

AMERICAN COLLEGE OF VETERINARY RADIOLOGY

RECOGNIZED VETERINARY SPECIALTY OF RADIATION ONCOLOGY (ACVR-RO)

RESIDENCY TRAINING PROGRAM RE-ACCREDITATION APPLICATION

NOTE: Some questions in this form are included for data collection purposes. The inclusion of an item does not necessarily imply that the item is a program requirement for ACVR-RO residency program. Please refer to the current Radiation Oncology Training Program Guidelines for comprehensive residency training requirements. This document may be downloaded from Members Only Downloads section of the ACVR website at <http://www.acvr.org>.

APPLICATION INSTRUCTIONS:

Training program directors wishing to have their programs evaluated should submit this electronic form and appropriate attachments electronically to the Chair of the Residency Standards and Evaluation Committee (RSEC) and to the Assistant Executive Director of the ACVR. The application must be received by February 15 of the third year following initial program approval / last re-accreditation. The RSEC will evaluate the application, a vote will be taken, and the results of the vote and the majority recommendation of the committee forwarded to the President of the Recognized Veterinary Specialty for consideration at Executive Council at one of the two annual meetings.

For the required ACVR and ACVIM Diplomates providing consultation in medical oncology and imaging, that are new to the program, please provide a brief 2-page curriculum vitae and specify the number of weeks each year that the individual will be available to actively support the radiation oncology resident.

**ACVR-RO RESIDENCY STANDARD TRAINING PROGRAM
REACCREDITATION APPLICATION**

1. Date of Application

22 January 2010

Date of Initial Program Approval

1998

Date of Last Re-accreditation

2007

2. Program Director(s): (Must be a Diplomate of ACVR Recognized Veterinary Specialty of Radiation Oncology)

Mary K. Klein, DVM, MS

Program Director's Contact Information:

Work Phone:	(520)888-3177
Fax:	(520)888-3725
E-mail:	Mkk1@mindspring.com

3. Additional ACVR-RO Diplomates supporting the program (not Program Directors)

Numbers of weeks per year an ACVR-RO Diplomate is available to resident on a daily basis.

45

4. Do you have a radiation oncology resident in training at this time?

Yes	No
	x

5. Name of resident(s)

Is/are the resident(s) in an approved Standard program or an Alternative program:

Standard	Alternative

6. Dates of training program (Please list only those dates of the actual training program. Time spent by the resident at your facility prior to beginning or following the completion of the actual training program should not be included.)

Dates of training program for resident (1) (mm/dd/yy)

Dates of training program for resident (2) (mm/dd/yy)

7. Location of Primary Institution

Primary Site:

Southwest Veterinary Oncology

Department

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Hospital/University

Southern Arizona Veterinary Specialty Center/ Arizona Veterinary Specialty Center

Address

141 E. Fort Lowell Road / 86 W. Juniper

City, State Zip Country

Tucson, AZ 85705 / Gilbert, AZ 85233

8. Cooperating Institution(s) (If applicable):

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Department

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Hospital/University

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Address

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City, State, Zip, Country

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For cooperating institutions, attach letters of agreement signed on behalf of the institution(s) by appropriate individual(s).

9. Length of Training Program (months):

24

If greater than 2 years, will this period include 24 months of continuous training in radiation oncology?

Yes	No

10. Number of months dedicated solely to radiation oncology training (excluding time on Medical Oncology service, Radiology/Imaging, etc.)

18

11. Advanced Degree:

	Yes	No	Optional
Masters:		x	
PhD:		x	

12. Essential Program Faculty: individual faculty member may serve in only one capacity

Please list all qualified faculty in support of program

a. Diagnostic Radiologist(s): (Must be Diplomate(s) of the ACVR)

Victoria Heffelman (Gilbert office) , Kerri Beck (Tucson office)

Number of weeks per year an ACVR – Radiology diplomate is available to resident on a daily basis.

45

Faculty member on site?

Yes	No
x	

If off site, please explain relationship.

- b. Medical Oncologist(s): (must be Diplomate(s) of ACVIM, Specialty of Oncology)

Kathryn Vickery, Kim Hillers, Mary K Klein

Number of weeks per year an ACVIM-Oncology Diplomate is available to resident on a daily basis.

52

Faculty member on site?

Yes	No
x	

If off site, please explain relationship

- c. Surgeon(s): (must be Diplomate(s) of the ACVS)

Mary K. Quinn, Bradford Dixon, David Bone, Tara Enweiler

Number of weeks per year an ACVS faculty member is available to resident on a daily basis.

52

Faculty member on site?

