Greetings from San Antonio!

Spring has been very noticeable this year in San Antonio: we had record amounts of rain in March, and this year’s crop of pollen is also making records. Since spring has sprung, it must be time again to give you an update on your Department of Endodontics.

Our endodontic mission is as focused as ever: delivering superior clinical training and cutting-edge research. One of our major goals is to create an outstanding residency program. There are four key factors in attaining this goal: talented faculty, motivated residents, state-of-the-art equipment, and generous support. You are certainly one of our keys to success. Without your continued support, San Antonio would not be where it is today. If I don’t see you Philadelphia to give you my thanks, please take this note as my gratitude for your continued support.

The Greek philosopher Heraclitus is credited with saying that the only constant is change. That has certainly been true for our Graduate Program. Since our fall newsletter, Dr. Scott Schwartz made the difficult decision to step down from the position of Program Director and to accept a position in the VA system across the street. Scott is an outstanding endodontist and a skillful educator and while we will miss his able hands directing the residency program, I am very happy that he will continue on as a faculty member in our Department and will staff our residents during their rotations to the VA. Scott accomplished much during his tenure as Program Director and I have great respect for both he and his family. We currently are in the process of conducting a nationwide search for a new Program Director and I am very gratified by the quality of the faculty applicants. In addition, both Rachel Cox and Lily Gutierrez have recently accepted promotions in other departments. Although it is always difficult to replace talented people, we are happy for their advancements and remain committed to the continued evolution of our outstanding residency program.

Our undergraduate program has introduced a new hybrid instrumentation method into the undergrad clinic this year using ProFile and K3 rotary NiTi files. We have spent several years developing this method via the undergrad endo elective course and to date both faculty and students appear quite satisfied with the quality of the resulting treatments, the efficiency of the method and the student’s ease in learning this technique. In addition, we have formalized a case complexity worksheet that helps students to identify cases within their scope and cases that should be referred to the endo specialty clinic staffed by our residents.

One newly emerging field in endodontics is regenerative endodontics. Regenerative endodontics has been defined as biologically based procedures designed to replace damaged structures, including dentin and root structures, as well as cells of the pulp-dentin complex. This is an exciting topic since it offers an alternative approach that one day might be able to restore the pulp-dentin complex thereby potentially saving our patient’s natural teeth from extraction and implant replacement. Accordingly, the field appears to be emerging as a new and potentially very important area for endodontics and the JOE has recently published review articles (Murray et al., JOE 33:377, 2007; Nakashima and Akamine JOE 31:711, 2005), case reports (Chueh and Huang JOE 32:1205, 2006; Banchs and Trope JOE 30:196, 2004) and basic research papers (Huang et al., JOE 32:1066, 2006; Saito et al., JOE 30:205, 2004; etc) on this topic. In addition, the AAE has formed a standing committee on Regenerative Endodontics. Our Department is starting research in this area and we are pleased to inform you that Todd Geisler, a first year resident, has already submitted a grant to the AAEF on regenerative endodontics.

All of this just means that tomorrow is coming ever faster. There is a continuing need for us to develop and adopt new technologies and new science into our practices. As a member of the San Antonio family of endodontists, we hope that you share our pride in contributing to that effort.

I hope to see you at our Alumni Reception on Thursday night at the AAE meeting (6-8pm in Room Independence I of the Philadelphia Marriott). This is a great time to see old classmates, meet new alumni, and to learn what’s new in your endodontic family. See you then,

Ken
Hello Alumni,

Greetings from San Antonio! I hope you and your families all had a great holiday season. We enjoyed a relatively mild winter here in south Texas with the exception of an amazing ice storm that actually closed the university for two full days in January. Please read on for more exciting activities associated with your residency program.

Faculty and Staff Changes:

Since our last newsletter, much has happened here in the Department and I have some important updates to share with you. In December Rachel Cox accepted a position in the Office of Academic Informatics at the Health Science Center and we certainly wish Rachel all the best in her new position. During the search for her replacement, Lynn Higginbotham and Holly Tealer enthusiastically stepped up to the challenge and managed all of graduate program responsibilities for nearly two months. Thanks to Lynn and Holly for their outstanding efforts in support of the residency during that time. For the past six weeks, Mrs. Donna Byrd has filled in admirably as our Academic Coordinator for the Graduate Program, but unfortunately due to personal circumstances, she is unable to continue in that position. At this point, our search for a new Academic Coordinator is under way and we will keep you apprised of our progress.

