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:
University of Minnesota

Email
cpober@umn.edu

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Objectives:
Succinctly state the objectives of the training program.
To train residents in order to successfully achieve board certification.
To offer a varied program in order that the resident is exposed to all aspects of medical imaging, is allowed more in-depth study of an area of interest, and is given experience in teaching, research, and service.
To provide the opportunity for interested residents to pursue a graduate degree should they have an
interest in an academic future

To train residents to serve the veterinary profession as an imaging specialist with sufficient insight to be able to apply their skills either in an academic or private practice environment

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Training Period:

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

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

What are the responsibilities of the resident in the remaining non-clinical portion of the program?
The resident is expected to accomplish a variety of activities during the non-clinical portion of the residency. The resident is expected to prepare for and lead monthly board review rounds with the radiologists. The board review rounds are based upon the ACVR exam objectives and study guide, as well as other topics deemed important by the radiologists. The resident is expected to participate in biweekly radiology journal club, biweekly known clinical case conference, weekly MRI rounds, weekly small animal Grand Rounds, and monthly morbidity and mortality rounds. The resident will prepare and present one seminar yearly in the VMC small animal Grand Rounds series. The resident is expected to complete a
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Direction and Supervision:

Program Director:

Who is the Director of Residency training?
Christopher Ober, DVM, PhD, DACVR

What percentage of this individual’s time is committed to clinical service and teaching of residents?
75%

Faculty:

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

Roentgen diagnosis
Kari Anderson 65%

Diagnostic ultrasound
Kari Anderson 65%

Computed Tomography
Christopher Ober 67%
Magnetic Resonance Imaging
Christopher Ober 67%

Nuclear Medicine
Kari Anderson 65%

List the names and percentage clinical commitment of additional imaging faculty in the program, and their area(s) of instructional responsibility.
None.

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.

Combined UMN CVs.pdf

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**
Jessica Lawrence

**ACVIM**
Christopher Stauthammer

**ACVS**
Wanda Gordon-Evans

**ACVS**
Michael Conzemius

**ACVP**
Daniel Heinrich

**ACVP**
Davis Seelig
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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.

Facilities:

Briefly describe how the program meets the facility requirements.

Radiology suites:
- Vet Ray by Sedecal all-purpose small animal radiographic room (500 mA, 125 kVp) with integrated ViviX 17x17 digital flat panel detector
- Philips ProxiDiagnost N90 small animal digital flat panel radiographic/fluoroscopic room with integrated wireless 17x17 digital flat panel detector
- Infinity XMA all-purpose small animal radiographic room (300 mA, 125 kVp) with Kodak DirectView CR
- Acoma Overhead Tube Crane system in combination with a TransWorld machine (two tube heads) all-purpose large animal radiographic room with Kodak DirectView CR
- MinXray portable unit for use in small animal imaging (ICU cases)
- MinXray HF80+ portable units for use in large animal imaging
- Varian Rad 92 x-ray tube with Sedecal SHF-835
generator (800 mA, 150 kVp) with MT Dual
Overhead Tube Crane with Master and Slave
configuration – Canon CXDI (Leatherdale Equine
Center)
-Vet Rocket portable digital radiography
(Leatherdale Equine Center)

Special Procedures:
-Philips ProDiagnost N90 small animal digital flat
panel radiographic/fluoroscopic room with
integrated wireless 17x17 digital flat panel
detector
-GE OEC C-arm fluoroscopic unit

Ultrasound:
-(2x) Samsung RS80A Prestige V3 with Doppler,
harmonics, contrast imaging, cardiac package,
stress and strain elastography, image fusion, and
needle guidance/navigation.
-Toshiba Apio 500 with Doppler, harmonics,
contrast imaging, 4D capabilities, elastography,
and image fusion capabilities

Computed Tomography:
-Toshiba Aquilion 64 CFX multi-detector row
scanner (small animal)
-Asto CT Equina 24 detector row scanner (large
animal)

Magnetic Resonance Imaging
-GE Signa HDx 3T with imaging table for equine
patients (primarily small animal) – scheduled for
upgrade in 2020
-Hallmarq Standing Equine 0.3T MRI (large animal)

Nuclear Medicine:
-NuCam gamma camera on Equistand II and
Mirage computer system

Radiation Therapy
-6MV Clinic iX linear accelerator (Varian Medical
Systems) with 6MV photon and 6-12 MeV electron
capabilities, Intensity Modulated Radiation Therapy
enabled, and on-board electronic portal imaging
and kV cone beam CT imaging
-MIM Maestro contouring (MIM), Pinnacle
treatment planning system (Phillips), and Mosaiq
record-and-verify system (Elekta)

Interventional Radiology
-Covidien Evident Microwave ablation system with
3 microwave generators

Positron Emission Tomography / Computed
Tomography
-Siemens Biograph mCT PET/CT scanner – 64-
slice CT scanner, 3D PET TrueV wide detector
allowing full list mode, HD-PET for higher
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Clinical Resources:

Indicate the approximate number of patients seen annually by the home institution?
46,632 visits of 18,564 unique patients (2019)

What is the annual imaging caseload?
14,063 (2019)

