build a solo practice.

In addition, a fee-for-service practice can be very challenging, as it requires an investment of time and money to build up a sufficient patient base in order to be financially beneficial. Patient loyalty is a major factor in establishing a practice and has been seriously affected by the changing health benefits scene. Changes and trends have diversified benefits provided by employers as well as insurance participation of an individual dentist. There has been an increase in difficulty to negotiate better reimbursement rates from insurance companies with an individual participation. Managed-group practice provides answers in many ways for a young dentist facing these dilemmas by providing financial independence and eliminating the hassles of ownership, redirecting focus to the art of dentistry.

Dr. Bhaskar Savani is a 1995 graduate of Temple University School of Dentistry. Prior to attending Temple University, Dr. Savani earned a master's degree in applied chemistry and a postgraduate diploma in textile chemistry from The M.S. University of Baroda, India.

Dr. Savani is the founder, president and CEO of Savani Group Dental Practice based in Fort Washington, Pa. Savani Group manages multispecialty dental offices. The foundation and business model of clinical dentistry is based on serving the underserved and lower socioeconomic population while providing the best facilities equipped with the latest technology in dentistry.

Dr. Savani has also spearheaded several dental lab ventures with a primary focus on creating strategic alliances with dental prosthesis fabricators around the globe. Dr. Savani's latest dental lab venture serves an expansive client base of dentists across the U.S.

Dr. Savani also serves as a director for Fidelio Dental Insurance Company. Fidelio is a health insurance operator in Pennsylvania, New Jersey and Delaware.

Dr. Savani is also the president and CEO of the India-based agriculture produce marketing company, Savani Farms, working toward uplifting the socioeconomic structure of farmers by creating new markets for their produce while preserving the wildlife and eco heritage of India. Dr. Savani has lobbied extensively to lift the ban on Indian mangoes in the United States. Dr. Savani is the first legal importer of Indian mangoes to the United States. Gamma radiation is used to mitigate the fruit-fly and pest risk. In 1985, working as an education officer for the nonprofit conservation organization World Wildlife Fund-India, Dr. Savani developed a vision of creating agricultural plantation corridors using native trees like mangoes to connect isolated wild habitats of India and to preserve the food chain of wild animals while supporting a farm-to-fork concept to help the micro-farming community of rural India.

Dr. Savani, a U.S. citizen, is 49 years young, married and has two daughters. He currently resides in the Ambler area in Pennsylvania and loves mangoes, hiking and nature expeditions.

Treating Children in the Dominican Republic

Eight Kornberg students with their advisor/mentor Dr. Chrystalla Orthodoxou showed leadership and creativity while faced with masses of patients on a mission trip, November 7–12.

"The line never stopped."

— Dr. Chrystalla Orthodoxou

The young girl was petrified, sitting in the school cafeteria waiting for Kim Jacobs, '16 to extract two teeth. The needle flashed as it got closer to her mouth, and she jumped up, not running away but standing, processing what would happen. When ready, she replaced the dental napkin and sat down again. The process was repeated—five times—as Jacobs worried that she was losing time to treat the massive number of waiting children. But Jacobs saw a strength and determination in the girl and persisted with calm reassurance. Finally, she heard, "OK, go ahead," as a Peace Corps volunteer serving as translator provided a hand of comfort.

Just as most of us were thinking about Thanksgiving and its usual abundance of food, football and family, eight Kornberg students and their faculty mentor/leader were on a mission trip to the Dominican Republic, where resources are alarmingly scarce. The team's challenge was balancing five days of treatment time with the great number of patients.

Jacobs and Arielle Manstein, '16, organized the mid-November trip to Sánchez and La Pascuala through an affiliation with Rotary Clubs in Harrisburg, Pa., and Sánchez. Although that connection had existed, it was not an official one, and the two students worked to that end. The resulting Rotary support was so beneficial that Jacobs maintains, "We couldn't have done it without them." The clubs handled the logistics: transportation, raising money for supplies and sending people to help. And the Sánchez Rotary even included the dental team in a club meeting and dinner that Jacobs describes as "a really nice get-together in someone's home after a hard day of our work."

For their faculty leader and mentor, Jacobs and Manstein recruited Dr. Chrystalla Orthodoxou. New to Temple Dental, she is clinical associate professor and director of the AEGD program. "They invited me because of my background in mission trips with children and because they were familiar with me as their course director in gerontology last spring," she explains.

The students also interviewed potential participants, asking them to write why they would like to go. Once selected, they each developed websites for sponsorship. "They were so clever. They took over, and I'm so proud of them," says Orthodoxou.

Even with such preparedness, the week in Sánchez and La Pascuala demanded creative thinking. At one point, Orthodoxou remembers that a student and she were on their knees, getting a better angle for a maxillary surgical procedure while the 12-year-old patient sat on a very low chair.

Conditions, too, were more rudimentary than in the U.S. Typical for the country, power would be cut in the afternoons and the generator would have to take over. How long the generator would last was always a question. Also, the equipment there "needed constant repair and adjustment," notes Orthodoxou.

But knowing they were helping so many drove the team to do as much as possible. "We had walls of people, a massive amount," Orthodoxou says. "But the students continued to perform services even beyond the conclusion

of the day. Their patient management skills were stellar. Each had a game face on. They tried to fit in more people at the end of the day, continuing to do services. They didn't want to stop."

Manstein recalls one child with two chipped front teeth. About 10 years old, he came with his grandfather, a Sánchez Rotarian. "We cleaned the boy's teeth the first day. Then on the second day, the grandfather asked what we could do with the front teeth. Using composite filling, we gave the boy a great smile. He was so happy. Everyone was asking him to smile."

For Manstein, other experiences were just as moving. "Although it was great," she says, "to fix teeth for people who couldn't afford it, the sad stories were there, too. An 11-year-old needed a root canal on three of her four front teeth. She wanted a filling, but we knew it wouldn't help. She would still have infection and be in pain. But we didn't have time for follow-up with root canal, so all we could do was give her fillings."

In another case, "we had to take out the first molars of a 13-year-old. It was a difficult procedure for both the doctor and the child to go through. It was so sad. No child should have to go through that."

Setting Up for Efficiency

The Kornberg group worked in two locations: a school cafeteria in Sánchez and a medical-dental clinic in La Pascuala. On-site, too, were the Rotary Club volunteers, a medical mission team and five Peace Corps volunteers. Children were the primary patients.

To treat as many people as possible, Orthodoxou quickly created stations when they first arrived. Since medical care was not requested as much as dental services, the medical mission team helped with triage. Meanwhile, the Peace Corps volunteers handled oral hygiene and diet education and stepped in with translation. Such supplies as toothbrushes came from Delta Dental and Henry Schein.

"The line never stopped," remembers Jacobs. "We were always in motion. Every person needed more than one thing, and sometimes they would come back for the second one. Anytime we looked over, a wall full of children was waiting with a ticket in hand."

But the rewards? Jacobs mentions one incident. "I was cleaning and applying a sealant with another student for an adult woman. Pointing a light in her mouth, I noticed her earrings and commented, 'I like your earrings!' She took them off and handed them to me, insisting I keep them, closing her hand around mine, earrings inside. It melted my heart. She has so little and gave so much in appreciation for what we were doing."

