

WuXi AppTec Radiation Platform



WuXi AppTec, WuXi Biology, Oncology & Immunology Unit



2022.01

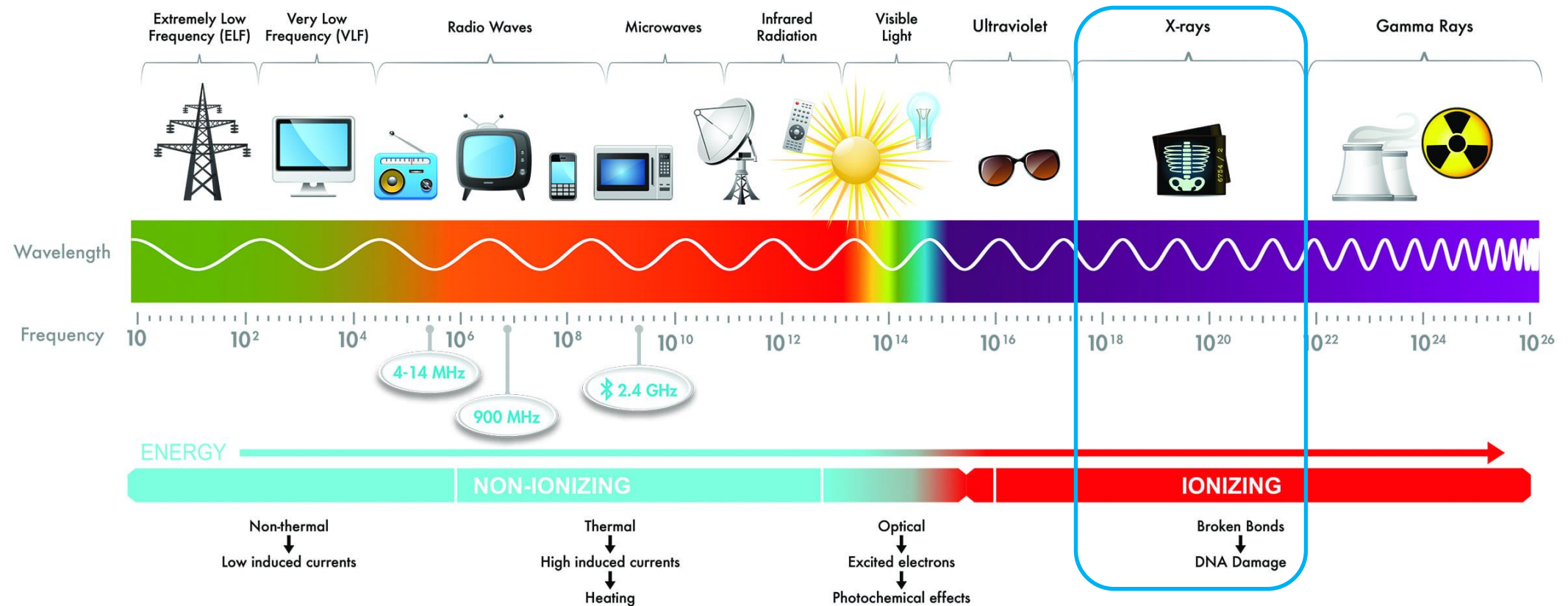
OncoWuXi Newsletter

Outline

- Radiation therapy introduction
- Radiation-related combination therapy
- Radiation baseline data of syngeneic models
- Case study

Radiotherapy introduction

- Radiation therapy uses high-energy radiation to shrink tumors and kill cancer cells. X-rays, gamma rays, and charged particles are types of radiation used for cancer treatment.
- Radiation therapy kills cancer cells by damaging their DNA. Radiation therapy can either damage DNA directly or create charged particles (free radicals) within the cells that can in turn damage the DNA.



Burwinkel JR, et.al Hearing Review. 2017;24(6):34-40

Radiation procedures using RS2000 X-Ray irradiator

- Dose rate measurement and radiation time calculation
 - The X-ray irradiator possesses the linear actuation system (spot beam collimator) for targeted radiation. The irradiated area is guided by a lighted square (Fig. 1).
 - The radiation dose rate (mGray/min) is measured by an Accu-Dose radiation measurement system (Fig. 2), and the radiation time can be calculated based on the measurement.
- Radiation treatment
 - Anesthetize the animal by isoflurane inhalation.
 - Place the animal in the radiation chamber. Ensure the center of irradiated area overlap with the center of the tumor, and the whole tumor is covered by the irradiated area guided by the lighted square (Fig. 3).