Another change in the department is the departure of our clinic office manager, Lily Gutierrez. We also wish Lily the best in her new position in Rehab Medicine in the Medical School. At this time, I’m pleased to report that we have welcomed Mrs. Erika Rodriguez as our new Dental Assistant Specialist/Office Manager in the Graduate Endodontic Clinic. Erika comes to us with previous experience as an administrative specialist, patient coordinator, dental manager, dental specialist and dental assistant. She has eagerly accepted the many challenges of her new position and the residents and staff really appreciate the outstanding job she is doing in the Grad Clinic.

One additional change will be occurring in the Department in July 2007. At that time I will be transitioning from the position of program director here at UTHSCSA to the staff endodontist position at the Audie Murphy VA Dental Clinic. This has been an extremely difficult decision for me to make because of the professional and personal satisfaction I have received while working with the residents and staff in the Endodontic Department at the Health Science Center. I will certainly miss the daily interaction with all of the wonderful, talented residents, faculty and staff members in the Department. I am pleased to report that I will retain an adjunct position at the University and look forward to continuing to work with the Endodontic Department and the senior endodontic residents as they participate in the endodontic rotation at the VA dental clinic.

Report on Annual Alumni Continuing Education Day:

Our 8th Annual Alumni Continuing Education Day held at the end of September 2006 was quite a success. We had an excellent turnout which included many of our alumni, current residents and staff. In addition, we were joined by an exceptional group of interviewees for five hours of outstanding CE presented by Dr. Linda Levin from the University of North Carolina. Her talk entitled “Endodontic Microbiology: Debugging the Root Canal” was terrific and resulted in very positive feedback from those in attendance.

We have already scheduled next fall’s CE day for Saturday, September 22, 2007 at the Marriott Northwest where Dr. Syngcuk Kim will be our featured speaker. Dr. Kim is the Louis I. Grossman Professor and Chairman of the Department of Endodontics at the University of Pennsylvania School of Dental Medicine. As most of you know, Dr. Kim is well known and respected for his research in dental pulp physiology and microcirculation. He also established the Microscope Training Center at Penn and developed a series of endodontic instruments for endodontic microsurgery, specifically the KiS ultrasonic tips as well as a complete set microsurgical instruments. Please mark your calendar now and make plans to join us for Dr. Kim’s presentation in September. This is a wonderful opportunity to see old friends and obtain some outstanding continuing education at no charge.

Welcome New Residents:

This year we had more than 70 applicants for our 3 resident positions and I’m pleased to report that all 3 of our top choices accepted the invitation to join our program. The competition for resident slots is very intense and we are indeed fortunate to have these exceptional individuals entering our program.

Welcome to:
- Dr. Anibal Diogenes (Federal University of Pernambuco Dental School, Recife, Pernambuco, Brazil; University of Nebraska at Kearney, MS in Molecular Biology; UTHSCSA, PhD in Pharmacology)
- Dr. Jay Simonton (University of Colorado School of Dentistry; University of Colorado GPR program)
- Dr. Ernesto Trevino (UTHSCSA Dental School; Audie Murphy VA AEGD program)

They will be joined this summer by two new Air Force residents to form an outstanding first year class:
- Lt Colonel Steven Klyn (University of Iowa College of Dentistry; Keesler AFB AEGD-2 program)
- Captain Sterling Whipple (University of Colorado School of Dentistry; Travis AFB AEGD program)

Progress Toward ABE Certification – Congrats!!!!!

In the last newsletter we recognized the first group of residents to successfully challenge the written board examination prior to graduation. That group included Drs. Asma Khan, Bryce McCready, Lee Fulsas, Shane Hanson, Kent Sabey and Michael Shuhler. At this time it is my pleasure to report that Drs. Tracy Clark, Shawn Gilbert and Damaries Candelario-Soto recently passed the case history portion of the board certification process. Congratulations and best of luck to Tracy, Shawn and Damaries as they prepare for and challenge the oral exam!

We are especially pleased to see our senior residents and graduates become involved in the board process and would love to help any of our alumni prepare for the board case portfolio and oral examination portions of the board certification quest. We would be happy to

Continued on pg. 4


10) Price TJ, Flores CM, Cervero F, Hargreaves KM. The RNA binding and transport proteins stauF and fragile X mental retardation protein are expressed by rat primary afferent neurons and localize to peripheral and central axons. Neuroscience. 2006 Sep 15;141(4):2107-16.