Yes	No
x	

If off site, please explain relationship.

d. Pathologist(s): (must be Diplomate(s) of the ACVP)

Sharon Dial

Number of weeks per year an ACVP faculty member is available to resident on a daily basis.

45

Faculty member on site?

Yes	No
	x

If off site, please explain relationship.

Dr. Dial works out of the University of Arizona Veterinary Diagnostic Laboratory. That facility is approximately 10 minutes away from the Tucson office. Dr. Dial is a regularly scheduled lecturer in both the internship and residency programs in the hospital. As well, residents are scheduled to spend time with Dr. Dial individually.

Please list all additional board certified specialists in direct support of the program. If

offsite, please explain relationship.

Name	Certifying College / Board
Analisa Prah	ACVIM
Reuben Merideth	ACVO
Stan Rubin	ACVIM
Victoria Lukasik	ACVA
Tom Lewis	ACVD
Lisa Felchle	ACVO
Whit Church	ACVIM-cardiology
Janet Bailey	ACVIM
Jen Klaus	ACVECC

13. How does resident receive training in Medical Oncology? What is time allotted for this training. Please provide description of formal and informal training experiences?

Each afternoon for the first four months of the residency, the radiation oncology resident will be seeing patients with the medical oncologist on duty. They will be expected to participate in the diagnostic and therapeutic plan for patients under their primary care. In addition oncology rounds are held daily, which includes the review of each of the oncology and radiation oncology patients scheduled for care that day.

14. How is resident trained in diagnostic imaging? What is time allotted for this training. Please provide description of formal and informal training experiences?

A total of eight weeks of clinic time will be spent exclusively in diagnostic imaging working under the direct supervision of a board-certified radiologist.

15. How is resident trained in radiation biology? Please provide description of formal and informal training experiences?

The resident will attend an in-house radiation biology course taught by Dr. Klein. In addition didactic courses are offered at the University of Arizona through the radiation oncology and cell biology departments. The residents are strongly encouraged to proxy relevant lectures.

16. How is resident trained in cancer biology? Please provide description of formal and informal training experiences?

The resident will attend and complete a cancer biology course prepared and administered by Dr. Mary K. Klein. Some cancer biology will also be incorporated into the radiation biology course.

17. How is resident trained in radiation oncology physics? Please provide description of formal and informal training experiences?

The resident will attend didactic classes taught by Dr. Wendell Lutz throughout their two year residency.

18. Please list any formal courses and their instructors included in the residency training curriculum. Please attach syllabi and instructor credentials for each listed course.

Radiation therapy physics	Wendell Lutz, PhD	CV previously supplied
Radiation biology	Mary K Klein, DVM, MS	CV previously supplied
Cancer biology	Mary K Klein, DVM, MS	CV

19. Does the resident participate in clinical rounds on a daily basis while on clinical rotations? Is a supervising Diplomate available for the majority of rounds? If no, please describe how rounds are attended and supervised.

Yes	No
x	
Comments:	Hospital rounds are held twice daily. Oncology rounds are held each morning. A supervising diplomate is scheduled to be present at every rounds.

20. Are formal conferences, such as clinicopathologic conferences, journal clubs, or seminars held on a weekly basis?

Yes	No
	x
Comments:	Journal club and grand rounds are held bimonthly (they alternate with each other), intern lectures are presented weekly and provided on a rotating basis by each specialty in the clinic. New radiation treatment plans are reviewed weekly. Any resident that is not previously board-certified in medical oncology will be required to attend the oncology intern lectures and other relevant topics.

21. Please provide a description of the conferences, etc., that are provided and the typical schedule.

See above

22. Is the resident required to give one or more formal presentations at a conference or in an educational setting on a yearly basis? If yes, please describe these conferences or educational settings.

Yes	No
	x
Comments: Although not required, it is strongly encouraged.	

23. How many major veterinary medical or medical meetings is each resident able to or expected to attend during his/her training program? Please list the meetings attended.

None	One	Two	> Two
			x
Comments: ACVR, VCS and/or ASTRO			

24. Does the training program require a research project? Please indicate the number of research projects required.

Yes	No	Optional	Number
	x		
Comments: Strongly encouraged, but not required			

25. Are one or more publications required as part of the training program?

Yes	No	Number
	x	
Comments: Strongly encouraged, but not required.		

26. Please indicate the availability of the following facilities or equipment. Indicate if these are available at the primary training site, or at a different location. For facilities that are not on-site, please describe the situation and availability in the space at the end of this section.