With a specialty in pediatric dentistry, Jacobs did find time for lighter moments with the children. Eating quickly at lunch break, she would bring out the bubbles, stickers and bracelets she had packed. Swarms of children would surround her, popping bubbles, their big smiles excited about the stickers that, she says with some amazement, were really just little pieces of paper.

For Orthodoxou the trip was the best one in her career, and she has participated in 12. "I was honored that the students selected me and proud to have led them."

It also was the highlight of her first year at Temple. "I'm so grateful for the support of my AEGD team and especially Dean Ismail for making it all possible. Providing care in regions across the world is such an important issue."

The students are equally appreciative of Orthodoxou's participation. "We're so thankful she did it. She's a great educator, supporter, leader, organizer. And her experience with mission trips in other places meant she could apply some of those techniques with us," says Manstein.

"Every student there has said the same thing," summarizes Jacobs. "We could not have had anyone better. She was compassionate with patients, patient with us, hardworking, jumping in to help."

Agreeing with Jacobs that "it was not a one-time thing," Manstein and Orthodoxou, as well as Jacobs, all plan to go on other trips. Manstein will probably go on a medical-dental mission with her father, Carl, a Temple Medical School graduate and plastic surgeon. A great role model for her, he has gone on many mission trips, once taking her with him as an observer.

"Every day," says Orthodoxou, "everyone who received esthetic procedures had a personality change. They would come to us shy, reserved, guarded. Then afterward, they would be more confident and beautiful. It was like seeing a butterfly emerge."

Hundreds treated in just five days

Total number of patients	**455**
La Pascuala treatments	
Extractions	116
Restorative procedures	62
Cleanings	35
Sánchez treatments	
Extractions	98
Fillings	23
Cleanings	86
Sealants	43
Total number of treatments	**463**

Partnership with China

Temple University Kornberg School of Dentistry's reputation for clinical excellence in treatment, education and research is transcending local and even national boundaries. Thanks to the school's reputation—and that of its leadership and faculty—new opportunities for growth and collaboration arise continually. The school has recently signed two exciting agreements with collaborators in China, one with Sun Yat-sen University Guanghua School of Stomatology, and the other with BYBO, the fastest-growing dental care company in China.

The roots of the Sun Yat-sen collaboration stretch back almost three years, to a meeting between the Deans of Kornberg School of Dentistry and Sun Yat-sen University Guanghua School of Stomatology. Finding there was much to learn from each other, the two deans initiated a series of collegial exchanges and conferences. Dean Ling Jungqi spoke at the Kornberg School of Dentistry's 150th Anniversary Celebration in 2013, and Sun Yat-sen graduate students have come to Philadelphia to work in Kornberg School of Dentistry faculty member Dr. Maobin Yang's lab since 2014. In 2015, Dr. Yang and adjunct faculty member Dr. Peter Lelkes lectured at a regenerative medicine conference in Guangdong.

These early steps showed such promise that the two dental schools entered into a formal agreement to promote academic collaboration and scholarly exchange, which was signed this past fall. The agreement establishes both a non-credit, two- to three-week student exchange and a faculty exchange of up to one year to conduct research or participate in a didactic and clinical exchange.

To Dean Amid Ismail, these collaborative agreements with a Chinese university and company signal their perception of Temple University Kornberg School of Dentistry as a premier provider of both high quality, pragmatic patient care and excellent education for students and dental professionals alike. The school in turn will benefit from our Chinese collaborators' innovation and vision for the future.

— Dean Amid I. Ismail

The agreement between Sun Yat-sen University and Temple exemplifies both institutions' belief that cooperation of this kind not only benefits the individual students and faculty involved, but also promotes scientific progress, cultural enrichment and positive multinational relations on a much larger scale. The exchanges will begin later this year.

At the same time, BYBO approached Dean Ismail and Dr. Jie Yang, professor and director of oral and maxillofacial radiology at Kornberg School of Dentistry, about developing clinical and didactic training for its cadre of dentists. There is tremendous demand for both general dentistry and specialty oral healthcare services in China, where there are approximately 10,000 people for every dentist. While there are many schools of dentistry, there is no national standard to which

schools are held. BYBO currently operates over 200 clinics throughout China, and it has found that many of its newly hired dentists have disparate levels of training and clinical experience.

Dr. Jie Yang, who is the current president of the American Academy of Oral and Maxillofacial Radiology and the president-elect of the International Association of Dento-Maxillo-Facial Radiology, has lectured at most of the major dental schools in China, as has Dean Ismail. BYBO approached Dr. Jie Yang and Dean Ismail to propose that Temple Dental faculty develop training for BYBO's dentists in order to establish a Temple-level standard of clinical care.

The training agreement, which was recently signed, contains multiple steps, the first being for Kornberg School of Dentistry to provide short-term courses (two to three weeks' duration) in general dentistry at BYBO's state-of-the-art training facility in Beijing. The two groups will convene a planning committee this spring, with the hopes of launching courses beginning in late summer or fall of this year. The courses would comprise lectures and case presentations as well as clinical supervision.

Should this initial phase prove successful and it is agreeable to both parties, there is plenty of room for growth in this partnership as well. For instance, BYBO is interested in the possibility of Kornberg School of Dentistry's faculty developing online curriculum for ongoing and advanced training for their dentists. For now, it is certain that this partnership will provide valuable experience for Temple Dental in exploring international teaching and training programs.

To Dean Amid Ismail, these collaborative agreements with a Chinese university and company signal their perception of Temple University Kornberg School of Dentistry as a premier provider of both high-quality, pragmatic patient care and excellent education for students and dental professionals alike. The school in turn will benefit from our Chinese collaborators' innovation and vision for the future.

Dr. Maobin Yang's Research

On the fourth floor of Temple University Kornberg School of Dentistry, Dr. Maobin Yang is doing research on the cutting edge of regenerative dentistry: regenerating pulp tissue in order to leave root canal patients not only free of pain and infection, but with a vital tooth. A traditional root canal treatment obturates the pulpal canal with inert material, causing a loss of a tooth sensation.

But if the pulp, nerve and blood vessel could be regenerated, pain or sensitivity caused by new damage to the tooth would alert the patient to the need to seek treatment early, increasing the chance that the natural tooth could be saved.

Only a few other research teams in the world are currently attempting this type of tissue regeneration. For Dr. Yang, who works closely with the Center for Bioengineering at Temple's College of Engineering, the end goal is all about positive patient outcomes and increasing the predictability of tissue regeneration. To advance these goals, collaboration between researchers with multidisciplinary backgrounds is key.

Dr. Yang's team has invented a new biomaterial scaffold for pulp tissue regeneration, and is currently performing stem cell culture and animal studies. If the scaffold is successful in pulpal regeneration, it could also be applied to other types of tissue regeneration.

Kornberg's digital capability is helping students deliver cost-effective care to patients.

Collaboration Moves Digital Dentistry Forward

Thanks to the support of Henry Schein, Inc., Kornberg is expanding its training in digital dentistry. "Two years ago, we equipped our preclinical program with digital cameras and milling stations for working with crowns," says Dean Ismail. "In a logical next step, now each student in our predoctoral clinics and the AEGD clinic will be able to set up a camera for a digital impression, design a crown and upload images to a cloud for the central milling lab, which will send back the crown."

