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**ENDODONTISTS DEVELOP NEW INTERACTIVE 3D TECHNOLOGY
TO REVOLUTIONIZE DENTAL ANATOMY AND ENDODONTIC EDUCATION**

*Innovative Imaging Software Used at 34 Dental Schools to Enhance Understanding of
Complex Anatomy and Build Endodontic Competency*

CHICAGO, July 10, 2006 – Endodontists, the dentists who specialize in root canal treatment, have long been at the forefront of adopting new technologies for patient care, from digital radiography to the use of operatory microscopes. Now, two endodontists, in partnership with the Stanford/NASA Biocomputational Center, have harnessed three-dimensional interactive imaging technology to create a tool that is changing the face of education in dental schools worldwide – and offers limitless possibilities to enhance learning throughout the medical profession.

The first application of this technology came from Drs. W. Paul Brown and Eric Herbranson, members of the American Association of Endodontists and endodontic professors at the University of the Pacific Arthur A. Dugoni School of Dentistry in San Francisco, California. The National Institute of Dental and Craniofacial Research at the National Institutes of Health gave the endodontists several grants to develop the 3D Interactive Tooth Atlas, which is designed to improve the learning of dental anatomy. It is the first comprehensive, interactive 3D database of the human dental structure, with hundreds of digital tooth models developed from micro CT scans, as well as thousands of other photographs and radiographs.

“Research at Stanford University has shown that the learning of 3D information, like the anatomy of teeth, is greatly enhanced when the instruction uses 3D models,” says Dr. Brown. “Whereas dental schools once taught anatomy using textbooks and a drawer full of teeth, students can now rotate, see inside, cut through, and measure teeth virtually on their computers to better understand the anatomy and learn more quickly.”

While the technology enhances the learning process for general dental students, it is particularly beneficial for developing competency in endodontics. “There are very few surgical procedures where you operate inside a very small area and can’t see what you’re working on,” says Dr. Brown. “You can’t perform a root canal procedure well without an accurate mental model of the anatomy, and the Tooth Atlas enables endodontists to have the best possible understanding of the anatomy of a tooth.”

Drs. Brown and Herbranson proposed the idea of a virtual, interactive database of teeth after Dr. Brown was introduced to a group from NASA in 1998 that was looking to develop high-resolution imaging and surgical simulators for an eventual manned flight to Mars. Because the flight will last several years, a virtual database of surgical procedures will be necessary to enable the doctor onboard to complete unfamiliar surgeries – or to help another crew member perform them if the doctor is unable.

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But the technology holds even greater promise for future dental applications. Drs. Brown and Herbranson are working on a dental simulator that allows users to virtually “perform” procedures such as fillings using a computer and a dental instrument that provides tactile feedback simulating the feel of the actual procedure. This will provide students with a greater familiarity with the procedures before working on patients, and give them more opportunities to enhance their skills, since they’ll be able to practice the procedures endlessly on a computer. The doctors are currently working on a version of the Tooth Atlas that can be used to educate patients in a practice setting, which should be available as early as this fall.

“The Tooth Atlas is another exciting advance that will benefit the specialty of endodontics by helping endodontic students effectively develop a deeper understanding of complex tooth anatomies that will be built upon through experience and ongoing education,” said John S. Olmsted, D.D.S., M.S., President of the American Association of Endodontists.

The Tooth Atlas has already been embraced by 34 dental schools in the U.S. as well as many others worldwide to enhance dental training, and is being translated into multiple languages. Drs. Brown and Herbranson believe that this imaging technology, and the high-powered personal computers that make its widespread use possible, will transform the way students learn.

“The educational experience of dental and probably medical students ten years from now will be very different than what it is today,” says Dr. Herbranson. “Instead of being based around lectures, it will revolve around simulator-based teaching models. It’ll be much more engaging – and a lot more effective.”

Other important contributors to the development of the Tooth Atlas include Kevin Montgomery, Ph.D., Director of the Stanford/NASA Biocomputation Center at Stanford University, and Bruce Fogel, D.D.S., part-time endodontic professor at the University of the Pacific Arthur A. Dugoni School of Dentistry.

American Association of Endodontists

The American Association of Endodontists, headquartered in Chicago, represents more than 6,600 members worldwide, including approximately 95 percent of all eligible endodontists in the United States. The Association, founded in 1943, is dedicated to excellence in the art and science of endodontics and to the highest standard of patient care. The Association inspires its members to pursue professional advancement and personal fulfillment through education, research, advocacy, leadership, communication and service. For more information, visit the AAE Web site at www.aae.org.