Orthotopic tumor models

Implantation of tumor cells into the organ of origin allows organotypical interaction between tumor cells and surrounding stroma affecting growth, differentiation, and drug sensitivity of tumor cells. Moreover, tumor cells can spread to metastatic sites in other organs, with specificities comparable to the human situation. However, it must be emphasized that in most orthotopic tumor models metastasis is very heterogeneous.

Information about metastasis after intravenous injection of B16-F10 cells can be found on our homepage.

B16-F10 cells (CPQ-365)

B16 cells originate from spontaneous melanoma of the skin of C56Bl/6J male mice. The B16-F10 cell subline (ATCC CRL-6475) shows higher metastatic capacities especially in the lung (Clin.Exp.Metastasis 19: 369, 2002).

In order to detect metastases, a luciferase expressing cell line was generated.

Study outline

- intradermal implantation of B16-F10 cells
- randomization into treatment groups according to tumor sizes
- tumor sizes are measured either via bioluminescence of luciferase-expressing B16-F10 once weekly or via calipering twice weekly
- animal behavior is monitored daily
- animal weights are measured three times weekly
- At necropsy, all tumors will be isolated for determination of tumor weights and volumes

Study example – Gemcitabine treatment

Mice bearing orthotopically implanted B16-F10 tumors were treated with Gemcitabine.
Study example – immune checkpoint inhibition

Treatment of B16-F10 tumor-bearing mice with checkpoint inhibitors anti-PD-L1, anti-PD-1 and anti-CTLA4 antibody does not result in significant tumor growth inhibition.

Study example – Flow cytometry analysis

The mode of action of immuno-modulating therapies can be investigated via flow cytometry analysis. Immune cells in the tumor, lymphatic tissues or other organs will be isolated and their distribution examined via staining with various antibody panels.

Markers against the following immune subsets are validated:

- T lymphocytes
- Regulatory T cells
- Dendritic cells
- MDCS/Neutrophils
- Macrophages

A comparison of the different animal models can be found in our Immuno-Oncology Info Sheet.

Please see our White Paper for an example study with mode of action analysis of anti-PD-L1 treatment in CT26.wt tumors.

Both documents can be downloaded from our homepage.