The pilot program began March 2, and it will expand further a year from now. Then the students will be working with bridges, inlays and onlays. "Eventually," notes the dean, "they'll be using digital tools for complete denture design."

Educating students about the latest, most effective technology is certainly a big benefit of the new program. "But the goal is really to find ways to reduce the costs for our patients, who are working, low-income individuals," Dean Ismail emphasizes.

Currently, Kornberg has six digital cameras, one each for the faculty and the AEGD clinics and four for the predoctoral clinics. For two days, February 29 and March 1, the first faculty group was trained on the equipment. Those 16 faculty members will instruct others until most of the faculty is familiar with this leading-edge technology.

Going Paperless:
A Valuable Tool in Dentistry

> **At present, dentistry is treatment-driven, but by utilizing this methodical process, the profession can become more diagnosis-driven.**
>
> — Dr. Mark Meraner

The field of dentistry is making the transition from paper chart to electronic health records (EHRs). Although standardized terminologies such as the International Classification of Diseases (ICDs) have been in use in medicine for over a century, efforts in the dental profession to standardize dental diagnostic terms have taken longer to achieve widespread acceptance.

At the Maurice H. Kornberg School of Dentistry, a paperless system is the next phase of the school's utilization of technology in patient care and dental education. The school is using a clinic management software called axiUm, which is used by approximately 80% of the dental schools in the U.S. and Canada. It was developed through the COHRI (Consortium for Oral Health Research and Informatics), a group of academic clinician users who work with this EHR platform. What developed was a standardized system to document diagnoses which has ultimately allowed for sharing of data and has facilitated clinical research. It was designed exclusively for use in dental schools and its functions include appointment scheduling, patient billing, instrument tracking, student grading and treatment charting.

"What makes axiUm unique to software programs used in private dental practices is that it not only has the capability of providing an entire electronic patient record, it integrates both the financial and clinical management of the practice, and it allows for management of student grades and evaluations," explains Leona Sperrazza, DDS, associate dean for patient care and associate professor, Department of Oral Maxillofacial Pathology, Medicine and Surgery.

Computers were installed in the clinical setting, and all new patient dental information is now input via computer into axiUm. The continued development of this program will tap the expertise of many at the school as the process moves forward. The faculty, staff and students have been adapting to and adopting this new technology.

"As an academic institution, we are trying to teach students how to methodically evaluate a patient from the point of obtaining a chief complaint and/or list of problems at the initial contact with a patient," says Mark Meraner, DDS, assistant dean for comprehensive clinical education and associate professor of restorative dentistry. "From that, determine the etiology or cause, make a diagnosis for each problem and ultimately provide a plan of treatment. At present, dentistry is treatment-driven, but by utilizing this methodical process, the profession can become more diagnosis-driven."

Dr. Sperrazza adds that a complete physical exam, which includes radiographs, is completed. "In dentistry, standardized treatment procedure codes are routinely used, unlike in medicine where diagnostic terminology and codes are the norm. With the development of more sophisticated dental clinical management software, the opportunity presents itself to thoroughly document a patient's complete treatment history."

Kornberg is now looking to utilize another coding system, SNODENT (Systematized Nomenclature of Dentistry), within the axiUm system. The benefit of utilizing this system is that it is accessible not only by academia but also by private practitioners. As such, it provides for standardization of terminology for describing dental disease, allowing for the collection of data on clinical presentations and patient characteristics for analyzing patient care and outcomes of treatment.

In addition, the more global use of SNODENT lends itself to continual and regular modifications of the existing terminology. It is also linked to the ICD-10 (International Classification of Disease-10th version) diagnostic billing codes. These codes are the avenue to explain to the insurance carriers the reason for the procedure, thus helping to reduce the need for submission of lengthy narratives and additional documentation to make the case for treatment.

Given the need for information and knowledge management in dentistry for the purposes of providing solid data for performing sophisticated quality improvement and clinical research, standardized diagnostic terms in dentistry (like in medicine) have come to stay.

ADMISSIONS

The Path to Admission:
Preparing for a Career in Dentistry

"The video interview was rather unique and I believe I was able to show my personality well in this format. The best part was my option to speak freely about myself outside of what I had listed on my application. The biggest advantage was that I didn't have to steer the conversation that would occur in a traditional interview. I could speak freely about myself and blend together my ideas that are unique to who I am."

— Recently accepted student Yash Boghara

Statistics:

National applications: approximately 11,745
Temple applications: 3,016
Temple interviewed: 392
Temple accepted: 332

After years of schooling and then the Dental Admission Test (DAT), it's time for that dental school interview. This is where the applicants have the chance to sell themselves and establish a connection with the dental school. With more than 11,000 applications per year, admittance into U.S. dental schools is becoming more and more competitive.

Kornberg School of Dentistry receives more than 3,000 applications per year. "Kornberg is the second oldest, and the sixth largest, dental school in the country, and applicants are knocking on our door," explains Brian Hahn, interim senior director of admissions. "Of those applicants, we select the brightest and the best to attend our highly rated dental school."

Qualifications

Completion of a minimum of 90 semester hours from an accredited college or university is required for admission. Students who have completed a baccalaureate degree are given preference in the admissions process. In addition, students who have been educated in universities outside the U.S. or Canada are required to complete at least one year of college and all the dental prerequisite courses in the U.S. or Canada. Applicants must demonstrate proficiency in English as determined through the interview, essays and reading comprehension score on the DAT.

Kornberg's Unique Interview Process

Unlike most dental schools that have faculty interviews, Kornberg utilizes on-camera interviews for eligible candidates. Applicants are placed in front of the camera and begin with a video statement which is up to five minutes long and showcases their verbal skills, as well as offers the opportunity for them to discuss any information that they would like the admissions committee members to consider when they review their applications. Candidates will randomly select an interview question and complete the manual dexterity exercise which concludes the video statement.

"We have found that video statements are the way to go," said Hahn. "The environment is less tense for the students, and they have more time to talk than they would in a traditional interview. Through the video, we also get a good feel for their personality because they are able to tell us about themselves."

Decision Time

The 12-member Admissions Committee at Kornberg consists of both faculty and student representatives. During the selection process, all videos, which are anonymous, can be viewed on a website where members can make comments. "This process is as consistent and transparent as possible," adds Mustafa A. Badi, DDS MS, assistant professor, Department of Oral Maxillofacial Pathology, Medicine and Surgery, Division of Oral and Maxillofacial Radiology. "It allows the committee to review the videos carefully and place our votes. We then meet twice monthly during the admissions cycle to discuss the candidate selection."

"It was a very unique experience for me. Initially, it was a bit distracting to have a camera standing between me and my future and all the hard work that led to that moment. But the video process really brings out the best in you."

— Fourth-year student Habib Asmaro

During the 2014–15 academic year:

- The incoming class of predoctoral students numbers 140.
- Of these students, nearly half (69) are female, and nearly half (64) are from out of state.
- Total mean college GPA was 3.5 (science 3.5) and academic average DAT score was 20 (science 20).

