

## ACVR Residency Training Program Application Form:

Oklahoma State University - Center for Veterinary Health Sciences

This document is to act as a guide for institutions desiring ACVR accreditation of their residency training program. It should be used in concert with the requirements set out in the ACVR Essentials of Residency Training document and it follows the headings of that document. It is intended to streamline the application process and help define what information the RSEC needs to evaluate the program. All terms used in this application have same definitions as defined in the Essentials.

### II. Objectives:

The residency training program at Oklahoma State University is designed to provide:

1. **Advanced clinical training to develop proficient clinical skills in veterinary diagnostic radiography, ultrasonography, CT, MRI, and nuclear imaging.**
2. **Introduction to literature evaluation, scientific writing, and clinical investigation.**
3. **Experience in teaching, presenting, and communicating with students and veterinarians.**
4. **Thorough preparation for examination and certification by the ACVR.**

### III. Training period:

What is the total length of the training program in months?	<b>36 months</b>
If this is a 4 year program, during what year will the resident be eligible to take the ACVR Preliminary Exam? If the resident is not eligible to take the exam during the beginning of the 3 <sup>rd</sup> year (September), please state the reason.	
What is the total duration of supervised clinical training in the program?	<b>30 months</b>
What are the responsibilities of the resident in the remaining non-clinical portion of the program? <b>This time is designated for research, board preparation , teaching, short course attendance, elective offsite experience and vacation.</b>	

### IV. Direction and Supervision:

#### Program Director:

Who is the Director of Residency training?	<b>Corey R. Wall, DVM, MS, DACVR</b>
What percentage of this individual's time is committed to clinical service and teaching of residents?	<b>60%</b>

**Faculty:**

Please list the faculty member of the program accepting PRIMARY responsibility for training in each of the following core areas:

Roentgen diagnosis:

Faculty: <b>Mackenzie Hallman</b>
Percentage clinical service: <b>70%</b>

Diagnostic ultrasound:

Faculty: <b>Corey R. Wall</b>
Percentage clinical service: <b>60%</b>

Computed Tomography

Faculty: <b>Mackenzie Hallman</b>
Percentage clinical service: <b>70%</b>

Magnetic Resonance Imaging:

Faculty: <b>Corey R. Wall</b>
Percentage clinical service: <b>60%</b>

Nuclear Medicine:

Faculty: <b>Corey R. Wall</b>
Percentage clinical service: <b>60%</b>

List the names and percentage clinical commitment of additional imaging faculty in the program, and their area(s) of instructional responsibility. For each imaging faculty in the program please provide a one page CV documenting their expertise in the area(s) of assigned responsibility.

For each of the specialty colleges listed below please list at least two Diplomates of these colleges who can be expected to regularly interact with radiology residents:

ACVIM

Andrew Hanzlicek, Shane Lyon, Laura Nafe
Todd Holbrook, Lyndi Gilliam

ACVS

Danielle Dugat
Daniel Burba, Michael Schoonover

ACVP

Jerry Ritchey, Melanie Breshears
James Meinkoth, Anthony Confer

**V. Affiliation agreement:**

If all of the training will not be accomplished on-site, please attach a copy of the affiliations agreement(s). Include the scope of the training and amount of time the resident will be away from the home institution.

N/A

**VI. Facilities:**

Briefly describe how the program meets the facility requirements.

**All modalities are connected to an Eklon based PACS system. A primary reading room with, multiple PC based reading stations, is present in the central area of the radiology section. Adjacent to this room there is a designated rounds room with a large overhead monitor which is utilized for student rounds.**

**Radiography:**

**There are two small animal suites. One suite is a Summit InnoVet with an Eklon EDR6 , while the other suite is a GE Precision 500, which is a dual function unit with DR and fluoroscopy. There is one equine suite, equipped with a CPI Millenia overhead telescoping unit. A portable MinXray unit is also stored and often utilized in this suite. Equine images are acquired with one of two Vet Rocket cannon plates.**

