Title: A Collaboration of Oral Health Practitioners and Community Members Develops Culturally Competent Health Promotion Materials About Probiotic Use to Improve Oral Health.

***Project Summary*:** This collaboration of the South Texas Oral Health Network and its *community* of researchers, practitioners and patients will be an excellent opportunity to bring community and professionals together for *consensus* in developing evidenced-based audience-specific *health promotion materials*, about the use of oral probiotics to maintain and improve oral health, This collaboration of these communities *enhances communication* and will disseminate valuable culturally competent information to practices, patients and the broader community.

Hypothesis and Specific Aims: *We hypothesize that a collaboration of oral health practitioners and community members can develop health promotion materials about oral probiotic use to improve oral health that have validated content and are culturally competent.*
1. Collaborate with community partner: South Texas Oral Health Network (STOHN), a group of practitioners and patients, and community members for consensus building content for health promotion materials about the use of oral probiotics to improve oral health.
2. Develop audience specific materials in English and Spanish, based on AIM I, that will focus on content, appearance, readability, cultural competency and informational resources.
3. Evaluate contents of the materials with community members and STOHN practitioners.
4. Disseminate the health promotion materials (flyers, posters, brochures etc.) to STOHN clinics and community members.

Anticipated Project Outcomes:
1. Enhance communication between practitioners and community members on issues of oral health.
2. Increase awareness of the use of oral probiotics to improve and maintain oral health.

Background and Significance
The oral cavity harbors one of the most diverse microbiomes in the human body, with approximately 1000 commensal species present second only to the colon.[1] This commensal microbiota is essential to oral health. Yet this normal microbiota is responsible for periodontal disease, one of the major diseases of the oral cavity.[2] While periodontal disease is a bacterial disease, it is not considered infectious. It results from the complex interplay of microbes, host response and factors such as smoking and diet.[2] There are several distinct microbial habitats in the oral cavity: teeth, gingival sulcus, attached gingiva, tongue, cheek, lip, hard palate, and soft palate. Continuous with these areas are the tonsils, pharynx, esophagus, eustachian tube, middle ear, trachea, lungs, nasal passages, and sinuses.[2]
Periodontitis is recognized as caused by a consortium of organisms in a biofilm rather than a single pathogen[2] and is characterized by inflammation, periodontal probe depths (loss of attachment) and generally associated with plaque biofilm formation.[3] Due to bacterial resistance associated with the use of systemic antimicrobial prescriptions in conjunction with debridement, alternatives for oral health maintenance are needed.[4] Debridement of periodontal pockets produces a temporary change in the microbial habitat. The disease process, however, re-initiates dependent on the type of bacterial (pathogenic or beneficial) that recolonize the pocket.[5]
“Probiotics are beneficial live organisms that confer health benefits to the host when administered in adequate amounts.” [6] While there are few reported adverse effects with the use of oral probiotics it is not recommended for immunosuppressed patients.[4] To function in the oral

cavity, an oral probiotic must adhere and colonize surfaces and tissues. They act as antagonists; inhibiting pathogenic colonization. Oral probiotics compete for nutrients and space for colonization by displacement.[4, 5, 7, 8] It is also suggested that oral probiotics decrease the pro-inflammatory factors; cytokines, collagenases, and prostaglandins. Thus, resulting in clinical improvement seen as reduced bleeding on probing, reduced probing depths, and improved gingival indices.[9]

Use of oral probiotics resulted it significantly improved plaque index (PI) scores in moderate to severe gingivitis, improved gingival index (GI) and significantly reduced bleeding (smokers only) when compared to placebo; reduced probing depths (PPD) and plaque indices when used as dissolved tablet on tongue.[3,5]