I would also like to recognize and congratulate Dr. Bill Schindler as he completes his sixth year as a Director of the American Board of Endodontics. Bill has done an outstanding job, not only as a member of the Board, but also as secretary and president of the Board during his tenure. We certainly owe him a great debt of gratitude for all he has done for our residents, the Board and our specialty.

**AAE Annual Session – Philadelphia Reception! Presentations! Awards!**

For those of you who will be attending the AAE Annual Session in Philadelphia, please plan to join us at our Annual Alumni Reception on Thursday evening, April 26th. The reception will be held from 6:00 to 8:00 p.m. in Independence I at the Philadelphia Marriott. We look forward to seeing all of you there for an enjoyable evening.

While you’re at the meeting, make a note to drop by and support our talented and hard-working residents and postdoctoral fellows in presenting their research findings in the following oral, poster and table clinic presentations.

**Thursday, April 26**

11:45 a.m. Dr. Kenny Wiltbank – “The Effect of Selected Accelerants on the Physical Properties of Mineral Trioxide Aggregate and Portland Cement”

3:45 p.m. Dr. Lisa Alvarado – “TRPA1 and TRPM8 Expressions in Normal and Cold-Sensitive Human Tooth Pulp”

4:30 p.m. Dr. James Kitchens – “Trans-Dentinal Delivery of Calcitonin by Both Diffusion and Iontophoresis”

**Friday, April 27**

8:00-11:00 a.m. Drs. Taylor Cotton and David Holden - Table Clinic describing applications of cone beam volumetric tomography in endodontics

8:45 a.m. Dr. Brett Owatz – “Central Sensitization and the Development of Bilateral Mechanical Allodynia in Patients with Irreversible Pulpitis and Acute Periradicular Periodontitis”

9:00 a.m. Dr. Anibal Diogenes – “Painful Infections: Bacteria Regulate Nociceptors via TLR4 and CD14 Receptors”

10:15 a.m. Dr. Asma Khan – “Tumor Necrosis Factor-α Directly Modulates the Function of TRPV1 in Rat Trigeminal Neurons”

**Saturday, April 28**

8:00-11:00 a.m. Dr. Caio Ferraz – “Potential Mechanisms for Exacerbated Pain Due to Infection: NGF Upregulates TLR4 and CD14 in Trigeminal Neurons” (Poster presentation)

Last but certainly not least, I would like to remind you to attend the Edgar D. Coolidge Luncheon on Saturday, April 28th where our own Dr. Ken Hargreaves will receive the Louis I. Grossman Award. This award “recognizes an author for cumulative publication of significant research studies that have made an extraordinary contribution to endodontics.” Congratulations Ken! I can think of no one more deserving of this prestigious award.

**Thanks to Volunteer Faculty!**

Thanks also to our volunteers who generously give up their free time to share their endodontic knowledge and clinical expertise on a regular basis in the Graduate Endodontic Clinic. Drs. Ed Bernier, John Calland, Carlos del Rio, Rick Schwartz and Bill Walker add immeasurably to the residents’ clinical experience as evidenced by the overwhelmingly positive resident course/faculty evaluations. Once again, thanks to everyone for your terrific support!

I hope to see you all at our reception at the Philadelphia Marriott on Thursday night.

Best regards,
Scott Schwartz

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**AWARD WINNERS IN ENDODONTICS!**

**Drs. Lisa Alvarado, Kenny Wiltbank, Asma Khan**

The American Association of Endodontists Foundation partnered with Dentsply International to recognize student excellence in research at the 2006 Annual Session of the American Association of Endodontists meeting in Honolulu, Hawaii.

