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The Art in Science—Adapting to the Unexpected

Science, with its rigid protocols and benchmarking, seems to have little in common with art, but like painters, musicians and writers, researchers seek to learn from observation, to see in new ways and to stimulate dialogue. They focus on the question rather than the answer.

In 2007, the Foundation funded two multi-year studies comparing endodontic retreatment and single-tooth implant supported restoration. Drs. Walter R. Bowles and Jianing He, the principal investigators, recently provided progress reports on their work. Their updates highlight how as a project unfolds, researchers often encounter the unexpected. The process of discovery demands a creative approach and the flexibility to adapt to changing circumstances. The two scientists explore the outcomes of endodontic retreatment versus implants from different, but complementary perspectives.

A Retrospective Comparison of Initial Nonsurgical Root Canal Treatment and Retreatment With Single-Tooth Implant Supported Restorations

Dr. Bowles, associate professor at the University of Minnesota, is conducting a retrospective study, along with Dr. Paul D. Eleazer of the University of Alabama and Dr. Melissa M. Drum of The Ohio State University. Dr. Bowles has received \$554,929 of a total grant of \$690,215. The research team will examine case records from 10,000 patients to provide a timeline for outcomes over a 10-year period.

One of Dr. Bowles' significant observations is the dramatic increase in

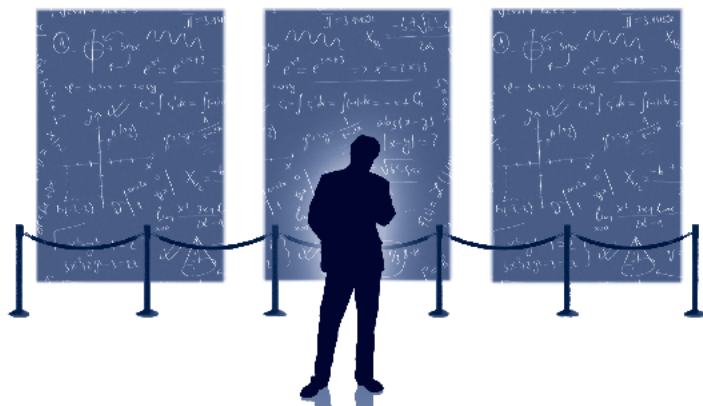
implant placement over the last 10 years. In his university's prosthodontic division alone, there was a 400 percent increase in implant placement between 1996 and 2007. On the other hand, the number of implants per patient has remained the same.

In 2008, Dr. Bowles' team has already examined over 5,000 charts from implant and endodontic patients. In matching endodontic cases to implant cases, they have noted a five-year survival rate of 95 percent with endodontic treatment versus a survival rate of 91 percent with implants, with nine-year survival rates ranging from 80-90 percent for both treatments.

One challenge was the discovery that many of the charts they are studying do not include information on patient recalls after five years. To address this issue, the team developed a strategy to encourage more patients to return to the clinic for follow-up. As an incentive, they will offer recall patients reduced fees on any other dental services they require. This will also provide an expanded patient pool for undergraduate dental students and give them much needed clinical experience.

The team is also gathering data on patient characteristics, such as history of smoking, diabetes, age, gender and location of the tooth in order to analyze possible predictors of failure. For the implant patients, this information includes implant length and diameter, bone loss and the presence of an adjacent endodontically treated tooth. For the endodontic patients, predictors include whether a post is present, number of treatment appointments, obturation length and if there was apical periodontitis before treatment.

Prognostic factors such as the patient's age and gender, the location of the tooth and the loss of alveolar bone height are also being analyzed. The radiographs examined so far, indicate that bone loss around the implant site increases with the length of time the implant is in the mouth. Based on the literature, bone loss is assumed to be approximately 1 mm during the first year of placement, with an additional 0.1 mm loss annually. Although this amount of deterioration seems minimal, with implants





From the President

Dear Colleague:

The current economy is challenging our country and possibly some members of our Association, but your Foundation remains steadfast in its commitment to keep endodontics strong.

This is the rainy day that we have been preparing for. It is wonderful to share the news that even in the severest economic down-turn since the Great Depression, we will continue to vigorously invest in research and education. At the Interim Board Meeting last fall, a budget of \$1.3 million for grants was approved.

While other funders cut back, we remain a source of research support for residents and faculty. In addition to the competitive grant program, we are providing every endodontic resident with \$500 for a research project. As academic departments trim their budgets, the Foundation has increased its giving to educators and to endodontic programs. We have added a Postgraduate Fellowship Award, an Endowed Faculty Matching Grant and doubled the travel reimbursement provided for educators to attend the Annual Session. To learn more about Foundation grants visit www.aae.org/foundation.

You make this generosity possible. AAE members are leaders in dental philanthropy. By supporting the Foundation, you advance your profession's development. The current financial environment only serves to emphasize the importance of this mission. The more clearly we define endodontists as the experts in saving teeth, the more likely patients are to choose a specialist. Research and education produce the clinical and technological progress that sets us apart.

If the economy has impacted your practice, I would like to extend a message of support. You belong to an Association that places great value on the relationships among colleagues and that strives to ensure the well-being of all its members.