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

<table>
<thead>
<tr>
<th>Type a question</th>
<th>Small Animals (canine, feline): 93%</th>
<th>Large Animals (equine and food animals): 6%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Exotic Animals: &lt;1%</td>
<td></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Type a question</th>
<th>Small Animal Radiology: 7789</th>
<th>Large Animal Radiology: 747</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Abdominal Ultrasound: 1096</td>
<td>Computed Tomography: 1098</td>
</tr>
<tr>
<td></td>
<td>Nuclear Medicine: 25</td>
<td>Magnetic Resonance Imaging: 501</td>
</tr>
<tr>
<td></td>
<td>Other (specify):</td>
<td></td>
</tr>
</tbody>
</table>
Please check which of the following types of imaging cases the residents will have exposure to during the residency:

- Small Animal Echocardiography
- Large Animal Ultrasound
- Nonabdominal Small Animal Ultrasound (i.e. cervical, musculoskeletal)
- Food Animal
- Exotics
- Teleradiology/Referral Imaging

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Training Content:

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

99%

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?

65%

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

100%

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.

<table>
<thead>
<tr>
<th>Category</th>
<th>Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small Animal Radiology</td>
<td>9000</td>
</tr>
<tr>
<td>Large Animal Radiology</td>
<td>860</td>
</tr>
<tr>
<td>Abdominal Ultrasound</td>
<td>850</td>
</tr>
<tr>
<td>Computed Tomography</td>
<td>1600</td>
</tr>
<tr>
<td>Nuclear Medicine</td>
<td>25</td>
</tr>
<tr>
<td>Magnetic Resonance Imaging</td>
<td>1000</td>
</tr>
<tr>
<td>Elective (any of above)</td>
<td></td>
</tr>
<tr>
<td>Required elective (specify)</td>
<td>40 (echocardiograms)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>13,375</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:

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.

If the resident chooses to pursue a graduate degree, formal graduate courses are available.

If the resident chooses to pursue a clinical residency only, formal courses are not available. The radiologists meet with the resident monthly for board review rounds. Each didactic area as specified in the ACVR board objectives is studied by the resident under direction of a lead radiologist. Study may include self-study and presentation by the resident, textbook chapter and/or literature assigned readings, formal lecture by a radiologist, or invited presentation. Both classic and current material is used. Material is selected by the responsible faculty and assigned to the resident; however, it is expected that the resident will also perform literature searches as
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?

9 publications/person over the 5 years

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

1-2

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

70%

Is an advanced degree a requirement of the training program?

No

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Educational Environment:

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

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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

List the current members of the residents' review committee.

Christopher Ober
Kari Anderson

List the internal mechanisms in place to protect your resident if conflicts arise.

Discussion with and through chief officers

Mediation through Medical Imaging section chief

Mediation through Veterinary Clinical Sciences department chair

Mediation through Human Resources department
Teaching File:

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

There are several types of teaching files available to residents. There are teaching files that are used for teaching DVM students in both the didactic courses as well as senior rotations. Files are both electronic (digital). These are indexed and coded. There is also a medical imaging server that houses digitized interesting cases that are indexed and coded. The Kodak Carestream PACS supports a digital teaching file of interesting cases that are identified by the radiologists (beginning March 2005). Finally, the hospital information system (VetView) can be searched for specific cases via the radiology reports with a link to the digital images.

How is it maintained/updated?

The teaching files (including the Kodak Carestream PACS digital teaching file) are maintained and updated by the faculty. The resident has access to all radiology reports through VetView when searching for other interesting cases.

Conferences:

On average how many Known Case
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Literature Resources:

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

The College of Veterinary Medicine houses a veterinary medical library with extensive veterinary and medical journals, publications, and textbooks. The CVM library also offers significant online journal access to faculty, house officers, students, and staff. The CVM library is on the St. Paul campus in a separate building from the teaching hospital that is reached via a skywalk. There are a large number of physician-oriented journals that are carried in the Veterinary Library including Radiology, Investigative Radiology, Seminars in Roentgenology, Seminars in Ultrasound, CT, and Nuclear Medicine, Radiologic Clinics of North America, American Journal of Roentgenology, Ultrasound in Medicine and Biology, Clinics in Diagnostic Ultrasound, International Journal of Radiation Oncology Therapy and Biology, and The Journal of Clinical Ultrasound.

The University of Minnesota also has an extensive Biomedical library at the School of Medicine housed on the east bank of the Minneapolis campus (the CVM is on the St. Paul campus). If faculty and staff do not have time to make the easy bus ride to the other bank of the campus, there is an inter-library loan that allows delivery of books and journals generally within 48 hours. Additionally, there is on-line access to all journals.
that are electronically available at the University of Minnesota.

The Medical Imaging section of the Veterinary Medical Center also maintains a small library in Medical Imaging that covers basic references on radiation therapy, nuclear medicine, diagnostic radiology, physics, radiation safety, and radiographic anatomy, as well as some species-specific textbooks.

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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>Passed preliminary exam 1st time</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 2nd time</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Passed preliminary exam after 2nd time</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Passed certifying exam 1st time</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 certifying exam 2nd time</td>
<td></td>
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</tr>
<tr>
<td>Passed certifying exam after 2nd time</td>
<td>1</td>
<td>1</td>
<td></td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

Unsuccessful in all attempts

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.