**Ultrasound:**

**The ultrasound suite is a designated room adjacent to the reading room, where two ultrasound units that are utilized. A Philips Epic 5 is the main diagnostic machine and a portable Aloca Prosound serves as a student teaching machine.**

**Cross-Sectional Imaging:**

**A 4 slice Helical GE light speed is the current CT machine, whereas a GE 1.5T Echosped is the current MR unit.**

**Nuc Med:**

**There is a designated nuclear medicine laboratory with includes an Equistand III Gamma Camera with Mirage/Oasis acquisition software.**

**VII. Clinical resources:**

Indicate the approximate number of patients seen annually by the home institution?

**17,500**

What is the annual imaging caseload? **7,270**

Indicate the approximate breakdown of the patient population according to species.

Small animals (canine, feline)	<b>13,400</b>
Large animals (equine and food animals)	<b>3,850</b>
Exotic animals	<b>250</b>



**Please complete the table below**

	Approximate number of cases in the 30 months clinical experience
Small Animal Radiology:	<b>5,000</b>
Large Animal Radiology:	<b>1,500</b>
Abdominal Ultrasound:	<b>1025</b>
Computed Tomography:	<b>375</b>
Nuclear Medicine:	<b>60</b>
Magnetic Resonance Imaging:	<b>225</b>
Elective (any of above)	
Required elective (specify):	
<b>Total</b>	<b>8,185</b>

Please indicate the course number and unit assignment residents are required to take to meet the educational objectives for formal instruction as outlined in the Essentials in the following:

<b>Topic</b>	<b>Course number</b>	<b>Units</b>
Radiobiology:		

The Physics of:

Diagnostic Radiology:		
Nuclear Medicine:		
Ultrasonography:		
CT:		
MRI:		

If your program does not offer formal courses in any or all of these topics please indicate how these educational objectives for each are met. Use attached sheets if necessary. **No formal didactic training will be required. Residents will have assigned study topics during incremental periods the first two years of the program. These topics will be obtained from the “Qualifying Study Guide & Resource List”, and each topic**

**will be assessed by an in depth mock exam.**

#### **IX. Research Environment:**

Over the last 5 years, what is the average number of peer reviewed publications, on which the IMAGING faculty listed under Direction and Supervision in **IV** above, are included as authors?

**Corey R Wall: 9 peer reviewed publications**

**Mackenzie Hallman: 4 peer reviewed publications**

What is the number of publications/submissions expected of a resident completing the program?

**One case report, case series, or retrospective study as a first author or co-author.  
One manuscript originating from the resident's research project as a first author.**

If this is an established program, what percentage of residents have made formal research presentations at the annual ACVR or equivalent national meeting?

**N/A**

Is an advanced degree a requirement of the training program?

**No**

#### **X. Educational Environment:**

How many lectures or scientific presentations are expected of each resident during the course of their training?

**1<sup>st</sup> year: 1 House Officer seminar**

**2<sup>nd</sup> year: 1 House Officer seminar**

**1 Anatomy lecture to 1<sup>st</sup> yr veterinary students**

**1 Phi Zeta day presentation**

**3<sup>rd</sup> year: 1 House Officer seminar**

**1 Lecture in the core 2<sup>nd</sup> yr veterinary students didactic radiology course**

**Abstract presentation at a national conference**

#### **XI. Evaluation 'Evaluation of residents and protection mechanisms':**

- At the 6 months reviews did your resident(s) successfully complete their residency training or did any of your resident(s) not adequately complete the last 6 months of training? **N/A**

- List the current members of the residents' review committee.

**Corey R. Wall, Mackenzie Hallman, & Daniel Burba (Department Head)**

- List the internal mechanisms in place to protect your resident if conflicts arise.  
**Departmental and OSU human resource procedures and protocols are in place within the Clinical Sciences Department, to address conflicts**

**XII. Teaching File:**

What is the nature and scope of the teaching file available to residents?

