

**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

02/15/2011

Date of Initial Program Approval

07/01/2003

Date of Last Re-accreditation

2009

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

Jimmy C. Lattimer DVM, MS

Program Director's Contact Information:

Work Phone:	573 882-7821
Fax:	573 884-5444
E-mail:	lattimerj@missouri.edu

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

David Bommarito DVM, MS, DACVR-RO

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

52

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

Yes	No
X	

5. Name of resident(s)

Dr. Stephanie Cook,

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

Standard	Alternative
X	

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)

07/15/2010 – 07/14/2012 (Cook)

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

7. Location of Primary Institution

Primary Site:

University of Missouri

Department

Veterinary Medicine and Surgery

Hospital/University

Veterinary Medical Teaching Hospital

Address

900 E. Campus Dr.

City, State Zip Country

Columbia, Missouri 65211

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

Department

Hospital/University

Address

City, State, Zip, Country

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
X	

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

20
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See accompanying calendar. 2 months of the 24 month program are dedicated to medical oncology clinics and one month dedicated to only diagnostic imaging. Of course activities in these areas are also a part of the everyday activities of the resident in the course of dealing with their cases. Approximately one month of vacation and meetings are dispersed through the entire length of the program.

11. Advanced Degree:

	Yes	No	Optional
Masters:			X
PhD:			X

Advanced degrees are not a part of the standard residency program. However, as this is an academic program there is a substantial amount of class work which could be directed toward an advanced degree. If a resident is interested in pursuing a Master's or Ph.D. degree following or in advance of the residency program then we are open to that possibility and will try find support for that. Over the years we have been moderately successful in accomplishing this. However the additional time required for the advanced does not affect the time in or the activities within the residency program. Likewise any time spent during the degree program in the radiation therapy service does not count toward the residency time either.

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)

Cristi Cook DVM, MS, DACVR (radiology) Lisa G. Britt DVM, MS, DACVR (radiology) Stephanie C. Essman DVM, MS, DACVR (radiology) Jesse Nagy DVM, MS, DACVR (radiology) Isabelle Masseur MS, DVM, Ph.D., DACVR (radiology)
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Number of weeks per year an ACVR – Radiology diplomate is available to resident on a daily basis.

52
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Faculty member on site?

Yes	No
X	

If off site, please explain relationship.

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

Carolyn J. Henry DVM, MS Diplomate ACVIM (Oncology)  
Sandra Axiak DVM, Diplomate ACVIM (Oncology)  
Jeffrey N. Bryan DVM, Ph.D Diplomate ACVIM (Oncology) (as of July 2011)

Each ACVIM diplomate currently has a 50-60% assignment to clinical service activities.

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)

James L. Cook DVM, Ph.D., Diplomate ACVS  
James Tomlinson DVM, MVSci., Diplomate ACVS  
Tony Mann DVM, MS Diplomate ACVS, Diplomate ACVECC  
Derek B. Fox DVM, Ph.D., Diplomate ACVS

Joanne Kramer DVM, Diplomate ACVS

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)

Marlyn Whitney, DVM, PhD, Dipl. ACVP  
Gayle C. Johnson, DVM, PhD, Dipl. ACVP  
Linda M. Berent DVM, PhD, Dipl. ACVP  
Charles Weidermeyer DVM, Ph.D. Dipl. ACVP

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

52

Faculty member on site?

Yes	No

If off site, please explain relationship.

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Please list all additional board certified specialists in direct support of the program. If offsite, please explain relationship.

Name	Certifying College / Board
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**Internal Medicine****Leah A. Cohn, D.V.M., Ph.D.**

Diplomate American College of Veterinary Internal  
Medicine (Small Animal Internal Medicine)  
Professor

**Amy DeClue, D.V.M., M.S.**

Diplomate American College of Veterinary Internal  
Medicine (Small Animal Internal Medicine)  
Assistant professor

**Marie E. Kerl, D.V.M.**

Diplomate American College of Veterinary Internal  
Medicine (Small Animal Internal Medicine)  
Diplomate American College of Veterinary Emergency and  
Critical Care (Emergency and Critical Care)  
Associate teaching professor

**Tekla Lee-Fowler, D.V.M., M.S.**

Diplomate American College of Veterinary Internal  
Medicine (Small Animal Internal Medicine)  
Clinical Instructor and Post-Doctoral Fellow in Immunology

**Carol R. Reinero, D.V.M., Ph.D.**

Diplomate American College of Veterinary Internal  
Medicine (Small Animal Internal Medicine)  
Assistant professor

**Faculty - Neurology/Neurosurgery**

**Dennis O'Brien, D.V.M., Ph.D**

Diplomate American College of Veterinary Internal  
Medicine (Neurology)

Professor

Neurologist & Director of the Comparative Neurology  
Program

Chancellor's Chair of Excellence in Comparative Neurology

**Joan Coates, D.V.M., M.S.**

Diplomate American College of Veterinary Internal  
Medicine (Neurology)

Associate Professor

Neurologist/Neurosurgeon & Service Leader

**Fred A. Winger, D.V.M., M.S.**

Diplomate American College of Veterinary Internal  
Medicine (Neurology)

Assistant Professor Neurology/Neurosurgery Small Animal  
Medicine and Surgery

**Faculty - Emergency and Critical Care**

**F. A. (Tony) Mann, D.V.M., M.S.**

Diplomate American College of Veterinary Surgeons  
Diplomate American College of Veterinary Emergency and  
Critical Care

Professor

Director of Small Animal Emergency and Critical Care  
Services

Small Animal Soft Tissue Surgery Service Chief

Small Animal Surgery/Neurology Instructional Leader

**Marie E. Kerl, D.V.M.**

Diplomate American College of Veterinary Internal  
Medicine (Internal Medicine)

Diplomate American College of Veterinary Emergency and  
Critical Care

Associate teaching professor

**Keith R. Branson, D.V.M., M.S.**

Diplomate American College of Veterinary Anesthesiologists  
Clinical assistant professor

**John R. Dodam, D.V.M., M.S., Ph.D.**

Diplomate American College of Veterinary Anesthesiologists

Associate professor veterinary medicine & surgery

Associate professor veterinary biomedical sciences

Department Chair

**Faculty - Cardiology**

**Deborah M. Fine - D.V.M., M.S.**

Diplomate American College of Veterinary Internal  
Medicine (Cardiology)

Assistant Professor

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?

The resident is required to take the Graduate Course in Medical Oncology given by the Oncology Faculty.

The resident is expected to attend the weekly staff rounds for the oncology section and the weekly radiation oncology rounds which includes the medical and radiation oncology faculty residents and technicians. The Resident will spend two months during the second year of the program functioning as a medical oncology resident under the supervision and direction of the medical oncology faculty.

In addition there is daily consultation between the radiation oncologists and medical oncologists. This communication is at the faculty and resident levels. There are currently three medical oncology residents in the hospital and the two services are closely integrated at all levels.

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

The resident is required to attend, daily for 2 months, the radiology staff rounds in which all diagnostic imaging studies are reviewed and final consensus interpretation arrived at. Diagnostic residents present their cases at this session and are critiqued. During the course of their program the radiation oncology resident is required to interpret imaging studies from all modalities for all radiation oncology cases under the supervision of the program director. Further instruction in diagnostic interpretation will occur in one-on-one discussions with diagnostic radiologists and the program director about interpretation of studies on oncology patients.

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

The resident is required to take the 3 credit course in radiation biology taught through the Nuclear Sciences and Engineering Institute. This course is take in the fall of the first year of the program. Radiation Biology is reviewed during the didactic course in Radiation Therapy taught by the program director. Journal readings from various oncology focused journals are assigned from time to time. Reading of the entire latest edition of Hall and the Radiation Biology section of Brady and Perez is required and discussed.

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

Cancer biology is covered as a portion of the course in Radiation Biology, Medical Oncology, and Radiation therapy as described above. In addition, the section of radiology includes a full time tumor biologist (Dr. Michael Lewis) who participates in the medical oncology program. Journal readings from various oncology focused journals are assigned from time to time. Multiple seminars on various aspects of tumor biology are attended throughout the course of the program as well.

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

The resident is required to take the course in radiation safety and physics taught by the faculty of the Nuclear Sciences and Engineering Institute which covers the basics of radiation physics and the safe use of radiation sources as well as shielding calculations. The resident is also required to take the radiation oncology course which addresses the physics of radiation oncology. The resident is required to learn and be able to perform daily, weekly, and monthly radiation safety and physics checks on the linear accelerator. The resident is required to perform hand dose calculations for all radiation therapy treatments which are checked by program director. Informal discussion on radiation physics occur frequently in the course of the program. AAPM certified physicists are used to oversee the physics certification of the program and are available for consultation when need arises. Reading and discussion of Kahn's "The Physics of Radiation Therapy is also required

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 Safety	Dr. William Miller
Radiation Biology	Drs. Wynn Volkert, Michael Lewis, Jimmy Lattimer
Medical Oncology	Dr. Carolyn Henry
Radiation Oncology	Drs. Jimmy Lattimer, Dr. Steven Westgate

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:	

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

Yes	No
X	
Comments:	Book reading sessions and Journal Club meetings are held weekly in addition residents are encouraged to attend seminars and rounds presented by the Department of Medical Oncology at the Medical School when relevant topics are being presented.

