

ACVR Residency Training Program Application Form:
Michigan State University

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:

Succinctly state the objectives of the training program.

1. To provide advanced training and clinical experience in the various diagnostic imaging modalities and radiation therapy to complete the requirements for the ACVR certification examination and function as a competent radiology specialist.
2. To develop skills in routine radiographic procedures, contrast procedures and interventional imaging, diagnostic ultrasound (non-cardiac & cardiac) computed tomography, nuclear imaging, and MRI.
3. To provide instruction through formal/informal courses and seminars for learning:
 - a. the principles of radiology including the diagnostic imaging modalities (ultrasound, CT, MRI, nuclear imaging)
 - b. basic concepts of radiation physics, radiation safety, and radiobiology
 - c. scientific writing and the principles/methods of clinical investigation
4. To gain experience in teaching by lecturing in radiology courses offered in the core-veterinary curriculum, clinical clerkships and the continuing education program for veterinarians.
5. To develop communication skills with referring veterinarians on the image consultation service

III. Training period:

What is the total length of the training program in months? 36

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 3rd year (September), please state the reason.

What is the total duration of supervised clinical training in the program? 30 months

What are the responsibilities of the resident in the remaining non-clinical portion of the program? Research, boards preparation

IV. Direction and Supervision:

Program Director:

Who is the Director of Residency training? Elissa Randall

What percentage of this individual's time is committed to clinical service and teaching of residents? 60% on clinics, but time off-clinics is spent teaching residents; 70% total

Faculty:

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

Roentgen diagnosis:

Faculty: **Randall**, also Kinns

Percentage clinical service: all 60%

Diagnostic ultrasound:

Faculty: **Kinns**, also Randall

Percentage clinical service: all 60%

Computed Tomography

Faculty: **Kinns**, also Randall

Percentage clinical service: all 60%

Magnetic Resonance Imaging:

Faculty: **Randall**, also Kinns,

Percentage clinical service: both 60%

Nuclear Medicine:

Faculty: **Randall**, also Kinns

Percentage clinical service: 60%

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.

Jennifer Kinns, VetMB, MRCVS, DACVR, DipECVDI, 60% clinical commitment

Elissa Randall, DVM, MS, DACVR, 60% clinical commitment

Ulreh Mostosky, DVM, MS, DACVR 20% clinical commitment, primarily instructs residents on OFA studies (hips and elbows)

CV's are at end of application.

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

Kate Holan Cheri Johnson Barbara Kitchell John Kruger Coretta Patterson William Schall Harold Schott
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ACVS

Charles DeCamp Loic DeJardin Joe Hauptman Susan Holcombe Steve Mehler Frank Nickels Curtis Probst John Stick Tiffy Zachos

ACVP

Jack Harkema Matti Kiupel Thomas Mullaney Jon Patterson Michael Scott Julia Stickle
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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.

Not applicable.

VI. Facilities:

Briefly describe how the program meets the facility requirements.

SUMMARY OF FACILITIES AND EQUIPMENT (For Each Room)

- Rooms (SA-1&2) Routine Small Animal Radiographic Procedures (GE Room A 132&134)
- Overhead tube Proteus XR (Max 150 KVp) 50kw high frequency generator with floating, elevating table and Bucky.
- Room (SA-3&LA-1) GE PlatinumOne RF with Infimed Innovision 1024 x 1024 x 12 bit digital CCD camera system for fluoroscopy and radiography.
- Room (SA-4) Room has overhead x-ray tube (Maxiray 100-18), (80kw) three phase generator. One room only also has Ordograph II-B Linear Tomography System and Puck C Auxiliary Film Changer.
- Rooms (LA-2)
- Has an 80kw three phase generator.
- Maxiray 100-18 X-ray Tube Advantx DR Digital R+F System
- The x-ray tube and fluoroscope are each on overhead suspensions and may be linked by servo system. Images made by either spot film, digital record or videotape.
- For lower limb radiography each room has a mobile radiographic tube (Maxiray 75-18NR) on a custom-made rolling stand.
- Room (CT)
- GE Brightspeed 16 slice Helical CT Scanner
- A continuous helical multi-detector, ultrahigh resolution, up to 440 mA for 0.5 - 1 second scan times, slice thickness .0625 – 10 mm. Increased scan speed and smaller slices allow for excellent CTA scanning.
- Room (Angio)
- Angiographic Special Procedures (GE Room 1134)
- Advantx 80 LU-A Angiographic System with 9 inch Image Intensifier, Digital Subtraction
- Omega III Angiographic Table with Pedestal Base and Top Rotation.