My term as president ends after the Annual Session in Orlando. It is my personal goal to raise the \$1 million we will spend in 2009 before that date. If you have the ability to do so, now would be an especially meaningful time to make your first pledge or increase your current pledge. It has been my privilege to serve the Foundation and to watch the Donor Honor Roll grow. I would be proud to add your name to the roster that we will display in Orlando.

Sincerely,

Denis (Chip) E. Simon III, D.D.S., M.S.

New Fellow Brings Promise of New Horizons for Endodontics

"A teacher affects eternity; he can never tell where his influence stops."—Henry B. Adams



Dr. Satish B. Alapati

United States and in Canada.

Dr. Satish B. Alapati, 2009 Fellowship Recipient

Dr. Satish B. Alapati is passionate about academics and science. His goal is to focus his academic and research activities on regenerative endodontics with the hope that his work will contribute new approaches to root canal treatment.

Dr. Alapati will enter the University of Illinois at Chicago's endodontic program in July 2009. He brings an impressive background in teaching, research and dentistry to his studies, having earned a Masters degree in Dental Materials Science and a Ph.D. degree in Oral Biology (biomaterials track) from The Ohio State University. His doctoral dissertation involved engineering materials science on metallurgy of the nickel-titanium alloy for rotary endodontic instruments and captured the attention of

The Endodontic Educator Fellowship Award recognizes residents who wish to pursue a career in education. The funding—full tuition plus a stipend of \$2,500 a month—helps to remove the financial barriers that confront aspiring educators. Since 2001, 14 fellowships have been awarded. Nine recipients are currently teaching in programs across the

the research and development staff at a leading U.S. manufacturer as it suggested directions for improved alloy processing.

Dr. Alapati started his career in dental academia as an assistant professor in the department of materials science at the College of Dental Medicine, Medical University of South Carolina, where he taught both pre- and postdoctoral students. He credits the American Dental Education Association's Institute for Teaching and Learning with helping to ensure that he performs his teaching and leadership responsibilities at the highest level.

Dr. Alapati recently shifted the focus of his research from nickel-titanium rotary instruments to regenerative endodontics. This change in direction aligns with the National Institute of Dental and Craniofacial Research's current priority to fund tissue-engineering studies. In

the fall of 2007, Dr. Alapati received a grant from the AAE Foundation for his project, *A Novel Approach for Isolation and Guided Differentiation of Dental Pulp Side Population (SP) Cells for Regeneration and Mineralization of Periradicular Tissue*. During his residency training, he will continue his research in the area of regenerative endodontics with emphasis on tissue engineering of novel "smart biomaterials," aimed at improving the outcome of root canal treatment.

Dr. Alapati's dedication to science and teaching promises to be a tremendous asset to the specialty in the

future. The Foundation is proud to support his studies.

"Endodontics is a fascinating and challenging speciality that promotes the advancement of treatment protocols to aid the longevity of the natural dentition.

I am thrilled that the AAE Educator Fellowship will lay a path and nurture my quest to excel in dental academia both as an educator and contributor to the speciality of endodontics."

—Satish B. Alapati, B.D.S., M.S., Ph.D.

Visit the Foundation's New Planned Giving Web Site

In order to provide members with a wealth of resources about opportunities for supporting the specialty of endodontics, the AAE Foundation has launched a new section of its Web site focused on planned giving.

Visit the site today to learn more about ways to give, what assets can be used to fund a gift and much more!

www.aae.org/foundation/plannedgiving

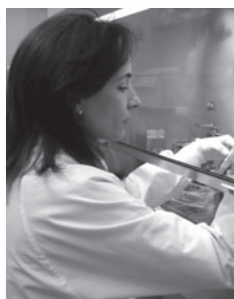


Each review cycle, the highest-scoring resident and faculty research grant applicants receive a \$500 cash award. In 2008, the recipients were Drs. Tatiana Botero, Daniel S. Fife, Jorge Garcia and Hiran Perinpanayagam. The Foundation's goal is to improve the quality of the research applications and to applaud those applicants whose efforts reflect the highest quality science.

The Foundation Research Grant Application can be downloaded from the Web at www.aae.org/foundation. The next deadline is August 24, 2009, to be eligible as a Fall 2009 recipient. If you have any questions, contact Suzanne Riger, development coordinator, at 800/872-3636 (North America) or 312/266-7255 (International), ext. 3008, or e-mail sriger@aae.org. Following are the stories of the 2008 recipients and their research.

Spring 2008

*Tatiana M. Botero, D.D.S., M.S.
University of Michigan*



CARIES-INDUCED ANGIOGENESIS

Dr. Tatiana Botero believes that research and clinical practice depend on each other to thrive. "If we want a better future for ourselves and our community; research is the answer," she shares. "We should base our own practice on what is found with our research and, at the

same time, many clinical situations generate multiple research questions to be answered."

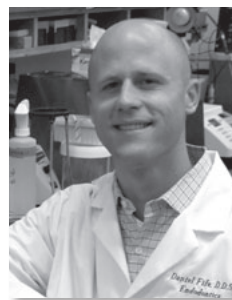
Over the last year, Dr. Botero, assistant clinical professor at the University of Michigan, has been searching for an answer to the question—is Vascular Endothelial Growth Factor expression and microvessel density increased during caries-induced pulpitis as compared to normal pulp from noncaries teeth? VEGF has been demonstrated to be a major contributor to angiogenesis, the growth of new blood vessels from pre-existing vessels.