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

Clinicopathologic conferences are held on Wednesday morning where oncology cases which have pathologic confirmation either from biopsy or post mortem are presented by the clinician and the pathologist involved. Discussion of treatments and outcomes are part of the conference. Journal clubs are held weekly and review current articles as well as “landmark” articles from the literature relevant to the subject of the journal club.
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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:	The resident is required to present one seminar to the clinic faculty, house officers and students each year. The topic of this seminar is usually a general topic presentation the first year and the results of a clinical investigative project the second year.

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:	Resident is expected to attend at least one ACVRO meeting and two VCS meetings during the course of the program. This is done at departmental expense. Attendance of ASTRO or RSNA is also encouraged.		

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

Yes	No	Optional	Number
X			
Comments:	An investigation of clinical relevance is required. Typically a retrospective investigation of case material and one related to administration of radiation therapy is required.		

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

Yes	No	Number
X		
Comments:	The results of the research project must be written up and submitted for publication. In addition one case report is strongly recommended	

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: Siemens 7440 – 8MV with electrons	X		X	
3D - Computer based treatment planning system Please specify manufacturer and model: CMS/Elekta – XIO latest version	X		X	
2D/2.5 D - Computer based treatment planning system Please specify manufacturer and model: CMS/Elekta – XIO latest version				
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.

The medical Library is on the same campus about ½ miles from the veterinary campus. The resident enjoys full access rights the J. Otto Lotts Health Sciences Library at the MU School of Medicine

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	Approximately 90
LDR Brachytherapy	4
HDR Brachytherapy	0
Injectable Radionuclide therapy	Approximately 60
Radioiodine	Approximately 40
Other (please specify) 153 Sm	Approximately 15
198 Au	5
<sup>90</sup> Strontium Pleiotherapy	Approximately 10
Other - please specify	

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

A detailed prescription sheet is filled out for all beam radiation therapy patients. This includes the demographic of the patient. The details of each beam used and the number of beams used. The administration of each beam is recorded in the daily log. For the majority of the beam treatments a computerized treatment plan is developed and printed. Isodose profiles for key areas of the treatment field and DVH's are printed. For treatments done without computerized planning the prescription form is filled out by hand and checked by the radiation oncologist. For brachytherapy and pliesiotherapy the number of needles/fields used and the dose rate and given dose are recorded in the medical record. All of these records are maintained in radiation oncology.

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

Both the section of Medical Oncology and the Section of Radiation Oncology maintain computerized patient lists which include the treatment, treatment date, tumor type and other information such as client address etc. Requests for followup information on the status of the patient are sent out quarterly unless notification of the patient's demise is received or the patient is lost to follow-up because the mailing is returned. In hospital follow-up is request for the first year in most radiation oncology patients. In addition a computer generated reminder system for rechecks has recently been instituted.

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

Written evaluations at six month intervals and oral evaluations at other times as needed.

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.

Terri Tucker-Warhover DVM 2003-2005 Columbia Missouri – 2<sup>nd</sup> attempt Sept. 2011  
David Bommarito DVM, MS 2006-2008 Columbia Missouri ACVRO Diplomate  
2008  
Koiche Nagata DVM, 2008-2010 Pittsburgh, PA ACVRO Diplomate 2010

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.

<b>Attached?</b>	<b>Documents</b>
	Twenty-four (24) month calendar of resident's activities - <b>Required</b>
	CV - ACVR-RO Diplomate - Program Director(s) - <b>Required</b>
	CV - ACVR-R Diplomate(s) - <b>Required</b>
	CV - ACVIM-O Diplomate(s) - <b>Required</b>
	Syllabi of formal course work included in the training program - <b>Required</b>
	Credentials of instructors providing formal course work - <b>Required</b>
	Forms used in resident evaluation - <b>Required</b>
	Letters of agreement from cooperating institutions - <b>Required</b>

## Radiation Oncology Residency Training Schedule

	Month	1	2	3	4	5	6	7	8	9	10	11	12	13
Radiation therapy clinics *		X	X	X	X	X	X	X	X	X	X	X	X	X
Diagnostic Imaging Rotation														
Diagnostic imaging rounds		X	X	X	X	X	X	X	X	X	X	X	X	X
Dictation of Imaging reports														
Radiation Therapy Class								X	X	X	X			
Radiation Safety Class				X	X	X	X							
Radiation Biology Class				X	X	X	X							
Medical Oncology Class														
Medical Oncology Clinics														
Oncology rounds		X	X	X	X	X	X	X	X	X	X	X	X	X
Oncology Journal Club		X	X	X	X	X	X	X	X	X	X	X	X	X
Radiation Oncology Rounds		X	X	X	X	X	X	X	X	X	X	X	X	X
Radiation Therapy Planning *								X	X	X	X	X	X	X
Clinico Pathologic Conference		X	X	X	X	X	X	X	X	X	X	X	X	X
Radiopharmaceutical Treatments *		X	X	X	X	X	X	X	X	X	X	X	X	X

\* The resident is expected to assume a primary role in this area during the last 8-12 months of the program with faculty supervision.

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## RESIDENT EVALUATION/SUMMARY

**Resident Name:** \_\_\_\_\_

**Evaluator:** \_\_\_\_\_

**Evaluation Period:** \_\_\_\_\_

**Service:** \_\_\_\_\_

**Today's Date:** \_\_\_\_\_

Please evaluate all items for which you feel knowledgeable regarding resident performance with a check mark or numeric score. Comments or anecdotes that further explain performance evaluation are encouraged.

<b>Scoring:</b>	
5 = well above expectations	2 = below expectations
4 = above expectations	1 = well below expectations
3 = meets expectations	N/O = Not Observed

### Clinical Abilities (including leadership)

	N/O	Deficient = 1,2	Satisfactory = 3,4	Exceptional = 5
<i>Efficient during clinics</i>				
<i>Able to handle emergencies</i>				
<i>Able to solve problems (diagnostic ability)</i>				
<i>Effectively utilizes diagnostic facilities</i>				
<i>Conducts special procedures competently</i>				
<i>Demonstrates appropriate technical skills</i>				
<i>Uses consultations with other specialists effectively</i>				
<i>Makes independent decisions</i>				
<u>  </u> <b>Change</b> ( <b>I</b> mprovement, <b>D</b> eterioration, <b>N</b> o change, or <b>U</b> nable to Evaluate?)				

### Knowledge

	N/O	Deficient = 1,2	Satisfactory = 3,4	Exceptional = 5
<i>Demonstrates understanding of basic science of the specialty</i>				
<i>Demonstrates familiarity with and understanding of relevant literature of the specialty</i>				
<i>Demonstrates growth in knowledge base</i>				
<i>Demonstrates ability to critically evaluate quality of newly reported information</i>				
<i>Application of basic and clinical knowledge</i>				
<i>Understands diagnoses clearly</i>				
<i>Understands changes to radiology reports by faculty</i>				
<u>  </u> <b>Change</b> ( <b>I</b> mprovement, <b>D</b> eterioration, <b>N</b> o change, or <b>U</b> nable to Evaluate?)				

### Professional Conduct / Personal Attitude

	N/O	Deficient = 1,2	Satisfactory = 3,4	Exceptional = 5
<i>Communicates effectively with:</i>				
<i>Faculty:</i>				
<i>Staff:</i>				
<i>Students:</i>				
<i>Interacts collegially with other Services, Faculty, Staff, Colleagues</i>				
<i>Demonstrates enthusiasm</i>				
<i>Demonstrates willingness to work / motivation</i>				
<i>Accepts responsibility</i>				
<i>Accepts constructive criticism / is receptive to guidance</i>				
<i>Demonstrates judgment, maturity, and professionalism</i>				
<i>Supports a "team-effort"</i>				
<i>Participates in consultations</i>				
<i>Maintains composure in adversity</i>				
<i>Exhibits tact and diplomacy</i>				
<p>___ <b>C</b>hange (<b>I</b>mprovement, <b>D</b>eterioration, <b>N</b>o change, or <b>U</b>nable to Evaluate?)</p>				

### Teaching Ability

	N/O	Deficient = 1,2	Satisfactory = 3,4	Exceptional = 5
<i>Demonstrates teaching ability during clinics, case rounds, and special procedures</i>				
<i>Shares knowledge with other residents/faculty</i>				
<i>Supervises students effectively</i>				
<p><b>Comments:</b></p>				
<p>___ <b>C</b>hange (<b>I</b>mprovement, <b>D</b>eterioration, <b>N</b>o change, or <b>U</b>nable to Evaluate?)</p>				

### Communication/Record Keeping Skills

	N/O	Deficient = 1,2	Satisfactory = 3,4	Exceptional = 5
<i>Dictations performed promptly</i>				
<i>Reviews transcriptions promptly</i>				
<i>Returns medical record promptly following animal dismissal</i>				
<i>Provides timely follow-up</i>				
<i>Follows up on case diagnoses</i>				
<i>Manages case flow in an efficient manner</i>				
<i>Supervises student notations in the medical record</i>				
<i>Communicates technical information effectively/clearly</i>				
<i>Arrives for rounds on time</i>				
<p>___ <b>Change</b> (<b>I</b>mprovement, <b>D</b>eterioration, <b>N</b>o change, or <b>U</b>nable to Evaluate?)</p>				

### Research and Publication Productivity

	N/O	Deficient = 1,2	Satisfactory = 3,4	Exceptional = 5
<i>Maintains appropriate progress on research and/or writing projects - (To be initiated by research advisor as appropriate)</i>				
<p><b>Comments:</b></p> <p>___ <b>Change</b> (<b>I</b>mprovement, <b>D</b>eterioration, <b>N</b>o change, or <b>U</b>nable to Evaluate?)</p>				

