



CANCER PREVENTION & RESEARCH INSTITUTE OF TEXAS

Award ID:
RP170179

Project Title:
Chemoablation of High-Risk Oral Premalignant Lesions for Sustained
Cancer Prevention

Award Mechanism:
Bridging the Gap: Early Translational Research Awards

Principal Investigator:
Tsai, Robert

Entity:
Texas A&M University System Health Science Center

Lay Summary:

The objective in this proposal is to develop a new, noninvasive product designed to ablate (destroy) lesions in the mouth that are at high risk of becoming malignant (oral premalignant lesions, or OPL) to prevent the development of oral cancer. Stopping cancers from developing, especially when the early (pre-malignant) lesions can be easily identified, is more cost-effective than treating cancers after they develop. Chemical ablation (in this case, applying drug-containing patches to lesions in the mouth) is a new alternative to surgery or laser therapy for treating premalignant lesions; it is less invasive, is better able to distinguish lesions from nearby healthy tissue, more sustained, and thus more cost-effective. For these reasons, chemical ablation of high-risk premalignant lesions may become the first line of defense against cancer in the future. Each year, oral cancer affects 24,000 Americans and results in 5,400 deaths. Two of every five patients with oral cancer die within 5 years of the initial diagnosis. Some types of oral cancer are known to develop from OPL, which can be seen as areas of leukoplakia ("white plaque") in the mouth. The presence of OPL provides a golden opportunity for early detection and intervention to prevent the development of full-blown oral cancer. Currently, the primary options for treating OPL are surgery and laser therapy, which are not appropriate for large lesions or multiple lesions and often have severe side effects such as pain, swelling, difficulty in swallowing, hoarseness, and permanent scar formation. We propose to develop a new form of treatment based on (1) our recent discovery of a new drug combination that works together to kill oral precancerous and cancerous cells and (2) our new invention of an oral patch that delivers drugs in one direction (from the patch to the lesion and not the other way around) in a controlled way. Our objective in this project is to test the effectiveness and safety of this medicated oral patch in treating OPL in a preclinical animal model (rats). Our studies will provide crucial evidence to support the clinical feasibility, therapeutic effectiveness, and safety of this new medicated oral patch for treating OPL that are chemically induced in a rat model. Successful completion of these preclinical studies will set an important milestone that will lead to further development of this product for clinical trials and eventually for it to be used for patients in the community. Our long-term goal is to develop this topical chemical ablation device as a new noninvasive treatment option for patients with high-risk OPL, an option that will have fewer side effects and be less expensive than surgery or laser treatments and can be used as an outpatient procedure by a much wider network of healthcare providers. Eventually, our device will help to reduce the incidence

of oral cancers. If our design works for treating oral lesions, the same strategy can be expanded to treat a wide range of precancerous lesions and thus have an even broader impact on cancer prevention.