This research will provide a better understanding of the vascular changes induced by active caries. If it can be proved that VEGF is upregulated during inflammation, then VEGF might be a therapeutic target to control irreversible pulpitis. "This could be important work for future research and improving patient care through targeting specific molecules to control the vascular changes and prevent the progression to necrosis," said Dr. Botero. This work is in part a continuation of several *in vitro* studies done with dental pulp cells since 2001, when she first started her research with Dr. Jacques E. Nör.

When not in the lab, teaching or treating patients,

Dr. Botero spends her time with her husband, Felipe, and their two children, Samuel (8) and Emilio (5). A native of Medellin, Colombia, Dr. Botero makes sure her family stays connected to Colombian culture by cooking native dishes and visiting her family and friends once a year.

*Daniel S. Fife, D.D.S.
University of California at Los Angeles*



FUSOBACTERIUM NUCLEATUM IN ENDODONTIC INFECTIONS

Dr. Daniel Fife, a second-year resident at University of California at Los Angeles, has plenty of reasons to be interested in endodontics. His family is involved in health care, including an older brother who is an endodontist, and as a third-year dental student,

he was seeing many patients in need of endodontic treatment. Dr. Fife found that "removing pathology, treating infection and healing patients was more exciting and interesting than some of the more aesthetic-related aspects of dentistry."

His research project, *Fusobacterium Nucleatum in Endodontic Infections*, was developed to clarify the subspecies distribution of fusobacteria in endodontic infections and the associated microbiota, and to provide important insights into the distribution of virulence-associated proteins. *Fusobacterium nucleatum* is an important human and endodontic pathogen that is found in dental plaque and is also associated with periodontal disease. He hypothesized that specific subspecies of *Fusobacterium nucleatum* are pathogenic, meaning they could cause disease, and that these pathogenic subspecies are associated with fusobacterial outer membrane proteins involved in virulence, the relative ability of the pathogen to cause disease.

"I believe that the data will show trends as to which subspecies of *F. nucleatum* are occurring in the infected root canals," said Dr. Fife. "Once these trends are identified, we will have a better understanding of the pathobiology of endodontic infections and develop novel therapies to specifically target the pathogenic bacteria."

When Dr. Fife graduates next summer, he plans to enter private practice, either in southern California or Las Vegas, Nev., and he hopes to be able to teach part time. When not in the lab, clinic or attending lectures, he enjoys surfing, fly fishing, and spending time with his friends and family.

To learn more about this research, stop by the Resident Poster Presentations in Exhibit Halls ABC at the AAE 2009 Annual Session in Orlando, Fla., on Friday, May 1, from 8:30 – 11:30 a.m.

Fall 2008

Jorge Garcia, D.D.S.
University of Michigan



ANGIOGENIC RESPONSE DURING PULPITIS

Maybe it's something in the water or perhaps it has something to do with those tenacious Wolverines, but in 2008, two of the four top-rated research proposals came from the University of Michigan. Along with Dr. Botero, Dr. Jorge Garcia, a second-year resident,

submitted a high-caliber proposal entitled, *Angiogenic Response During Pulpitis*.

Dr. Garcia graduated from a dental school in Venezuela in 2002. After practicing as a general dentist for a few years, he decided that he wanted to specialize in root canal treatment. "I decided that the meticulous aspects of endodontics and helping patients to maintain their natural dentition was really what interested me," said Dr. Garcia. He then made the move to Ann Arbor, Mich., where he is currently working on his certificate of endodontics and doing research alongside his mentor, Dr. Botero.

Although their studies are within the same realm of molecular biology, they are exploring different angiogenic growth factors. Previous studies have looked at the growth factors PDGF (Platelet Derived Growth Factor) and FGF-2 (Fibroblast Growth Factor) in healthy dentin but never during stages of pulpal inflammation. Dr. Garcia hypothesized that these two growth factors and their receptors are upregulated, or increased, and have an angiogenic effect in pulpitis. He hopes that he can prove that the presence of these growth factors is higher in decayed teeth than in healthy teeth.

"If we can find that these growth factors connect to a pulpal response, future work could be done to develop new strategies for inflammatory prevention," he commented. "Down the road, this work could be beneficial to pulpal response and lead to enhanced dental healing."

Dr. Garcia will also be presenting at the 2009 Annual Session in Orlando. His study called, *Use of MTA Within a Collagen Membrane for Lateral Root Perforation Repair*, will be during the Resident Table Clinics in Exhibit Halls ABC on Friday May 1, from 8:30 – 11:30 a.m.

Hiran Perinpanayagam, D.D.S., M.S., Ph.D.
University of Western Ontario



ENDODONTIC/IMPLANT RELATIONSHIPS: COMPARISON OF THE CELLULAR RESPONSE TO ENDODONTIC MTA AND TITANIUM IMPLANT SURFACES

As part of his Ph.D. program at the University of Iowa, Dr. Hiran Perinpanayagam studied how titanium implant surfaces could be modified in order to

optimize the osseointegration of dental implants. He studied the effects of modified titanium on bone matrix synthesizing osteoblasts. Since leaving Iowa in 2003, Dr. Perinpanayagam turned his attention towards other biomaterials, particularly MTA, in an effort to unravel the underlying mechanism for its success.