### Conferences/Meetings

	N/O	Deficient = 1,2	Satisfactory = 3,4	Exceptional = 5
<i>Participates in Journal Club, Known Case Conference</i>				
<i>Attends pertinent conferences</i>				
<p><b>Comments:</b></p> <p>___ <b>Change</b> (<b>I</b>mprovement, <b>D</b>eterioration, <b>N</b>o change, or <b>U</b>nable to Evaluate?)</p>				

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Overall Rating: \_\_\_\_\_

**Further attention to the following area(s) is needed:**

- Clinical Abilities (including leadership)*
- Knowledge*
- Professional Conduct / Personal Attitude*
- Teaching Ability*
- Communication/Record Keeping Skills*
- Research and Publication Productivity*
- Conferences/Meetings*

**Plan:**

\_\_\_\_\_  
Signature of Evaluator

# INTRODUCTORY RADIATION BIOLOGY COURSE OUTLINE

2010

Web Site

<http://som.missouri.edu/RSI/>

Go to "Courses"

1. Introduction/Radiation Energetics
2. Nuclear Structure/Decay Modes
3. Radioactivity Decay Kinetics
4. Production of Ionizing Radiation
5. Interactions of Radiation With Matter (EMR)
6. Interactions of Radiation With Matter (particles)
7. **EXAM I**
  
8. Neutron Interactions
9. Dosimetry Units/Free Radicals
10. LET/O<sub>2</sub>/Dose Rate Effects at Cellular Level
11. UV Effects
12. Reactor Tour
13. Cell Survival Curves
14. Applications of Cell Survival Curves
15. **EXAM II**
  
16. Tissue Effects of Radiation at the Cellular Level
17. Cell Cycle and Differentiation Effects
18. Assay Systems for Radiation Injury
19. Effects and Injurious Dose Levels on Major Organs (Acute and Chronic)
20. Acute Radiation Syndromes, Fetal Effects, and Low Dose Somatic Effects
21. Dose Rate and Fractionation Effects
22. 4 R's and Effects of Fractionation on Early and Late Effects
23. Applications of Radiation Biology in Clinical Radiotherapy
24. **EXAM III**
  
25. Nuclear Medicine – Diagnostic
26. Nuclear Medicine – Therapy
27. Stochastic Effects/Risk Factors
28. Stochastic Effects/Risk Factors
29. Stochastic Effects/Risk Factors
30. Radiation Safety Considerations

## Disability Accommodation

MU is required to inform students with disabilities of their rights under federal law. Here is a recommended statement for syllabi:

If you need accommodations because of a disability, if you have emergency medical information to share with me, or if you need special arrangements in case the building must be evacuated, please inform me immediately. Please see me privately after class, or at Dr. Lewis's office.

Office location: F001, VA Hospital

Office phone: 814-6000, ext. 53703

To request academic accommodations (for example, a notetaker), students must also register with Disability Services, AO38 Brady Commons, 882-4696. It is the campus office responsible for reviewing documentation provided by students requesting academic accommodations, and for accommodations planning in cooperation with students and instructors, as needed and consistent with course requirements. For other MU resources for students with disabilities, click on "Disability Resources" on the MU homepage.

<b>Introductory Radiation Biology (7328/4328)* - Course Schedule 2010</b>					
<b>Period No.</b>	<b>Date†</b>	<b>Instructor</b>	<b>Period No.</b>	<b>Date</b>	<b>Instructor</b>
1	Aug. 24	Lewis	21	Nov. 2	Lattimer
2	Aug. 26	Lewis	22	Nov. 4	Lattimer
3	Aug. 31	Lewis	23	Nov. 9	Lattimer
4	Sept. 2	Lewis	24	Nov. 11	<b>EXAM III</b>
5	Sept. 7	Lewis	25	Nov. 16	Lewis
6	Sept. 9	Lewis	26	Nov. 18	Lewis
7	Sept. 14	<b>EXAM I</b>	27	Nov. 30	Volkert
8	Sept. 16	Volkert	28	Dec. 2	Volkert
9	Sept. 21	Volkert	29	Dec. 7	Volkert
10	Sept. 23	Volkert			
11	Sept. 28	Volkert			
12	Sept. 30	Volkert			
13	Oct. 5	Volkert			
14	Oct. 7	Volkert			
15	Oct. 12	<b>EXAM II</b>	<b>Final Exam</b>		
16	Oct. 14	Lattimer			
17	Oct. 19	Lattimer			
18	Oct. 21	Lattimer			
19	Oct. 26	Lattimer			
20	Oct. 28	Lattimer			

## Class schedule for Radiation Therapy VMS 8488

Three credits

3 hours of lecture weekly, 2 lectures weekly, TBA

Class period

Topic

1	Basics of Radiation Biology – Mechanisms of Injury
2	Basics of Radiation Biology – Survival Curves and Assays
3	Basics of Radiation Biology – Tissue Effects, early and late
4	Basics of Radiation Biology – Effects of Fractionation
5	Basics of Radiation Biology - Linear Quadratic Model
6	Basics of Radiation Biology – Tumor Biology and 4 R's
7	Basics of Radiation Biology -4 R's and Fractionation
8.	Medical Radiation Physics – Types of Radiation
9	Medical Radiation Physics – Sources of Radiation / linacs
10	Medical Radiation Physics – Units and Measurement of Radiation
11	Medical Radiation Physics – Absorption of Radiation and Absorbed Dose
12	Medical Radiation Physics – Absorption of Radiation and Absorbed Dose
13	Medical Radiation Physics – LET, Dose Equivalent, and RBE
14	Medical Radiation Physics – Dose buildup, Scatter, and Field Size Effects
15	Examination
16	Radiation Dosimetry & Planning – Photon External Beam Dosimetry
17	Radiation Dosimetry & Planning – Photon External Beam Dosimetry
18	Radiation Dosimetry & Planning – Electron Beam Therapy
19	Radiation Dosimetry & Planning – 2D RT Planning
20	Radiation Dosimetry & Planning – 3D Conformal RT planning
21	Radiation Dosimetry & Planning – IMRT
22	Radiation Dosimetry & Planning – Quality control, Field Verification
23	Radiation Dosimetry & Planning – Altered SSD and Whole Body Therapy
24.	Radiation Dosimetry & Planning – Patient Positioning and Stabilization
25	Radiation Dosimetry & Planning – Stereotactic Radiosurgery
26	Radiation Dosimetry & Planning – Heavy Particle Beams
27	Radiation Dosimetry & Planning – Principals of Brachytherapy
28	Radiation Dosimetry & Planning - Clinical Brachytherapy
29	Review
30	Final Examination

References: Principals and Practice of Radiation Oncology – Perez, Brady, Hillman and Schmidt-Ullrich

The Physics of Radiation Oncology – Kahn

Radiobiology for the Radiologist - Hall

**Syllabus for VMS 8417**  
**Advanced Studies in Veterinary Internal Medicine-Oncology**

Credit hours: two

Prerequisite: graduate standing; DVM or equivalent degree recommended

Course leader: Dr. Carolyn Henry (A373 Clydesdale Hall; 2-7821)

Class time and site: A301 Clydesdale Hall (3<sup>rd</sup> floor conference room) 7:20 to 8:10 am on Mondays and Fridays

Oncology Grand Rounds are held on the first Monday of each month from 12 noon to 1:00 in the Acuff Auditorium; **attendance is a requirement of this course**

Scope of Course

VMS 8417 is intended to provide graduate students in the clinical and basic sciences alike with a working knowledge of the pathobiologic mechanisms of cancer development and progression and the related approaches to cancer prevention and therapy. For each topic discussed at a molecular level, clinical correlates will be discussed to emphasize the topic's relevance to clinical oncology. It is anticipated that students will have a diversity of backgrounds that will bring breadth to the discussions and permit us to bridge understanding between clinical and basic sciences. Discussions are intended to promote exchange of ideas and should be targeted to the wide audience. It is assumed that students will have a strong background in biology as a foundation for these discussions. Required reading must be completed prior to the class to which it relates, as this will be a discussion-based rather than lecture format course.

Course objectives:

- 1) To develop a fundamental understanding of the basic pathobiology of cancer development and progression.
- 2) To relate basic mechanisms of cancer development and progression to their clinical relevance in terms of strategies for disease prevention, treatment, and control.
- 3) When applicable, to critically review current oncology literature in terms of experimental design, research methodology, and clinical relevance.
- 4) To gain exposure to experts in the field of oncology, both on the MU campus and nationally in order to facilitate research collaboration, exchange of ideas, and a broader understanding of basic and clinical oncology.
- 5) To gain insight and expertise in experimental design and manuscript preparation as it relates to cancer research.

Grading A letter grade for the course will be based on (1) class and oncology grand rounds attendance and readiness for class periods, participation and response to questions posed during class meetings, (2) one in-class presentation, (3) questions submitted for each class topic [*2 multiple choice questions per lecture in standard format with 5 possible answers*] that may be used as final exam questions, and (4) one final exam

Grading Scale

90-100%	A
80 – 89%	B
70 –79%	C
60 – 69%	D
0-59%	F

In-class presentation: Each student will chose an oncology topic of interest and prepare a presentation based on the most current journal literature. Presentations will be made to the class on assigned days and a one-page summary of the topic will be provided to the class by the presenter. Topics are to be chosen by the February 14 class period and will be presented on March 11, April 8, +/- April 22.