**The radiology section maintains a digital teaching file through MIRC software.**

**The radiology section maintains an additional digital Excel spreadsheet of cases with teaching value for cases located on the server.**

**Historic film based teaching cases are maintained and searchable through established spreadsheets.**

How is it maintained/updated?

**The radiology teaching list is updated during rounds on a weekly basis.**

**The MIRC teaching file is updated yearly.**

**XIII. Conferences:**

On average how many Known Case Conferences are conducted annually?**30**

**XIV. Literature resources:**

What is the geographic relationship between the nearest medical library and the training program?

**The “Center for Veterinary Health Sciences Library” is in the building adjacent to the teaching hospital.**

**XV. Appendix:**

- (a) Provide the pass rate for first time, second time, etc for both the preliminary and certifying exams for your residents for the past 5 years. For example, for all residents finishing your program 5 years ago (Year 5), check the appropriate box. Complete the table for residents finishing 4 years ago (Year 4), 3 years ago (Year 3), etc.

	Year 5	Year 4	Year 3	Year 2	Year 1
Passed preliminary exam 1st time					
Passed prelim					

**New Program**

exam 2 <sup>nd</sup> time					
Passed prelim after 2 <sup>nd</sup> time					
Passed certifying exam 1 <sup>st</sup> time					
Passed certifying exam 2 <sup>nd</sup> time					
Passed certifying exam after 2 <sup>nd</sup> time					
Unsuccessful in all attempts					

(b) Provide a clinical schedule for your resident(s). This schedule should provide a weekly or monthly outline of the resident’s clinical responsibilities. This may be in the form of a master schedule or duty roster for your entire radiology section if desired.

**Base Residency Schedule**

Assignment	Year 1	Year 2	Year3
Clinics	47 Weeks	38 Weeks	45 Weeks
Research	3 Weeks	4 Weeks	
Board Prep		8 Weeks	
Vacation	2 Weeks	2 Weeks	2 Weeks
Elective /Short Course	Elective weeks are flexible to the year taken		(5 weeks total )

**Oklahoma State University has a very centralized radiology service allowing ready access for both participating in and viewing of diagnostic imaging studies of all species. At least one radiologist is in support of the clinical radiology service each day.**

**The daily flow of cases at Oklahoma State University is also variable, with daily scheduling taking place to meet the pressing clinical needs. With that in mind the guidelines listed below in the “schedule of expectations and objectives” will be utilized in scheduling residents their clinical duties.**

**Schedule of Expectations and Objectives**

**Year One**

**1<sup>st</sup> Quarter (July – October)**

- Assist technologists in positioning for and acquiring radiographic studies, troubleshooting equipment, and providing quality control for routine studies, perform all contrast studies



- Review teaching file cases
- Interpretation: small animal abdomen and thorax

## 2<sup>nd</sup> quarter (October – December)

- Quality control for radiographic studies, contrast studies
- Begin small animal abdominal ultrasound
- Mock exam #1 (November)
- Assume primary on-call duties with full radiologist back-up
- Interpretation: US, SA abdomen and thorax

## 3<sup>rd</sup> quarter (Jan – March)

- Quality control of radiographic studies, contrast studies
- Interpretation: begin small and large animal orthopedic interpretation
- Attend sophomore class radiology lectures and assist in lab
- Create a plan for research project and submit grant proposals
- Mock exam #2 (March)

## 4<sup>th</sup> quarter (April – June)

- Continue 3<sup>rd</sup> quarter clinical duties
- Start research project

## Year Two

### 1<sup>st</sup> & 2<sup>nd</sup> Quarters (July – December)

- Begin CT, MR, and NM acquisition with technologists, and interpretation
- Continue with past clinical duties as scheduled.
- Mock exam #3 (July)
- Progress on research project
- Mock exam #4 (November)

### 3<sup>rd</sup> – 4<sup>th</sup> Quarters (Jan – June)

- Continue clinical duties as scheduled
- Mock exam #5 (March)
- Complete research project
- Mock exam #6 (July)