In the current study funded by the AAE, Dr. Perinpanayagam will compare the cellular response to endodontic MTA and titanium implant surfaces and thereby account for localized differences in the tissue response. "Dental implants made of titanium are highly biocompatible, but they are largely inert and fail to be retained within suboptimal bone," he explained. "In contrast, the endodontic MTA materials are routinely used in areas of inflammation within pulp and periradicular tissues, and yet they perform remarkably well."

This study is essential because it could lead to the development of better biomaterials in dentistry, both for endodontic application and perhaps even implant surfaces. Dr. Perinpanayagam thinks that for endodontists, "the main challenge we now face is to emphasize the value of endodontic treatment options versus implant-supported prosthesis to our dental colleagues." This research stresses the value of root canal treatment options including surgical endodontics with MTA. "Not only are we preserving the patients' natural dentition, but we are utilizing biocompatible materials such as MTA that may be able to invoke a more beneficial tissue response than that seen with titanium implants."



Company Sponsors Leadership Donor Reception

SybronEndo has a long history of providing support to the AAE Foundation. To encourage more AAE members to pledge at a significant level, the company will once again sponsor a Leadership Donor Reception at the 2009 Annual Session in Orlando, Fla.

Members who have contributed at the Founder (\$10,000) level and above are invited to attend this special event. The reception will take place on Saturday, May 2, from 6 – 7 p.m. in the Orange Blossom Ballroom at the Gaylord Palms Resort and Convention Center.

This is the third year the company has honored leadership donors. The Foundation is extremely grateful for SybronEndo's generosity and the company's ongoing commitment to the specialty.

The Art in Science—Adapting to the Unexpected, continued from page 1

being placed in younger patients, it could suggest a problem later in life.

Cost also appears to be a distinguishing factor between the two types of treatment. From 1996-2007, the average cost in the university setting for restored implants was 235 percent greater than the cost of endodontic treatment with restoration.

The researchers' goal is to improve the treatment planning process. Clinicians will be able to share specific statistics for outcomes under a variety of circumstances with their patients, and arrive at a more informed and objective decision.

Evaluation of Masticatory Function Between Implants and Endodontically Treated Teeth

Dr. He, an assistant professor in endodontics at Baylor College of Dentistry, received a grant of \$82,303 for year one of what is anticipated to be a five-year prospective project at a total cost of \$681,448. Dr. He will follow 200 patients from January 2008 through 2012. Half will receive an implant and half will be treated endodontically. Only patients with a mandibular first molar with failed nonsurgical root canal treatment will be eligible.

Dr. He's team conducted a pilot study to test their hypothesis and methodology prior to launching the larger prospective project. Twenty-five patients received root canal treatment and 25 patients received an implant. They tested masticatory function in both groups using the contralateral side where natural teeth were present as a control. Their results indicate that endodontically treated natural teeth may provide more efficient mastication compared to implant-supported crowns.

In preparation for the larger study, a database has been created to collect and analyze patient information and recruitment began in April 2008. Although a variety of techniques were used to stimulate interest in the project, identifying enough patients to participate has been a

challenge. Since most of the outreach was done within the university, the group has decided to begin promoting the study to the larger dental community. They plan to advertise in dental publications as well and use the local dental society as a vehicle to disseminate information.

Several modifications in the research protocol have also been initiated. Originally, to ensure consistency, all of the restorations were to be done by one graduate prosthodontic student. However, the team found that the more than \$200 difference in fees for treatment by a graduate student and an undergraduate student was a deterrent to patient participation. In addition, the fact that undergraduate students are required to complete a certain number of procedures made them reluctant to refer patients. The graduate student's busy schedule also made providing treatment in a timely manner difficult. To address these problems, both groups of students will be allowed to place restorations using a standard set of criteria.

Originally all of the treatment planning and placement was to be performed in the department of oral and maxillofacial surgery. However, the protocol was changed to allow undergraduate students to have greater exposure to implant placement. After careful consideration, the team decided to involve undergraduate students in treatment planning, making the surgical stent and restoring the implants. The actual placement will still be done by OMS residents under faculty supervision.

These projects demonstrate that "how" and "why" are inseparable questions. The art in science lies in discovering the most effective route to the truth. Not only will this research provide important data, it will be a template to help others design highly effective new studies.

Philanthropy should be a rewarding experience for the whole family. The AAE Foundation wants your spouse or partner, and even your children to feel great about supporting endodontic research and education. One way we can accomplish that goal is to ensure that those closest to you understand the Foundation's mission and programs. The AAE Alliance is an important partner in helping to disseminate this information.

Over the years, the Alliance has contributed a total of \$434,437 to the Foundation. Now, the two organizations will enjoy a closer collaboration than ever before. The Foundation recently approved the appointment of an Alliance Representative to the Board of Trustees.

"As a smaller association, the AAE is a close knit group," says Foundation President Denis E. Simon III. "The Alliance reinforces these relationships. It is great to open this dialogue between the Alliance and the Foundation so that everyone in our endodontic family can feel proud to be part of our success."