"The main thing I really liked about Kornberg's interview process was how comfortable the staff and students made me feel. After the group interview, the current students gave us a tour of the school, and that was probably my favorite part of the day. Before my interview, I felt that Temple was going to be a great fit for me, and after the interview day, my feelings were confirmed."

— First-year student Hannah Burke

Post Baccalaureate Program

Temple University Kornberg School of Dentistry initiated an innovative new Post Baccalaureate Program on June 1, 2015. This unique one-year program was designed to fulfill a need in the current dental educational market; it targets a portion of the annual dental school applicants who do not get accepted to dental school in the year they are applying because of their applicant qualifications and the number of students applying for admission to dental school in that year. In a 2014 survey of the students who were not accepted to Temple University Kornberg School of Dentistry, 97% reported that they would apply to a post baccalaureate program.

The standard recommendation to the applicant who is not accepted to dental school is to enroll in a one-year post-baccalaureate program to strengthen their academic success in a full-time science program of study. The Post Baccalaureate Program at the Temple University Kornberg School of Dentistry is designed

"The Kornberg School of Dentistry's Post Baccalaureate Program is an amazing opportunity for me as I strive for admission into dental school. I was drawn to this program by its dental-related curriculum and have found that it is greatly beneficial for my future in this profession. One of the most advantageous opportunities of this program is being able to assist the dental students in the clinics. Not only do I have the chance to see procedures being carried out but I am also able to observe the interactions it takes to make a patient feel comfortable in a dental setting."

— Patrick Rubert, Post-Baccalaureate Class of 2016

POST BACCALAUREATE PROGRAM

The program consists of three semesters of academic, laboratory and clinical coursework. The curriculum includes the following courses:

Microbiome (3 credit hours)
This course will focus on the biology, ecology and cell behaviors in the human microbiome in the whole body with a specific emphasis on the oral cavity.

Microbiome Laboratory (2 credit hours)
This course will follow the introduction to the microbiome and focus on laboratory techniques to investigate cell signaling, quorum sensing and genomic mapping of the microbiome.

Craniofacial Bone Biology and Maxillo-facial/Dental Orthopedic Care (2 credit hours)
This introductory course will review bone biology and how bone develops and remodels in orthodontic and orthopedic care.

Regeneration of Bone and Dental Hard Tissues (1 credit hour)
This course will focus on dentin and bone regeneration research already being conducted at the dental school and Temple University Center for Bioengineering Research.

Behavioral Change Theories and Practice (2 credit hours)
This course will review and apply selected behavioral change theories in addressing common behavioral problems, including addiction.

Neuroscience of Pain (2 credit hours)
This is a neuroscience course that covers the anatomical and physiologic basis for different forms of pain.

Temporomandibular Joint Biology (2 credit hours)
This course will cover the anatomy, mechanics, and function of the TMJ and associated muscles and ligaments.

Basic and Advanced Statistical Methods (3 credit hours)
This course will provide an introduction to statistical theory and applied methods, including modeling techniques, to analyze dental data.

Biomaterials (1 credit hour)
This course will cover the theory of bonding of materials to enamel and dentin and mechanisms used to increase the mechanical and chemical bonding of restorative materials

Introduction to Translational Molecular Technology (2 credit hours)
This is a survey course that will introduce graduate students to important topics in the area of translational research.

Dental Radiology (2 credit hours)
This course is designed to provide the student with basic knowledge of the principles of radiology and radiographic techniques, including the principles and methods employed in the paralleling technique and radiographic interpretation.

Introduction to Dental Assisting (2 credit hours)
This course is designed to provide the student with an introduction to the dental profession, the dental team and the roles and responsibilities of each member of the team, infection control procedures, sterilization and patient confidentiality.

Chairside Dental Assisting (2 credit hours)
This course is designed to give the student an introduction to dental terminology, medical-dental histories, dental instruments, charting, oral evacuation, instrument transfer and procedure-specific tray set-ups.

Dental Materials (2 credit hours)
This course is designed to give the student fundamental knowledge of the dental materials commonly employed in the practice of dentistry.

Practical Clinical Practice (2 credit hours)
Students will be assigned as dental assistants, quality evaluators or patient advocates in the dental school clinics.

Advanced Clinical Practice (3 credit hours)
Students will be assigned as dental assistants, quality evaluators or patient advocates in the dental school clinics.

to provide both translational basic science courses as well as formal training in dental assisting coursework, exposing the students to a variety of clinical dental assisting skills in a laboratory setting as well as providing the opportunity to assist dental students in the clinical clusters and dental specialty departments. The program is unique because after completion of the one-year program based on meeting certain admissions criteria, students may be offered admission to Kornberg's DMD program.

"Students will be not only competitive when seeking admission into dental school but also well prepared for clinical education through the curriculum provided by the Kornberg School of Dentistry. The students all have applied to the DMD program at Temple University Kornberg School of Dentistry as to well as numerous other dental schools in the country."

— Dr. Ellen Walker, Temple University School of Pharmacy

This one-year program admitted 40 students for the 2015–2016 academic year who had both applied to Temple University Kornberg School of Dentistry for the 2015–2016 academic year and had met the stated academic admission requirements that were established for the Post Baccalaureate Program. Student applications were reviewed by the Post Baccalaureate Admissions Committee.

The Temple University Kornberg School of Dentistry Admissions Committee selected 40 students from the national applicant pool who were not offered admission to the Kornberg School of Dentistry. Successful applicants submitted an Associated American Dental Schools Application Service (AADSAS) application to the Kornberg School of Dentistry and have earned a baccalaureate degree from an accredited college or university in the U.S. or Canada or an equivalent ranked international university.

The Post Baccalaureate Program faculty were selected from Temple University's Kornberg School of Dentistry, Basic Sciences Department, School of Pharmacy and the Medical School to teach to this inaugural class. In addition, online lectures and testing were provided by the Dental Assisting National Board, the Dale Foundation and Kaplan Test Preparation.

The current class of 40 students chosen to begin June 1, 2015, consisted of 22 males and 18 females and represented 12 states and Canada; 18 of the admitted class are from Pennsylvania. The students come from a wide variety of undergraduate educational institutions and will complete the program in April 2016. The goal is to provide a state-of-the-science program in selected biological and clinical sciences relevant to oral and general health for the post-baccalaureate students as well as practical learning experiences in the dental school clinics.

For further admission and program information, please contact Jo Ann Allen Nyquist, associate dean for student affairs, director of the Post Baccalaureate Program at jo.ann.nyquist@temple.edu.

A MESSAGE FROM **GARY NACK, DDS, '83**

PRESIDENT, KORNBERG SCHOOL OF DENTISTRY ALUMNI ASSOCIATION

Bringing Temple Dental Alumni Together to Support Our Students Today

No matter when you graduated from the Kornberg School of Dentistry, your involvement with the school and its students does not have to end. We have a lively, engaged and purposeful Alumni Association that I hope you will consider joining for the benefit of current students, and for your own benefit as well.

The Alumni Association provides positive and enriching educational experiences for students. I have re-engaged with the school through the Alumni Association and by teaching one day per week in the clinic. I can say that through this experience I have gained a fresh perspective on the value of supporting and interacting with the students. It is also personally rewarding for me to share my knowledge and experiences with the dentists of tomorrow. They are a bright and energetic group who will no doubt serve our profession well for many years to come.