## Year Three

### 1<sup>st</sup> Quarter (July – Sept)

- Continue clinical duties as scheduled
- Board preparation
- Qualifying board exam

### 2<sup>nd</sup> – 4<sup>th</sup> Quarters (October – June)

- Continue clinical duties as scheduled
- Submit research abstracts & prepare research manuscript
- Continue radiographic, US, and CT/MR interpretations
- Elective rotations

## R. Mackenzie Hallman

### Contact Information:

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5209 N. Hunter's Ridge  
Stillwater, OK 74075

540.577.9161  
mohallman@gmail.com

### Education & Certification:

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2004 Bachelor of Science, Biology  
*Summa cum Laude* Kansas State University  
Manhattan, Kansas

2008 Doctor of Veterinary Medicine  
*Summa cum Laude* Kansas State University  
Manhattan, Kansas

2016 Diplomate, American College of Veterinary Radiologists

### Professional Experience:

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*July 2016 – Present* Assistant Clinical Professor, Diagnostic Imaging/Radiology  
Boren Veterinary Teaching Hospital, Oklahoma State University, Stillwater, Oklahoma

*July 2013 – July 2016* Resident, Diagnostic Imaging/Radiology  
Veterinary Health Center, Kansas State University, Manhattan, Kansas  
Faculty advisor: Laura J. Armbrust, DVM, DACVR

*May 2010 – July 2013* Associate Veterinarian  
Companion Animal Hospital, Selinsgrove, Pennsylvania

*July 2009 – May 2010* Emergency Veterinarian  
Animal Emergency Center, Watsonstown, Pennsylvania

*June 2008 – June 2009* Intern, Small Animal Medicine & Surgery  
Virginia- Maryland Regional College of Veterinary Medicine, Blacksburg, Virginia

### Publications & Grants:

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**Hallman RM**, Eshar D, Biller DS. Diagnostic Challenge: Computed tomography of coelomic mineral in a red-eared slider (*Trachemys scripta elegans*). *Journal of Exotic Pet Medicine*. 2015; 24: 476-479.

Lindemann DM, Nietfled JC, Gonzalez E, **Hallman RM**, Hause BM. Multicentric T-cell lymphoma and cutaneous Hemangiosarcoma in a captive Cheetah (*Acinonyx jubatus*). *Journal of Zoo and Wildlife Medicine*. 2015; 46(4): 961-966.

**Hallman RM**, Armbrust LJ, Marroquin S. Computed tomography of the thorax in awake small breed canines. Kansas State University Department of Clinical Sciences Research Grant. June 2014.

Lindemann DM, Carpenter JW, Almes KM, Schumacher L, Ryseff JK, **Hallman RM**. T-cell Hepatic Lymphoma with large granular lymphocyte morphology in a captive Cheetah (*Acinonyx jubatus*). *Journal of Zoo and Wildlife Medicine*. 2015; 46(2): 400-404.

Armbrust LJ, **Ostmeyer RM**, McMurphy R. Magnetic resonance imaging of bone marrow in the pelvis and femur of young dogs. *Vet Radiol & Ultrasound*. 2008; 49(5): 432-437.

Armbrust LJ, Hoskinson JJ, Biller DS, **Ostmeyer RM**, Milliken GA, Choi J. Comparison of digitized and direct viewed (analog) radiographic images for detection of pulmonary nodules. *Vet Radiol & Ultrasound*. 2005; 46(5): 361-367.

**ABBREVIATED CURRICULUM VITAE**  
**Corey R. Wall, DVM, MS**

**PRESENT POSITION AND ADDRESS:**

Title:	Diagnostic Imaging - Assistant Professor	Telephone:	405-744-7000
Office:	Center for Veterinary Health Sciences	FAX:	405-744-6265
	Veterinary Teaching Hospital	Email:	wallcr@okstate.edu
	1 BVMTH		
	Stillwater, OK 74078-2041		