In 2008-2009, Alliance President Liza Starr appointed Janette Sonnenberg to be the representative. Mrs. Sonnenberg is married to Dr. Brent C. Sonnenberg of Salt Lake City, Utah. The couple has five daughters, one son, and seven grandchildren with two more on the way. They have been involved in AAE activities for over 30 years.

No stranger to organized dentistry or philanthropy, Mrs. Sonnenberg recently completed a term as president of the Alliance of the American Dental Association and continues to serve on the AADA Board as nominating chair. She also served as AAE Alliance president in 2006-2007, and has been involved in numerous other community boards and activities. Her appointments include the School of Music at the University of Utah, Brigham Young University Women's Conference Committee, 2002 Ambassador for the XIX Olympic Winter Games, Salt Lake Women's Council and Salt

Lake Women's Legislative Council.

Mrs. Sonnenberg brings a wealth of expertise, enthusiasm and commitment to her responsibilities. She has already participated in three separate conference calls to organize this year's fundraising campaign and will be attending the fundraising portion of the Foundation's Annual Board Meeting in April 2009.

"The Alliance exists to support the specialty," shared Mrs. Sonnenberg. "Although most members of the Alliance know about the Foundation, I'm not sure how many can name all of the grants and programs, or tell you why they are so important. My job is to help change that. The more Alliance members understand about the Foundation's role in endodontics, the more they will want to help. Most of us contribute to several different nonprofits. The Foundation is special because it is the organization that makes all our other giving possible. I hope to continue emphasizing that message to my friends and colleagues on the Alliance Board."



Mrs. Sonnenberg (center) with her family.

In Appreciation

The AAE Foundation gratefully acknowledges these partners from industry for leadership support to endodontic research and education:

\$1,000,000

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DENTSPLY TULSA DENTAL SPECIALTIES

\$295,000

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Twenty-Eight Research Grants Funded in 2008

The Foundation is proud to recognize the following recipients of competitive research grants in 2008. A total of \$349,339 was awarded. Since 2001, the Foundation has allocated over \$2.1 million to research. The AAE Research and Scientific Affairs Committee reviews grants on the Foundation's behalf and their recommendations are submitted to the Board of Trustees for approval.

In addition to competitive funding for research, the Foundation also provides \$500 to every resident in an advanced specialty program in endodontics that is accredited by or has a reciprocal agreement with the Commission on Dental Accreditation of the American Dental Association. As of March 1, 2009, 12 programs have received this funding for a total of \$20,000.

Daniel S. Fife*	\$22,500	University of California at Los Angeles	<i>Fusobacterium Nucleatum</i> in Endodontic Infections
Ernesto G. Trevino	\$24,000	University of Texas Health Science Center at San Antonio	Role of Dentin Growth Factors in the Induction of an Odontoblastic Phenotype in Stem Cells Found in the Apical Papilla
Leila Tarsa	\$19,500	Oregon Health & Science University	Inflammation-Induced Regulation of Brain-Derived Neurotrophic Factor Expression in Mouse Tooth Pulp Nociceptors
Tatiana M. Botero*	\$23,010	University of Michigan	Caries-Induced Angiogenesis
Chris S. Mirucki	\$12,600	University of Connecticut Health Center	Tissue Destructive Biological Activity of Complex Lipids Synthesized by <i>Porphyromonas Endodontalis</i>
Clare Quinlan	\$13,500	University of Michigan	Mechanisms Underlying the Differentiation of Dental Pulp Stem Cells (DPSCs) in Neovascular Endothelial Cells
Anastasia V. Mischenko	\$15,700	University of Maryland	Comparison of Bupivacaine vs. Lidocaine on Pain and Inflammatory Regulation Following Endodontic Surgery: A Double-Blind, Randomized, Controlled Clinical Trial
Anibal R. Diogenes	\$9,800	University of Texas Health Science Center at San Antonio	Expression of TLR4, CD14 and TLR2 in Human Dental Pulp Trigeminal Sensory Neurons
Nozomu Yamauchi	\$25,000	University of North Carolina	Pulp Revascularization Through Exposed Dentin Matrix With Collagen Scaffold on Immature Teeth With Apical Periodontitis
Robert P. Corr	\$3,843	Loma Linda University	Identification of Hard Tissues Involved in Pulp Revascularization
Sandra L. Shambarger	\$900	University of Minnesota	The Prevalence of Furcation Canals in Molars, before and after Simulated Periodontal Therapy
Mo K. Kang	\$20,000	University of California at Los Angeles	Role of Bmi-1 in Regulation of Dental Pulp Stem Cell
Sheila Chandrhasa	\$2,950	Nova Southeastern University	Regenerative Endodontics: Investigation of the Reactions of the Human Dental Pulp to Three Types of Tissue Engineering Scaffolds in an <i>Ex Vivo</i> Model
Felicity H. Shelton	\$11,580	University of Maryland	The Effects of Bisphosphonate Treatment on the Prevalence and Pathogenesis of Endodontic Pathosis
Sarah Jo Welch	\$17,400	University of Texas Health Science Center at Houston	Dental Pulp Regenerative Potential of Stem Cells of Bone Marrow Origin in a Rat Model
Ramya Ramamurthy	\$1,900	Temple University	Comparative Study to Determine the Efficiency of Progressive Taper and Constant Taper Rotary File Systems During the Cleaning and Shaping of Root Canal Systems
Arya M. Tehrani	\$5,000	University of North Carolina	Outcome Study of Gutta-Percha and Resilon™ Filled Root Canals: A Radiographic and Clinical Analysis
Maheeb Jaouni	\$4,000	University of Maryland	Penetration of Systemic Antibiotics Into Necrotic Pulp Space
Yelena Kholodenko	\$10,090	University of Maryland	The Effect of Endodontic Instrumentation Techniques on Post-Operative Local and Systemic Responses
SPRING TOTAL	\$243,273		
Jorge Garcia*	\$15,240	University of Michigan	Angiogenesis During Pulpitis
Fang Gu	\$6,000	University of North Carolina	Viral-Bacterial Interaction in the Pathogenesis of Human Endodontic Disease
Mayes A. McEntire	\$6,188	The Ohio State University	Anesthetic Efficacy of 4% Articaine With 1:100,000 Epinephrine Compared To 4% Articaine With 1:200,000 Epinephrine as Primary Infiltrations in Mandibular Posterior Teeth
Hiran Perinpanayagam*	\$20,290	University of Western Ontario	Endodontic/Implant Relationships: Comparison of the Cellular Response to Endodontic MTA and Titanium Implant Surfaces
Frederick M. Nuzum	\$6,248	The Ohio State University	Anesthetic Efficacy of a Combination Labial Plus Lingual Infiltration Compared to a Labial Infiltration Using 4% Articaine With 1:100,000 Epinephrine in Mandibular Anterior Teeth
Shiwei Cai	\$24,000	University of Texas Health Science Center at Houston	Regulation of Dental Pulp and Dentin Formation by PDGFR-Beta Positive Stem Cells
Aurelia N. Vanderburg	\$3,500	University of North Carolina	<i>In Vitro</i> Assessment of Cone Beam-Computed Tomography for the Detection of Vertical Root Fractures
Glorimar Llavona	\$4,600	Nova Southeastern University	Optimizing the Survival of Dental Pulp Stem Cells Within Delivery Scaffolds for Regenerative Endodontics
George T.J. Huang	<u>\$20,000</u>	Columbia University	Stem Cell-Mediated Periodontal Ligament Regeneration for Avulsed Teeth
FALL TOTAL	\$106,066		
GRAND TOTAL	\$349,339		