	Image recording is digital.
Room (Nuclear)	<p>Nuclear imaging gamma camera: Scintron VI with embedded motion correction from Medical Imaging Electronics.</p> <p>Same camera performs both small animal and large animal studies including tomography (SPECT) on small animal patients.</p>
Room (Ultrasound)	<p>Diagnostic Ultrasound (Non-cardiac)</p> <p>BioSound Technos ultrasound system with B-Mode and M-Mode Multi-frequency convex & linear array probes (13MHz-2.5MHz) 2-D imaging, spectral Doppler, Color Doppler, Power Doppler, Biopsy applications, digital storage capabilities Sony Video Printer and DICOM printer.</p> <p>Siemens Sonoline ultrasound system with B-Mode and M-Mode Multi-frequency convex & linear array probes (10MHz-5.0MHz) 2-D imaging, spectral Doppler, Color Doppler, Power Doppler, Biopsy applications, digital storage capabilities Sony Video Printer and DICOM printer.</p>
Room (RadTherapy)	<p>Linear Accelerator – Varian 2100C, dual energy (6 and 10 MV) and range of electron energies, multi-leaf collimator, 3-D treatment planning system</p>

Additional Equipment

- ❑ 2 AGFA CR 85 - X laser scanners
- ❑ 2 AGFA 5302 laser printers
- ❑ 3 AGFA QS servers for image quality control
- ❑ 50 AGFA CR plates
- ❑ Eklin DR system
- ❑ Mobile Image Intensifier (C-arm) GE Stenoscope D9 System with dual 9 inch or 6 inch fields, dual TV Monitors, digital record and with digital subtraction capability.
- ❑ Kodak Automatic Film Processors M-35 (2) and M-6 (1).
- ❑ Hewlett-Packard Faxitron Model 43805 System
- ❑ Six mobile and portable x-ray units and portable ultrasound units (Aloka 500) used primarily by Large Animal Theriogenology.
- ❑ RTI/IDX PACS system, new system to be installed Feb 2008
- ❑ Voxar 3D: software with analysis tools and advanced visualization tools including MIP, MPR, 3D, segmentation and bone removal.
- ❑ Power injector: Mallinkrodt/Covidien Angiomat Illumena angiographic/CT digital injection system

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VII. Clinical resources:

Indicate the approximate number of patients seen annually by the home institution? 28,200
What is the annual imaging caseload? 14,339

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

Small animals (canine, feline)	86%
Large animals (equine and food animals)	13%
Exotic animals	1%

What is the approximate annual imaging caseload of the program in:

Small Animal Radiology: 13,127
Large Animal Radiology: 1,212
Abdominal Ultrasound: 3239
Computed Tomography: 375
Nuclear Medicine: 113
Magnetic Resonance Imaging: 0
Other (specify):

VIII. Training content:

What percentage of imaging reports are typically available within 48 hours after the examination is conducted in typewritten or electronic form? 75-80%

If your answer is less than 75% please explain how reports are generated and how long it takes for the report to be available for review in typewritten form.
Of the preliminary reports generated from the imaging caseload what percentage are initially produced by the resident? 80%
What percentage of resident reports are reviewed by the imaging faculty prior to finalization of the report? 90%
When preliminary resident reports are reviewed and edited by the imaging faculty responsible for training, what percentage of the time are two or more faculty present? 50%

Please complete the table below

	Approximate number of cases in the 30 months clinical experience
Small Animal Radiology:	8,000
Large Animal Radiology:	700
Abdominal Ultrasound:	1300
Computed Tomography:	400
Nuclear Medicine:	50
Magnetic Resonance Imaging:	100*
Elective (any of above)	
Required elective (specify):	
Total	10,550
*estimate for MRI based on rotations at other vet schools and projected studies at MSU: MRI should be in use at MSU by Jan 2008.	

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:

Topic	Course number	Units
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Radiobiology:	See below	
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The Physics of:

Diagnostic Radiology:	No course number; Physics of Radiology course given by Radiology Department of MSU Medical School	2 hours per week for 2 semesters
Nuclear Medicine:	same as above	
Ultrasonography:	Same as above	
CT:	same as above	
MRI:	same as above	
<p>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.</p> <p>The physics course is taken with human radiology residents at the MSU Medical School Radiology Department.</p> <p>Radiobiology and additional material for physics are taught as internal review sessions scheduled 2 hours per week for one semester once during the 3 year training period. Sessions are based on board objectives.</p>		

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? 38 for all faculty
What is the number of publications/submissions expected of a resident completing the program? One
If this is an established program, what percentage of residents have made formal research presentations at the annual ACVR or equivalent national meeting? 100%
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? Three (one per year as part of CVM resident seminar series)
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XI. Evaluation:

During the program how often is resident performance evaluated in writing? Three times (once per year)

XII. Teaching File:

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

The Resident Teaching File is a conventional system consisting of representative cases of interesting or uncommon cases as well as challenging and complex cases. These files have a radiology report and/or laboratory reports.

How is it maintained/updated?