RadSource RS2000/XE
X-ray irradiator

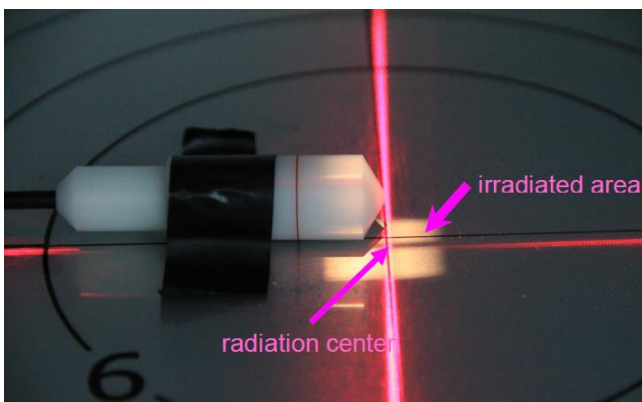


Figure 1

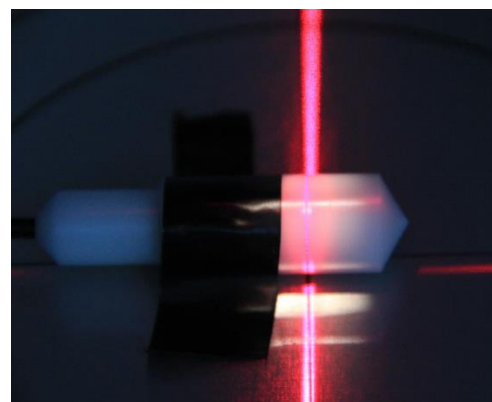


Figure 2

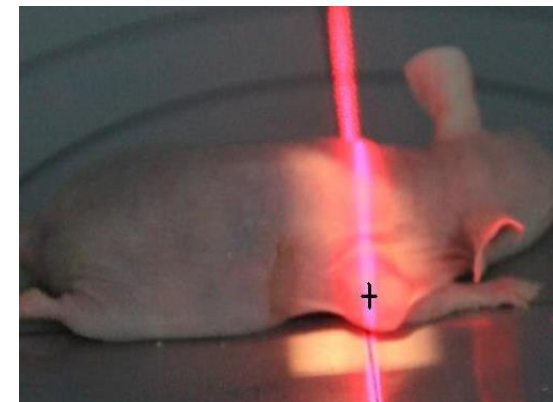
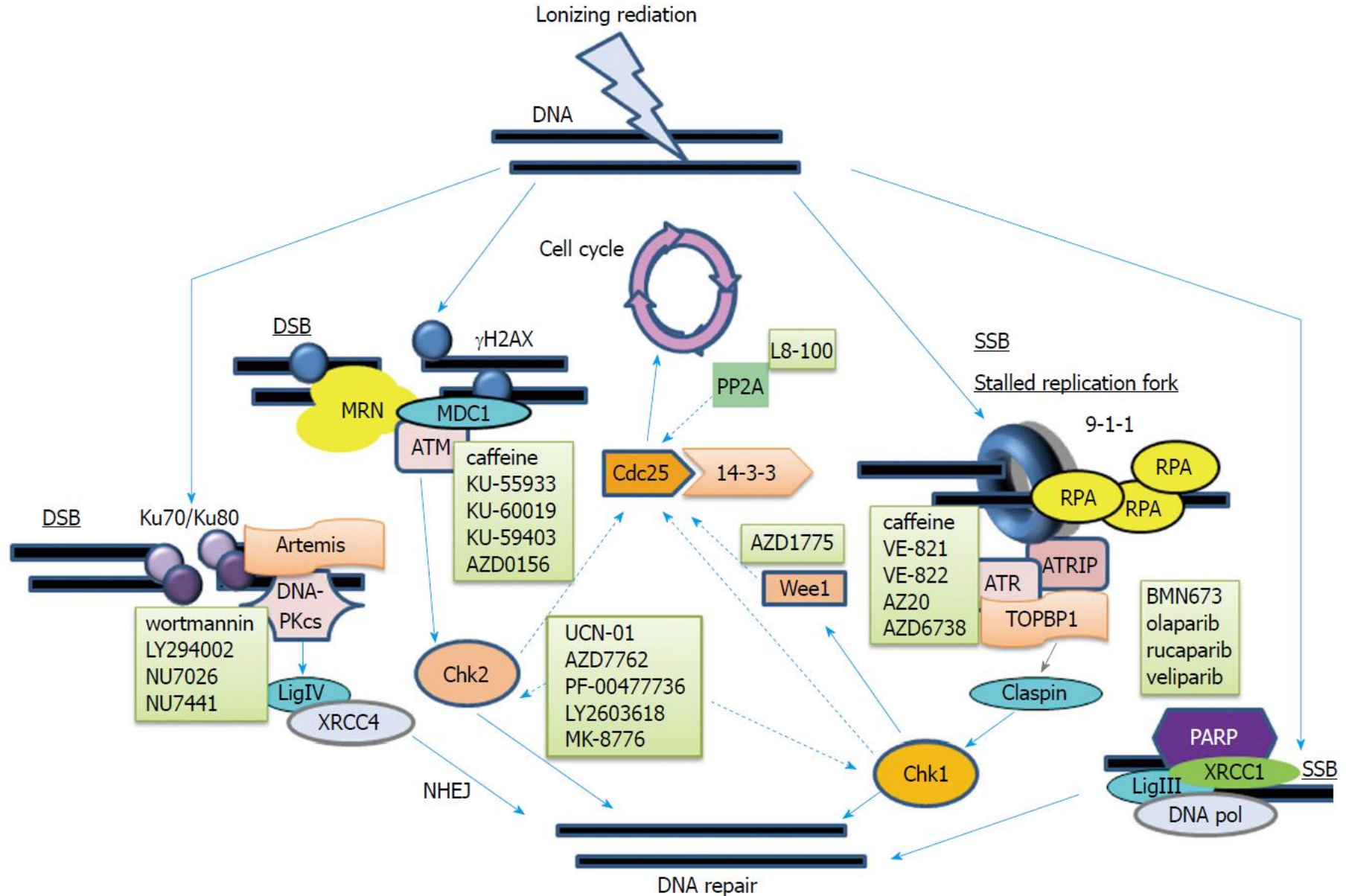