Alumni Association dues make possible the social and educational experiences that help lay the groundwork for emerging dental professionals to succeed in an ever-changing (and increasingly challenging) dental healthcare environment. The Alumni Association sponsors important activities like the annual White Coat Ceremony, dental mission trips to underserved communities around the world, student research projects and other initiatives as funding allows.

There are several ways for you to get involved. First, of course: just join! As an added benefit for dues-paying Alumni Association members, we are offering a 9 CE credit lecture series for free. We also offer structured ways to give back to students through the Mentoring for Life and Practice Management in Action programs.

No matter how you choose to get involved, I know you will be glad you did.

First Annual "9 CE for $95" Lecture Series

Free to Current KSoD Alumni Association Members!

Mar. 19, 2016
Dr. John Nosti: *Anterior All Ceramics: From Case Selection to Cementation*

Apr. 2, 2016
Dr. Zola Makrauer: *Full Mouth Reconstruction or Single Tooth Implants, Let's Make It Happen!*

All courses begin at 8:30 AM, preceded by registration and light breakfast beginning at 7:30 AM.

To learn more or to register online, visit dentistry.temple.edu/alumni-9CE or contact Emily McNair at 215-707-3304.

ALUMNI

Looking Back on a Career in Prosthetics: Perspective of an Alumnus

Dr. Frank Schiesser, '55
Studying the forces of biting and the concept of the neutral zone were a focus for Dr. Frank Schiesser, '55.

We don't usually lose our fingers and toes, emphasizes Dr. Frank Schiesser, '55, so why should we lose our teeth? "Your reputation as a dentist is only developed by the number of teeth your patients keep for a lifetime."

Put that thinking with another of his beliefs borrowed from L.D. Pankey, and you have a dental philosophy that is as relevant today as it was when Schiesser was in practice several decades ago. Pankey, a restorative pioneer and educator whose philosophy was making a big impact in the 1960s, said: "Know yourself. Know your patient. Know your work. Apply your knowledge, and your reward will be spiritual and material."

It all made sense to Schiesser. Certainly, he thought, this attitude was the way to bring his best work to patients and do something to help the people of the world. "Nothing is better than keeping your teeth," he says. "You can enjoy a good meal and be out of pain."

That's the reason he chose prosthetics as his specialty and then began studying the forces of biting. In his early days as a dentist, he remembers, "We didn't work with implants. We worked with bridges and dentures for missing teeth."

To ensure that patients would have a good fit for these appliances, he applied the concepts of the neutral zone. Understanding what happens in this zone, when the inward forces of cheeks and lips neutralize the outward forces of the tongue, is critical, he believes, to prosthesis retention and stability—and to solving TMJ problems.

In fact, he applied techniques, based on the neutral zone, for creating optimal denture positions and base contours with Temple Dental faculty member Dr. Victor Beresin and co-authored a book about the neutral zone. "Some schools picked up on the protocol," he says, "and today's dentists are still aware of it." Basically, he says, occlusion and encouraging patients to practice good oral hygiene at home were his focus in his Cheltenham, Pa., practice.

Asked why he chose dentistry, he recalls that his first choice was teaching. "I graduated from high school when I was 17 and couldn't go into the service till I was 18. So I became a lifeguard in Ocean City, N.J., for the summer. I saw the vacation lifestyle there and thought I could achieve it by majoring in education."

But he changed his mind after two and a half years in the Army Air Corps and then four years at Ursinus College. The transition happened during several more summers on the Beach Patrol. He remembers the time well: sitting on the lifeguard stand with a recent Temple Dental School graduate, also on the Beach Patrol, "talking about what dentistry was and wanting to look into it." Knowing he had always liked to work with his hands since building airplane models when younger, he decided to put aside pursuing a master's degree in education and go to Temple Dental.

"The school was close to where I lived in Willow Grove," he says. "I could just hop on the 55 trolley, get the subway and get off near the school. And Temple was known for its clinical dentistry."

After 37 years in a practice that still continues, Schiesser retired early.

Today, he and his wife live in Florida. However, this winter he traveled back to the Northeast to go to Washington, D.C. The Honor Flight Network had invited him, as they invite all of America's veterans, to be recognized for his service. For Schiesser, dedicated service defines him, no matter what the arena.

The Highs and Lows of Running a Dental Practice

By Mersad Hoorfar, DMD, '95
In a new practice management course begun this semester, Dr. Mersad Hoorfar, '95, shares lessons learned from operating several dental practices. His strong business focus has long been evident. For a short while before dental school, he ran his family's restaurant business and now has diversified holdings, including real estate.

A random encounter brought me back to Temple. I met Dean Ismail by chance on the golf course, and as we went along our round, the topic soon changed to business and my interests. Perhaps I should teach, he said. I didn't think he was serious. I mean what qualifications did I have? I have no formal business training!

The more I pondered his suggestion, the more I realized there was perhaps a need for someone like me. I could bring a new approach to readying students for their professional careers. The thought intrigued me. I would have the opportunity to give a little back to the school that gave me my profession and my start in life. Even more importantly, I could give students an opportunity to listen to someone who has gone through all the highs and lows of running his own businesses for more than 20 years.

So I started planning the course in earnest. Little did I know how much time is involved in creating one single lecture. It gave me a newfound level of respect for all my teachers.

Now life has come full circle. I am preparing courses that I had been taught in the very same lecture hall where I am teaching. My goal is to share my successes and also failures in Practice Management 1. Although I am barely touching the surface of the dental business, I hope this course gives students a taste of what's waiting for them down the road.

Artistry

REFLECTED IN DENTISTRY AND SCULPTURE

Dr. Joel Shapses, '71
A cosmetic dental surgeon, Dr. Shapses has created more than 700 sculptures for customers around the world. He continually exhibits and recently launched his first show in New York.

> "My art is my love and soul. But my dentistry was also innovative. My artistic abilities made dentistry fun and creative."
>
> — Dr. Joel Shapses

Quiet and introspective, yet able to bring energy and a driven commitment to his work, Joel Shapses has pursued careers in both dentistry and sculpture simultaneously since entering Temple Dental School in the late 1960s. That is until recently, when he retired from dentistry and decided to focus solely on his sculpture.

The dual careers are only somewhat surprising for someone who has an artistic eye, very good dexterity and a strong interest in understanding the working medium. But he says, "I never intended on sculpture playing such a major role in my life. As a child I was always interested in science, not art."

That all changed when as an undergrad in pre-med he decided, on a lark, to take a course for non-art majors with famous sculptor Alfred Van Loen. For his first piece, Shapses used hammer and chisel. When the professor said it was the best thing he'd ever seen. Shapses thought, "Wow, this is neat." He knew he had found a hidden talent.

His ability was encouraged further during Temple Dental's required sculpting classes. When he presented a molar carved in Carrara marble, not wax, to his anatomy professor, Shapses remembers that Dr. Charles Santangelo "went crazy" with amazement.