The teaching files are maintained by all radiologists and office staff. The residents are responsible for updating the files with cases that are culled at the end of the year. Interesting cases are also added throughout the year.

XIII. Conferences:

On average how many Known Case Conferences are conducted annually? 24

XIV. Literature resources:

What is the geographic relationship between the nearest medical library and the training program? The veterinary medical library is in the same building complex. The Michigan State University Libraries consist of a Main Library and 14 branch libraries at various campus locations and serving faculty and students in specific areas of study.

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			x	x	
Passed prelim exam 2 nd time					
Passed prelim after 2 nd time					

Passed certifying exam 1 st time					
Passed certifying exam 2 nd time			x	x	
Passed certifying exam after 2 nd 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.

Sample Resident Duty Schedule (3-week rotations)

	<u>Primary Duty</u> (Routine/CT/Spec Proc/NucMed)	<u>Ultrasound/Secondary Duty</u>	<u>Emergency Duty</u>
Clerkship 1			
<i>Week #1</i>			
Monday	Kinns/Resident 1	Randall/Resident 2	Kinns/Res 2
Tuesday	Kinns/Resident 1	Randall/Resident 2	Kinns/Res 2
Wednesday	Kinns/Resident 1	Randall/Resident 2	Kinns/Res 2
Thursday	Kinns/Resident 1	Kinns/Resident 2	Kinns/Res 2
Friday	Kinns/Resident 1	Kinns/Resident 2	Kinns/Res 2
<i>Week #2</i>			
Monday	Randall/Resident 2	Kinns/Resident1	Randall
Tuesday	Kinns/Resident 2	Kinns/Resident1	Randall
Wednesday	Kinns/Resident 2	Kinns/Resident1	Randall
Thursday	Randall/Resident 2	Randall/Resident1	Randall
Friday	Randall/Resident 2	Randall/Resident1	Randall
<i>Week #3</i>			

Monday	Randall/Resident 1	Kinns/Resident 2	Resident 1/Kinns
Tuesday	Randall/Resident 1	Randall?Resident 2	Resident 1/Kinns
Wednesday	Randall/Resident 1	Randall/Resident 2	Resident 1/Kinns
Thursday	Kinns/Resident 1	Kinns/Resident 2	Resident 1/Kinns
Friday	Kinns/Resident 1	Kinns/Resident 2	Resident 1/Kinns

Condensed CV's of Diagnostic Imaging Faculty

Name: Jennifer Kinns
Title: Assistant Professor

EDUCATION

Veterinary Education

- 1997-2002 University of Cambridge Department of Veterinary Medicine.

Undergraduate Education

- 1990-1994 St Andrews University, Fife, Scotland.

CERTIFICATION

Diplomate, American College of Veterinary Medicine, September 2007

Diplomate, European College of Veterinary Diagnostic Imaging, September 2007

VETERINARY EMPLOYMENT

University of Pennsylvania, Philadelphia, Pennsylvania, USA.

- Radiology residency 2004-2007

Culverden Veterinary Clinic, Tunbridge Wells, Kent, England.

- Mixed practice locum position from Dec 2003 – March 2004.

Bell Equine Veterinary Clinic, Butchers Lane, Mereworth, Kent, England.

- Hospital based intern from July 2002 – Sep 2003

PUBLICATIONS

Peer reviewed

- Kinns J, Mai W, Seiler G, Johnson V, Caceres A, Zwingenberger A, Valdez-Martinez A and Schwarz T (2006). Radiographic sensitivity and negative predictive value for acute canine spinal trauma. *Veterinary Radiology and Ultrasound* 47 (6)
- Kinns, J. and Mair, TS (2005) Use of magnetic resonance imaging to assess soft tissue damage in the foot following penetrating injury in three horses. *Equine Veterinary Education* 17(2):69-73
- Berent AC, Kinns J and Weisse C (2006) Balloon dilatation of nasopharyngeal stenosis in a dog. *JAVMA* 229 (3): 385-388
- Mair, TS, Kinns, J, Jones, RD (2005) Magnetic resonance imaging of the distal limb of the standing horse. *Equine Veterinary Education* 17(2):74-79
- Mair, T.S., Kinns, J (2005) Deep digital flexor tendonitis in the equine foot diagnosed by low-field magnetic resonance imaging in the standing patient: 18 cases. *Veterinary Radiology and Ultrasound* 46(6): 458-466

Accepted publications

- Kinns J and Mai W (2007) Association between malignancy and sonographic heterogeneity in canine and feline abdominal lymph nodes. Accepted: *Veterinary Radiology and Ultrasound*
- Sherlock C, Kinns, J. and Mair, TS (2007) Evaluation of foot pain by MRI in the standing horse: preliminary results and long-term follow up. Accepted: *Veterinary Record*