Figure 3

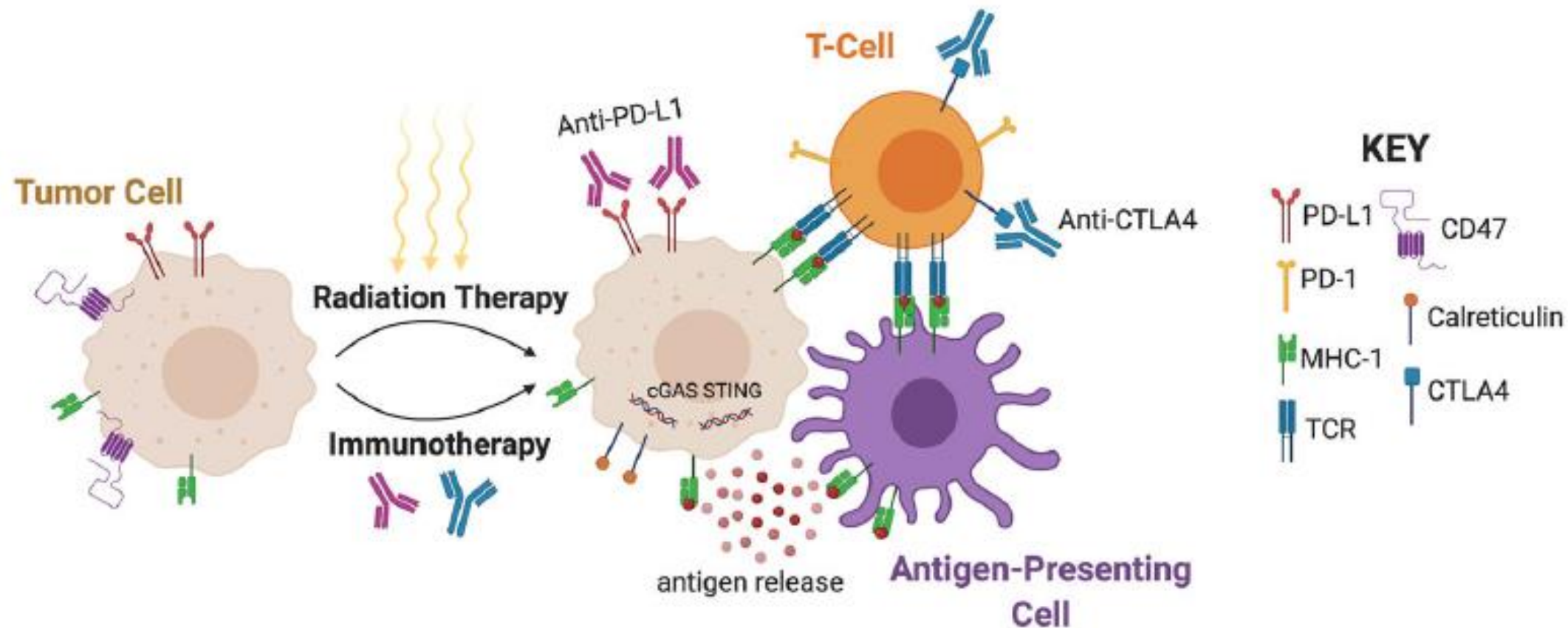
Radiotherapy in combination with DDR inhibitors