Responding to suggestions that he show his work, he exhibited in art shows every spring and summer while at Temple. At his first show, the marble tooth won first place, and every time thereafter he came home with an award.

Later, in private practice, he never gave up the sideline. In fact, his office was his gallery, comfortable and appealing, "like coming into a living room," he says. Patients responded not only to the sculpture but also to his dental artistry. "They wanted my artist's hands." Crown and bridge were his favorites, and cosmetic dentistry was still in its infancy.

Open to Change

Although art was a constant part of his life, his dental career reflected an ethos of being open to change and progress. It's an outlook he hopes today's dental students will embrace.

It's also an outlook that he and his longtime companion, Jerry Pyser, another Temple Dental graduate, share. Meeting each other in a dental lab and then studying together throughout their four years, they became partners and set up a practice in Fort Lauderdale, Fla., in 1972. Pyser handled the management end, and Shapses handled the creative production.

One of Shapses' male patients was a particularly challenging case. Cancer had created such disfigurement that he was unwilling to go out in public. Major reconstruction with special devices was needed, and Shapses brought all his skill to the task.

Throughout his career—from private practice to public health—Shapses has applied his artistic and clinical skills in equal measure in service to his patients.

In 2006, Shapses discovered Naples, Fla. Enamored with the culture, he knew it was the place to live. Now fully immersed in the Naples art district, he works full time with fused glass, stone, bronze, aluminum and even neon to freely express his feelings in abstract and realistic forms of all sizes.

"My art is my love and soul," he says. "But my dentistry was also innovative. My artistic abilities made dentistry fun and creative."

Although global travel has advanced his knowledge of various stones, Dr. Shapses' gallery and studio entrance feature fanciful work in metal.

Dr. Shapses won his first art award with this molar in marble.

Selling **Mangoes** to Protect **Lions**

Why would Bhaskar Savani, '95, with 65 very successful dental offices in Pennsylvania, New Jersey and Iowa care about Indian mangoes? What's so special about the fruit that he thought it could become a conduit to saving wild animals, especially Asiatic lions?

Savani explains by first describing the Indian mango. It's the aroma of India, he says, an exotic connection that brings the Indian population living in the U.S. closer to their homeland. They yearn for the fruit's superior taste and texture. Yet for 20 years Indian mangoes were banned in the U.S. The reason: contamination from the seed weevil and other pests.

So with a burgeoning market demand for a fruit with addictive flavor, Savani knew if he could get the ban lifted, struggling rural Indian farmers could increase their yield and benefit economically. Just as important, cultivation of new plantation corridors could connect and revitalize India's wild habitats.

The concept was Mission Mango, Savani's opportunity to give back to his country and its farming communities like the one he grew up in, Gujarat state, near Gir National Park. There, the only area where Asiatic lions live, he had seen the struggle to preserve a fragile ecosystem with the seemingly competing interests of agriculture and wildlife.

So in 2000, he started lobbying U.S. federal officials to lift an 18-year ban on Indian mangoes. In 2007, he was successful and became the first importer, using irradiation to ensure a pest-free product.

Today, Savani's vision has begun to be reality. As president and CEO of Savani Farms, he is making a difference through what he calls a farm-to-fork program. It eliminates the middleman, bringing the produce directly from the farm to consumers and giving farmers a fair wage. The program also is building schools, developing dental and medical camps and supporting programs for health checkups and awareness in rural areas because all profits from the organization go back to the communities.

Dr. Bhaskar Savani, who lives in Ambler, Pa., is giving back to rural populations in India, his native country.

Increased mango production is one major key to preserving the habitat and future of Asiatic lions.

And the wildlife corridors are expanding, while environmental programs push the effort forward. For example, the 2015 census puts the Asiatic lion, lioness and cub population at 523, up from 411 in 2010.

The Path to Dental School

Focusing on the underserved is not new for Savani. As a boy, he saw his uncle taking care of the rural population's dental needs. In fact, his dentist-uncle's dedication to relieving pain and suffering is what inspired Savani to go to dental school.

But the path was not a straight one. He says he wasted his time in 12th grade and didn't do well on that year's exam, losing an admission spot in a very competitive field of study. Instead, he became a chemist with three academic degrees. Then, moving to the U.S., he pursued his earlier dream, graduating from Temple Dental.

Carrying forward his family tradition of serving a lower socioeconomic population, Savani has made that principle the foundation of his dental practice. Also important in his work is providing the latest dental technology to patients.

In addition, he continues to explore new vistas. In 2002, he acquired a Pennsylvania biotech firm aimed at reducing toxic chemical exposure by creating enzyme-based products for the home, garden and industry.

Also, he is a member of the U.S.-India Business Council, whose goal is to deepen two-way trade and commercial ties between the two countries. That involvement is important because what he calls the "mango revolution" still has market limitations to overcome.

ALUMNI

What's new at the 2016 Temple Dental Reunion?

There will be reminiscing…

There will be old friends laughing together…

What is new are the 2016 Temple Dental Reunion Ambassadors. As the 2016 Reunion was approaching—celebrating, in five-year increments, the 5th-year to the 70th-year anniversaries of Temple Dental graduates—there were forces already in action.

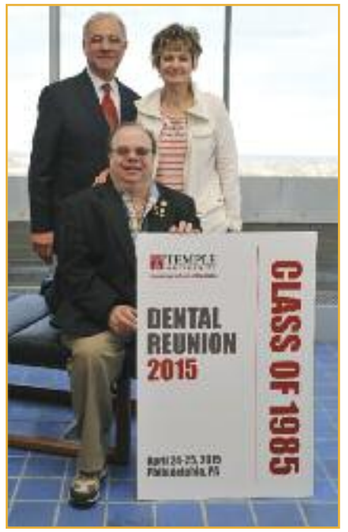
The 2016 Temple Dental Reunion Ambassadors have been very hard at work sending hundreds of notes to their classmates, calling classmates and managing their Ambassador Toolkits. The Ambassadors are all volunteers who consented to help make this year's reunion a big success.

Reunions should be fun, exciting and inspiring.

Of course, catching up with your closest friends from dental school is fun. Laughing about all the memories that may not have been so funny back when they occurred, also has allure. But inspiration sometimes comes in unlikely forms or unsuspecting moments. So we are preparing for all the aha moments that may be discovered as you join us for this year's Temple Dental Reunion, Friday, April 29, 2016.

And of course, inspiration…

Due to ongoing available space options at Temple, we chose to proceed with the White Coat Ceremony, Friday, April 29, 2016, and to include the White Coat Ceremony in your Temple Dental Reunion. We realize April 29, 2016, may present a conflict with attending due to religious beliefs and traditions. If you cannot attend your Temple Dental Reunion or the White Coat Ceremony, please join us, as Dean Ismail's special guest, for the Dental Commencement, May 13, 2016. The keynote speaker for Commencement is Rabbi Kalman Samuels, founder and CEO, Shalva Association.



Class NOTES

1930s

Morris J. Block, DDS, and Berta Reesman Block, RDH, ('32), are honored in loving memory by their daughter, Elaine Block Yanell, RDH, Class of 1954, and their son-in-law, Donald D. Yanell, DDS, Class of 1956.