References: Tannock and Hill (eds) *The Basic Science of Oncology* 4<sup>th</sup> edition (2005) (ISBN#0071387749) available in the MU Bookstore after January 28. Until then, related chapters will be provided as handouts.

Review articles may be used in lieu of chapters from Tannock and Hill by some instructors. These will be made available electronically when possible or outside my office door (A373 Clydesdale Hall).

If you have special needs as addressed by the Americans with Disabilities Act and need any test or course materials provided in an alternative format, notify your instructor immediately. Reasonable efforts will be made to accommodate your special needs. You are reminded that you are subject to the college Honor Code as stated in the student handbook.

Tentative Schedule for  
**RADIATION SAFETY**  
 NE – 4303/7303 and Rad Sci – 4303/7303

<u>Week of</u>	<u>Material</u>	<u>Tour/Lab/Demo/Exams</u>
Aug.	Types of Radiation	Radiation Naturally Video
Sept.	Labor Day Radioactive Decay	Half-Life Demo/Lab
Sept.	Interactions of Gammas/Neutrons	Shielding Demo/Lab
	Interactions of Charged Particles	Shielding Demo/Lab
	Units of Radiation Dose	----
	Exposure of U.S. Population	Exam #1
Oct.	Radiation Effects on Biological Systems	Suicide Mission to Chernobyl
	External Radiation Dose (Gamma/X-Ray)	Operation Smash Hit Video
	External Radiation Dose (Neutrons)	MU's NRC License
	X-Ray Shielding Design	Medical H.P. Video
Nov	Internal Radiation Dose	Exam #2
	Principles of Radiation Detection	GM Voltage Plateau Lab
	Non-Ionizing Radiation	NRC Video
	Thanksgiving Week	----
.	Reactor Safety/Term Project Reports	----
Dec	Term Project Reports	----
	Final Week	

**Text:**

Notes Provided (Purchase from Engineering Copy Center - W1023 Lafferre Hall)

**References:**

Shapiro, Jacob, Radiation Protection, 3rd ed., Harvard University Press (1990)  
Cember, Herman, Introduction to Health Physics, 3rd ed., McGraw-Hill (1996)  
Knoll, Glenn, Radiation Detection and Measurement, 2nd ed., Wiley (1989)

**BIOGRAPHICAL SKETCH**

Provide the following information for the key personnel and other significant contributors in the order listed on Form Page 2.  
Follow this format for each person. **DO NOT EXCEED FOUR PAGES.**

NAME Jimmy C. Lattimer		POSITION TITLE Associate Professor – Radiology	
eRA COMMONS USER NAME (credential, e.g., agency login) Lattimerj		Department of Veterinary Medicine and Surgery University of Missouri	
EDUCATION/TRAINING <i>(Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)</i>			
INSTITUTION AND LOCATION	DEGREE <i>(if applicable)</i>	YEAR(s)	FIELD OF STUDY
Washington State University	BS	1973	Veterinary Science
Washington State University	DVM	1975	Veterinary Medicine
Colorado State University	MS	1980	Radiological Sciences
Colorado State University	Residency	1980	Veterinary Radiology

Please refer to the application instructions in order to complete sections A, B, C and D of the Biographical Sketch.

**A. Personal Statement:**

This proposal is an extension of a career long interest in the use of radioisotopes in the treatment of cancer. As a board-Certified Veterinary Radiation Oncologist, I have treated cancer using conventional radiation therapy techniques for nearly 30 years. However, there are numerous instances in which the location, extent or type of disease make treatment of that disease difficult or impossible using traditional teletherapy or brachytherapy. The use of beta-emitting radioisotopes which are biochemically target to the tumor cells whether through chemical, immunological or physical mechanisms holds promise for greatly simplifying the treatment of cancer using radiation. The impact on the patient is markedly reduced and their life style is likewise improved. Quicker, easier and cheaper treatment of cancer would also have great benefits in reducing the cost of health care to which cancer treatment is a major contributor. Use of spontaneous animal models, of which the dog is the prime example, represents a way to validate treatments in a way the testing on laboratory animals cannot duplicate. Such trials can be performed for a small fraction of the cost of human trials and in a fraction of the time due the lower cost of treatment in veterinary patients and the short disease arc in animals. At the same time valuable data on the effects of radiation exposure and localization are accrued in a model which has been traditionally shown to very closely represent the effects in humans. Previous work with investigators from MU has lead to the approval for use in humans and commercialization of two agents used cancer treatment. The agent under investigation in this proposal holds promise for being another.

**B. Positions and Honors:**

Medical Director of Radiation Oncology- Veterinary Medical Teaching Hospital – University of Missouri	July 1997 - present
Medical Director of Radiation Oncology- Mizzou Animal Cancer Center	Jan. 2011 – present
Section Head – Radiology, Veterinary Medical Teaching Hospital University of Missouri	Aug 1997 – Sept 2010
Associate Professor - Radiology (with Tenure) University of Missouri, Department of Veterinary Medicine and Surgery	Sept. 1986 - present
Assistant Professor - Radiology University of Missouri, Department of Veterinary Medicine and Surgery	Aug. 1980 - August 1986
Resident in Radiology, Colorado State University, Department of Radiology and Radiation Biology	July 1977- June 1980

**Board Certification and other Memberships and qualifications:**

Veterinary Diagnostic Radiology (active Diplomate) 1980	American College of Veterinary Radiology
Veterinary Radiation Oncology (active Diplomate) 1996	American College of Veterinary Radiology
License to practice Veterinary Medicine	Missouri and Idaho
Radiological Society of North America	Current Member
American Association of Veterinary Clinicians	Current Member
American College of Veterinary Radiology	Current Member
International Veterinary Radiology Association	Current Member
Society of Nuclear Medicine	Current Member
Veterinary Cancer Society	1981-1998

**Selected Peer Reviewed Publications:**

**Most relevant to the current application**

1. Lattimer, J.C., Corwin, L.A., Stapleton, J., Volkert, W. A., Ehrhardt, G.J., Ketring, A.R., Anderson, S.K., Simon, J., Goeckeler, W.F., Clinical and Clinicopathologic Effects of 153 Samarium EDTMP Administered Intravenously to Normal Beagle Dogs, J. Nucl. Med., 31 (5) 1990 586-593
2. Lattimer, J.C., Corwin, L.A., Stapleton, J., Volkert, W. A., Ehrhardt, G.J., Ketring, A.R., Anderson, S.K., Simon, J., Goeckeler, W.F., Clinical and Clinicopathologic Response of Canine Primary Bone Tumor Patients to Treatment with Sm-153 EDTMP, J. Nucl. Med., 31 (8) 1990 1316-1325
3. Bryan JN, Bommarito D, Kim DY, Berent LM, Bryan ME, Lattimer JC, Henry CJ, Engelbrecht H, Ketring A, Cutler C. Comparison of Systemic Toxicities of 177Lu-DOTMP and 153Sm-EDTMP Administered Intravenously at Equivalent Skeletal Doses to Normal Dogs. J Nucl Med Technol. 2009 Mar;37(1):45-52. Epub 2009 Feb 17
4. Reirradiation of recurrent canine nasal tumors. Bommarito DA, Kent MS, Selting KA, Henry CJ, Lattimer JC. Vet Radiol Ultrasound. 2011 Mar-Apr;52(2):207-12. PMID:2138847
5. 90Sr therapy for oral squamous cell carcinoma in two cats. Nagata K, Selting KA, Cook CR, Renschler M, Lattimer JC. Vet Radiol Ultrasound. 2011 Jan-Feb;52(1):114-7.

**Additional recent publications of importance to the field (in chronological order)**

- Park, R.D.; Nyland, T. G.; Lattimer, J.C.; Miller, C. W.; Lebel, J.L.; B-Mode Gray-Scale Ultrasound; Imaging artifacts and Interpretation Principles; Veterinary Radiology, vol 22, no.5, 1981; 204-210
- Nyland, T.G.; Park, R.D., Lattimer, J.C.; Lebel, J.L.; Miller, C.W.; Gray-Scale Ultrasonography of the Canine Abdomen Veterinary Radiology, vol 22, no. 5, 1981; 220-227
- Miles, K.G., Lattimer, J.C., Jergens, A.E., Krause, G.F., A Retrospective K.G., Lattimer, J.C., Jergens, A.E., Krause, G.F. A Retrospective Evaluation of the Radiographic Evidence of Pulmonary Metastatic Disease on Initial Presentation in the Dog; Veterinary Radiology, Vol. 31 (2) 1990 79-82
- McCaw, D.L., Lattimer, J.C., Radiation and Cisplatin Therapy for Treatment of Canine Urinary Bladder Carcinoma: A Report of Two Cases. Veterinary Radiology, Vol 29 (6) 1988 264-267
- Keller, G.G., Bouchard, G., Fagin, B., Lattimer, J.C., Ellersieck, M.R., Influence of the Estrous Cycle on Coxofemoral Joint Subluxations, Canine Practice, 18 (1) 1993 19-22