Background: Irradiation-induced DNA damage and DNA repair pathway



Radiotherapy in combination with immunotherapy

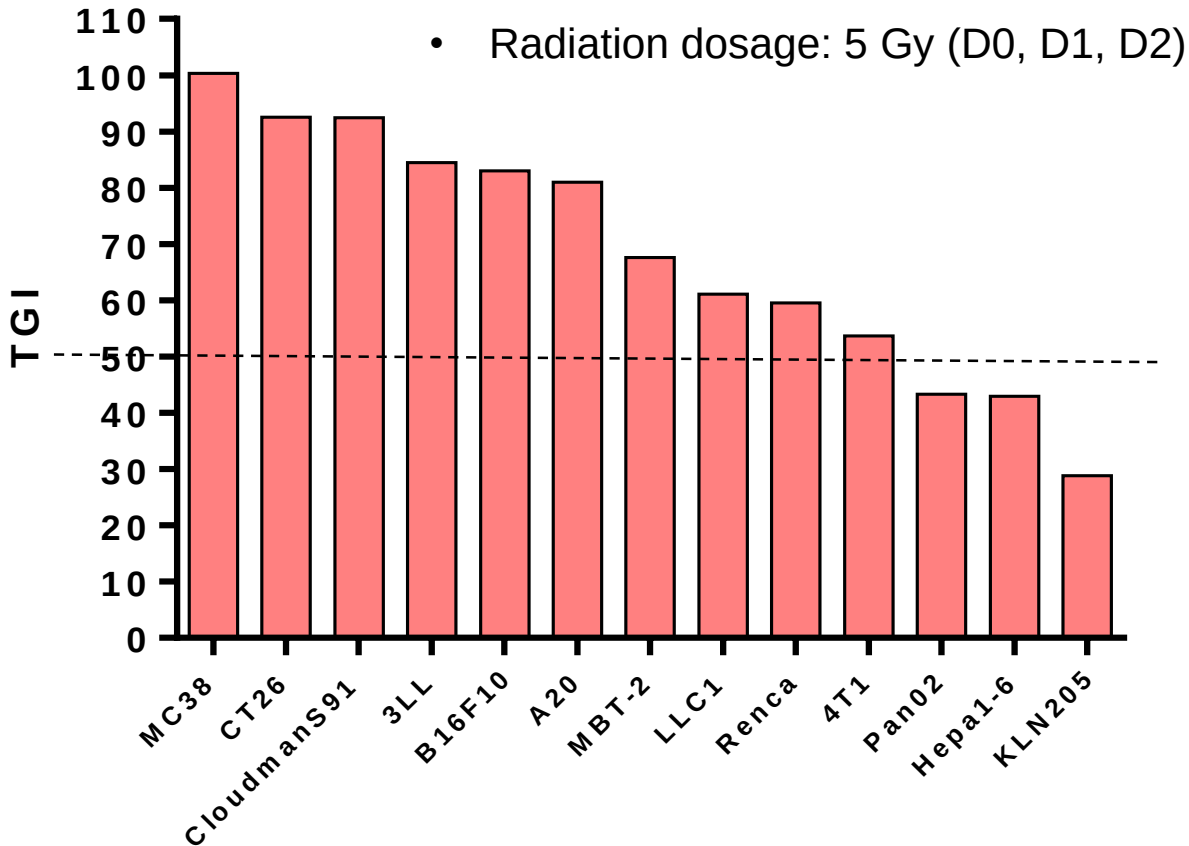
Background: Mechanism underlying synergy of radiotherapy and immunotherapy



Ukleja J, et al. *Front. Oncol.* 2021;11:663852

Radiation Baseline Data

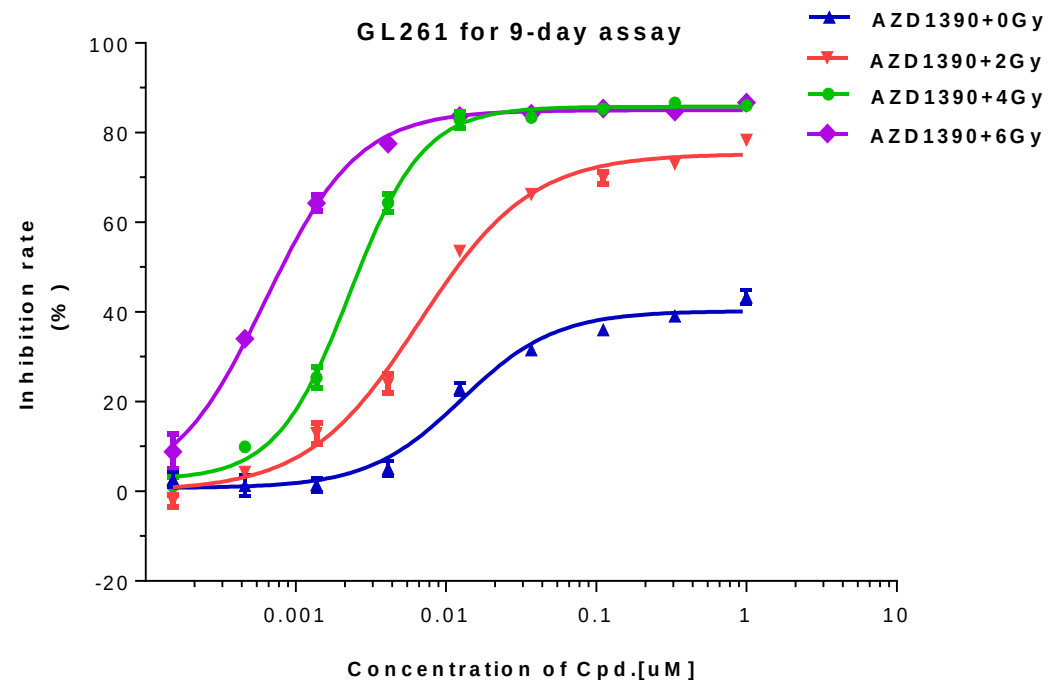
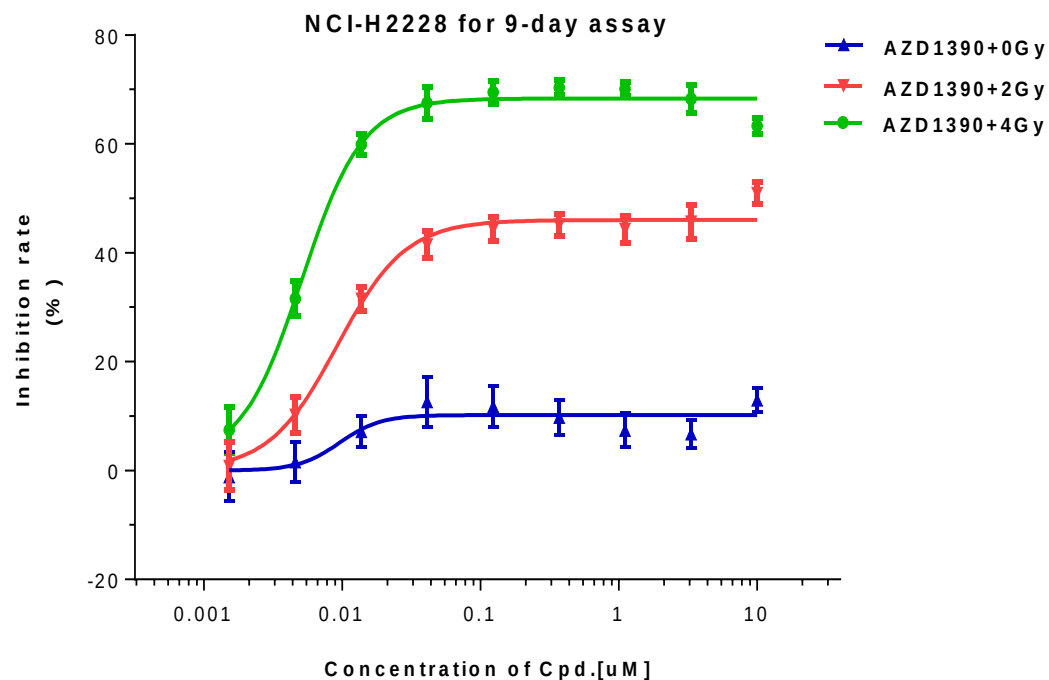
Baseline data of Irradiation: syngeneic subcutaneous models