Oral probiotics are easily administered to the oral cavity as live cultures and provide few or no side-effects; work quickly to compete with oral pathogens, reduce inflammation and help maintain tissue health. Oral probiotic effects are strain specific.[10] Two strains most widely investigated for oral treatment are Lactobacillus (L. reuteri) and Bifidobacterium.[9] These strains can be delivered by gum, dissolvable tablet, lozenge, drink or ice cream. Using antimicrobial rinses or toothpastes only effective during contact and have low substantivity. In contrast oral probiotics have high substantivity, prolonged contact and are able to reduce inflammation by out colonizing pathogens. With little to no side effects, this would be a beneficial adjunct to tradition method of treatment.[5] Health promotional information from this study will be used to enhance community and practitioner communications and support further practice-based research exploring a broader participant base for knowledge and awareness of oral probiotics in the National Dental PBRN. With a larger group of practitioners and patients it will be possible to develop and longer-term observational study focusing on specific strains and cataloguing specific clinical improvements. **Purpose statement:** The purpose of the project is to develop culturally competent health promotion materials, based on current research, about the benefits of oral probiotics to maintain and improve oral health and enhance communication about oral health through a collaboration of community members, patients and practitioner.

Significance, Innovation and Effectiveness: With the advent of antibiotic resistance, and the fact that gingival and periodontal diseases are less about infection and more about inflammation, additional therapies become more important. It is significant that there is growing data that supports oral probiotics as an adjunct to current methodology. It is important for oral health practitioners, patients and by extension the community to be aware of new therapies to improve and maintain oral health. This innovative project will use the collaboration of researchers, practitioners, patients and others in the community to develop health promotion materials on oral probiotics for practitioners and community members that is valid and culturally appropriate. The study's use of Technology of Participation (ToPs) [11-13] consensus building focus method will engage diverse individuals in effective development of topic generation and organization. This method encourages a high level of participation in the decision-making process through individual, small group, and large group discussions (add reference here). Utilizing this method for this study enables communication which will result collaborative health promotion material useful for the professional and non-professional environment. **Approach.** Oral health practitioners (dentists/hygienists) from STOHN and community members will be recruited by phone, email and informational flyers. We anticipate recruiting ten practitioners and ten community members. Two ToPs consensus building sessions will be planned; one for each group (practitioners and community). A draft of the health promotion material will be developed from the analysis of ToPs sessions. The material will be reviewed and tested for content and for face-validity by community members. Members will also come to a consensus at to the type, format and distribution of the promotional materials. Once the content, appearance, readability, cultural *competency and informational resources have been approved, the health* promotions

materials will be printed and distributed. The information will also be disseminated on the STOHN web-site, social media sites and Community Engagement Meetings.

Work Proposed: Research Team Consists of the PI's, STOHN Directors, STOHN advisory group, and STOHN Research Coordinators. The research team will collaborate to develop the health promotion materials, participate in recruitment, evaluate the materials, dissemination, and data gathering.

Information about Collaborating Partner:

South Texas Oral Health Network (STOHN)

The South Texas Oral Health Network, affiliated with UT Health San Antonio, has enrolled 60 dentists and hygienists throughout South Texas. STOHN was funded, in 2008, through the Clinical Translational Science Award of the National Institutes of Health (http://iims.uthscsa.edu/STOHN/home). Among recently completed studies by STOHN was the "Increasing E-Cigarette Awareness and Counseling among South Texas Dentists, Patients and Community." This was a collaborative effort with focus groups of practitioners, patients and community members. All STOHN practitioners have completed a Human Subjects Protection Training course approved by the UT Health San Antonio IRB. Demographics of STOHN practices are diverse and would be appropriate for this project to gain a representative sample of dental patients (see Table 1). About 83% of the patients seen by STOHN practitioners during a year are 15 years and years older, totaling 8,543 patients per year. There are 10,293 annual patient visits in STOHN practices. Race/Ethnicity (40%) Non-Hispanic white, (37%), Hispanic, (14%) African-American, (9%) and Others. Children <14 (17%), Adults 15-64 (60%), and Adults > (23%). Gender Male (40%) and Female (60%). Insurance Status: Private insurance (44%), Medicare (5%), Medicaid (8%) and No insurance (43%). 3

Table 1: Information on the patient population of STOHN

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Patients	
Annual patient visits	10,293
Race/Ethnicity (%)	40
Non-Hispanic white	37
Hispanic	14
African-American	9
others	
Age (%)	17
Children <14	60
Adults 15-64	23
Adults >65	
Gender (%)	40
Male	60
Female	
Insurance Status (%)	44
Private insurance	5
Medicare	8
Medicaid	43
No insurance	