

***Screening the oral mucosa in an independent pre-clinical trial for disease diagnosis using infrared micro-spectroscopy***

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The American Cancer Society estimated that in 2011, *ca.* 34,300 new cases of oral cancer would be diagnosed and *ca.* 6,900 people would die of the disease. Unlike the Pap test for cervical cancer, there are currently no standard screening protocols for oral cancer, and many cases of oral cancer are asymptomatic until the disease has reached an advanced stage.[1] Oral cancer occurs more frequently in men than women (nearly two times as frequent), and risk factors include excessive alcohol or tobacco use and in 25 percent of cases, human papillomavirus infection.[2]

Previously, Spectral Cytopathology (SCP) has detected infrared spectral changes in exfoliated oral mucosa cells from a small number of subjects based on anatomical region, tobacco and drug use (recreational or pharmaceutical), *herpes simplex* virus infection, and squamous cell carcinoma of the tongue, cheek and mouth floor by multivariate analysis, principal component analysis (PCA).[3] Currently, The Laboratory for Spectral Diagnosis has commenced an independent pre-clinical trial at Northeastern University in an effort to develop a method for oral cancer screening utilizing spectroscopic methods, specifically infrared micro-spectroscopy (IR-MSP). Thus far, exfoliated oral mucosa cells from the cheek, tongue, and mouth floor have been collected and analyzed by SCP from 100 volunteers. Participants filled out a questionnaire specifying their demographic information as well as alcohol and tobacco use, medication, history of oral disease, mononucleosis or herpes viral infection, and if they received the HPV vaccination. Presented are the results reflecting the first phase of this pre-clinical trial.

References

- [1] American Cancer Society: “Detailed Guide: Oral Cavity and Oropharyngeal Cancer”, [cited 2011 30 August], Available from: [www.cancer.org](http://www.cancer.org).
- [2] H. z. Hausen: “Infections Causing Human Cancer”, John Wiley and Sons, Ltd. (2006).
- [3] K. Papamarkakis et al., *Lab Invest* 90, 589-598 (2009).