Model ID	Cancer type	TGI (%)
KLN205	Lung cancer	28.8
Hepa1-6	Liver cancer	42.9
Pan02	Pancreatic cancer	43.3
4T1	Breast cancer	53.7
Renca	Renal cancer	59.5
LLC1	Lung cancer	61.1
MBT-2	Bladder cancer	67.6
A20	Lymphoma	81.0
B16F10	Melanoma	83.0
3LL	Lung cancer	84.5
CloudmanS91	Melanoma	92.4
CT26	Colon Cancer	92.5
MC38	Colon Cancer	100.3

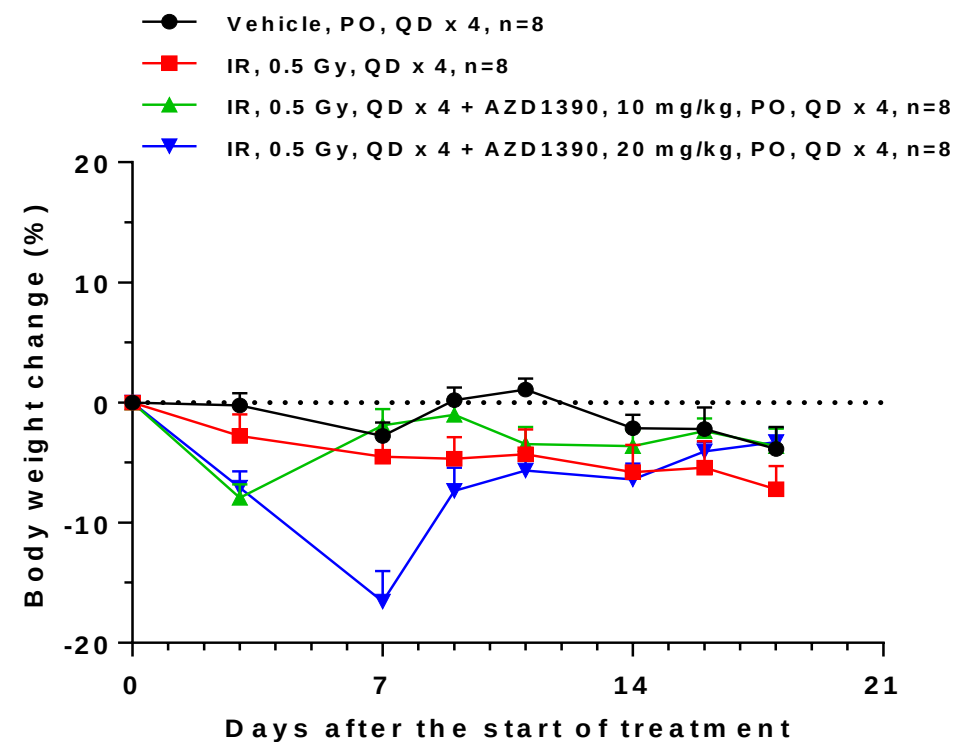
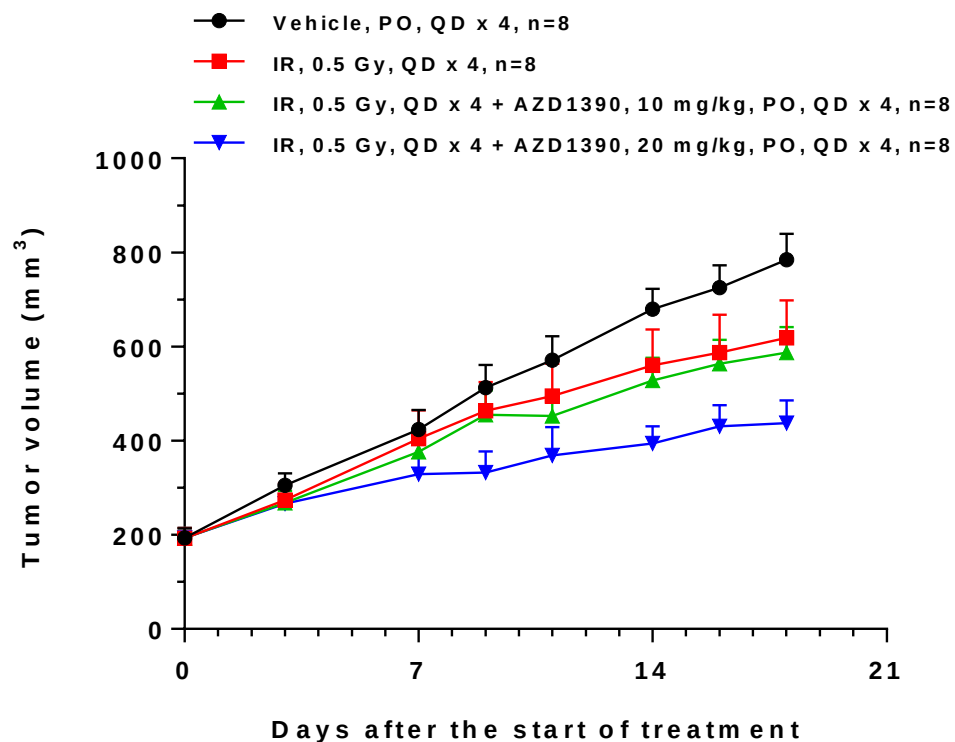
Radiotherapy combination with DDR inhibitor