Bold – Faculty

* Highest-scoring resident and faculty applicants. RFPs were not considered in this competition.

Regenerative Endodontics—A Good Bet for the Specialty's Future

Innovation drives progress, but good ideas can get left in the parking lot when the focus is on an immediate return on investment. The AAE Foundation provides the resources to invest in the best bets for the specialty's future; regenerative endodontics is one of those promising areas.

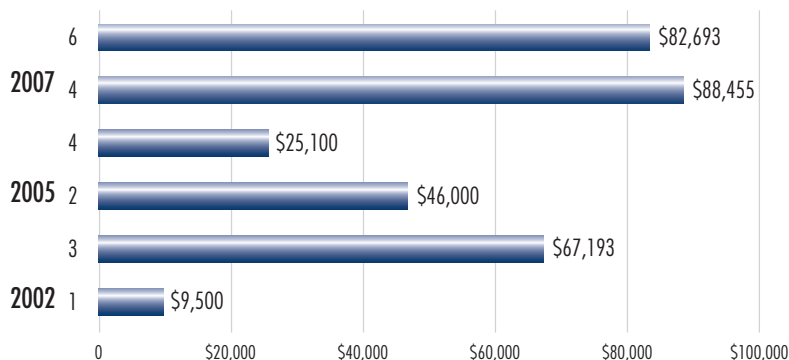
In December 2007, the Foundation provided \$15,000 to the AAE Regenerative Endodontics Committee in support of building a database, which can be accessed at www.aae.org/regeneration. Gathering data from clinicians who are performing regenerative procedures is an important first step in developing the kind of sophisticated research projects that will lead to clinical advances.

Dr. Alan S. Law, REC chair, presented highlights of the project at the August 2008 College of Diplomates meeting. Following is a summary of the significant findings:

- There have been 41 visits to the survey site
- 15 practitioners have entered a total of 34 cases
- Patients ranged in age from 6-28
- 16 patients are male and 14 are female (4 practitioners did not indicate patient gender)
- Types of teeth
 - 23 maxillary central/lateral incisors and canines
 - 6 mandibular premolars
 - 1 mandibular molar
- There is a reduction in apical radiolucency in all cases
- There is a reduction in width of the canal at midroot and the apical opening in most cases

The Committee hopes that many more practitioners

Grants to Regenerative Endodontics



will provide case information. All AAE members are encouraged to support this project. In the 10 minutes it takes to complete the survey, you can make a valuable contribution to the future of your specialty.

Since 2001, the Foundation has funded a total of 21 regenerative studies from 12 different institutions in the amount of \$341,741. Of 30 grant applications under consideration for spring 2009, nine relate to regenerative endodontics. Members who wish to learn more about developments in this exciting field can attend an educational track focused on the topic at the 2009 Annual Session in Orlando, Fla., April 29 – May 2. In addition, the International Dental Research Association's Pulp Biology Group presented a symposium on regeneration at its annual meeting earlier this month.

