

FACULTY PERSPECTIVE

VIEWS ON DENTAL TOPICS & TRENDS



Accelerating Translational Research

Multidisciplinary research approach to meet the unmet clinical needs

Contributed By: Dr. Anh Le, Chair and Norman Vine Endowed Professor of Oral Rehabilitation

THE CONCEPT OF clinician-led scientific research is hardly new and has been the foundation of the practice of medicine and dentistry. The clinician often diagnoses an abnormal condition in a patient that triggers the whole scientific inquiry into the pathophysiological process, the diagnosis, and the treatment. The integration between medical/dental practice and research is essential to achieve efficient and focused progress in advancing health and treatment options.

The National Institutes of Health has taken several steps to further integrate practicing clinicians into the full scope of research and to help facilitate clinical translation of the most promising scientific and technological advances. One such example was recently introduced by the National Institute of Dental

.....
ABOVE: The Penn Multidisciplinary Consortium on Personalized Dental, Oral, and Craniofacial Tissue Regeneration retreat held in March at the Jordan Medical Education Center, Perelman Center for Advanced Medicine, had attendees from schools across Penn.

and Craniofacial Research (NIDCR) with its call to establish a multidisciplinary dental, oral, and craniofacial tissue regenerative consortium (DOCTRC). The immediate goal of the DOCTRC is to develop effective clinically-applicable strategies for regenerating functional tissues of the human dental, oral, and craniofacial complex.

Practicing clinicians will define areas of unmet clinical need and collaborate with scientists on several key research topics to establish a deliverable product. Stem cell biologists, bioengineers, and regulatory experts will address specific scientific, technical, ethical, and regulatory issues involved in bringing tissue engineered and regenerative medicine products from proof-of-concept to preclinical applications. To meet the demands of the accelerated translational timeline of this effort, the DOCTRC will employ those tools and strategies that have already demonstrated significant translational potential and readiness to advance through the translational pipeline.

This initiative has galvanized the enthusiasm and integrated the efforts of investigators from several Penn health science institutions, including Penn Dental Medicine, Perelman

School of Medicine, the School of Veterinary Medicine, and the School of Engineering and Applied Science. In 2015, a multidisciplinary team of clinicians and scientists from these schools joined efforts to establish the Penn Multidisciplinary Consortium on Personalized Dental, Oral, and Craniofacial Tissue Regeneration and was among 10 institutions to be funded by the NIDCR in Phase I of the DOCTRC.

The DOCTRC will be built through a three-stage process; this first stage involves the development of resource centers, which will be the foundation for the Consortium. Dr. Anh Le, Chair and Norman Vine Endowed Professor of Oral Rehabilitation within Penn Dental Medicine's Department of Oral & Maxillofacial Surgery/Pharmacology, is the lead principal investigator for the Phase I DOCTRC grant award. Other principal investigators include Dr. Songtao Shi of Penn Dental, Dr. Bert O'Malley of Penn Medicine, Dr. Jason Burdick of Penn Engineering, and Dr. Thomas Schaer of Penn Vet.

The long-term objective of the Penn Multidisciplinary Consortium is to enable rapid translation of tissue engineered and regenerative medicine products to the preclinical and clinical pipeline to address a broad spectrum of fundamental clinical needs in the reconstruction of the injured or dysfunctional orofacial complex affected by diseases, trauma, and warfare.

A research retreat on "Personalized Dental, Oral, and Craniofacial Tissue Regeneration" was organized in March 2016 at Penn, which provided a forum for networking and interaction among clinicians and scientists from academic institutions, clinical practice, and industry, and allowed for the recruitment of potential investigators for the interdisciplinary translational projects.

Collaboration at the University of Pennsylvania is one of the most important aspects of patient care and the integration between several specialties in dentistry, medicine, bioengineering, and veterinary medicine promises faster progress and growth in regenerative research and new advances to apply to patient care across specialties. ■