**EDUCATION:**

<u>Degree/Training</u>	<u>Conferring Institution</u>	<u>Field</u>	<u>Year</u>
B.S.	Weber State University	Zoology	1995
D.V.M.	Colorado State University	Veterinary Medicine	1999
M.S.	University of Missouri	Biomedical Science	2010
Internship	Alameda East Veterinary Hospital	Small Animal Med & Surg	2000
Internship	Veterinary Specialists of Nevada	Small Animal Surgery	2001
Residency	University of Missouri	Diagnostic Imaging	2010

**CLINICAL SPECIALTY/BOARD CERTIFICATION:**

September 2011     Diplomate, American College of Veterinary Radiology

**BIBLIOGRAPHY:**

1. Rebecca S. Sayre, Mauricio Lepiz, Corey Wall, Kelley Thieman-Mankin, Jennifer Dobbin. Traumatic Tracheal Feline Diverticulum with Subsequent Resection and Anastomosis Utilizing One Lung Ventilation and Total Intravenous Anesthesia. *J Vet Emerg Crit Care* 2016; 26(6) 864-869.
2. Daqing Piao, Nigar Sultana, G. Reed Holyoak, Jerry W. Ritchey, Corey R. Wall, Jill K. Murray, Kenneth E. Bartels. In vivo assessment of diet-induced rat hepatic steatosis development by per-cutaneous single-fiber spectroscopy detects scattering spectral changes due to fatty infiltration. *Optics in the Life Sciences, OSA Technical Digest, BM3A.6* 2015.
3. Paige E. Mackey, Katharine G. Cappe, Rinosh Mani, Lana Rothenburg, Deanna A. Sutton, Nathan P. Wiederhold, Jonathan Lindner, Akhilesh Ramachandran, Corey R. Wall, Timothy Snider. Disseminated *Conidiobolus incongruus* in a dog: A case report and literature review. *Medical Mycology Case Reports* 2015; 8:24-28.
4. Wall CR, Cook CR, Cook JL. Diagnostic Sensitivity of Radiography, Ultrasonography and Magnetic Resonance Imaging for Detecting Shoulder Osteochondrosis/Osteochondritis Dissecans in Dogs. *Vet Radiol Ultrasoun* 2015; 56:3-11.
5. Simpler RE, Kerwin SC, Eichelberger BM, Wall CR, Thompson JA, Padua A, Purdy D, Griffin JF. Evaluation of the WARP-Turbo Spin Echo Sequence for 3 Tesla Magnetic Resonance Imaging of Stifle Joints in Dogs with Stainless Steel Tibial Plateau Leveling Osteotomy Implants. *Vet Radiol Ultrasoun* 2014; 55:414-419.
6. Coleman MC, Norman TE, Wall CR.  
What is your diagnosis? Persistent right aortic arch in a foal. *JAVMA* 2014; 244:1253-1254.
7. Griffin JF, Archambault NS, Mankin JM, Wall CR, Thompson JA, Padua A, Purdy D, Kerwin SC. Magnetic Resonance Imaging in Cadaver Dogs with Metallic Vertebral Implants at 3 Tesla: Evaluation of the WARP-Turbo Spin Echo Sequence. *Spine* 2013; E1548-E1553.
8. Simpson KM, Streeter RN, Wall CR, Sula MJ, Breshears MA.  
What is your diagnosis? Urethral Pseudodiverticulum in a Boer buck. *JAVMA* 2013; 243:1395-1397.
9. Kusmierczyk J, Wall CR, Hoppes S, Budke C, Spaulding K.  
Comparison of Computed Tomographic Images of Birds Obtained with Sedation versus General Anesthesia. *J Exot Pet Med* 2013; 22:251-257.
10. Middleton JR, Fine DM, Britt LG, Nagy DW, Wall CR. What is your diagnosis? Cardiogenic pulmonary edema in a 2-day-old calf. *JAVMA* 2009; 234:739-740.
11. Wall CR, Taylor R. Arthroscopic biceps brachii tenotomy as a treatment for canine bicipital tenosynovitis. *J Am Anim Hosp Assoc* 2002; 38:169-175.