- Keegan, K.G., Wilson, D.A., Lattimer, J.C., Twardock, R., Ellersieck, M.R., Scintigraphic Evaluation of 99mTc-MDP Uptake in the Navicular Area in Horses with Lameness Isolated to the Foot by Anesthesia of the Palmar Digital Nerves, *Journal of the American Veterinary Medical Association*, April, 1996
- Corley EA, Keller GG, Lattimer JC, Ellersieck MR, Reliability of early radiographic evaluations for canine hip dysplasia obtained from the standard ventrodorsal radiographic projection, *J Am Vet Med Assoc*, 1997
- Keller GG, Kreeger JM, Mann FA, Lattimer JC, Correlation of radiographic, necropsy and histologic findings in 8 dogs with elbow dysplasia, *Vet Radiol Ultrasound* 1997 Jul;39(4): 272-276
- Canapp SO Jr, Mann FA, Henry CJ, Lattimer JC. The use of a latissimus dorsi muscle flap for scapular reconstruction in a cat following fibrosarcoma excision. *J Am Anim Hosp Assoc*. 2001 May-Jun;37(3):283-9.
- Neil JA, Canapp SO Jr., Cook CR, Lattimer JC, Kartagener's syndrome in a Dachshund dog. *J Am Anim Hosp Assoc*. 2002 Jan-Feb;38(1):45-9.
- Cohn LA, Lattimer JC, Dvorak LD, What is your diagnosis? An ill-defined soft-tissue opacity in the caudal abdominal region and numerous metallic opacities in the soft tissues of the lumbar area. *J Am Vet Med Assoc*. 2002 Jan 15;220(2):169-70.
- Carter DB, Lai L, Park KW, Samuel M, Lattimer JC, Jordan KR, Estes DM, Besch-Williford D, Prather RS, Phenotyping of transgenic cloned piglets. *Cloning Stem Cells*. 2002;4(2):131-45.
- Rettenmaier JL, Keller GG, Lattimer JC, Corley Ea, Ellersieck MR, Prevalence of canine hip dysplasia in a veterinary teaching hospital population. *Vet Radiol Ultrasound*. 2002 Jul-Aug;43(4):313-8.
- Templer, AS, Carcia-Seco E, Johnson PJ, Keegan KG, Lattimer JC, Ultrasonographic findings in a mare with strangulating jejunal obstruction associated with pedunculated lipomas. *Equine vet. Educ.* (2003) 15 (1) 52-55
- Gordon PN, Kornegay JN, Lattimer JC, Cook CR, Tucker-Warhover T. Use of a rivet-like titanium clamp closure system to replace an external frontal bone flap after transfrontal craniotomy in a dog. *J Am Vet Med Assoc*. 2005 Mar 1;226(5):752-5, 731-2.
- Throop JL, Cohn LA, Lattimer JC. What is your diagnosis? Abscessed lymph node. *J Am Vet Med Assoc*. 2005 Feb 15;226(4):523-4
- Gordon PN, Kornegay JN, Lattimer JC, Cook CR, Tucker-Warhover T, Use of a rivet-like titanium clamp closure system to replace an external frontal bone flap after transfrontal craniotomy in a dog. *J Am Vet Med Assoc*. 2005 Mar 1;226(5):752-5, 731-2.
- Packer, RA, Coates, JR, Cook, CR, Lattimer, JC, O'Brien, DP, Sublumbar abscess and diskospondylitis in a cat. *Vet Radiol Ultrasound*, 2005 Sep-Oct;46(5):396-9
- Janicek, JC, Kramer, J, Coates, JR, Lattimer, JC, Lacarruba, AM, Messer NT. Intracranial abscess caused by *Rhodococcus equi* infection in a foal. *J Am Vet Med Assoc*. 2006 Jan 15;228(2):251-3
- Middleton, JR, Chigerwe, M, Fine, DM, Turk, JR, Lattimer, JC, Pulmonary hypertension and right-sided heart failure in an adult llama with hepatic disease. *J Am Vet Med Assoc*. 2006 Mar 1;228(5):756-9.
- LaCarrubba AM, Johnson PJ, Whitney MS, Miller MA, Lattimer JC. Hypoglycemia and tumor lysis syndrome associated with peritoneal mesothelioma in a horse. *J Vet Intern Med*. 2006 Jul-Aug;20(4):1018-22.

Support:

Safety of Radioactive Gold Nanoparticles in the Treatment of Canine Prostatic Carcinoma - MU Institute of Clinical and Translational Science \_ Co-investigator 2010 – 2012

In Vivo Compatible Readily Injectable Nanoconstructs for Tumor Therapy - NCI/NIH - Co Investigator 2011-2013.

**BIOGRAPHICAL SKETCH**

Provide the following information for the key personnel in the order listed for Form Page 2.  
Follow sample format for each person. **DO NOT EXCEED FOUR PAGES.**

NAME <b>Essman, Stephanie</b>		POSITION TITLE <b>Assistant professor of Radiology</b>	
EDUCATION/TRAINING (Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)			
INSTITUTION AND LOCATION	DEGREE (if applicable)	YEAR(s)	FIELD OF STUDY
Oklahoma State University, Stillwater, OK	BS	1993	Animal Sciences
Oklahoma State University, Stillwater, OK	DVM	1998	Veterinary Medicine
Metroplex Veterinary Centre, Irving, TX	Intern	1998-99	Veterinary Medicine
University of Missouri, Columbia, MO	Residency/MS	1999-2003	Radiology

**A. Positions and Honors****Positions and Employment**

July 2003 – present                      Assistant professor, Radiology  
University of Missouri-Columbia  
Department of Veterinary Medicine and Surgery  
Columbia, MO

June 99 – July 2003                      Resident, Radiology  
University of Missouri-Columbia  
Department of Veterinary Medicine and Surgery  
Columbia, MO

June 98 – June 99                        Intern, Small Animal Medicine and Surgery  
Metroplex Veterinary Centre  
Irving, TX

**Other Experience and Professional Memberships**

Veterinary Orthopedic Society (2001-present)  
Missouri Veterinary Medical Association (1999-present)  
American College of Veterinary Radiology (1999-present)  
American Veterinary Medical Association (1998-present)

**Selected Honors and Professional Activities**

2008 – Golden Aesculapius Teaching Award (second year class)  
2007 – Golden Aesculapius Teaching Award (senior class)  
2005 - SCAVMA Teaching Excellence Award in Clinical Sciences  
2005 – Golden Aesculapius Teaching Award (second year class)  
2004 - Alavi-Mandell award for recognition of work published in the *Journal of Nuclear Medicine*

## **B. Selected peer-reviewed publications**

**Essman SC**, Lewis MR, Fox DB. Effects of increasing doses of samarium-153-ethylenediaminetetramethylene phosphonate on axial and appendicular skeletal growth in juvenile rabbits. Accepted. *Nucl Med Biol.* 2008;35(2):219-225.

**Essman SC.** The use of the bone seeking radiopharmaceutical 153-Samarium- EDTMP as an adjuvant treatment for osteosarcoma: A review. *Current Medical Imaging Reviews.* 2007; 3(3):214-218.

Brummit, JW, **Essman SC (45% effort)**, Kornegay JN, Graham JP, Weber WJ, Berry CR. Radiographic features of golden retriever muscular dystrophy. *Veterinary radiology and ultrasound.* 2006;47(6):574-580.

**Essman SC (80% effort)**, Sherman AK. Comparison of digitized and conventional radiographs for Hip grading by the Orthopedic Foundation for Animals. *Am J Vet Res.* 2006;67(9):1546-1551.

**Essman SC**, Lewis MR, Miller WH. Intra-organ Biodistribution and Dosimetry of <sup>153</sup>Sm-Ethylenediaminetetramethylene Phosphonate in the Juvenile Rabbit Tibia: Implications for Targeted Radiotherapy of Osteosarcoma. *J Nuc Med.* 2005;46:2076-2082.

**Essman SC.** Contrast Cystography. *Clin Tech Small Anim Pract* 2005; 20:46-51.

**Essman SE**, Lattimer JL, Cook JL, Turnquist S, Kurochii K. Effects of intravenously administered <sup>153</sup>Samarium EDTMP in physal and articular cartilage in rabbits. *J Nuc Med.* 2003;44:1510-1515.

**Essman SE**, Hoover JP, Bahr RJ, Ritchey JW, Watson C. An intrathoracic malignant peripheral nerve sheath tumor in a dog. *Veterinary radiology and ultrasound.* 2002; 43:255-259.

**Essman SE**, Drost WT, Hoover JP, Lemire TD, Chalman JA. Imaging of a cat with perirenal pseudocysts. *Veterinary Radiology & Ultrasound* 2000;41:329-334.

## **C. Research Support**

### **Completed Research Support**

Competitive University of Missouri Research Board Grant "Samarium-153-EDTMP treatment of primary osteosarcoma"

Amount \$30,850; Duration: 7/1/05-7/1/08; Role - PI

Competitive University of Missouri Committee on Research "Effects of 153Samarium-EDTMP on physal cartilage in juvenile rabbits."