Equipment / Service	Available?		On-Site?	
	Yes	No	Yes	No
Megavoltage Teletherapy Machine Please specify manufacturer and model: Clinac 1800, Theratron 80	x		x	
3D - Computer based treatment planning system Please specify manufacturer and model: Prowess Panther v. 4.71	x		x	
2D/2.5 D - Computer based treatment planning system Please specify manufacturer and model:		x		x
LDR Brachytherapy treatment and planning		x		x
HDR Brachytherapy treatment and planning		x		x
Diagnostic Radiology/Imaging Services	x		x	
Conventional radiography	x		x	
Fluoroscopy		x		x
Ultrasound	x		x	
Nuclear Medicine	x		x	
Computed Tomography	x		x	
Magnetic Resonance Imaging	x			x
Positron Emission Tomography		x		x
Intensive Care Facility - 24 hours	x		x	

Clinical Pathology capabilities: (includes CBC, serum chemistries, blood gases, urinalysis, cytology, parasitology, microbiology, and endocrinology)	x		x	
Veterinary Library w/Literature Searching Capabilities	x			x
Medical Library w/Literature Searching Capabilities	x			x

27. If any of the above equipment or facilities are available off-site, please explain how the resident can access them for case management, research, or study.

MRI studies are done through the Veterinary Neurologic Center in Phoenix. The medical school library at the University of Arizona is readily available for literature searches and includes the veterinary journals with the largest circulations in their collection.

28. Please list numbers of patients treated in the last 12 months using the listed radiation treatment modalities.

Modality	Number Treated
Megavoltage Gamma / X-ray Teletherapy	>200
LDR Brachytherapy	0
HDR Brachytherapy	0
Injectable Radionuclide therapy	
Radioiodine	>150

Other (please specify)

⁹⁰Strontium Pleisotherapy

>6

Other - please specify

29. Describe procedures for resident record recording of radiation treatment details of all patients.

A separate radiation record is generated for each patient. That record includes all treatment plans, prescription, port films, pictures and treatment logs. New radiation plans are reviewed weekly.

30. What procedures are in place to facilitate collection of follow up information of patients treated?

All medical records are computerized with searching capability. The resident is strongly encouraged to keep a log of patients treated during their residency and follow-up information on those patients.

31. By what mechanisms and how often are residents evaluated? Please attach form used in this evaluation (required).

Residents are officially evaluated annually. If any concerns or questions arise, a separate evaluation can be done at any time.

32. Please list the residents who have completed the training program including the year that each individual's training program ended. If at all possible, please provide an address, and any information you have on the status of each individual with respect to the board certification process.

Tracy LaDue-Meeks	2000	Board-certified 2000
Eric Boshoven	2002	Board-certified 2004
Pamela D. Jones	2004	Board-certified 2004
Sarah Charney	2007	Board-certified 2007

33. Please list any additional information of interest in support of this residency re-accreditation application.

Attachments:

Please attach the following documents to the application if applicable. Please mark box to indicate which documents are included. Please list any additional documents attached in support of this application.

Attached?	Documents
x	Twenty-four (24) month calendar of resident's activities – Required follows below
Previously supplied	CV - ACVR-RO Diplomate - Program Director(s) – Required
x	CV - ACVR-R Diplomate(s) – Required Beck previously supplied, heffelman attached separately
x	CV - ACVIM-O Diplomate(s) – Required Klein prev supplied, Vichery, Hillers attached separately
x	Syllabi of formal course work included in the training program – Required follows below
Previously supplied	Credentials of instructors providing formal course work – Required Lutz, Klein previously supplied
x	Forms used in resident evaluation – Required follows below
na	Letters of agreement from cooperating institutions - Required

**Southwest Veterinary Oncology
Radiation Oncology Residency Calendar by Month**

	1	2	3	4	5	6	7	8	9	10	11	12
RadOnc	am	am	am	am		x	x	x	x	x	x	x
MedOnc	pm	pm	pm	pm								
Imaging					x							

12	13	14	15	16	17	18	19	20	21	22	23	24
RadOnc		x	x	x	*	x	x	x	x	x	x	*
MedOnc												
Imaging	x											

*Research or individual study time

Note that the following schedule will be completed during the two year residency, however there may be some months which are switched around to accommodate the radiologists or medical oncologists commitments.

