ACVR Residency Training Program Application

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.

Institution Name:
LSU School of Veterinary Medicine

Email
nrademac@lsu.edu

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Objectives:

Succinctly state the objectives of the training program.

The residency program is designed to provide highquality, in-depth clinical training in veterinary diagnostic imaging which will allow the resident to develop knowledge and clinical proficiency in the field. The program will provide an in-depth understanding of diagnostic radiology, ultrasonography, magnetic resonance imaging and computed tomography as well as knowledge of the general principles and applications of nuclear medicine. The principles of radiation safety and
biology and radiotherapy will be given. The training program will aim to produce veterinary radiologists proficient in the use of current imaging techniques for examination of a wide variety of diseases in animals, with an understanding of developing techniques, digital radiography, and the ability to contribute to the discipline through participation in research, congresses and publications. The resident will be expected to meet the training requirements of the ACVR required to take the ACVR board examination. Upon completion of the program and examinations the successful candidate will be able to pursue career goals in academia, industry or private specialty practice.

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Training Period:

What is the total length of the training program?
3 years

If this is a four year program, during what year will the resident be eligible to take the ACVR Preliminary Exam?

3

If the resident is not eligible to take the exam during the beginning of the third year (September), please state the reason.

NA

What are the responsibilities of the resident in the remaining non-clinical portion of the program?
All of the required supervised training will be accomplished on site. Six of the first 36 months of training are scheduled for research and writing, elective subspecialty training, outside rotations and studying for the written and practical board examinations. Four weeks of vacation are granted annually and is included in the elective weeks.

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**Direction and Supervision:**

Program Director:

Who is the Director of Residency training?
Nathalie Rademacher

What percentage of this individual's time is committed to clinical service and teaching of residents?
50%

Faculty:

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

**Roentgen diagnosis**
Nathalie Rademacher 50%

**Diagnostic ultrasound**
Lorrie Gaschen 50%

**Computed Tomography**
Nathalie Rademacher 50%
Magnetic Resonance Imaging
Abbi Granger 50%

Nuclear Medicine
Lorrie Gaschen 50%

Using the button below, please provide a one page CV documenting their expertise in the area(s) of assigned responsibility for each imaging faculty in the program.

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

**ACVIM**
Kirk Ryan

**ACVIM**
Andrea Johnston

**ACVS**
Karanvir Aulakh

**ACVS**
Colin Mitchel

**ACVP**
Shannon Dehghanpir

**ACVP**
Courtney Nelson

**Affiliation Agreement:**

Using the button below, provide a copy of the affiliation agreement(s) in place if all of the training will not be accomplished on-site. Include the scope of the training and amount of time the resident will be away from the home institution.
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Facilities:

Briefly describe how the program meets the facility requirements.

Radiographic equipment:
The section has two small animal suites and one large animal suite newly installed in 2020:
- AGFA DR Retrofit with 2 detectors plus VET Ray Double Tube Crane X-Ray System
- AGFA 2 DR Laptop Retrofit systems with DR Suitcases
  - AGFA DR 800 RF Room
  - AGFA DX-D 600 with wall stand
  - AGFA PACS
  - AGFA RIS

Ultrasonographic equipment:
1. Toshiba Aplio 300 Small Animal ultrasound machine
   a. Low and high frequency, curved and linear array probes (5 probes)
   b. Cardio package and phase array probe
   c. Elastography
2. Philips iu22 Small Animal ultrasound machine
   a. Low and high frequency, curved and linear array probes (6 probes)
   b. Qlab contrast imaging software with dedicated contrast probes
   c. Elastography software with dedicated linear probe
3. Hitachi Noblus (x2), Mobile Unit, Small and Large animal machines
4. Toshiba Viamo, Mobile Unit, Small and Large Animal machines
5. Mylab 50 ultrasound unit with 5 probes, including a rectal, phased array and linear transducer.

CT equipment:
GE Lightspeed 16-slice CT unit with pressure injector: Equipped for equine with a dedicated table and two 3-D GE Workstation for all reconstruction work

Nuclear medicine equipment:
MiE Equine Scanner HR with Scintron VI workstation including Camera control board and multi-tasking real time operating system; rectangular format gamma camera with a very large field of view (61cm x 39cm) mounted on a crane system with the ability to rotate the camera in 2 orthogonal planes high performance PMT, LEAP and pinhole collimator in a dedicated room for equine and small animal imaging.

MRI equipment:
1.5T Hitachi Echelon, in hospital for small and large animal (with custom equine table) with Diffusion Tensor Imaging capabilities

Other:
1. A total of 8 triple head, 3 megapixel greyscale medical grade workstations are available for image viewing in the reading room, conference room, US room and MRI in addition to 1 single head conventional color monitor and 2 dual head Mac Stations.

