Dr. Kübler GmbH

"CANCER IS A MOLECULAR ACCIDENT
THAT OUGHT TO BE AVOIDED"

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Isolation and molecular characterization of Glioma stem cells

Liquid Biopsy = CellprediKt® + Diagnostic Apheresis

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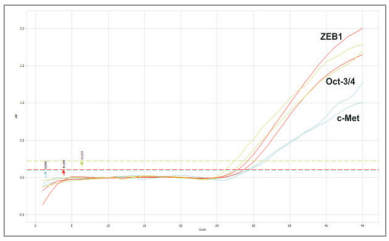
The underlying cause of glioblastoma is the loss of controllability of normal glial cells and the formation of tumor stem cells in a molecular niche. The Dr. Kübler GmbH has a patented system available for isolation, quantification and molecular characterisation of these cells. After dissolution of neuroectodermal cell layers GFAP expressing Cancer Stem Cells (CSCs) can be found in the bloodstream, which have been undergone epithelio mesenchymale transition (EMT) and which represent the heterogeneity of both the primary tumor and disseminated cells. Therefore, the cells change their cell-specific characteristics and thus gain migratory capability and invasiveness. They already circulate in the bloodstream before a primary tumour gets visible. The early detection of these cells is a revolution in prevention, diagnosis and treatment. [1-10]

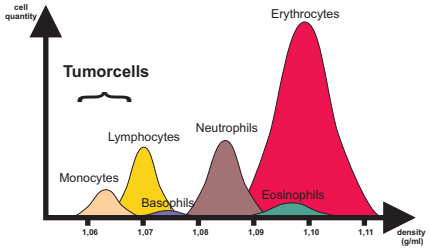
CellprediKt®

The CellprediKt® test allows detection of circulating cells with deranged epithelio-mesenchymal transition in the bloodstream via Real-Time RT-PCR (reverse transcriptase-polymerase chain reaction). The epithelio-mesenchymale character of these cells is documented by overexpression resp. amplification of Oct-3/4, c-Met and ZEB1. Quantification and precise characterization of the cancer stem cells detected with CellprediKt® follows by diagnostic apheresis.[7, 8, 11-13]



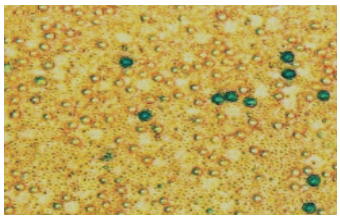
Diagnostic Apheresis

The Diagnostic Apheresis enables a quantitative extraction of metastasis initiating Cancer Stem Cells (MICs) from the bloodstream and their complete molecular-pathological characterization without any biopsy (c-Met, Oct-3/4, GFAP, EGFR, erb/B2, erb/B3, myc, ras, p53m, MDR, CD44v5/v6, VEGF, Akt/mTOR, IDO, Survivin, Urokinase).[10]

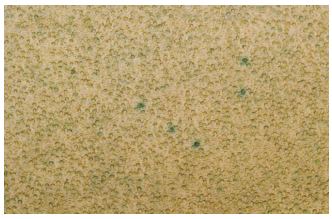


Detection

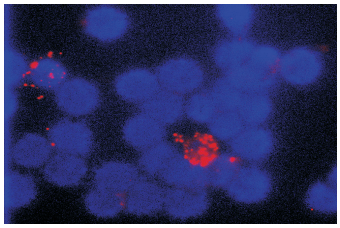
A specifically developed ELISA test (enzyme linked immuno-sorbent assay) as well as FISH techniques (fluorescence in situ hybridisation) provide a single cell detection and consequently a quantification. Furthermore an expression profile of circulating tumor cells is created by determination of different biomarkers.[10, 14, 15]



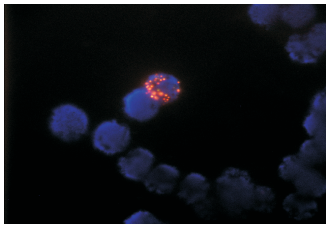
GFAP positive cells



Oct-3/4 positive cells



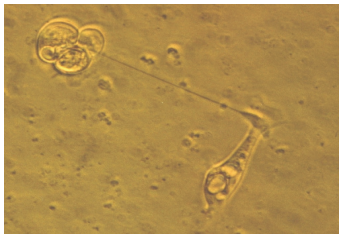
MET gene amplification

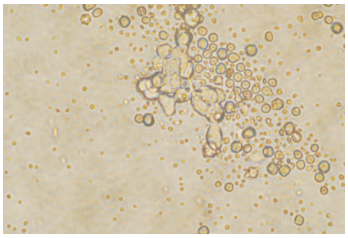


c-erb/B2 gene amplification

Therapeutic consequences

A combined immunotherapy consisting of Natural Killercells (NK cells) and heat-shock proteines can specifically attack and destroy Cancer Stem Cells.[14, 15]





NK cells

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Weiterführende Literatur unter www.kueblergmbh.com