Residents Give, Programs Receive

In 2008, the AAE Foundation launched a new award to recognize residents who have made a commitment to their future through support of the endodontic specialty. Any endodontic program where 100 percent of the residents have made a pledge to the AAE Foundation receives a \$2,000 award in departmental funding.

The AAE Foundation would like to recognize the following programs where all residents have made this commitment:

University of Iowa
University of Pennsylvania
Louisiana State University
University of Florida
University of Indiana
University of Detroit Mercy
University of Michigan
The Ohio State University
Lutheran Medical Center
University of Illinois at Chicago
Baylor College of Dentistry
St. Louis University

To find out how your program can take advantage of this award, please contact Suzanne Riger,

development coordinator, at 800/872-3636 (North America) or 312/266-7255 (International), ext. 3008, or send an e-mail to sriger@aae.org.



In February 2009, AAE Foundation President Denis E. Simon III hand-delivered the award to the endodontic residents at Louisiana State University School of Dentistry. Pictured from left to right—back row: Residents Kristopher Ruebsamen, Steven M. Gaudet Jr., Joshua D. Beaver, Beatriz Robles, Pinkney H. Gilchrist, Jered B. King (Keesler), Rinku Parmar, and Paul B. Hilfer (Keesler). Front row: Drs. Simon, Billie Jeansonne (program director and acting department chair), and Henry Gremillion (LSUSD dean).

For Volunteers, Friend-Raising is as Important as Fundraising

There is some good news about the economy. Although the Dow Jones has plunged to an all-time low, the AAE's generosity index continues to surge ahead.

The AAE Foundation extends a heart-felt "thank you" to every member who recently made a new or increased pledge. A tough financial environment can mean difficult choices, and the Foundation trustees applaud the many members who are keeping endodontic research and education at the top of their priority list. As of March 5, \$650,000 had been raised against a goal of \$900,000. A total of \$320,536 or half comes from first

time donors and 65% of the first time donors are residents.

The Foundation is fortunate to have a group of volunteers who are enthusiastically supporting the 2008-2009 fundraising campaign. Their leadership is the Foundation's most important resource. They devote time and effort to ensuring that every member understands what the Foundation does and why it is important. Yes, they are fundraisers. But, friend raising is their more important objective.

The Foundation extends its gratitude and appreciation to these outstanding individuals.

FRIENDS OF THE FOUNDATION educate their colleagues about the Foundation's mission.

Murat Ayik	Mitchell H. Davich	Tamara Gravely Griffin	Brian A. Mykleby	Rebecca S. Prescott	Howard J. Sorensen
Benedict Bachstein	Mark B. Desrosiers	Yu Kai Hsu	William E. Newell*	GorgAnna Randolph*	Clara M. Spatafore*
Thomas D. Becker	Gerald C. Dietz Jr.*	Allan Jacobs	Samuel W. Oglesby	Cindy R.	Michael G. Stevens
Deborah S. Bishop	Anibal R. Diogenes	Karl Keiser	John S. Olmsted	Rauschenberger	Michael Stone*
Kendra K. Boda	Natasha M. Flake	Keith V. Krell*	John A. Pane	Al Reader	Maureen L. Swift*
John P. Braud Jr.	Jamal R. Flowers	James C. Kulild	Dr. Vince Penesis	Louis E. Rossman*	Patrick E. Taylor
G. Matthew Brock	David C. Funderburk	Kerri L. Lawlor	Joseph A. Petrino	Hank Schiffman	Anne E. Williamson*
Jared T. Buck	Adam J. Gatan	Jeffrey P. Lilly	Mary T. Pettiette	Joseph H. Schulz	Kenneth J. Zucke
Chad A. Campanelli	Gerald N. Glickman*	Sheldon R. Mann	Jerome V. Pisano*	Sandra L. Shambarger	
Robert A. Coleman *	Shepard S. Goldstein*	Gary D. Matt	Micah L. Porter	Denis E. Simon III	
Toby L. Comer	George T. Goodis	Donna J. Mattscheck*	William D. Powell	Fiza Singh	
Lance Crawford	Brian D. Greenberg	Philip L. Michaelson	Nidhi Prakash	A. Eddy Skidmore*	

STUDENT AMBASSADORS educate residents at endodontic programs about the Foundation's role in their future profession.