Dr. Khan earned 5th place for her oral research presentation entitled: “The Effect of Calcium Hydroxide on Interleukin -1β.” Drs. Alvarado and Wiltbank earned 2nd place for their table clinic presentation entitled: “Impact of Bisphosphonate-Associated Osteonecrosis on Endodontics.”
Radiographic examination is essential to diagnosis and treatment planning in endodontics. The interpretation of an image can be confounded by the anatomy of both the teeth and surrounding structures. The ability to assess an area of interest in three dimensions may benefit both novice and experienced clinicians alike. High-resolution limited conebeam CT (CBCT) or Cone-beam volumetric tomography (CBVT) has been specially designed for dental applications. As opposed to sliced-image data of conventional CT imaging, CBVT captures a cylindrical volume of data in one acquisition and thus offers distinct advantages over conventional CT including: increased accuracy, higher resolution, scan time reduction and radiation dose reduction. The clinician is able to scroll through the entire volume and simultaneously view axial, frontal and sagittal (0.125-2.0 mm-thick) two-dimensional sections (See Fig. 1). The axial and proximal (sagittal in the anterior; frontal in the posterior) views are of particular value, as they are generally not seen with conventional periapical radiography. In addition, processing software can create a three-dimensional image for further evaluation. CBVT may prove to be a valuable diagnostic and treatment-planning tool in the modern endodontic practice.

Case Report: A 29 year-old dentist was self-referred for consultation and treatment of tooth #8 with the chief complaint, “I had a filling done in November 2006 and there was a pulp exposure. They started the root canal and then the dentist noticed the internal resorption.” The patient sent a radiograph via email on 01/04/07 (See Fig. 2). Upon presentation to the UTHSCSA post-graduate endodontic clinic on 02/01/07, the patient reported no pain since the original pulpectomy had been completed in November 2006. Tooth #8 had been restored with Ketac-Silver™. The patient reported no history of trauma, orthodontic treatment or intracoronal bleaching. The patient’s medical history was non-contributory.

Clinical findings: Pulp testing revealed that #8 was non-responsive to cold, non-tender to percussion and palpation. Probing depths were 2-3 mm and there was no evidence of sinus tract or intraoral swelling (See Fig. 3). All adjacent teeth tested normal to pulp vitality tests.

The patient had been scheduled for a Cone-Beam Volumetric Tomography survey prior to presenting on 02/01/07. Figure 4 shows off-angle radiographs taken immediately prior to the scheduled CBVT.

Radiographic findings: Interpretation of the radiographs revealed the presence of a lingual radiolucency. The canal is clearly visible through the radiographic defect and the radiolucency appears to shift almost entirely off the root structure. The appearance is suggestive of either an external resorptive defect or, more likely, pathosis within the palatal bone.

Figures 5 & 6 show selected 2-D slices and a 3-D reconstruction of the completed CBVT survey.

CBVT findings: A large incisive foramen and canal were observed in intimate contact with lingual aspect of #8 root. The bony lesion measured approximately 5 mm in diameter and 6 mm in height. Differential diagnosis included but was not limited to:

1. Enlarged incisive foramen
2. Nasopalatine duct cyst.

The patient was referred to OMS for evaluation and possible enucleation. Patient was evaluated on 03/26/07. OMS recommended that the radiolucency be monitored with the acquisition of a follow-up CBVT in 1 year.

Diagnosis #8: Previous partial treatment with normal periapex. No internal or external resorption. Root canal treatment and build-up were completed on 02/16/07 (See Fig. 7).

From left to right: Drs. Ken Hargreaves, Bill Schindler, Linda Levin (guest speaker), Scott Schwartz.

Drs. James Kitchens, Scott Schwartz, Taylor Cotton

Drs. Mike Henry, Anibal Diogenes, Caio Ferraz

Drs. Bryce McCreary and Asma Khan

From left to right: Drs. Jim Gilles, Jack Martin, Bill Walker, Bill Schindler, John Andrews

Air Force Residents (from left to right): Drs. Kim Wilkinson, Jarom Ray, Brian Min, Thad Chamberlain, Dennis Holt, Dusty Watts
The Department’s research program is continuing to grow. Asma Khan, Brett Owatz and Bryce McCreary have completed the initial studies on a new electronic force transducer that measures patient levels of mechanical pain (imagine a digital tooth slooth). Their clinical research resulted in three papers that will be published in the May, June and July issues of the JOE. Congratulations for their great work! If it is possible for you to attend, I am sure that you will enjoy hearing Lisa Alvarado, Anibal Diogenes, Asma Khan, James Kitchens, Brett Owatz, and Kenny Wiltbank presenting their research at the AAE. In addition, Dr. Caio Ferraz, a Professor from the School of Dentistry of Piracicaba, University of Campinas, Piracicaba, Brazil, is completing his sabbatical year of research in our Department and will be presenting his findings at the AAE. Michael Henry is continuing his research on sodium channels and TRP channels in patients with irreversible pulpitis. Michael is a superb dentist and neuroanatomist who has mentored Lisa Alvarado, in her project on TRP channel expression in the dental pulp from teeth with irreversible pulpitis (see figure at right). As I mentioned last year, Michael’s research is truly ground breaking and represents a unique blend of art and science. Of course, having a state-of-the-art confocal microscope, available at the price of only a couple of Lamborghini’s, provides him with a tool that is unique among endo programs in the country. Combined with Michael’s exceptional skills as a neuroanatomist, we anticipate increased contributions to our knowledge of pain mechanisms and new potential approaches to pain control.