1950s

Donald Yanell, DDS, ('56), orthodontist and sleep disorder dentist, has retired. In his time at Temple University School of Dentistry, Dr. Yanell was the president of the Junior ADA and a member of the OKU Dental Society. Upon graduating from Temple University, Dr. Yanell went on to become a captain in the United States Air Force-Dental Corps and later studied orthodontics at the Tufts University School of Dentistry. From 1973–1974, he served as president of the Greater Norwalk Dental Society and he is both a member and diplomate of the American Academy of Dental Sleep Medicine. Dr. Yanell is not the only Temple Dental graduate in his family: Elaine Block Yanell, his wife of 62 years, graduated from Temple University School of Dental Hygiene in 1954, as did his mother-in-law, Berta Reesman Block, in 1932. His father-in-law, Morris Block, graduated from the School of Dentistry in 1932. Dr. Yanell is serving as a 2016 Temple Dental Reunion Ambassador for the Class of 1956.

1970s

David R. Russell, DDS, ('74), was awarded the Outstanding Public Service Award by the Pennsylvania Dental Association at their annual meeting in Hershey, Pa., for his efforts to provide dental care to the people served by the Bethesda Mission of Harrisburg, which provides shelter, meals and other services for individuals experiencing homelessness or hardship. In 2009, Dr. Russell, seeing the overwhelming need for dental care among this population, and the difficulty of obtaining it, converted a residential room at Bethesda Mission into a dental clinic, providing care once a week and using equipment he donated himself. Demand for dental care quickly became more than one person could manage alone, so Dr. Russell recruited several more volunteer dentists to help staff the clinic. Finally, in April of 2014, with the help of grants and private donations, Bethesda Mission was able to open a 4,000-square-foot, state-of-the-art dental clinic. What began with one dentist giving of his time and resources in a tiny room in a homeless shelter, today is an extraordinary dental and medical healthcare resource providing treatment that would otherwise be inaccessible to people in need. Congratulations to Dr. Russell on this well-deserved recognition from the PDA.

Martin Gorman, DDS, ('76), shares an update from his practice in Encino, Calif. Recognizing the need to treat oral healthcare concerns in a whole-body context, Dr. Gorman provides integrative dental solutions to his patients. He takes into account how a patient's physical health issues—such as diabetes, poor nutrition, smoking and other chronic conditions—impact oral health. As Dr. Gorman points out, "the mouth is only one part of the puzzle."
Dr. Gorman has particular experience and expertise in addressing airway development and proper breathing, correcting certain types of obstructive sleep apnea, and the treatment of TMD/TMJ. He also provides myofunctional therapy—the "neuromuscular re-education or re-patterning of the oral and facial muscles to promote proper tongue positions, improved breathing, chewing and swallowing"—for patients. In his practice, he focuses on a whole health approach to biological, integrative dentistry in order to help patients achieve optimal health, from tooth to toe. Dr. Gorman is a proud and active Temple alumnus and is serving as a 2016 Temple Dental Reunion Ambassador for the Class of 1976.

Dean Amid I. Ismail receives the annual donation of the Eastern Dentists Dental Insurance Company (EDIC) from Dr. Richard LoGuercio (member of the Board of Directors) and Mr. Jack Dombek (vice president of sales). The EDIC is a large dental malpractice insurance company that is managed "By dentists, for dentists"™. In 2015, it insured just over 5,500 dentists. The company is committed to education and offers several free programs to help dentists reduce their liability risk. Their annual donation to Temple Dental has been ongoing for over a decade.

Faculty

Jie Yang, DDS, MMedSc, MS, DMD (Professor and Director of Oral and Maxillofacial Radiology) was installed as president of the American Academy of Oral and Maxillofacial Radiology (AAOMR) during their 66th Annual Session in Indianapolis, Ind.

Sheldon Winkler, DDS, former Professor and Chairperson of Prosthodontics and Dean of Advanced Education, Research and Continuing Education at the Kornberg School of Dentistry, recently enjoyed dinner with several Temple Dental alumni in Scottsdale, Ariz. Pictured above, from left to right, are Dr. Boyd Patummas ('04), Dr. Winkler, Dr. Linda Ma ('04), Dr. Vu Vo ('04), and Dr. Wil Saavedra ('01).

Students

Arielle Manstein, ('16), was nominated by Hillel directors to be a student exemplar for Hillel of Greater Philadelphia's Vision and Values Celebration, to be held in June 2016. This event celebrates the work done by Hillel chapters throughout the region. To date, they have honored 15 students for their leadership on their respective campuses. Hillel is the largest Jewish student organization in the world, connecting young adults at more than 550 colleges and universities.

Calendar of Events

Wednesday, March 2, 2016
Alumni Reception at the Valley Forge Dental Conference
Radisson Hotel, 4:30 – 6:00 PM
King of Prussia, PA

Friday, March 25, 2016
Science in Dental Practice Day
Alumni General Meeting and Alumni Awards
Temple Performing Arts Center

Thursday, April 7, 2016
Alumni Reception at the American Association of Endodontists Annual Meeting
San Francisco Marriott Marquis, 6:30 – 8:00 PM
San Francisco, CA

Thursday, April 7, 2016
Abrams Lecture Series
Dr. Chandur Wadhwani: Dental Implant Complications: Restorative Procedures and Implant Health
Temple University Student Faculty Center Auditorium, Philadelphia, PA
9:00 AM – 12:00 PM

Friday, April 29, 2016
2016 Temple Dental Reunion
Events throughout the day at the Kornberg School of Dentistry, with an evening reception at the Loews Hotel in Center City, Philadelphia, PA

Friday, April 29, 2016
White Coat Ceremony
Temple Performing Arts Center
3:00 PM

Friday, May 13, 2016
Commencement
The Kimmel Center, Verizon Hall
Philadelphia, PA
2:00 PM

Thursday, September 15, 2016
Abrams Lecture Series
Dr. Joseph Carpentieri: Introduction to CAD/CAM and Digital Dentistry
Temple University Student Faculty Center Auditorium, Philadelphia, PA
9:00 AM – 12:00 PM

Don’t miss out on some great CE Courses!

Fri., Mar. 11, 2016
Prosthetically Driven Implant Dentistry: Treatment Planning and Complication Management
Dr. Hai Qing
D $325 DT $125
SFC / 9 AM – 4 PM / 6 CE

Wed., Mar. 23, 2016
Dental Management of Emergencies
Dr. Allen Fielding and
Dr. Gary Jones
D $325 DT $125
SFC / 8 AM – 4 PM / 7 CE

Fri., April 22, 2016
Mastering Indirect Dental Esthetics, Diagnosis, Design, Ceramic Options, Color Management, Photography and Successful Techniques
Dr. Steven Weinberg
D $295 DT $125
SFC / 9 AM – 4 PM / 6 CE

Fri. & Sat., May 13 & 14, 2016
Introduction to Laser Dentistry (Hands On)
Dr. Robert Convissar and
Dr. James Craig
D $695
SFC / 8 AM – 4 PM / 14 CE

Sun., May 22, 2016
Jewels You Can Use On Monday
Dr. Marc Gottlieb
D $295 DT $125
SFC / 9 AM – 4 PM / 6 CE

First Annual 9 CE for $95 Lecture Series*

Mar. 19, 2016
Dr. John Nosti: *Anterior All Ceramics: From Case Selection to Cementation*

Apr. 2, 2016
Dr. Zola Makrauer: *Full Mouth Reconstruction or Single Tooth Implants, Let’s Make it Happen!*

** Free to Current KSoD Alumni Association Members!*

Receive a Discount!
(One discount option is available per registration.)

