

UNIVERSITY OF MONTREAL - ACVR Residency Training Program

II. Objectives:

Succinctly state the objectives of the training program.

The primary objective is to train a well-rounded veterinary radiologist, capable of successfully completing the written and oral examination of the American College of Veterinary Radiology. A working familiarity with all clinical and theoretical aspects of all fields of veterinary imaging, including diagnostic radiography, ultrasonography, computed tomography (CT), magnetic resonance imaging (MRI), and scintigraphy, will be expected by the time the individual has completed the program. Secondary objectives are to expose the individual to research in veterinary imaging by completing a research project and to give the individual the opportunity to develop clinical and formal teaching abilities. Teaching abilities will be developed mostly through clinical instruction of senior veterinary students, but also through assistance during laboratory instruction to students and general practitioners.

III. Training period:

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

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?

The resident will be required to fulfill the requirements of the DES (Diplôme d'Études Spécialisées), which is the certificate of residency awarded by the Graduate Studies Faculty (FES – Faculté d'Études Supérieures) of the University of Montreal. A total of 108 credits, divided into 18 credits of course work, 12 credits of clinical research and 78 credits of clinical training are required by this program. The 78 credits of clinical training are included within the framework of the supervised clinical training portion of the program. Courses in complementary disciplines such as internal medicine and neurology are given within the Faculty of Veterinary Medicine to complete the course work. At least one original study is expected from the resident. Depending on the nature of the study, off-clinics time will be used to draft a proposal and protocol, perform the study and write up and submit the results for publication. A presentation of this project during resident seminars (French) and during the annual ACVR meeting

(English) during the 3rd year of the program is expected. Additional time will be spent on completing the ACVR written examination objectives and undertaking Board-preparation written and oral exams.

IV. Direction and Supervision:

Program Director:

Who is the Director of Residency training? **Marc-André d'Anjou, DMV, DACVR**

What percentage of this individual's time is committed to clinical service and teaching of residents? **55% of his time is committed to clinics, during which 30-50% of his time will be spent teaching residents. Of his off clinics time, 5% will be dedicated to assisting residents with fulfilling the objectives of the program.**

Faculty:

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

Roentgen diagnosis:

Faculty: **Laurent Blond, DMV, MSc, DACVR**

Percentage clinical service: **55%**

Diagnostic ultrasound:

Faculty: **Marc-André d'Anjou, DMV, DACVR**

Percentage clinical service: **55%**

Computed Tomography

Faculty: **Kate Alexander, DMV, MSc, DACVR**

Percentage clinical service: **55%**

Magnetic Resonance Imaging:

Faculty: **Marc-André d'Anjou, DMV, DACVR**

Percentage clinical service: **55%**

Nuclear Medicine:

Faculty: **Kate Alexander, DMV, MSc, DACVR**

Percentage clinical service: **55%**

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.

Eric Norman Carmel, DMV, DES, Clinical Instructor, Veterinary Diagnostic Imaging, 80% clinical 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

Marilyn Dunn (Small Animal), Marie-Claude Bélanger (Small Animal), Joane Parent (Neurology), Jean-Pierre Lavoie (Equine), Daniel Jean (Equine), Yves Rossier (Equine), Gilles Fecteau (Food Animal).

ACVS

Bertrand Lussier (Small Animal), Christian Bollinger (Small Animal), Sheila Laverty (Equine), Christine Théoret (Equine), André Desrochers (Food Animal).

ACVP

Christian Bédard (Clinical Pathology), Pierre Hélie (Pathology), Malcolm Gains (Pathology), Christiane Girard (Pathology).

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.

Drs. Heather Chalmers and Stephanie Nykamp at the University of Guelph, and Mauricio Solano at Tufts University, have agreed to accept our resident for supplemental nuclear medicine training if our radionuclide usage permit approval remains delayed. The duration would be approximately one month. During that time, between 10-15 cases would typically be expected. Any additional time that the resident would have would be spent completing the nuclear medicine objectives and reviewing current literature on scintigraphy.

