



## Development of a workflow for the detection and characterization of disseminated tumor cells in histopathologically negative lymph nodes of patients with head and neck cancer

Behrens B<sup>1</sup>, Swierz J<sup>1</sup>, Hölbling M<sup>2</sup>, van Dalum G<sup>1,3</sup>, Broekmaat J<sup>3</sup>, Andree K<sup>3,4</sup>, Oomens L<sup>3</sup>, Nanou A<sup>4</sup>, Bongers E<sup>1</sup>, Neves R<sup>1</sup>, Terstappen L<sup>4</sup>, Kübler NR<sup>2</sup>, Knoefel WT<sup>1</sup>, Sproll KC<sup>2</sup> and Stoecklein NH<sup>1</sup>

<sup>1</sup> Experimental Surgical Oncology, Department of General, Visceral and Pediatric Surgery; <sup>2</sup> Department for Cranio- and Maxillofacial Surgery, Westdeutsche Kieferklinik of Düsseldorf, 40225 Düsseldorf, Germany; <sup>3</sup> Department of Medical Cell BioPhysics, Faculty of Science and Technology, University of Twente; <sup>4</sup>VYCAP Capitool 41, 7521PL Enschede, The Netherlands



## Summary

- · Harvested lymph nodes from HNSCC patients were successfully processed and analysed.
- Detected CKpos/CD45neg/DAPIpos cells were successfully isolated with the Cell Puncher Pro and the single cell genomes were amplified.
- Single cell genomes were successfully analysed for copy number aberrations by low-pass WGS to validate their malignant origin.
- · Genomic profiling revealed that 4 of 5 HNSCC patients were positive for disseminated tumor cells (DTC). In 5 of 7 lymph nodes were at least one proofed DTC detected.
- Due to the finding of nonmalignant CK-positive cells in lymph nodes of HNSCC patients and healthy donors we tested an additional exclusion marker for these cells apparently of glandular origin.
- · The preliminary experiments suggest that Amylase might be a good exclusion marker but to ensure the malignant origin a second independent method as genomic profiling or FISH should be performed additionally.