WuXi AppTec case study: *in vitro* screening



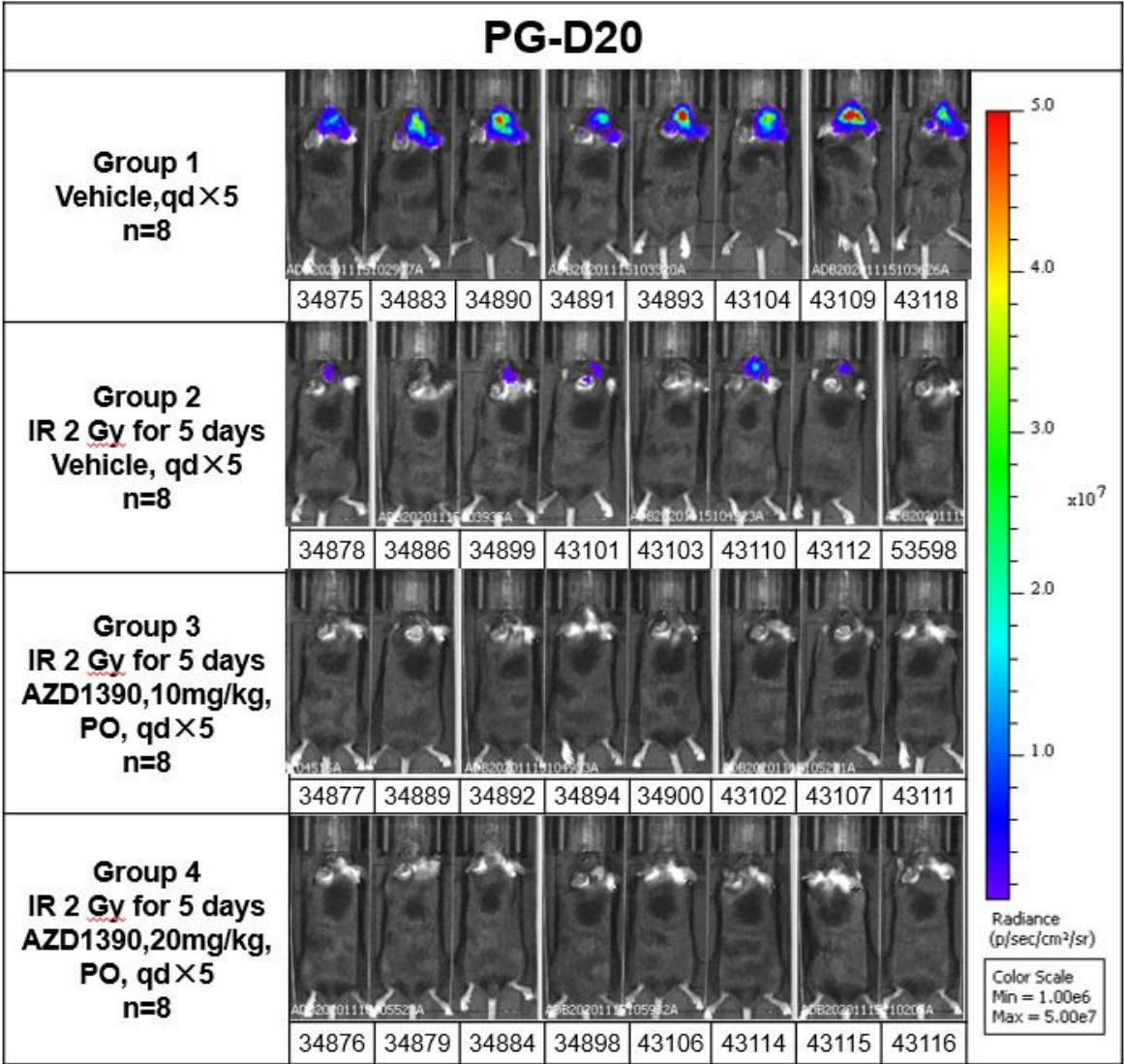
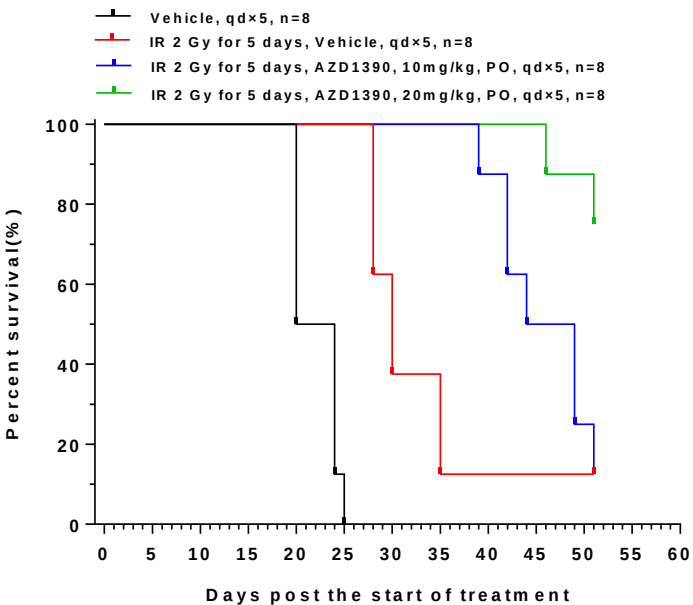
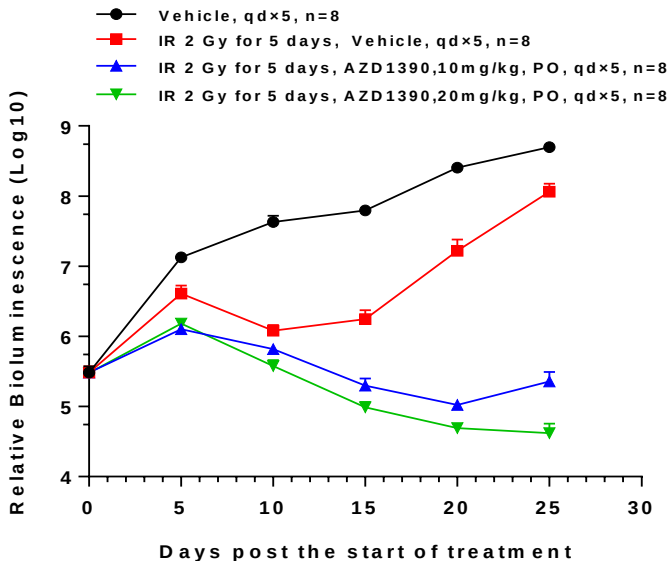
Radiotherapy combination with DDR inhibitor

