

# Research

## Research Excels on the Forefront

**M**omentum is a force to be reckoned and the growth in research at the School of Dental Medicine is no exception.

According to Dr. Mary Marazita, associate dean for research and chair of the Department of Oral Biology, the school is looking at hiring new faculty, renovating labs and developing a center for craniofacial regeneration.

Her powerhouse network of researchers has a wealth of various studies – from cleft lip and palate to behavioral development in oral health disparities. However, Dr. Marazita doesn't bother to mask her excitement about the areas of research she finds most interesting: genetics and tissue engineering.

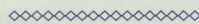
"We're trying to come up with a whole tooth," Dr. Marazita admitted with excitement. Tissue engineering would solve the problem of infection and rejection in implants by independently growing biological materials such as tissue, teeth and bone. The advantage in growing biological materials is that they are more easily tolerated in implants.

"Plus, you wouldn't have to take it [tissue, teeth or bone] from somewhere else," added Dr. Marazita.

Tooth loss can be attributed to inheritance patterns, disease or trauma. Faculty member Dr. Nicholas Piesco recently completed a study on tissue engineering of tooth structure by taking cells from existing developing teeth and determining methods for their culture. Dr. Piesco's latest endeavor is to develop methods for tooth reconstruction in an artificial environment.

Faculty member Dr. Charles Sfeir

is in the process of publishing several papers on biomineralization and tissue engineering. His research has led to a better understanding of how organisms form mineral tissues such as bone, dentin and cartilage.



Gene mapping studies continue following the breakthrough last year in genetics involving cleft lip and palate.

"We're trying to find the gene [or genes responsible for cleft lip and palate] using tools the Human Genome [Project] has devised," Dr. Marazita said.

Oral-facial clefts, particularly cleft lip with or without cleft palate, are common abnormalities found at birth. The cause of these defects is unclear and many studies are being conducted at the SDM to discern the gene expressions related to the development of cleft palate and/or cleft lip.

"To do these kinds of studies, you need a lot of numbers. We have families from Western Pennsylvania and also overseas in China, India, Turkey, Hungary, Guatemala and Brazil," said Dr. Marazita. She explained that families with two or more affected individuals are important in gene mapping studies because they can be evaluated for physical assessments and DNA samples.

In January, the SDM will send faculty and staff to Guatemala with Children of the Americas, Inc. (COTA). COTA is a non-profit organization that provides free medical and surgical care as well as treatment to children throughout the world. While there, Dr. Marazita's team also will recruit more families for cleft lip and palate research.



*Dr. Charles Sfeir*



*Dr. Alexandre Vieira*



*Dr. Brion Maher*



## Sponsored White Coats Welcome Students to Dental Profession

Another area of research that is coming to fruition at the school is publication of results from the Center for Oral Health Disparities in Appalachia. The first set of research papers for this study was sent to various journals in November.

The studies counter the common belief that oral health disparities generally are higher in African Americans and Hispanics. A population-based sample of families from two counties in West Virginia and two counties in Pennsylvania was studied for issues related to dental trauma, periodontal disease, caries, malocclusions, soft tissues, lesions and other diseases such as cancer.

"Family is an important unit in this study," Dr. Marazita said. "There could be genes, attitudes and microorganisms shared." To determine the causes of poor oral health, demographic and behavioral information is a big part of such studies.

Dr. Brion Maher, faculty member of the Department of Oral Biology, has recently initiated a collaboration with the Hosanna House in Wilkesburg, Pa. The purpose of the project is to assess behavioral, environmental and genetic factors that may influence oral health. The study will serve to contrast poor, rural Caucasians with poor, urban African Americans.

Related research on genetics in caries is being headed by Dr. Alexandre Vieira, one of the newest faculty members of oral biology. Some areas to be addressed by this research are whether genetic factors contribute to poor oral health and if so, determining which genes are responsible for causing caries.

Dr. Marazita concluded that genetics must play a big part in oral health issues, but she is not willing to settle for any generalizations.



*Students, dressed in their first white coats, gather for a group photo.*

On August 29th, the White Coat Ceremony had an extra-added sentiment. Dr. Marnie Oakley (DMD '92), 2004-05 Dental Alumni Association President, introduced alumni, faculty and SDM friends to the new tradition of sponsoring incoming students' by purchasing their first white coats for a \$50 donation.

The idea was well-received and 115 white coats were purchased for the 80 first professional students and 35 dental hygiene students. The white coat pockets contained note cards with the name and contact information of sponsors along with a message of encouragement.

Dr. Oakley said she wanted to come up with a way to bring the alumni and students together from the onset of the students' studies at the SDM.

"They're at a very vulnerable time," said Dr. Oakley. "We wanted to show them that we know what they're going through with the cost and being away from

home."

The White Coat Ceremony is a way for the faculty to welcome incoming students to the dental profession. Like graduation, students walk across a stage and shake hands with the deans.

The ceremony is part of the Annual General Assembly, started five years ago, with various speakers such as Dr. Craig Eisenhart, president of the Pennsylvania Dental Association and Dr. Gerrit Hagman, a representative from the International College of Dentists. Associate Dean for Clinical Affairs, Wilbert Milligan (PhD '72) led the incoming students in the reading of the dental oath.

Dr. Oakley said board members of the Dental Alumni Association and SDM staff worked hard to ensure all students were sponsored. They contacted people from the students' hometowns and alma maters. Some SDM offices also collectively sponsored a few of the students' white coats.