Amount \$5,000; Duration: 7/1/01-7/1/02; Role - PI

---

## BIOGRAPHICAL SKETCH

Provide the following information for the key personnel and other significant contributors.  
Follow this format for each person. **DO NOT EXCEED FOUR PAGES.**

---

NAME Bryan, Jeffrey N.	POSITION TITLE Assistant Professor of Oncology Veterinary Clinical Sciences College of Veterinary Medicine		
eRA COMMONS USER NAME			
EDUCATION/TRAINING <i>(Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)</i>			
INSTITUTION AND LOCATION	DEGREE <i>(if applicable)</i>	YEAR(s)	FIELD OF STUDY
University of California, Davis	BS	1991	Veterinary Science
University of California, Davis	DVM	1993	Urban Practice
University of Missouri-Columbia	MS	2004	Biomedical Sciences
University of Missouri-Columbia	PhD	2007	Pathobiology
University of Missouri-Columbia	Post-Doc	2005-2007	Bioinformatics

### A. Positions and Honors

#### Positions and Employment

1993-2002	Medical Director, Irving Street Veterinary Hospital, San Francisco, CA
1994-2002	Relief Veterinarian, San Francisco Zoological Gardens, San Francisco, CA
2000-2004	Director of Rabbit Health, Maui Animal Rescue and Sanctuary, HI
2002-2005	Resident, Veterinary Oncology, University of Missouri-Columbia
2005-2007	Research Assistant Professor, Veterinary Medicine and Surgery, University of Missouri-Columbia
2005-2007	Post-doctoral Fellow in Informatics, National Library of Medicine
2007-present	Assistant Professor, Washington State University

#### Other Experience and Professional Memberships

1993-present	American Veterinary Medical Association
1993-present	Society of Phi Zeta
2001-present	Veterinary Cancer Society
2002-present	American College of Veterinary Internal Medicine
2007-present	General Examination Committee, American College of Veterinary Internal Medicine
2008-present	Executive Committee Member at Large, Veterinary Cancer Society

#### Honors

2003, 2004	First Place Award for Research, Phi Zeta Day, MUCVM
2003	Ivan Award for Excellence in Veterinary Oncology
2003, 2005	Redhage Award for Excellence in Client Communications
2003-2005	Resident Teaching Award
2003	E. Gregory MacEwen Award for the Outstanding Basic Research Project in Oncology, Veterinary Cancer Society
2005	First Place, Research Competition, Technology Division, Missouri Life Sciences Week
2008, 2009	Wescott Clinical Teaching Scholar, College of Veterinary Medicine, Washington State University
2010	Jerry Newbry Teaching Scholar, College of Veterinary Medicine, Washington State University
2010	Norden Distinguished Teacher Award

### B. Publications

Statham-Ringen KA, Selting KA, Lattimer JC, Henry CJ, Green JA, **Bryan JN**, Jia F, Lewis MR. Molecular Imaging of Canine B-cell Lymphoma Using an Anti-bcl-1 2 Peptide Nucleic Acid-2 Peptide Conjugate. *Am J Vet Res*. In Press 2011.

Nedrow-Byers J, Jabbes M, Jewett C, Ganguly T, He H, Liu T, Benny P, **Bryan JN**, and Berkman CE. A Phosphoramidate-Based Prostate-Specific Membrane Antigen-Targeted SPECT Agent. *Prostate*. Submitted 2011.

**Bryan JN**, Jia F, Mohsin H, Anderson C, Miller W, Henry CJ, and Lewis MR. Monoclonal Antibodies for Copper-64 PET Dosimetry and Radioimmunotherapy. *Cancer Biology and Therapy*, 2011; 11: epub ahead of print.

Vancil JM, Henry CJ, Milner RJ, McCoig AM, Lattimer JC, Villamil JA, McCaw DL, **Bryan JN**. Use of <sup>153</sup>Sm-EDTMP for the treatment of dogs with primary tumors of the skull. *J Am Vet Med Assoc*. In press 2011.

**Bryan JN**, Lattimer JC, Jia F, Caldwell CW, Villamil JA, Selting KA, Henry CJ, and Lewis MR. Scintigraphic imaging of B-cell lymphoma in dogs using a radio-labeled somatostatin analogue. *Oncology*. Submitted 2011.

**Bryan JN**, Jabbes M, Berent LM, Arthur GL, Taylor KH, Rissetto KC, Henry CJ, Rahmatpanah F, Rankin WV, Villamil JA, Lewis MR, Caldwell CW. Hypermethylation of the DLC1 CpG island does not alter gene expression in canine lymphoma. *BMC Genetics*, 2009; 10(1):73.

**Bryan JN**, Taylor KH, Henry CJ, Selting KA, Rahmatpanah F, Lewis MR, Caldwell CW. DNA Methylation in Cancer: Techniques and Preliminary Evidence of Hypermethylation in a Canine Gene. *Cancer Therapy*, 2008;6:137-148.

**Bryan JN**, Bommarito D, Kim DY, Berent LM, Bryan ME, Lattimer JC, Engelbrecht H, Ketring A, Cutler C. Comparison of systemic toxicity of Lu-177-DOTMP to Sm-153-EDTMP administered intravenously to normal dogs at an equivalent skeletal dose. *J Nucl Med Technol*, in press, 2008.

**Bryan JN**, Jia F, Mohsin H, Sivaguru G, Miller WH, Anderson CJ, Henry CJ, and Lewis MR. Comparative uptakes and biodistributions of internalizing versus non-internalizing copper-64 radioimmunoconjugates in cell and animal models of colon cancer. *Nucl Med Biol*, 2005; 32(8): 851-858.

**Bryan JN**, Lewis MR, Henry CJ, Owen NK, Zhang J, Mohsin H, Jia F, Sivaguru G, Anderson CJ. Development of a two-antibody model for the evaluation of copper-64 radioimmunotherapy. *Veterinary and Comparative Oncology* 2004; 2(2):82-90.

**Bryan JN**, Keeler MR, Henry CJ, Bryan ME, Hahn AW, Caldwell CW. A population study of neutering status as a risk factor for canine prostate cancer, *The Prostate*, 2007;67(11):1174-1181.

**Bryan JN**, Henry C, Turnquist S, Tyler J, Liptak J, Rizzo S, Sfiligoi G, Steinberg H, Smith A, Jackson T. Primary renal neoplasia of dogs: a retrospective review of 82 cases. *J Vet Intern Med*, 2006; 20:1155-1160.

## C. Grant Funding

### Current

Sasaki T (PI), **Bryan JN**(Co-PI). Development of Artemisinin Compounds for Cancer Treatment. Washington State Life Sciences Discovery Fund. 1/1/10-12/31/12. Award total was \$1,451,193 with subcontract total of **\$269,146** and \$ 232,607 direct.

**Bryan JN** (PI). Examination of Canine Lymphoma Cell Lines for CpG Island Hypermethylation by Microarray. American Cancer Society. 1/1/09-12/31/09. **\$30,000**.

**Bryan JN** (PI), Jabbes M (Co-I), Tripp CD (co-I). Immunoprecipitation for hypermethylation screening of canine lymphoma cell lines. College of Veterinary Medicine Intramural Grant. 7/1/08-6/30/09. **\$19,668**.

Tripp CD (PI), **Bryan JN** (mentor). Expression of Lim homeobox (Lhx2) and Brain 1(POU3F3) genes in canine lymphoma cell lines. Veterinary Clinical Sciences Graduate Student Grants. 1/1/09-12/31/09. **\$6,999**.

Wills TB(PI), Davis WC(co-PI), **Bryan JN**(co-PI), Fidel JL(co-PI). Evaluating lymphocyte immunophenotypes in canine peripheral blood using flow cytometry and three color analysis. College of Veterinary Medicine Intramural Grant, Washington State University. 9/01/08-7/31/09. \$18,675.00.

Benny P (PI), Berkman C (co-I), **Bryan JN** (co-I). Development of Prostate Membrane Specific Antigen (PMSA) Inhibitors Coupled to <sup>99m</sup>Tc(CO)<sub>3</sub><sup>+</sup> with Enhanced Specific Activity for SPECT Imaging. Department of Energy, DE-PS02-08ER08-11. \$622,266 total requested. April 2008.

Berkman C (PI), Benny P (co-I), **Bryan JN** (co-I). Chemoaffinity Agents for the Detection of Prostate Cancer. Washington State Life Sciences Discovery Fund. 9/1/08-8/31/09. **\$332,133** total funding.



## BIOGRAPHICAL SKETCH

Provide the following information for each key personnel in the order listed on the title page.