Conference abstracts

- Kinns, J, Sehgal C and Seiler G. Contrast enhanced ultrasound of the canine kidney. 2006 IVRA congress.
- Kinns J, Mai W, Seiler G, Johnson V, Caceres A, Zwingenberger A and Schwarz T. Radiographic evaluation of spine trauma in dogs: a study using CT as a gold standard. 2005 ACVR Congress.
- Kinns J and Mair TS Penetrating foot lesions assessed using MRI in the standing horse. 2004 EAVDI Congress
- Kinns J and Mair TS Diagnosis of deep digital flexor tendonitis using MRI in the standing horse. 2003 IVRA Congress
- Kinns J and Mair TS The clinical use of standing MRI in the evaluation of equine foot lameness. 2003 ACVR Congress.

Invited presentations

- Kinns, J Magnetic resonance imaging of the distal limb. Nurses' section of the 2003 BEVA Congress.
- Kinns, J, Johnson V and Schwarz T. CT evaluation the spine in the canine trauma patient. EAVDI satellite meeting of the 2005 BSAVA congress.

Poster presentation

Kinns J, Berent A and Weisse C. CT evaluation and balloon dilatation of nasopharyngeal stenosis in a dog. 2005 ACVR congress.

Name: Elissa Randall

Title: Assistant Professor

Education and Training

1993	B.A. History	University of North Carolina at Chapel Hill
2001	D.V.M.	Virginia-Maryland Regional College of Veterinary Medicine
2005	Master's Degree	Department of Environmental and Radiological Health Sciences, Colorado State University
2002- 2005	Residency	Radiology Department, Colorado State University Veterinary Teaching Hospital
2005	Diplomate	American College of Veterinary Radiology

Professional Experience

2005-2006	Assistant Professor, Diagnostic Imaging, Michigan State University College of Veterinary Medicine, East Lansing, MI
2002 – 2005	Resident, Radiology, Colorado State University Veterinary Teaching Hospital, Fort Collins, CO
2001 – 2002	Associate Veterinarian, Falls Church Animal Hospital, Falls Church, VA

Abstracts

Randall EK, Kraft SL, Lana S, Avery A, Olver C. Whole-body MRI: a prospective comparison to routine diagnostics in staging lymphoma in dogs. Proceedings, American College of Veterinary Radiology annual meeting, Chicago, IL, November 2005.

Randall EK, Kraft SL, Wilhelm M, Evolution and Evaluation of a whole body MRI protocol. Proceedings, American College of Veterinary Radiology annual meeting, Montreal, Canada, August 2004.

Manuscripts

Kraft SL, Randall EK, Wilhelm, M, Lana S. Development of a whole body magnetic resonance imaging protocol in normal dogs and canine cancer patients. *Vet Rad & US*, Vol. 48, No. 3, 2007, pp 212-220.

Meola S, Swiderski J, Randall E, Kraft S, Palmer R, What's your diagnosis? Spinal cord compression. *J Am Vet Med Assoc*. 2007 Jun 1;230(11):1629-30.

Manuscripts in Preparation

Randall EK, Kraft SL, A prospective comparison of whole-body MRI and traditional diagnostic evaluation to stage lymphoma in dogs. To be submitted to *Vet Rad & US*, Fall 2007.

Continuing Education Lectures

“The use of multiple imaging modalities to diagnose orthopedic disease in equine patients”. Presented at the International Conference on Advanced Veterinary Practice in Medicine and Surgery , Tamil-Nadu Veterinary and Animal Sciences University, Chennai, India, June 2006.

“Radiographic Diagnoses”. Presented at veterinary technician conference offered by Colorado State University, January 2005.

“Cardiac Radiology”. Presented as part of practitioner echocardiography course offered by Dr. Jan Bright and June Boon at Colorado State University, September 2004 and January 2005.

NAME: Ulreh V Mostosky

TITLE: Professor of Veterinary Radiology

EDUCATION: Michigan State University B.S. (Zoology)* Michigan State University B.S. (Vet. Med.)* Michigan State University D.V.M.* Michigan State University M.S.

*Awarded with High Honors

POSITIONS HELD: SUMMARY INFORMATION:

EMPLOYER	TITLE	MAJOR RESPONSIBILITIES
Michigan State University	Instructor	Undergraduate and graduate teaching of formal courses and clinical radiology.
Michigan State University	Assistant Professor	Undergraduate and graduate teaching of formal courses and clinical radiology.
Michigan State University	Associate Professor	Undergraduate and graduate teaching of formal courses and clinical radiology.
Michigan State University	Professor	Undergraduate and graduate teaching of formal courses and clinical radiology.

Years of full-time MSU faculty service through 1999.

Instructor 3 1/2 years Assistant Professor 4 years Associate Professor 4 years Professor 29 1/2 years

Total full-time faculty experience: 41 years