Combining immunotherapy and radiation has emerged as a promising strategy to boost efficacy of diverse immunotherapeutic agents including tumor vaccines, immune-checkpoint inhibitors, and more recently, combination immunotherapy and radiation. Preclinical studies demonstrate that combining radiation and immunotherapeutics can increase T cell recruitment, activate resident immune cells, and promote anti-tumor immune responses.

**Methods and Results**

Combining subtherapeutic doses of RT and PSA vaccine creates an immune microenvironment favorable for increased tumor regression. TPSA23, a live-attenuated Listeria monocytogenes (Lm)-based vector engineered to express human PSA (Haas et al., J Pharmacol Exp Ther 2015;352:1125-34) was administered to mice bearing subcutaneous syngeneic prostate cancer cells expressing human PSA (TPSA23). Tumor volumes were compared between treatment groups (n=5 mice per condition).

**Conclusion**

Combination therapy achieves tumor response that is superior to single modality treatments, confirming prior observations. Combination therapy promotes enhanced antitumor effector/memory T cell activation markers in the tumor microenvironment and increased levels of T cell activation and signaling genes are observed in tumor tissue of RT + PSA vaccine treated mice. Increased levels of T cell activation and signaling genes are observed in tumor tissue of RT + PSA vaccine treated mice.
SH1 Any chance that you can add t in front of LLO on diagram of construct??

Sandra Hayes, 9/28/2017