**DO NOT EXCEED TWO PAGES PER PERSON.**

NAME		POSITION TITLE	
Carolyn J. Henry		Professor of Oncology	
EDUCATION/TRAINING (Begin with baccalaureate or other initial professional education and include			
INSTITUTION AND LOCATION	DEGREE	YEAR(s)	FIELD OF STUDY
Eastern Kentucky University, Richmond, KY	BS	1987	Animal Science and Biology; minor-Chemistry
Auburn University, Auburn, AL	DVM	1990	Veterinary Medicine
Auburn University, Auburn, AL	MS	1993	Small Animal Surgery & Medicine

**A. Role on this study:** Principle Investigator

### **B. Positions and Honors**

#### **Positions and Employment**

1990-1991 Associate Veterinarian, Animal Care Center, Prattville, AL  
1991-1993 Emergency Veterinarian, part-time, Montgomery Emergency Clinic, Montgomery, AL  
1992-1993 Emergency Veterinarian, part-time, Columbus Emergency Ctr., Columbus, GA  
1991-1993 Oncology Resident/MS Candidate, Dept of Small Animal Surgery and Medicine, College of Veterinary Medicine, Auburn University.  
1993-1997 Asst Professor, tenure track, Dept of Vet Clinical Sciences, Washington State Univ  
1997-2003 Asst Prof of Oncology, Dept of Vet Medicine and Surgery, University of Missouri  
2001-2003 Asst Prof of Oncology, Dept of Internal Medicine, Division of Hematology/Oncology, School of Medicine (dual appt), University of Missouri  
2002-present Director, Scott Endowed Program in Veterinary Oncology, University of Missouri  
2003-2008 Assoc Professor of Oncology with tenure; University of Missouri  
2008-present Professor of Oncology, University of Missouri

#### **Other Experience and Professional Memberships**

1990-present American Veterinary Medical Association  
1993-present Veterinary Cancer Society member  
1994-present American College of Veterinary Internal Medicine, Diplomate, Specialty of Oncology  
1996-present Veterinary Cooperative Oncology Group  
1997-1998 ACVIM Oncology Exam Committee Chairperson  
1998-2001 ACVIM General Exam Committee Member  
1998-2000 Veterinary Cancer Society Executive Board Member-at-Large  
2001-2004 ACVIM Oncology Residency Training Committee; Chair  
2002-2004 Veterinary Cancer Society President-elect  
2004-2006 Veterinary Cancer Society President (2004-2006)  
2007-2010 ACVIM Board of Regents and Specialty of Oncology President

#### **Scientific Review, Editorial, and Advisory Positions in past 3 years**

Scientific Peer Review Committee, School of Medicine, University of Missouri, 2008 to present

Editorial Board, *Journal of the American Animal Hospital Association*, 2005-2010

Grant Reviewer, American Kennel Club/ Canine Health Foundation, 2000, 2004

Grant Reviewer, MU Research Board, 2005, 2006

Ad hoc reviewer for: *J Gene Med*, *Lung Cancer*, *Cancer Immunity*, *Vet Comp Oncol*, *Vet Rec*, *Am J Vet Res*, *J Am Vet Med Assoc*, *Compendium*, and *J Vet Intern Med*

## Honors:

1999	Phi Zeta Veterinary Honor Society
2000	Auburn University Young Achiever Award
2004	Eastern Kentucky University Distinguished Alumni Award

## **C. Selected peer-reviewed publications.**

- Henry CJ**, McCaw DL, Turnquist SE, et al. Clinical evaluation of mitoxantrone and piroxicam in a canine model of human invasive urinary bladder carcinoma. *Clin Cancer Res* 2003;9:906.
- Henry CJ**, Buss MS, Hellstrom I, et al. Clinical evaluation of BR96 sFv-PE40 immunotoxin therapy in canine models of spontaneously occurring invasive carcinomas. *Clin Cancer Res* 2005;11:751.
- Henry CJ**, Tyler JW, McEntee MC, et al. Evaluation of a bladder tumor antigen test as a screening test for transitional cell carcinoma of the lower urinary tract in dogs. *Am J Vet Res* 2003;64:1017.
- Higginbotham ML, **Henry CJ**, Katti KV, et al. Preclinical tolerance and pharmacokinetic assessment of MU-Gold, a novel chemotherapeutic agent, in laboratory dogs. *Vet Therapeutics* 2003;4:76-82.
- Bryan JN, Jia F, Mohsin, J, Sivaguru G, Miller WH, Anderson CJ, **Henry CJ**, Lewis MR. Comparative uptakes and biodistributions of internalizing versus non-internalizing copper-64 radioimmunoconjugates in cell and animal models of colon cancer. *Nucl Med Biol* 2005;32(8):851.
- Henry CJ**, Brewer WG Jr, Whitley EM, et al. Canine digital tumors: A Veterinary Cooperative Oncology Group retrospective study of 64 cases. *J Vet Internal Med* 2005;19:720.
- McCaw DL, Chan AS, Stegner AL, Mooney B, Bryan JN, Turnquist SE, **Henry CJ**, Alexander H, Alexander S. Proteomics of canine lymphoma identifies potential cancer specific protein markers. *Clin Cancer Res* 2007;13:2496.
- Bryan JN, Keeler MR, **Henry CJ**, Bryan ME, Hahn AW, Caldwell CW. A population study of neutering status as a risk factor for canine prostate cancer. *The Prostate* 2007;67:1174.
- Johnson KD, Glinskii OV, Mossine VV, Turk JR, Mawhinney TP, Anthony DC, **Henry CJ**, Huxley VH, Glinsky GV, Pienta KJ, Raz A, Glinsky VV. Galectin-3 as a potential therapeutic target in tumors arising from malignant endothelium. *Neoplasia* 2007;9:662.
- Henry CJ**, Downing S, Rosenthal RC, et al. Evaluation of a novel immunomodulator composed of human chorionic gonadotropin and bacillus Calmette-Guerin for treatment of canine mast cell tumors in clinically affected dogs. *Am J Vet Res* 2007;68:1246.
- Rankin WV, **Henry CJ**, Turnquist SE, et al. Comparison of distributions of survivin among tissues from urinary bladders of dogs with cystitis, transitional cell carcinoma, or histologically normal urinary bladders. *Am J Vet Res* 2008; 69(8):1073-78.
- Selting KA, Waldrep C, Reinero C, Gustafson D, Mercier E, Branson KR, Kim DY, **Henry CJ**, Owen N, Hoopes PJ, Madsen R, Dhand R. Feasibility and safety of targeted cisplatin delivery to a select lung lobe in dogs via the AeroProbe® intracoporeal nebulization catheter. *Journal of Aerosol Medicine and Pulmonary Drug Delivery*, 2008;21(3):255-268.
- Bryan JN, Taylor KH, **Henry CJ**, et al. DNA Methylation in cancer: techniques and preliminary evidence of hypermethylation in a canine gene. *Cancer Therapy* 2008;6:137.
- Rankin WV, **Henry CJ**, Turnquist SE, Turk JR, Beissenherz ME, Tyler JW, Rucker EB, Knapp DW, Rodriguez CO, Green JA. Identification of survivin, an inhibitor of apoptosis, in canine urinary bladder transitional cell carcinoma. *J Vet Comp Oncol* 2008;6(3):141-50
- Bryan JN, Bommarito D, Kim DY, Berent LM, Bryan ME, Lattimer JC, **Henry CJ**, Ketring A, Cutler C. Systemic toxicity of Lu-177-DOTMP administered intravenously to normal dogs. *Journal of Nuclear Medicine Technology* 2009;37:46-52.
- London CL, Malpas PB, Wood-Follis SL, Boucher JF, Rusk AW, Rosenberg MP, **Henry CJ**, Mitchener KL, Klein MK, Hintermeister JG, Bergman PJ, Couto GC, Mauldin GN, Michels GM. Multi-center, placebo-controlled, double-blind, randomized study of oral toceranib phosphate (SU11654), a receptor tyrosine kinase inhibitor, for the treatment of dogs with recurrent (either local or distant) mast cell tumor following excision. *Clin Cancer Res* 2009, in press.
- Paoloni MC, Tandle A, Mazcko C, Hanna E, Kachala S, LeBlanc A, Newman S, Vail D, **Henry C**, Thamm DH, Sorenmo K, Hanna E, Libutti S, Khanna C. Launching a novel preclinical infrastructure: Comparative oncology trials consortium directed therapeutic targeting of TNF $\alpha$  to cancer vasculature. *PLoS One*, 2009;4(3):1-11.

## BIOGRAPHICAL SKETCH

Provide the following information for the key personnel and other significant contributors in the order listed on Form Page 2.  
Follow this format for each person. **DO NOT EXCEED FOUR PAGES.**

NAME <b>Axiak, Sandra M.</b>	POSITION TITLE <b>Assistant Professor, Oncology</b>		
eRA COMMONS USER NAME (credential, e.g., agency login)			
EDUCATION/TRAINING <i>(Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)</i>			
INSTITUTION AND LOCATION	DEGREE <i>(if applicable)</i>	YEAR(s)	FIELD OF STUDY
Michigan State University, East Lansing, MI	BS	2002	Animal Science
Michigan State University, East Lansing, MI	DVM	2004	Veterinary Medicine
Mississippi State University, Starkville, MS	Certificate	2005	Rotating Internship: Small Animal Medicine and Surgery
Gulf Coast Veterinary Specialists, Houston, TX and Veterinary Specialists of North Texas, Dallas, TX	Certificate	2005-2008	Residency: Medical Oncology
American College of Veterinary Internal Medicine, Lakewood, CO	Diplomate	2008	Board certification: Medical Oncology

### A. Positions:

#### Positions and Employment

2004-2005      **Small Animal Intern**, Mississippi State University, Mississippi State, MS.  
 2005-2008      **Medical Oncology Resident**, Gulf Coast Veterinary Specialists, Houston, TX and Veterinary  
 Specialists of North Texas, Dallas, TX  
 2008-2009      **Medical Oncologist**, Veterinary Specialists of North Texas, Dallas, TX  
 2009 – Present      **Visiting Professor, Oncology, Immunology, and Hematology**, St. George's University,  
 Grenada, West Indies  
 2009 – Present      **Assistant Teaching Professor, Oncology**, Department of Veterinary Medicine and Surgery,  
 University of Missouri, Columbia, MO

#### Other Experience and Professional Memberships

2004 – Present American Veterinary Medical Association  
 2004 – Present Veterinary Cancer Society  
 2008 – Present American College of Veterinary Internal Medicine  
 2009 – Present Ad hoc reviewer, *American Journal of Veterinary Research*  
 2009 – Present Ad hoc reviewer, *Journal of American Veterinary Internal Medicine*  
 2010 – Present Data Safety Monitoring Board, Clinical Oncology Trials Consortium  
 2010 – Present      Oncology Residency Credentials and Training Committee, American College of Veterinary Internal  
 Medicine

### B. Awards and Honors

April 30, 2010      Faculty Development Project Award: Molecular Biology Summer Workshop  
 Amount: \$5,000

### C. Peer-reviewed Publications:

**Axiak SM, Carey S and Rosenstein D.** "What's Your Diagnosis?: Spindle Cell Sarcoma. *J Am Vet Med Assoc* 228 (2):  
 201-202, 2006.

