



# RON 199

## Research in Radiation Biology

**UCDAVIS**  
**HEALTH**

**COMPREHENSIVE  
CANCER CENTER**

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## Research in Radiation Biology

### Syllabus

#### Description:

Radiation Oncology is a unique discipline in that it combines elements of clinical practice linked to complex physics based dosimetry and treatment planning. Included within this clinical environment is a strong basis in biology that underpins the clinical effectiveness of radiation treatment. A study of biology and biological mechanisms can provide an understanding of both better ways to treat cancer and on potential adverse events, such as normal tissue damage.

#### Orientation:

##### **Day 1:**

Meet with the course instructor who will provide an overview of the proposed project and who will provide insight on how the work entailed fits in with both the laboratory goals and the clinical question or topic that it addresses

##### **Mid-way:**

Meet with Course Instructor to discuss rotation

##### **End of rotation:**

A summary will be prepared by the student and presented to the department research focused staff and faculty.

#### Objectives:

- Understand the basic question being asked that will be studied in the laboratory based environment as it pertains either to the treatment of patients with radiation or some aspect of the cancer initiation process.
- Understand the acute and late effects that could result from treatment of patients with cancer. Here an appreciation is required of either the process of clinical treatment and/or the experience of patients undergoing treatment. This information may be generated from either attendance at clinical meetings or through discussion with your mentor.
- Understand how to design an experiment that will generate useful data. It may be that you will participate in the experimental design process. This will include the concept of appropriate controls, the need for experimental repetition and critical assessment of data.
- Demonstrate the ability to keep and record both data and results such that others could understand and repeat your work as necessary. As a part of the training you will be required to present your progress in an informal setting as a part of weekly laboratory meetings.

## Background Knowledge:

- Key to understanding the experiments undertaken will be to place these in the context of other work in the field.
- Research papers will be provided for your review that will cover key components of the research you undertake relating them to both clinical and biology based research.

## Expectations:

- Gain an appreciation for the role of basic research undertaken in a clinical environment.
- Gain an appreciation for the possibilities and issues related to a complex treatment modality for which basic research is a key component.
- Understand and appreciate the concepts of mechanistic vs non-mechanistic research questions.

## Additional Resources:

### Our Team:

- [Radiobiologists](#)
- [Physicians](#)
- [Medical Physics](#)
- [Residents](#)

### Suggested References:

- Hall EJ, Giaccia AJ. (2018). Radiobiology for the Radiologist (8th Edition). published by Lippincott Williams & Wilkins (Philadelphia)

## Telecommunications Information

### Phones

To call within the Medical Center, dial 4+XXXX or 3+XXXX (4-digit extension). To call the Davis Campus, dial 9+1+530+752+XXXX (4-digit extension). To call outside the Medical Center within the Sacramento area, dial 9+the seven-digit number.

### Pager

How to page: To call while inside the Medical Center, dial 9+762-XXXX. You will then be asked to enter your numeric message after the tone (your telephone number). To page from outside the Medical Center, dial 762-XXXX.

### Locations

#### Lab:

Research II  
4625 2<sup>nd</sup> Avenue, #2101  
Sacramento, CA 95817

#### Administrative Offices:

South Cancer Center Building  
4501 X Street, #G0140  
Sacramento, CA 95817