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## Prof creates dental DNA registry

Jill Schaefer comes to work at Pitt every day hoping to make people drool — all in the name of science.

As manager of the School of Dental Medicine’s new Dental Registry and DNA Repository (DRDR), part of Schaefer’s work week is spent asking Pitt dental clinic patients for 10 minutes of their time and a teaspoonful of their saliva, all to build what dental school professor Alex Vieira believes is the world’s only dental DNA bank established to share with other researchers.

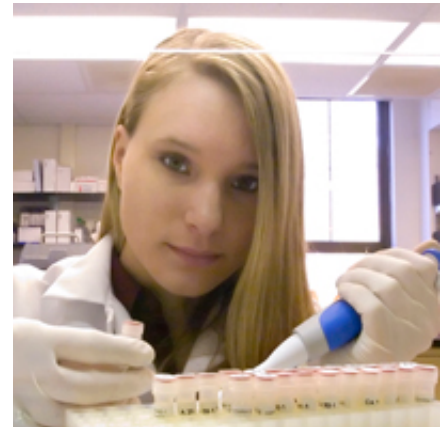
Vieira, whose background is in pediatric dentistry, is studying the genes that may play a role in clefts and missing teeth, the genetics behind cavities and periodontal diseases and the link between premature birth and periodontal diseases. “My motivation in creating this repository is I can do all these studies in the background,” he said, adding that he hopes the existence of the bank may spark additional interest in dental research within the University and perhaps beyond.

The resource stands to be invaluable in terms of saving both time and money, Vieira said, noting that because he already has Institutional Review Board (IRB) approval for the DNA bank, others who use the data contained in it need not go through the same IRB process that governs studies involving human subjects. Once sufficient samples are collected, researchers wishing to use the bank will need only to secure approval from the DRDR’s oversight committee.

Researchers might request samples from a certain subset of the group: all women, for example, or those with a certain dental condition. They can make a one-time request for data, or ask for data with an update from the same group of donors later to observe the progression of a condition over time.

Once he request is approved, Schaefer will draw the pertinent data from the bank to facilitate the research.

Collecting and processing the samples is relatively simple. “Pretty much anybody who has a chart here at the School of Dental Medicine can donate,” Schaefer said. After a patient agrees to participate, the saliva sample is collected in a



Jill Schaefer manages dental medicine new Dental Registry and DNA Repository.

receptacle that looks something like an overgrown contact lens case. The receptacle temporarily is labeled with the patient's chart number in order to link the sample with his or her dental records. To protect the patient's identity, that number is replaced by a bar code when the data and sample are added to the registry.

Schaefer processes the sample in the lab, adds a stabilizer and prepares it for storage in a Salk Hall freezer.

Patients' initial response has been good, Schaefer said, with only a few patients declining to participate. Some, she said, want compensation — there isn't any. Others are concerned about privacy or about the idea of storing their DNA or what it could be used for.

Schaefer said researchers requesting data must adhere to ethical standards, projects must be for dental research only and must be reviewed and approved by the DRDR oversight committee.

Some participants are interested in being informed about results, something Schaefer said is not possible because identifying information that could link the sample to an individual is removed.

Since mid-September when the collection process was piloted in one of Pitt's eight dental clinics, of 120 patients who were asked to donate, 109 agreed to give samples and allow researchers access to their dental charts. At that rate, the bank will include 1,000 samples within a year, Schaefer said. But Vieira hopes for even more in time, and has not set a limit to the number he'd like to collect. More is better.

Vieira said he was expecting perhaps 30 percent compliance and was pleasantly surprised to find early recruitment is yielding about three times that amount. "It's very promising," he said, noting that the pilot recruitment for the registry currently only involves the 20-chair "module 2" dental clinic staffed by third- and fourth-year dental students under faculty supervision. Altogether, Pitt has eight clinics with a total of 263 chairs, allowing for plenty of potential to recruit more donors, Vieira said.

Vieira said there likely will be thousands of samples in the DRDR within five years, making it a valuable resource for dental researchers who are searching for the genetics underlying various dental conditions and diseases.

A large number of samples are needed to find genetic variations that may contribute to certain conditions or diseases. Genes have a role, but the answers to many such questions likely lie in a complex combination of genes working together. And, Vieira said, environment plays a role as well.

"There will be genes we never find," he admitted. Nevertheless, he hopes the existence of the DRDR will spark interest in dental research and yield some answers.

Vieira, who arrived at Pitt a year ago, proposed the DRDR with an eye toward furthering not only his own research interests, but as a way to facilitate others' as well.

He also hopes that awareness of the registry and its power to contribute to the understanding of the role genetics plays in dental health may motivate dental students to pursue careers in academia rather than private practice. Vieira said few dental students follow his path into academia and older researchers aren't being replaced in sufficient numbers by new students interested in dental research. "There's a clear gap," he said.

Although Pitt's DRDR is limited to collecting samples from dental clinic patients, Vieira envisions it perhaps someday becoming part of a much larger pool. Rather than remain unique, "It is more as a model to follow," he said, envisioning that someday an organization such as the Centers for Disease Control and Prevention or the World Health Organization could serve as a clearinghouse to link data from multiple registries into a huge database of DNA samples for dental research.

"I hope in my lifetime to see something like that happening," he said.

—Kimberly K. Barlow