NYU shares $1.63 million NIH award

Although the destructive effects of oral bacteria in producing dental caries (cavities), periodontal disease and other infectious conditions are well known, the identities of many of the microbes responsible for these conditions, as well as their physical characteristics and ability to grow and sustain themselves, remain a mystery. In fact, only half of the bacteria residing in the human oral cavity have been identified.

Now, a NYU College of Dentistry (NYUCD) microbiologist and an engineer at Sandia National Laboratories, part of the U.S. Department of Energy, are partnering to develop a technology that will facilitate bacterial identification. Their study was recently funded with a three-year, $1.63 million grant from the National Institute of Dental and Craniofacial Research (NIDCR) of the NIH.

The study’s principal investigator, Dr. Anup Singh, director of biosynthesis research at Sandia, uses a method for spotting unknown microbes in saliva dubbed “FISH n’ CHIPS” because it combines fluorescent in situ hybridization (FISH) with a glass chip less than four centimeters wide.

NYUCD, a subcontractor on the grant, received a $264,000 award to acquire saliva samples from NYUCD’s patient population, prepare the samples for Dr. Singh, and analyze Dr. Singh’s findings. Dr. Deepak Saxena, an assistant professor of basic science and craniofacial biology, is leading the NYUCD study in collaboration with Dr. Daniel Malamud, a professor of basic science and craniofacial biology and director of NYUCD’s HIV/AIDS Research Program.

In their study, Saxena and Singh take advantage of recent advances in gene sequencing that enable microbial analysis without lab cultivation. Using probes composed of small, incomplete oral bacteria nucleic acid sequences, the researchers will locate, or “fish out,” bacterial cells with matching DNA sequences from dozens of saliva samples that have been arrayed on a glass chip. Probes that bind to complementary sequences will be marked with a fluorescent dye so that investigators can examine them under a microscope to confirm that they have been properly matched.

The researchers plan to locate cells from a dozen unknown oral bacterial species and establish a bank of cells that can be manipulated in subsequent sequencing studies designed to fully decode a microbe’s genome.

“I anticipate that our ‘FISH n’ CHIPS’ model will ultimately also be used to locate unknown bacteria in the gastrointestinal and nasal tracts and in other part of the body,” said Saxena. “This will help in the development of genetic tests to identify those at risk for a variety of infectious diseases.”

(Source: New York University)

Long-term cavity protection from tooth-binding micelles?

A new study suggests that tooth-binding micelles (or particles) may provide long-term cavity protection by adhering to tooth surfaces and gradually releasing encapsulated antimicrobials.

The researchers, from the University of Nebraska Medical Center, Omaha, and the University of Florida, Gainesville, reported their findings in the November 2009 issue of the journal Antimicrobial Agents and Chemotherapy.

One of the main contributing factors to dental cavities is overpopulation of acid-producing bacteria in the oral cavity that causes localized destruction of compromised dental hard tissue.

Due to the episodic nature of cavities, long-term benefits of periodic treatments administered during routine office visits are minimal. Other delivery systems developed to maintain drug concentrations, including bioadhesive tablets, patches, films and gels, aren’t very effective on the tooth surface and often cause irritation resulting in poor patient compliance.

Emphasis on the need for therapeutic strategies that target the bacterial aspect of the disease and a delivery platform that would maintain the drug concentration on the tooth surface is warranted.

In the study, tooth-binding micelles (molecular particles) were developed and encapsulated with farnesol, an antimicrobial recently found to be effective against the cavity causing bacterium Strepto-
Cosmetic dentist holds video contest

By Fred Michmershuizen, Online Editor

A cosmetic dentist in Austin, Texas, has thought of an interesting idea to drum up interest in his practice, Austin Dental Spa.

Dr. Mark Sweeney is conducting a contest inviting participants to describe — on video — why they think they are “the most interesting dental patient in the world.” The winner will be chosen by an online vote and will be treated to a smile makeover worth up to $15,000, including a variety of treatments designed to fix dental issues and improve the appearance of his or her teeth.

Contestants are asked to create a video that shows why they are the most interesting dental patient and why they deserve a smile makeover. Submissions will be judged by staff members of Austin Dental Spa for creativity and entertainment value, and the top three finalists will be uploaded to the practice’s Facebook and YouTube pages.

Anyone can view the videos and vote on the contestant he or she believes best represents the most interesting dental patient in the world.

Although only the winning submission will earn the smile makeover prize, Sweeney says everyone who submits a video will receive from the practice a teeth whitening treatment valued up to $600. Sweeney is asking contestants to keep video submissions shorter than five minutes — and also G-rated.

Contestants aiming for a smile makeover, which can include teeth whitening, dental crowns, porcelain dental veneers and dental implants in Austin, are encouraged to check out the contest rules and details on Austin Dental Spa’s Web site, located at www.austindentalspa.com.

Videos were submitted through Dec. 31. Online voting began Jan. 6 and ends on Jan. 22. The winner will be announced Jan. 27.

Dentists honor Mingledorff

Fort Washington, Pa., prosthodontist Dr. Tom Balshi and his wife, Joanne, recently gathered dental specialists born of Philadelphia’s only graduate program in prosthodontics to honor its renowned former chair, mentor and Bryn Mawr resident Ernest Beckwith Mingledorff.

Beloved by all for his wisdom, gentle manner and flowing good humor, “Ernie” drew a crowd of 80 professionals from the greater Philadelphia and New York area.

In a late summer poolside setting with the vibrant music of live steel drums keeping beat, dental collegiality was at its best graced by the presence of Temple University President Ann Weaver Hart and newly appointed Dean Amid Ismail of Temple’s Kornberg School of Dentistry.

Both Hart and Ismail spoke of their commitment to reinvigorate prosthodontic education in the Philadelphia area.

Balshi was the first graduate of the Temple Dental School program in prosthodontics to become certified as a Diplomat of the American Board of Prosthodontists. His Fort Washington, Pa., practice boasts a 100 percent success rate in prosthodontic restorations on dental implants.

“It is anticipated that the tooth-binding micelles have the potential to be formulated into mouth rinses that may have the merits of simple application, cultural acceptance and improved patient compliance.”

If you would like to download a copy of the journal article, please visit www.asm.org.

(coccus mutans UA159. When tested on a model tooth surface, the micelles were able to swiftly bind and gradually release the encapsulated farnesol.

Additionally, biofilm inhibition studies of the farnesol-containing tooth-binding micelles demonstrated that they were able to inhibit S. mutans UA159 at much higher levels than untreated blank control micelles.

“A tooth-binding micelle delivery platform for the prevention and treatment of dental caries has been designed and prepared in this study,” the researchers said.


(Source: American Society for Microbiology)