- 15% Temple Dental Alumni Discount
- 10% Discount if you sign up for 3 or more courses. (No changes/refunds applicable after registration. Only available for phone, fax or mailed registrations.)
- Word of Mouth Discount (For full paying attendees): Bring one or more friends/colleagues to a continuing education course and receive 20% discount on a future course. (Discounted course must be taken within 6 months to qualify.)

Cancellation Policy
Full refunds are granted, less a $50 administrative fee per course/person, if we receive your written cancellation five business days prior to the start of the course. No refunds are granted after that time.

Register
Please be sure to sign up for any course at least two weeks prior to the course date.

- **Online:** Visit the Continuing Education section of our website at dentistry.temple.edu/continuing-ed to download the registration form or register online.
- **Fax:** Send completed registration form to 215-707-7107.
- **Mail:** Mail completed registration form to Temple University Kornberg School of Dentistry, Office of Continuing Education, 3223 N. Broad Street, Philadelphia, PA 19140

Contact Nicole Carreno at 215.707.7541 or via email at ncarreno@temple.edu for assistance.

In Memoriam

Edward L. Udis, DDS, (‘42), passed away on June 20, 2014. Dr. Udis was at the top of his class when he graduated in 1942. He went on to join the Army and achieved the rank of Second Lieutenant prior to retiring. Dr. Udis marrried Thelma Waldman and they enjoyed 56 beautiful years together.

Irvin Hockstein, DDS, (‘47, ‘61), passed away on December 1, 2015. After graduating from Temple Dental, he served in both the Army and Navy. He practiced orthodontics for nearly 50 years, and he served as the president of the Delaware Dental Society. Dr. Hockstein was active in the Delaware Jewish community and enjoyed many hobbies. He leaves behind his wife of 48 years, Sara, his children, grandchildren and great-grandchildren.

William A. Friz, DDS, (‘65), passed away on August 31, 2015. He met his wife, Patricia Godshall (‘64), during his time at Temple, and they were married for 50 years prior to his passing. Following his time at the School of Dentistry, he completed his residency as an officer in the U.S. Navy. Dr. Friz went on to open a private dental practice in Wilmington, Del., and later joined with partners to establish Dental Associates of Delaware.

Gregory B. Chess, DMD, (‘98), passed away on July 10, 2015, after a long battle with cancer. After graduating from the School of Dentistry, he opened Chess and Taub Dental with a partner in Jenkintown, Pa. He continued to practice dental medicine until his health prevented it. Dr. Chess was a lifelong resident of Warrington, Pa., where he raised his family with his wife, Robin.

Dr. Keith Anderson, (Retired Faculty), passed away on December 16, 2015, of complications from Parkinson’s disease. Dr. Anderson taught at Temple Dental for 25 years, and served for several years as the director of emergency services. He maintained a private practice for more than 40 years, continuing to practice into his 80s.

Dr. Julius Rosen, (Retired Faculty), passed away on July 21, 2015. Before his retirement, Dr. Rosen was a member of the faculty for Temple University Kornberg School of Dentistry. During his time at Temple he created a website, which is still in use today, to aid students’ transition from preclinical denture courses to work in the clinic. Dr. Rosen wanted the students to be as informed and comfortable as possible in their future careers.

Roger V. Ostrander, DDS	DEN ‘39
Gilbert S. Gold, DDS	DEN ‘44
David S. Shelby, DDS	DEN ‘45
Daniel Roberts, DDS	DEN ‘45
Lawrence H. Throne, DDS	DEN ‘45
Louis J. Loscalzo, DMD	DEN ‘46
Gaetan A. Campisi, DDS	DEN ‘48
Walter Gaskill, DDS	DEN ‘50
Vincent J. Roach, DDS	DEN ‘51
Bruce L. Shrallow, DDS	DEN ‘52
Samuel Lazzaro, DDS	DEN ‘53
Robert E. Fahringer, DDS	DEN ‘54
Daniel R. Lovette, DDS	DEN ‘54
Arnold M. Gordon, DDS	DEN ‘54, CLA ‘50
John J. Carchman, DDS	DEN ‘55
Richard E. Borchardt, DDS	DEN ‘55
Howard L. Reuben, DMD	DEN ‘56
David I. Lipkin, DDS	DEN ‘57
Stuart M. Lehman, DDS	DEN ‘57
Bernard Nisenholtz, DDS	DEN ‘57
John R. Beyrent, Jr., DDS	DEN ‘57
Pasquale J. Grant, DDS	DEN ‘58
Francis P. Donatelli, Jr., DDS	DEN ‘58
William C. Peeney, DDS	DEN ‘59
Arnold Pollack, DDS	DEN ‘61
Richard R. Lawless, DDS	DEN ‘61
Edmund Levendusky, DDS	DEN ‘61
Morton Averick, DDS	DEN ‘62
Colonel Ronald G. Stepler, DDS	DEN ‘62
Edward J. Fitzgerald, Jr., DDS	DEN ‘64
Irving Hornstein, DDS	DEN ‘65
David H. Rothstein, DDS	EDU ‘61, DEN ‘65
John F. Farne, DDS	DEN ‘66
Joseph G. Kirkpatrick, DDS	DEN ‘66
Robert E. Watkins, DDS	DEN ‘66
George MacLeod, DDS	DEN ‘67
Richard A. Rainka, DDS	DEN ‘67
Michael P. Stiglitz, DDS	DEN ‘68
Jerome M. Grossinger, DDS	DEN ‘68
John A. Schiavo, DDS	DEN ‘70
James E. Specter, DDS	DEN ‘72
James U. Treter, DDS	DEN ‘73
Stephen J. Uram, DDS	DEN ‘76
Michael L. Loll, DDS	DEN ‘77
Cedric E. Grosnick, DMD	DEN ‘83
James Joseph O’Larnic, DDS	DEN ‘85

TEMPLE UNIVERSITY
Kornberg School of Dentistry

3223 North Broad Street
Philadelphia, PA 19140

Non-Profit
Organization
US Postage
Paid
Philadelphia, PA
Permit No. 1044

REUNION 2016

celebrating

GENERATIONS OF CLINICAL EXCELLENCE

Friday, April 29, 2016

Registration is now open!

Visit **http://dentistry.temple.edu/Reunion2016** for a full schedule of events and registration information.

TEMPLE UNIVERSITY
Kornberg School of Dentistry

3223 North Broad Street
Philadelphia, PA 19140
http://dentistry.temple.edu

Facebook Link:
http://www.facebook.com/TempleDental

Copyright © March 2016, Temple University

Dean
Amid I. Ismail

Director, Development
Jennifer Jordan

Editor
Cynthia Busbee

Contributing Writers
Meg Cave
Leslie Feldman
Jessica Lawlor

Design
Cynergy Integrated
Janice Ellsworth