

## 45 A preclinical model to assess the interaction between patient-derived 3D microtumors and tumor infiltrating immune cells in prostate cancer

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**Introduction & Objectives:** There is a lack of preclinical model systems to assess individual therapy response in patients with prostate cancer. Patient-derived 3D microtumors have been introduced as model for therapy response assessment. However, assessment of potential effects of immunotherapy require preclinical models that involve patient-derived immune cells. We have established a model allowing the assessment of the interaction of patient-derived 3D microtumor (PDM) from primary prostate cancer tissue and tumor infiltrating immune cells.

**Materials & Methods:** Fresh prostate cancer tissue from 17 patients who underwent radical prostatectomy specimen in the Department of Urology, University Hospital Tuebingen, Germany were used. The preparation of the PDMs were performed by mechanical and enzymatic processing of the tissue. Autologous immune cells were isolated from respective cancer tissue (tumor infiltrated immune cells). PDMs and immune cells were characterized with regard to pathological and immunological phenotype. Immunohistochemistry and FACS analysis were performed. Viability of cells was assessed using

**Results:** The preparation of PDMs was feasible in 15 prostate cancer specimens (tissue from 12 patients with intermediate risk and 3 patients with high risk prostate cancer). The numbers of prepared PDMs were dependent on the size of the tissue sample. Shape and size (50-500µm) of the PDMs showed high interpatient variability. Live-Dead-staining showed an overall viability of >90% of the cells. Histological characterization of the PDMs showed significant overlaps between the grading and morphology of the original tumor and the phenotype of the PDMs. The FACS analysis of the tumor infiltrated immune cells showed interpatient variability regarding the ratios of CD4+/CD8+/FOXP3- positive cells. Exposure of the PDMs to increasing concentrations of docetaxel and enzalutamide showed considerable patient-dependent differences in drug susceptibility.

**Conclusions:** We have established a preclinical model for successful cultivation of PDMs that allows both assessment of drug response and investigations of the interaction of tumor cells with immune cells. Therefore this model may provide a future tool for in-vitro assessment and prediction of response to immunotherapy.