WuXi AppTec case study: human lung cancer NCI-H2228 subcutaneous model



Radiotherapy combination with DDR inhibitor

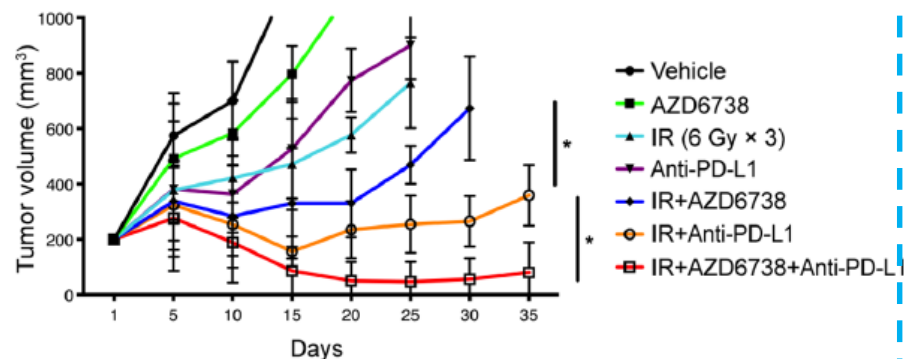
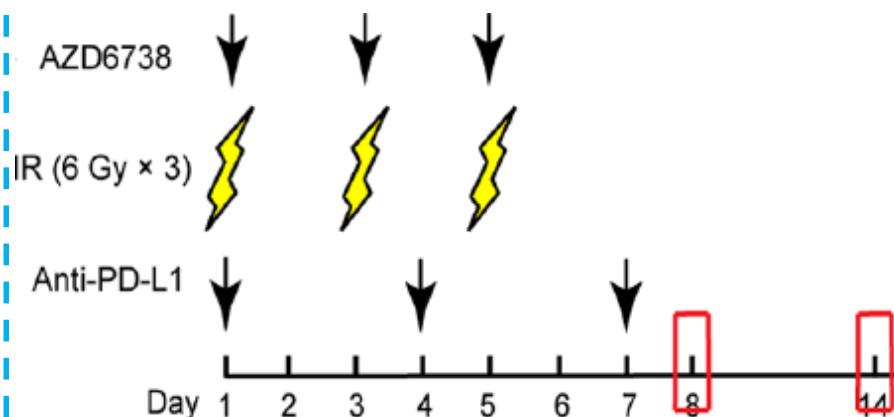
WuXi AppTec case study: murine glioma GL261-luc orthotopic model