2. Radiology reporting system and Mini “RIS” (Filemaker based)
3. Dragon Dictation software and Microphones were added at all work stations.
4. Large reading room to accommodate students and residents for rounds with HD smart board.
5. Large conference room for journal club and book review, resident rounds and case discussions with viewing workstation and HD smart board.
6. Radiotherapy: the oncology service maintains a Varian 21EX linear accelerator with photons and electrons, a multileaf collimator, On-board imaging (OBI) and a cone beam CT. In addition, 3D treatment planning system (TPS) and record and verify system (R&V) for advanced techniques such as IMRT, SBRT, SRS is available.
7. Radioactive iodine therapy ward for treatment of cats with hyperthyroidism.
8. Isolation wards for cats and dogs for holding post-nuclear medicine scans.
9. Isolation stalls for horses post nuclear medicine scans.
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Clinical Resources:

Indicate the approximate number of patients seen annually by the home institution?
30,995

What is the annual imaging caseload?
~9000

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

Type a question

- Small Animals (canine, feline): 25,319
- Large Animals (equine and food animals): 3,253
- Exotic Animals: 2,423

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

Type a question

- Small Animal Radiology: 4600
- Large Animal Radiology: 600
- Abdominal Ultrasound: 1550
- Computed Tomography: 420
- Nuclear Medicine: 60
- Magnetic Resonance Imaging: 205
- Other (specify): 100 Large Animal Ultrasounds 350 US guided procedures 300 Wildlife and exotics 85 Radiotherapy

Please check which of the following types of imaging cases the residents will have exposure
Training Content:

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

98%

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.

N/A

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.

N/A

Of the preliminary reports generated from the
imaging caseload what percentage are initially produced by the resident?
95%

What percentage of the resident reports are reviewed by the imaging faculty prior to finalization of the report?
100%

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?
60%

For each category below, approximate the number of cases a single resident will be involved in the interpretation of during the course of the entire program.

**Type a question**

<table>
<thead>
<tr>
<th>Category</th>
<th>Number of Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small Animal Radiology</td>
<td>5000</td>
</tr>
<tr>
<td>Large Animal Radiology</td>
<td>500</td>
</tr>
<tr>
<td>Abdominal Ultrasound</td>
<td>1000</td>
</tr>
<tr>
<td>Computed Tomography</td>
<td>400</td>
</tr>
<tr>
<td>Nuclear Medicine</td>
<td>100</td>
</tr>
<tr>
<td>Magnetic Resonance Imaging</td>
<td>300</td>
</tr>
<tr>
<td>Elective (any of above)</td>
<td>300</td>
</tr>
<tr>
<td>Required elective (specify)</td>
<td>RT 20, Cardio 150</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>7170</strong></td>
</tr>
</tbody>
</table>

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:

**Radiobiology**

MDEP 7121 ~38.5 hrs see details below
Nuclear Medicine
MDEP 7121, Nuc Med Short Course ~28 hours, Residents also are sent to the Nuc med short course if offered. This course is intended as a general review of nuclear medicine. It will include: reviews of the basic principles of nuclear medicine and image processing, common nuclear medicine imaging procedures, interpretative principles and case examples. The course will focus on small animal nuclear medicine, with a brief review of equine nuclear medicine (specifically bone scintigraphy). The course is targeted towards radiology residents, with a focus on ACVR board objectives.

Ultrasonography
MDEP 7121 ~24 hours see details below and attached

CT
MDEP 7121 ~4.5 hours see details below and attached

MRI
MDEP 7121 ~8 hours see details below and attached

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 the button below to upload additional information as necessary.

MDEP 7121: Radiological Physics for residents: Formal course work is provided by the Medical physics Department in Baton Rouge, Louisiana in association with the Ochsner Health Group (hospital) in New Orleans. The course is taken with human radiology residents in that program and the course covers the topics of Radiography, CT, MRI, Neuroimaging, Ultrasound and Nuclear Medicine and Radiobiology. They also visit a radiopharmacy to learn how a molybdenum generator functions. The residents will attend the course via videoconference in the first and second year of the residency.

In addition, residents attend the US course offered to RDVMs at LSU (8 hours of lectures) and student lectures when applicable.

1. Formal case discussion daily, all modalities
2. Journal Club: residents prepare assigned journal articles using power point format followed by an open forum discussion or topic discussions resulting from compiled journal articles for a particular topic
3. Board Examination review: residents prepare in advance an assigned reading from pertinent texts summarized in a power point that follow the syllabus of the ACVR for the board examination covering all topics, including physics, physiology, pathophysiology, anatomy, and all modalities.
4. Path rounds: held monthly, review of cases with final diagnosis from histopathology prepared and presented by residents
5. During the 30 months of training, 6 weeks total will be spend in the Cardiology service to cover the basics of echocardiography and principles of interpretation and patterns of disease.
6. During the 30 months of training, 2 weeks total will be spend in the Oncology service to cover the basics of radiation treatment planning, radiobiology and radio-oncology.
7. Resident and Intern Seminar (i.e. all interns and residents of the hospital). These are held weekly on Friday and are formal 30 minute presentations by the resident either to review a subject area in internal medicine, surgery, neurology, exotics, anesthesia, oncology or radiation oncology or to present the resident’s research project or case reports. Both large and small animal is covered.
8. Large Animal House Officer Rounds: 1 hour on Wednesday mornings. Additional large animal topics are covered through presentations by the residents. Either case presentations or mortality and morbidity cases are made. Also, research topics in the Equine Division are presented, occasionally by invited speakers.
9. Dean’s Grand Rounds. 1 hour. Held once a month. Invited speakers covering a variety of topics.
10. Graduate Courses. As part of the graduate studies program, three, three hour long courses are held annually with in depth teaching of specific imaging topics in both small and large animal.
Research Environment:

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

Lorrie Gaschen 5 per year, Nathalie Rademacher 5 per year, Abbi Granger 3 per year

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

Residents are expected to submit two first-author manuscripts during the residency, one of which must be completed by the second year. One manuscript must originate from the resident’s research project, the other a case report or retrospective study. Two manuscripts from the research project are also acceptable. At least one abstract is to be presented at an annual imaging conference meeting. Sufficient time and support is given by the faculty to complete this work and the faculty will aid the resident with developing collaborations and obtaining funding if necessary.

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

65%

Is an advanced degree a requirement of the training program?

No
Educational Environment:

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

The resident will be expected to hold 2 formal intramural lectures per year. At least one lecture at a veterinary congress will be required, usually during the second year of the program. Depending on the resident's level, they will begin leading student rounds in a formal setting where the student's have the opportunity to discuss the cases they were assigned to as well as introduction on the topic morning rounds given to students. Residents will also assist in all laboratories in the diagnostic imaging courses of the years 1-3 as well as the anatomy teaching labs. This will be no more than 1 lecture per student year.

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Evaluation 'Evaluation of residents and protection mechanisms' :

Did all of your current resident(s) adequately complete the last six months of training?

Yes

If no, please explain:

NA
List the current members of the residents' review committee.
Nathalie Rademacher
Lorrie Gaschen
Abbi Granger

List the internal mechanisms in place to protect your resident if conflicts arise.
A departmental house officer committee of the School of Veterinary Medicine is in place to protect and help the resident in cases of conflicts and issues that might arise. Member are residency directors of each section. Contacts outside of the radiology department are the chair of the house of the committee (although that is me, Nathalie Rademacher, right now), the Departement Head and the school counselor.

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Teaching File:
What is the nature and scope of the teaching file available to residents?
A searchable database is available. A teaching file is saved in this database and (currently contains approximately 2000 cases, 1500 electronic, rest film) is maintained for review by residents and students. It consists of large animal, small animal and exotic cases, 60 percent small animal, 30 percent large animal and 10 percent exotic cases. Both normal and abnormal examples are available. CT and MRI cases are included. Large animal cases include appendicular and axial skeleton and thorax. Small animal includes thorax, abdomen, extremities, special procedures, computed
tomography and magnetic resonance imaging. Exotics are mainly whole body radiographic studies.

**How is it maintained/updated?**

The cases are updated daily as clinical pathology and histopathology results that are available via an online database as well become available.

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**Conferences:**

On average how many Known Case Conferences are conducted annually?

30

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**Literature Resources:**

What is the geographic relationship between the nearest medical library and the training
program?
The resident has access to the veterinary journals and reference books listed in the reading list of the syllabus. The School of Veterinary Medicine maintains a complete library with up-to-date textbooks and journals in all specialty fields. The main veterinary journals for all specialty fields are also available and most all are available electronically. In addition, the radiology section maintains its own library of the most recent anatomy and diagnostic imaging textbooks. The nearest human medical library is 1 hour away by car.

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Appendix:

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): x number passed prelim 1st time, y number passed certifying exam 1st time, z number was unsuccessful.

<table>
<thead>
<tr>
<th></th>
<th>Year 5</th>
<th>Year 4</th>
<th>Year 3</th>
<th>Year 2</th>
<th>Year 1</th>
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</thead>
<tbody>
<tr>
<td>Passed preliminary exam 1st time</td>
<td></td>
<td>1</td>
<td></td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Passed preliminary exam 2nd time</td>
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<td></td>
<td>2</td>
<td></td>
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</tr>
<tr>
<td>Passed preliminary exam after 2nd time</td>
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<tr>
<td>Passed certifying exam 1st time</td>
<td>Year 5</td>
<td>Year 4</td>
<td>Year 3</td>
<td>Year 2</td>
<td>Year 1</td>
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<tr>
<td>Passed certifying exam 2nd time</td>
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<td>1</td>
<td></td>
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<tr>
<td>Passed certifying exam after 2nd time</td>
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<tr>
<td>Unsuccessful in all attempts</td>
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</table>

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. Use the button below.

[3 year Resident schedule weekly 2020.xlsx](3 year Resident schedule weekly 2020.xlsx)