# AbstractID: 5667 Title: Growth and Initial Area Under Curve Correlation Data From DCE-MRI For Treatment Planning and Monitoring in Orthotopic Tumor Models

**Purpose:** Human bladder carcinoma cells are grown in murine bladders to study antitumor effects of new-targeted therapies. Lack of data on their neovascularity in mice, makes it difficult to evaluate new therapies like anti-angiogenesis or potential of combinatorial treatments like radiation and hyperthermia. The purpose of this study is to understand the changes in neovascularity with tumor growth in relevant organ environment, with dynamic contrast enhanced magnetic resonance.

**Method and Materials:** Eleven athymic nude mice underwent orthotopic injection of $10^{6}$ 253-J B-V cells. MR imaging was performed on a 4.7 T small animal MR scanner (Bruker Biospin). Axial T1 weighted spin-echo and T2 weighted fast spin-echo acquisitions were performed for volumetric measurements. For dynamic studies, an axial 3D fast RF-spoiled gradient-echo acquisition (TR:40ms,TE:1.4ms,slice thickness:1mm) with gadolinium-DTPA (Magnevist, Schering) was used. The time points for imaging were day 15, day 21 and day 30 after inoculation.

**Results:** The MR volume measurements were made from the fused T1 and T2 images, which were shown to better delineate tumor margins in previous experiments. The initial area under the curve was plotted at 90 seconds, 120 seconds and 200 seconds. An inverse relationship was noted between larger tumor sizes and their $IAUC^{90}$ (correlation=-0.866 ($p<0.05$). There is no correlation between the slow growing tumors and the $IAUC^{90}$ ($p=0.708$). No significant difference was noted between $IAUC^{90,120,200}$ of the whole tumor and tumor rim ($p<.05$).

**Conclusion:** The inverse relationship between the IAUC and tumor growths maybe indicative of developing necrotic core. The IAUC and tumor growth data correlation could be a predictive tool for radiation response. It could also assist in planning time points for anti-angiogenic therapy. In future, we plan to use a higher molecular weight gadolinium agent, and stain the tissue for mean vessel density.