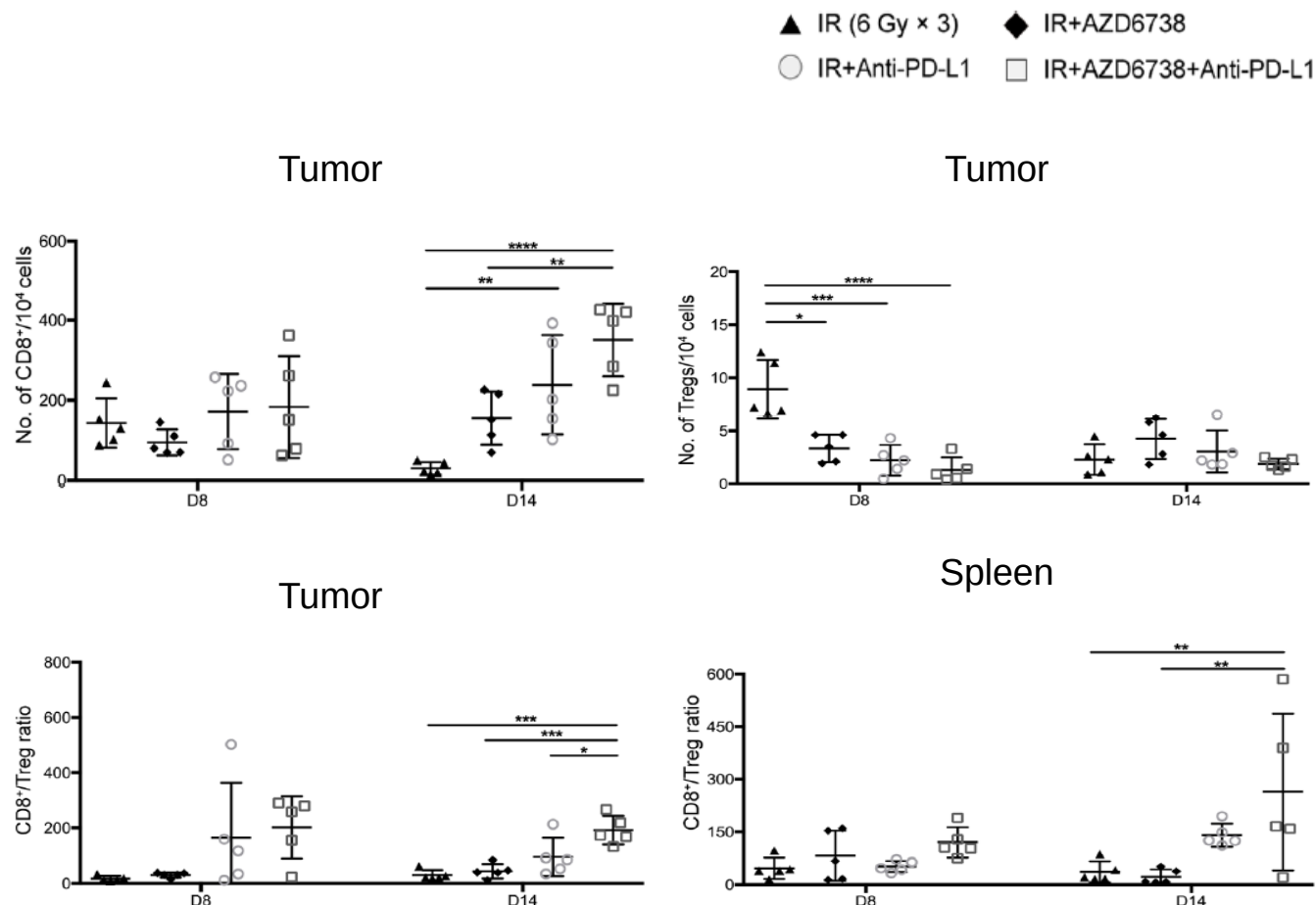
Radiotherapy in combination with ATR inhibitor + α PD-L1

Case study: *Journal for ImmunoTherapy of Cancer*, 2020, 8:e000340

Triple therapy in Hepa 1-6 model



T cell infiltration in mice tumor and spleen





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