**Axiak SM**, Carreras J, Hahn K, Endicott M, Parshley D, King G. Hematologic Changes Associated with Half-Body Irradiation in Dogs with Lymphoma. J Vet Intern Med 20 (6): 1398-1401, 2006.

**D. Research Support:**

**Ongoing Research Support:**

NIH – NCI In Vivo Compatible and Readily Injectable Gold Nanoconstructs for Tumor Therapy Role: Co-investigator	Volkert (PI) Amount: \$2,882,252	9/30/10 – 9/29/12
AKC Canine Health Foundation Leukocyte Oxidative Burst Activity in Peripheral Blood of Dogs with Lymphoma Role: Primary Investigator	Axiak (PI) Amount: \$12, 957	11/1/10-10/31/11
Morris Animal Foundation Phase I/II Clinical Trial of Nanotax® in Tumor-Bearing Dogs Role: Co-investigator	Selting (PI) Amount: \$79,612	11/1/10 – 9/30/12
Morris Animal Foundation Use of Tavocept to mitigate nephrotoxicity associated with cisplatin and piroxicam treatment of canine bladder cancer Role: Co-investigator	Henry (PI) Amount: \$121,973	10/1/10-9/30/11
MU Institute for Clinical and Translational Science Safety of radioactive gold nanoparticles in the treatment of canine prostatic carcinomas Role: Primary Investigator	Axiak (PI) Amount: \$50,000	7/1/10 – 6/30/11
Amount: \$11,210		

**Completed Research Support**

Kansas City Area Life Sciences Institute Dose escalation safety study of Nanotax® in dogs. Role: Co-investigator	Selting (PI) Amount: \$50,000	10/1/09 – 9/30/10
Richard Wallace Research Incentive Grant Investigation of immunodysfunction in canine lymphoma Role: Primary Investigator	Axiak (PI) Amount: \$4,000	5/1/10-4/30/11
Winn Feline Foundation Evaluation of the effects of retinoid isotretinoin and feline recombinant interferon-omega on a feline squamous cell carcinoma cell line Role: Co-investigator	deMello-Souza (PI)	3/3/10 – 2/28/11

Date: May 2009

CURRICULUM VITAE  
**Lisa Gay Britt, DVM, MS, DACVR**

EDUCATION:

<u>Degree/Training</u>	<u>Conferring Institution</u>	<u>Field</u>	<u>Year</u>
Residency	Washington State University	Radiology	1999
Masters of Science	Washington State University	Veterinary Science	1997
Internship	Ontario Veterinary College	Large Animal	1995
D.V.M.	North Carolina State University	Veterinary Medicine	1994
Bachelor of Science	North Carolina State University	Poultry Science	1992
Bachelor of Science	North Carolina State University	Animal Science	1991

PROFESSIONAL EXPERIENCE AND ACADEMIC APPOINTMENTS:

2002 – present	<u>Clinical Assistant Professor in Radiology</u> , Department of Veterinary Medicine and Surgery, College of Veterinary Medicine, University of Missouri, Columbia, Missouri, 65211.
2001 – 2002	<u>Clinical Instructor in Radiology</u> , Department of Veterinary Medicine and Surgery, College of Veterinary Medicine, University of Missouri, Columbia, Missouri, 65211.
1999 - 2000	<u>Small Animal Radiology</u> , Animal Radiology Clinic, Veterinary Referral Center of North Texas, 4444 Trinity Mills Road Suite 100, Dallas, TX 75287.
1997 - 1999	<u>Senior Resident, Radiology</u> , Department of Veterinary Clinical Sciences, Washington State University, Pullman, Washington 99164-6610 USA.
1995 - 1997	<u>Resident, Radiology</u> , Department of Veterinary Clinical Sciences, Washington State University, Pullman, Washington 99164-6610 USA.
1995 - 1997	<u>Masters candidate</u> , Department of Veterinary Clinical Sciences, Washington State University, Pullman, Washington 99164-6610 USA.
1995 - 1996	<u>Resident, Radiation Oncology</u> , Department of Veterinary Clinical Sciences, Washington State University, Pullman, Washington 99164-6610 USA.
1994 - 1995	<u>Intern, Large Animal Medicine and Surgery</u> , University of Guelph, Ontario Veterinary College, Guelph, Ontario, N1G 2W1 CANADA.

BOARD CERTIFICATION:

Radiology                      American College of Veterinary Radiology                      September 8, 2002

Research Funding:

Schulz JH (PI), Millspaugh JJ, Bermudez AJ, Paine M, **Britt LG (Co-I)**. Experimental evaluation of lead (Pb) toxicoses in wild mourning doves. Missouri Department of Conservation, July 1, 2003 to June 30, 2006. \$101,560 direct cost; \$160,360 actual and indirect costs. 5% Effort, 5% Shared Credit.

BIBLIOGRAPHY:

Middleton JR, Fine DM, **Britt LG**, Nagy DW, Wall CR. What is your diagnosis? – Patent foramen ovale and ductus arteriosus in a 2-day-old calf with acute bronchopneumonia. *J Am Vet Med Assoc.* 234(6):739-740.

Cambridge AJ, Bagley RS, **Britt LG**, Silver GM. Radiographic diagnosis: arachnoid cyst in a dog. *Vet Radiol Ultrasound* 1997;38(6):434-436.

Bagley RS, Silver GM, Sequin B, Lincoln JD, **Britt LG**. Scoliosis and associated cystic spinal cord lesion in a dog. *J Am Vet Med Assoc* 1997;211(5):573-575.

**Britt LG**, Middleton JR, Valdez RA, Tucker RL, Parish SM, Tyler JW. Facial fibrosarcoma in two cows. *Vet Radiol Ultrasound* 1998;39(1):18-21.

Middleton JR, Valdez R, **Britt LG**, Parish SM, Tyler JW. Progressive hindlimb paraparesis in a goat associated with a vascular hamartoma. *Vet Rec* 1999;144(10):264-265.

**Britt LG**, Barbee DD, Moore MP, Stauber EH. Radiographic diagnosis: engorged ticks appearing as distinct radiographic opacities. *Vet Radiol Ultrasound* 2000;41(2):145-146.

**Britt LG**, Middleton JR, Warhover TT, Kreeger JM, Branson KR. Acanthomatous ameloblastoma of the maxilla of an adult alpaca. *Vet Radiol Ultrasound* 2005;46(1):65-68.

Schulz JH, Millspaugh JJ, Bermudez AJ, Gao X, Bonnot TW, **Britt LG**, Paine M. Acute Pb Toxicosis in Mourning Doves. *The Journal of Wildlife Management* 2006;70(2):413-421.

Book Chapters:

**Britt LG**, Tucker RL. Chapter 22, The Metacarpophalangeal (Metatarsophalangeal) Articulation; in Thrall's *Textbook of Veterinary Diagnostic Radiology*; Blackwell Spring 2007.

Submitted Publications:

Jurney C, Haddad J, Crawford N, Miller A, Van Winkle T, Vite C, Sponenberg D, Inzana K, Cook C, **Britt L**, O'Brien D. Polymicrogyria in Standard Poodles. Resubmitted after revisions to JVIM April 2009.

Abstracts and Proceedings:

Selting KA, Spier AW, Dodam JR, Skimming JW, Lattimer JC, **Britt LG**, Turk JR, Tyler JW, Durham HE, Garro M. Noninvasive monitoring of doxorubicin cardiotoxicity: a pilot study of two dogs. *Vet Comp Oncol* 2004;2(2):107.

**Britt LG**, Gavin PR, Bagley R, Barbee DD, Silver GM, Kippenes H. A comparison of myelography and magnetic resonance imaging for detection and localization of spinal lesions. Abstract in *ACVR Annual Conference Proceedings*, December 1999. (Oral presentation ACVR Scientific Meeting, 1999)

**Britt LG**, Tucker RL, Sande RD, Barbee DD, Schneider RK, Johnston GR, Kippenes H. Magnetic resonance imaging and computed tomography of the equine foot. Abstract in *ACVR Annual Conference Proceedings*, August 1998. (Oral presentation ACVR Scientific Meeting, 1998)

Kippenes H, Gavin PR, Tucker RL, Bagley RS, Silver GM, **Britt LG**. Magnetic resonance scanning technique and image characteristics in evaluation of canine spinal tumors. Abstract in *ACVR Annual Conference Proceedings*, August 1998.

**Britt LG**, Gavin PR, Alexander JE, Barbee DD, Henry CJ. A comparison of the uptake of liposome encapsulated and non-encapsulated boron in lung tumors of mice. Abstract in *ACVR Annual Conference Proceedings*, December 1996. (Oral presentation ACVR Scientific Meeting, 1996)

Tucker RL, Gavin PR, Bagley RS, Greene SA, **Britt LG**. Transcranial doppler in normal dogs. Abstract in *ACVR Annual Conference Proceedings*, December 1996.