Ambassador	Institution	Ambassador	Institution
Gerald N. Glickman*	<i>Baylor College of Dentistry</i>	Nadia Chugal	<i>University of California at Los Angeles</i>
Jeffrey W. Hutter	<i>Boston University</i>	W. Craig Noble	<i>University of California at San Francisco</i>
André K. Mickel	<i>Case Western Reserve University</i>	Gerald C. Dietz Jr.*	<i>University of Detroit Mercy</i>
Donna J. Mattscheck*	<i>Columbia University</i>	Roberta Pileggi	<i>University of Florida</i>
Shepard S. Goldstein*	<i>Harvard School of Dental Medicine</i>	Jerome V. Pisano*	<i>University of Illinois at Chicago</i>
Mahmoud Torabinejad	<i>Loma Linda University</i>	Mychel M. Vail	<i>University of Indiana</i>
Denis E. Simon III*	<i>Louisiana State University</i>	Jeffrey P. Lilly	<i>University of Iowa</i>
Donna J. Mattscheck*	<i>Lutheran Medical Center</i>	Donna J. Mattscheck*	<i>University of Maryland</i>
Donna J. Mattscheck*	<i>Marquette University</i>	Robert A. Coleman*	<i>University of Michigan</i>
James O. Roahen.	<i>Naval Postgraduate Dental School</i>	Alan S. Law	<i>University of Minnesota</i>
Donna J. Mattscheck*	<i>New York University</i>	James C. Kulild	<i>University of Missouri, Kansas City</i>
A. Eddy Skidmore*	<i>Nova Southeastern University</i>	Jeri R. Rush.	<i>University of Nebraska</i>
Al Reader	<i>The Ohio State University</i>	Judy D. McIntyre	<i>University of North Carolina</i>
Kathryn C. Wright	<i>Oregon Health & Science University</i>	Louis E. Rossman*	<i>University of Pennsylvania</i>
Jerome V. Pisano*	<i>St. Louis University</i>	James A. Wallace.	<i>University of Pittsburgh</i>
George A. Bruder III	<i>State University of New York at Stony Brook</i>	Donna J. Mattscheck*	<i>University of Southern California</i>
Robert B. Amato	<i>Tufts University</i>	Maureen L. Swift*	<i>University of Washington</i>
Denis E. Simon III*	<i>University of Alabama</i>	B. Ellen Byrne	<i>Virginia Commonwealth University</i>
Ming Shih Levine	<i>University of Buffalo</i>	A. Eddy Skidmore*	<i>West Virginia University</i>

* Indicates a Foundation Trustee

Get in on the Action With the Foundation Auctions!



**Has the economic down-turn challenged
your philanthropic goals this year?**

**The AAE Foundation Silent Product and Live Auctions
are an opportunity to give back while also receiving
a great deal on new equipment or instruments for
your office!**

Silent Product Auction

Thursday, April 30 through Friday, May 1

Foundation Booth in the AAE Oasis

- Bid on equipment, instruments and other products valued up to \$5,000
- Bidding closes at 4:30 p.m. on Friday
- Winners will be posted at the AAE Foundation Booth



Foundation Live Auction

Friday, May 1, 5 – 6 p.m.

Exhibit Halls ABC

- Enjoy the Exhibit Hall Happy Hour with complimentary cocktails
- Bid on products valued at \$5,000 or more

**All proceeds benefit the
AAE Foundation**

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FOR MORE INFORMATION VISIT THE FOUNDATION REPRESENTATIVES AT THE AAE OASIS

Dr. Mo K. Kang Shines IADR Spotlight on Endodontics



Dr. Mo K. Kang, an AAE Foundation Endodontic Educator Fellowship Award recipient, received the International Association for Dental Research's 2009 Young Investigator Award at the organization's 87th General Session and Exhibition in Miami, Fla., on April 1, 2009. Dr. Kang currently serves as the first Jack A. Weichman Chair in Endodontics at the University of California at Los Angeles.

Dr. Kang was the first student who successfully completed the combined D.D.S./Ph.D. program at UCLA, where he graduated in 2001, and completed postgraduate specialty training in endodontics in 2003. He has studied the senescence (aging) process in normal human oral keratinocytes with a long-range goal of understanding the health and disease of human oral mucosa. The objectives of Dr. Kang's current research are to determine the long-term phenotypic and genetic effects of antiretroviral drugs on human oral epithelial cells in patients with the Human Immunodeficiency Virus. An additional objective is to develop adjunctive therapies to alleviate morbidity in human oral mucosa associated with antiretroviral therapy.

Dr. Kang has authored nearly 40 original research articles. He has won several other major research awards, including first place in both the predoctoral (1998) and postdoctoral (2002) IADR/Unilever Edward H. Hatton Awards Competitions. Two of the papers authored by Dr. Kang were selected as featured articles—one as the cover of *Experimental Cell Research* and the other as the corresponding paper of the editorial commentary in *Clinical Cancer Research*. In 2007, Dr. Kang was awarded a new five-year R01 grant from the National Institute of Dental and Craniofacial

Research for the project, *Effects of Antiretroviral Therapy on Telomerase Function in Human Oral Epithelium*.

The IADR Young Investigator Award, supported by Crest Oral-B, P&G Professional Health, is designed to stimulate basic research in all dental disciplines. The recipient must not have reached his/her 40th birthday at the time it is presented. The award consists of a monetary prize and a plaque, and is one of the 16 IADR Distinguished Scientist Awards, one of the highest honors bestowed by the association.

"This is exactly the type of individual that our Foundation is proud to support," states Foundation President Denis E. Simon III. "Dr. Kang is one of our specialty's rising stars and we expect to hear of even more great accomplishments in the future."

With This Issue

Grateful Patient Form

A gift to the AAE Foundation is a wonderful way to demonstrate appreciation for services received from an endodontist. Gifts may also be made in honor of or in memory of an endodontist. Patients who wish to contribute may use the enclosed form to provide a donation to the Foundation's Endowment Fund.

Guidelines for Gifts of Stock

These guidelines provide the procedures to follow for individuals who wish to make a gift of stock to the AAE Foundation. A gift letter template is also included.