



# Promising Epigenetic Biomarkers for Improved Detection of Head and Neck Cancer in Non-Invasive Specimen\*

Presenter: Carolin Hoyer  
Biotechnologist  
oncnostics GmbH

HNo4  
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Room 16A

## Objectives

Head and neck squamous cell carcinomas (HNSCC) are mainly diagnosed at advanced tumour stage after the onset of symptoms. Therefore, the establishment of non-invasive diagnostic tools for screening may improve detection of early cancer disease stages. The aim of our prospective observational feasibility study OncSaliva is to prove that cancer-specific epigenetic markers, detected in DNA from primary tumor tissue, may also be detectable in non-invasive saliva and swab samples.

## Methods

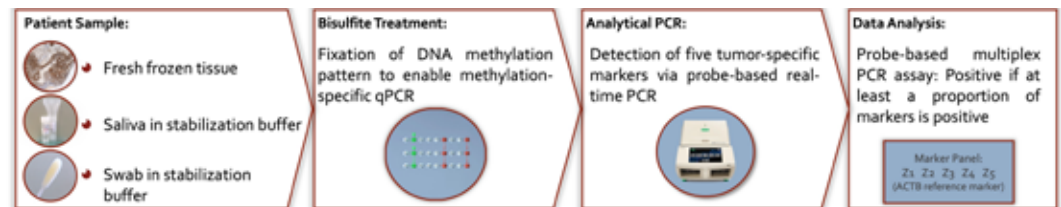


Figure I: Workflow for sample processing of HNSCC patient specimen collected at the Department of Ortorhinolaryngology, Jena University Hospital.

## Results

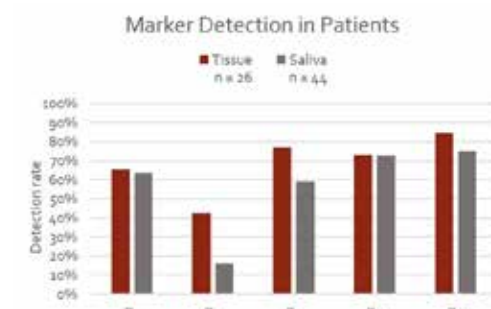


Figure II: Epigenetic marker detection rate in tissue and saliva of HNSCC patients.

Five epigenetic markers were validated in previous studies in tissue and saliva (Fig. II). Alternative collection devices were tested, as tumour patients described issues collecting the required amount of saliva. The swab tools FLOQSwab (COPAN Diagnostics) and my-Budget (Bio-Budget) showed comparable performance to the saliva collection kit in regards of DNA yield (Fig. III). The FLOQSwab device will be further employed in the ongoing feasibility study OncSaliva.

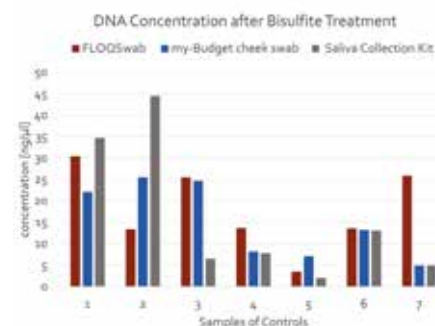


Figure III: DNA concentration after bisulfite treatment from three tested oral collection devices (FLOQSwab, my-Budget Swab, Saliva Collection Kit).



FLOQSwab  
COPAN Diagnostics



my-Budget  
cheek swab  
Bio-Budget Technologies



Saliva Collection Kit  
oncnostics

## Conclusion

Detection of DNA methylation markers in oral samples may be utilized as usable tool for early and precise detection of HNSCC. The advantage of oral swabs are an easy and fast sampling for the patient, stability of methylation-markers, storage at room temperature and a high DNA yield after the bisulfite treatment of the sample. Therefore, the five validated DNA methylation markers Z1 – Z5 may provide the basis for first cancer-specific tests within early head and neck cancer diagnostics and post-surgical follow-up monitoring.

\*Carolin Hoyer, Anna-Bawany Hums, Carolin Dippmann, Juliane Priese, Lars Jansen, Matthias Dürst, Orlando Guntinas-Lichuis, Martina Schmitz, Alfred Hansel

oncnostics GmbH  
Löbstedter Str.41  
07749 Jena | Germany  
+49 3641 5548500

contact@oncnostics.com  
www.oncnostics.com