Resident Physics Course
Instructor – Wendell Lutz, PhD

1. Structure of Matter	Khan 1-11	Bentel 1-15
2. Electron Energy Loss – X-ray production	32-34,38-43	
3. Interaction of photons with matter	71-90	
4. Interactions continued.....		
5. Dose, Radiation Measurements	94-102,106-108	32-36
6. Radiation Measurements continued...		
7. Treatment Machines		
Co-60 Teletherapy	45-48,51-57	
Linacs, Orthovoltage	62-66	16-31
8. Central Axis Dose Calculations for		
Co-60, Linacs, Orthovoltage	176-190,193-196	36-58
PDD, TMR, TAR		
9. Central Axis Dose Calculations continued		
S, Sc, Sp, BSF		
Calibration Factor, Eq Sq	200-210	59-78
10. Central Axis Dose Calculations		
Extended Distance		79-97
11. Basics of Treatment Planning		
External Beams	chap 11	chap 6
12. Basics of Treatment Planning continued	chap 12	
13. Basics of Treatment Planning continued	chap 13	chap 7
14. Treatment examples		
Human and Animal		
15. Electron Beam Planning	chap 14	53-54
16. CT Planning, Plan Evaluation		
DVH, TCP, NTCP		

Resident Physics Course – p.2

17. Radioactivity	12-26	29-31
18. Radionuclides used in Brachytherapy Types of Implants	chap 15	chap15
19. Approaches to Brachytherapy Interstitial & Intracavitary High Dose Rate		chap16
20. Fractionation: Time-Dose Relationships	ref. Orton	
21. Fractionation: continued		
22. Diagnostic X-rays and CT	32-44, 272-75	Huda
23. MRI and Ultrasound	269-275	Huda
24. Nuclear Medicine Tc-99, Anger Camera		Huda
25. Special Treatment Techniques Radiosurgery, TBI, Intraoperative		
26. Radiation Safety Standards and Barriers	chapter16	

Resident Radiation and Cancer Biology

Instructor – M. K. Klein

Texts: Radiation Biology for the Radiologist - Hall
Medical Radiobiology - Travis
Introduction to Radiobiology – Tubiana
Tannock and Hill

1. Review of Cell Biology
2. Basic Biologic Interactions of Radiation
3. DNA Strand Breaks and Chromosomal Aberrations
4. Cellular ‘Radiosensitivity’
5. Tissue Response to Radiation
6. Cell survival curves
7. Radiation Pathology
8. Repair of radiation damage
9. Oxygen Effect and Reoxygenation
10. LET and RBE
11. Acute Effects
12. Late Effects
13. Cataractogenesis
14. Radioprotectors
15. Radiosensitizers
16. Effects of radiation on embryo and fetus
17. Doses and risks in diagnostic radiology
18. Radiation protection
19. Mechanisms of carcinogenesis

Cancer Biology and Fundamentals of Oncology

Instructor – M.K. Klein

Texts: The Basic Science of Oncology – Tannock and Hill
Current scientific literature

Topics

Nomenclature, Classification and Pathology of Neoplasms; Properties of Malignant Cells

Oncogenes and Tumor Suppressor Genes

RNA Viruses and Cancer

DNA Viruses and Cancer

Radiation Carcinogenesis and other Physical Agents

Epidemiology of Cancer

Chemical Carcinogenesis

Growth Factors and Intracellular Signaling

Genetic Testing

Genetic Basis of Cancer

Cancer Cytogenetics

Tumor Growth and Cell Kinetics

Gene Therapy

Experimental Radiotherapy

Invasion and Metastasis

Tumor Immunology

Hormones and Cancer

Biological and Pharmacological Properties and Anti-Cancer Drugs

**Radiation Oncology Resident Evaluation Form
Southwest Veterinary Oncology**

Resident Name _____

Evaluator(s) _____

Period covered by this evaluation _____

Date of evaluation _____

Year of program: 1 ____ 2 ____

CLINICAL ABILITY	1	2	3	NA
Knowledge (theory/principle, current literature)				
Application of knowledge, logic				
Quality of patient management (diagnosis, treatment, follow-up)				
Patient care				
Diagnostic/technical skills				
Instructional skill				
Oral and written presentation				
Other				
SENSE OF RESPONSIBILITY				
Initiative, motivation				
Judgment reliability				
Organization				
Attendance at rounds and seminars				
Punctuality				
Other				

INTERPERSONAL SKILLS				
Communication with:				
Clients				
Faculty				
Interns				
Technical and administrative staff				
Referring veterinarians				
Other house officers				
Performance under stress				
Receptiveness toward guidance				
Other				
HOSPITAL POLICIES AND PROCEDURES				
Medical record, including reports (timeliness, accuracy, completeness)				
Procedures (anesthesia scheduling, admissions/discharge)				
Other				
PROGRESS ON RESIDENCY AND BOARD REQUIREMENTS				
OVERALL EVALUATION				
COMMENTS				

1-exceeds standards, 2-meets standards, 3-does not meet standards, NA=not applicable