Our PhD students are doing great. Anibal Diogenes successfully defended his PhD last December and his paper reporting the discovery of a novel “pain producing” neuropeptide that might contribute to gender differences in pain disorders has received strong accolades. Anibal will be starting his endodontic residency here in July. Joe Vela is in year 5 of his DDS, PhD program and is happy to be in his junior clinical year. His research is focusing on how adrenergic drugs (aka “vasoconstrictors”) alter pain neurons. Niki Ruparel is studying how marijuana-like compounds alter the pain response; a topic that not surprisingly always draws a large crowd. Niki is an advanced standing PhD student who will be starting her dental school training in July for a combined DDS, PhD program. We are also happy to have Phoebe Duckworth and Margaux Salas, two first year PhD students, join us in their lab rotations this spring.

The post-doc fellows are also doing fantastic. Asma Khan, BDS, PhD completed her endo residency last December and started as an Assistant Professor for research in the Department in January this year. She has been involved in developing the “digital tooth slooth” described above and her basic research has focused on the role of cytokines in regulating pain. Nathan Jeske, PhD completed his post-doc and started as an Assistant Professor in the Dept of Oral and Maxillofacial Surgery last fall. Jill Fehrenbacher, PhD is continuing her post-doc in studying the role of estrogen in regulating pain neurons and how this mechanism might explain sex differences in pain patients.

Erin Locke, RN and Xiaoling Sun, DDS, PhD continue their masterful work on our clinical trials on endodontic pain patients. These clinical projects are where the rubber hits the road: we plan on taking the best ideas from the lab and testing their utility as analgesics in our endo pain patients, and in dental pain neurons taken from patient volunteers. It is important to realize that none of our research comes from our state budget. All of it is supported by federal (NIH) grants. Our residents will be presenting their work at the AAE meeting and at our department’s research day, held on the day of graduation, June 29.

- Ken

TRPA1, N52 and PGP9.5
A confocal micrograph of TRPA1 (red), N52 (green) and PGP9.5 (blue) staining within nerve fibers from a painful human tooth pulp sample. The N52 and PGP9.5 staining identify nerve fibers. The TRPA1 staining is colocalized within some of the nerve fibers and is also highly expressed in inflammatory cells.
Keep in touch with our department by e-mail

Attention Alumni!
If you have news about yourself that you would like mentioned in our newsletter, drop me a message at higginbotham@uthscsa.edu
Your newsletter can only be successful with your support. Thanks!

We receive Newsletters returned due to changes of address. Please inform us of your move so we can continue to keep in touch and send you the Newsletter.
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Visit our Web Site at
www.endodontics.uthscsa.edu
Thanks to your generous pledges and contributions, The Carlos E. del Rio Endowment in Endodontics continues to grow. Total pledges to date now exceed $312,000.

With heartfelt thanks we recognize the selfless generosity of all contributors (alumni, faculty and friends). It is truly a statement in celebrating Dr. del Rio’s life-long dedication to excellence in endodontic education and to your commitment to fuel the continued growth of San Antonio Endodontics.

*Denotes completion of 1st 5-year pledge as of 2/1/07.

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Your support is a key factor in our success in developing and maintaining the top-notch program we currently have in San Antonio. Please consider giving something back to the program that helped provide you with the wonderful practice and lifestyle you currently enjoy. Complete and return the form below with your donation, new pledge or a renewal of your 5-year pledge. Thanks in advance for your continued support!

Enclosed is a tax-deductible gift of $ _________________________ made payable to UTHSCSA (please indicate “Dr. del Rio Endowment” on the memo line of the check.)

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