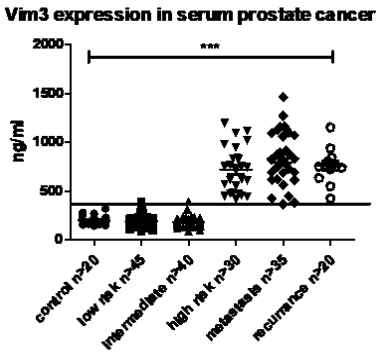
Malignancy marker for therapy planning

Early classification of aggressive prostate cancers

Invention

The diagnosis, classification and therapy of prostate cancer are based on the PSA value, the Gleason score from histology obtained by prostate biopsies and an imaging diagnosis from CT and bone scintigraphy. The variability of prostate cancer ranges from low-risk tumors without progression over many years to high-risk tumors with rapid local progression and high metastasis potential. There is a correlation with the risk for metastasis and the Gleason score, however there is an ongoing search for new biomarkers that directly correlate with the risk for metastasis. Vimentin 3 (Vim3) has been discovered as biomarker, which correlates with the risk of progression of prostate cancer. Results show high expression of Vim3 in cells of metastatic prostate and low expression in non-metastatic cancer, thus demonstrating the potential of Vim3 for risk stratification of localized prostate carcioma to enable personalized therapy planning. Vim3 is a truncated and biologically active variant of Vimentin. Healthy cells express the Vimentin full-length variant (Vim-fl) and are characterized by a functional cytoskeleton. If Vim-fl is no longer expressed in the cells, Vim3 is predominantly detectable. In this case the intracellular structure of the cell is disordered due to the loss of the normal cytoskeletal architecture with the consequence that cells become deformable and consequently mobile.



Vim3 ELISA, cut-off value is between 320-350 ng. *** p<0.0001

Commercial Opportunities

Prostate cancer is the second most common cancer in males. An estimated 1.1 million men worldwide were diagnosed with prostate cancer in 2012, accounting for 15% of the cancers diagnosed in males. The selection of the therapeutic strategy depends on the risk classification. There is a strong medical need to precisely identify those patients whose disease allows monitoring without therapeutic intervention, in order to avoid overtreatment, which comes along with high medical costs and loss of life quality.

Current Status

To date, 200 serum samples from prostate cancer patients, resectates and biopsies have been examined. A validation on about 800 serum samples is planned. Data on additional tumor types are available, including urethel cancer and breast cancer. In case of interest we are pleased to inform you about the patent status.

Relevant Publications

Von Brandenstein, M. *et al*. (2018) Tamoxifen Treatment in Correlation with Increased ET-1 Levels Is Associated with the Development of Breast Cancer Metastases. *Journal of Cancer Therapy* 9: 438-436.

Von Brandenstein, M. *et al*. (2018) Beyond the 3'UTR binding: microRNA - induced protein truncation via DNA binding, *Oncotarget* 9: 32855-32867.

An invention of the University of Cologne.

Competitive Advantages

- Early classification of aggressive prostate cancers for personalized therapy planning
- Applicable for analyzing tissue samples and liquid biopsies
- Also relevant for other tumor entities (e.g. esophagus, breast cancer)
- Additional biomarker that can be measured in an easy and objective way

Technology Readiness Level

1 2 3 4 5 6 **7** 8 9

System prototype demonstration in operational environment

Industries

- Diagnostics Industry

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5158

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