

➤ Metastasizing tumor models

In metastatic tumor models, tumor spreading originates either from a primary tumor or is artificially induced by intravenous or intracardial tumor cell injection. The metastatic pattern is dependent on the tumor cell line with a preference of lung metastasis in case of intravenous injection. For human tumor cell lines immune-compromised mice are used with the advantage to study classical antitumoral test compounds. In contrast, murine tumor cell lines can be grown in immune-competent mice (syngeneic), providing a functional immune system to assess novel immunotherapeutic approaches.

➤ A549_Luc cells

Human A549 cells were isolated from a patient with a lung carcinoma.

In order to detect the orthotopically implanted cells, a luciferase expressing cell pool was generated via transduction of a luciferase-neomycin construct and subsequent neomycin selection.

➤ Study outline

To initiate metastatic growth, the tumor cells are injected intravenously. Tumor cell growth is monitored via in vivo bioluminescence imaging (BLI). The animals are randomized into treatment groups according to the luminescence signal. During the study, tumor growth is monitored via BLI once per week, animal behavior is monitored daily and animal weights are measured three times per week.

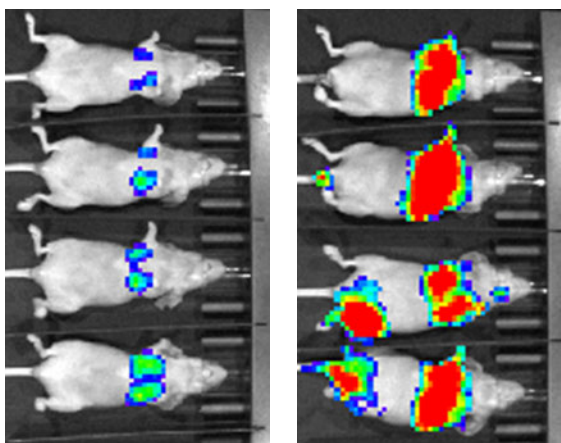


Figure 1: In vivo BLI of mice with A549_Luc cells intravenously injected were measured 19 days (left) or 75 days (right) after implantation.

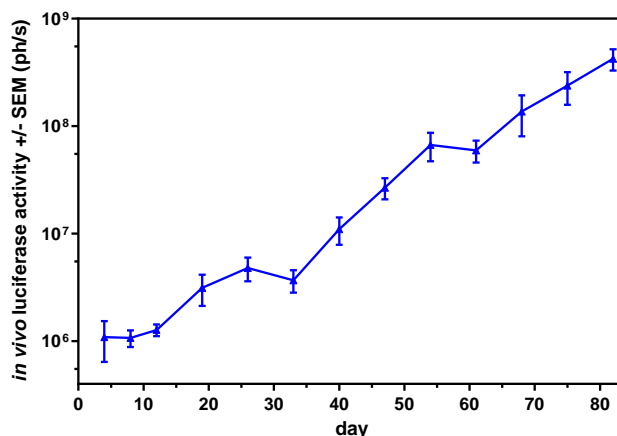


Figure 2: In vivo BLI of A549_Luc cells growing as metastasis in vivo, luciferase activity, mean values +/- SEM

➤ Quality Assurance

- Routine authentication of tumor cell lines by STR profiling
- Mycoplasma testing of implanted tumor cells by PCR just prior to implantation
- Routine health monitoring of sentinel animals (according to FELASA guide lines)
- Animal work according to the 5R rules (reduce, refine, replace, responsible, remember)

Note: Graphs depicted are derived from study examples. Each study is a biological system of its own and subject to intrinsic variation.