

Date approved:

IN VIVO STUDY DESIGN & BEAM REQUEST

Please email completed form to ProtonResearch@cchmc.org.

PROJECT INFORMATION

Project title:

Principal investigator:

PI affiliation: CCHMC UC Other:

Research field: Biology Physics Other:

Collaborator(s):

Collaborator affiliation: CCHMC UC Other:

Project contact (name and phone number):

Initial submission date:

Modification number and date:

Requested beam time (i.e., 1 hr., etc.):

Preferred irradiation date:

Anticipated animal transfer to Liberty:

Anticipated animal transfer back to Base:

STUDY OBJECTIVES

(1) Describe the key question(s) to be addressed by this experiment. List the hypothesis and expected outcomes.

(2) Define study endpoint (e.g., when tumors reach xx size or necropsy at xx days after treatment).

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- (3) Provide a full list of measurements required (e.g., survival, tumor size, PD marker analysis at xx days post treatment, pulmonary function at xx days post treatment).

****Please note that endpoints and measurements cannot be added or modified once the study plan is approved.*

ANIMAL REQUIREMENTS

- Total number of animals:
- IACUC protocol #:
- IACUC approved proton radiation doses:
- Species (e.g., mouse or rat):
- Strain (e.g., C57BL/6):
- Age and weight at the start of the experiment:
- Sex:
- Source (e.g., name of vendor or bred in-house):
- Primary housing location(s):
- Location(s) where manipulation will be conducted:
- Will animal tissue be extracted at Liberty?

TUMOR MODEL INFORMATION

- Genetic model description:
- Tumor cell line name:
- Cell line culture condition:
- # of cells used to inoculate:
- Inoculation volume:
- If treated, what drug was used for treatment?
- What was the dose and duration of drug treatment?
- Average tumor size to start treatment (e.g., 80 mm³):
- Tumor size for euthanasia (e.g., 2000 mm³):

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RADIATION TREATMENT SETUP

Field size/shape	
Beam particle/preferred delivery platform	
Dose constraints (organ sparing)	
Beam energy	

EXPERIMENTAL SETUP

Groups	# of animals	Treatment (including dose, dose rate and fractionation)
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

EXPERIMENTAL PROTOCOL

Date	Procedure
e.g., Day 0	e.g., s.c. injection of 2×10^5 tumor cells on right flank
Day	
Day	
Day	

Date approved:

Day	
Day	
Day	
Day	

Please answer the following questions.

INSTRUCTIONS FOR WHEN ANIMALS REACH STUDY ENDPOINT

(e.g., harvest tumor, blood and draining lymph nodes, perform necropsy (please specify organs to be collected and methods) etc.)

CRITERIA FOR EUTHANASIA PRIOR TO STUDY ENDPOINT

(e.g., weight loss >20% for more than 3 days)

INSTRUCTIONS FOR WHEN ANIMALS REACH EUTHANASIA CRITERIA PRIOR TO STUDY ENDPOINT

(e.g., harvest tumor, necropsy etc.)

POTENTIAL PITFALLS AND MITIGATION PLAN

(e.g., what to do if severe toxicity is observed prior to study endpoint)

OTHER INSTRUCTIONS

(e.g., implant tumors to 20% more animals to account for tumor take rate and allow optimal randomization)

A proper un-irradiated control group (Sham) should also be transferred to Liberty as the animals will be hosted for various length of time outside a barrier environment.

For in vivo experiments: Due to possible interlock during irradiation delivery or issues during anesthesia, it is suggested to add 20% more mice/dose group.

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REQUIRED BEAM TIME ESTIMATION

Use the guaranteed minimum productivity rates below, rounding up to the nearest hour, to estimate the required beam time.

For conventional irradiation: 6 mice/hour

For special irradiations: 5 mice/hour

Dose = Proton physical dose

*Photon equivalent dose (Assuming RBE 1.1) = Proton physical dose *1.1*

OTHER NOTES

If there is any additional information you want to share or anything you want to elaborate on, please use this space.

PRIOR RESEARCH

Is this project a continuation of prior research completed at the Proton Center? Yes No

If yes, please describe key findings and outcomes (publications, grant applications, etc.) that resulted from the prior research.

HELPFUL INFORMATION

The Liberty Proton Facility has a cell culture hood, a 4°C refrigerator, a -20°C freezer compartment, and a 37°C CO2 incubator, etc. for short-term storage. Researchers should bring all other reagents, containers, dry ice, etc. they wish to use with them to the Liberty Facility.

There is a printed copy of the SomnoSuite Manual available at the Liberty PTC. Lexie Redmond will assist with setup and use of the anesthesia machine.