VI. Facilities:

The University of Montreal Faculty of Veterinary Medicine is equipped with a new veterinary hospital that was completed in 2006. A state of the art imaging suite, located in the center of the hospital and directly connected to small animal, bovine, equine and exotic animal sections is part of the design.

Radiology: Two small animal radiology suites are available. One contains a Siemens Iconos 600 mA and 150 kVp machine with plain film, computerized radiography (CR), and digital fluoroscopy capabilities. This machine is used for the bulk of the canine, feline and exotic animal cases, and for any special procedures. The second small

animal machine is a Summit InnoVet Select 300 mA and 125 kVp unit, mainly used for emergency radiographs, teaching radiographic technique to students, and for general practice cases. Large animal radiographs are obtained in a suite equipped with a Siemens 500 mA and 150 kVp machine with a column-mounted Bucky. Two mobile radiography units (Philips and Siemens Mobilett II) and a fluoroscopic C-arm (GE Series 9800) are used for intraoperative procedures. Additionally, a portable unit is also available (MinXRay HF8015). A CR system (Agfa CR-DX) is used for all cases performed during regular hours, while emergency radiographs remain obtained with standard films. This allows the resident to become familiar with both of these radiographic modalities. CR images are archived on a PACS (Agfa IMPAX 6.0) and viewed on diagnostic stations equipped with high-resolution grayscale LCD monitors. When necessary, and for hard-copy teaching files, films can be printed from the CR system using a Agfa Drystar 3000 printer.

Ultrasound: For routine small animal cases, a Phillips ATL HDI 5000 unit is used. An additional Phillips ATL HDI 5000 unit is available for ICU cases and a portable Sonosite Titan unit is available for intra-op imaging. For equine cases, a GE Logic 7 and an Aloka SSD 1700 are available. Most equine cases are scanned by the internal medicine and lameness services, with occasional backup support by the radiology service. Food animal cases are scanned by faculty and residents in that department using another Aloka unit. Echocardiography is provided by the internal medicine service using a GE Vivid 7 Dimension.

Computed Tomography: A GE LightSpeed 16-detector helical scanner is installed within the imaging section, directly connected to both small and large animal hospitals. Large animals including horses are imaged with a customized table.

Magnetic Resonance Imaging: A short-bore, GE EchoSpeed HDxt 1.5 Tesla unit is available on site, adjacent to the reading room and also directly connected to the small and large animal hospitals. The system is equipped with state-of-the-art imaging sequence packages, as well functional imaging and spectroscopy. A customized table is used for equine imaging of heads and extremities.

Nuclear scintigraphy: A IS2 digital gamma camera and Mirage software (Enhanced Technologies inc.) are installed and will soon become operational, pending approval of a radionuclide usage permit.

PACS: All modalities, including equine ultrasound and small animal echocardiography,

are connected to the Agfa IMPAX 6.3 system. Workstations are available in both the large and small animal reading areas. Remote access to jpeg-lossless images is available though the web (Agfa web1000). Multiplanar and three-dimensional reconstruction and several other functions are available on a GE Advantage Workstation 4.3, which is installed in the reading room.

VII. Clinical resources:

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

14,600 patients

What is the annual imaging caseload? **7,150**

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

Small animals (canine, feline)	82% (12,000 cases/year)
Large animals (equine and food animals)	16 % (2,300 cases/year)
Exotic animals	2% (300 cases/year)

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

Small Animal Radiology: 3,000
Large Animal Radiology: 2,300
Abdominal Ultrasound: 1,250
Computed Tomography: 250
Nuclear Medicine: not available at the moment
Magnetic Resonance Imaging: 350
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?

Approximately 80%. One full-time transcriptionist typewrites imaging reports from orally-dictated reports on a digital recording system.

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

Approximately 60% of all reports are generated by the residents. The residents will be responsible for approximately 60% of the reports generated by the service to which he/she is assigned.

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

100% of reports in diagnostic radiology and alternate imaging are reviewed in rounds by radiologists. Ultrasound reports of examinations performed by first-year residents, supervised by faculty members, are also reviewed.

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?

Two radiologists are present 80% of the time, while only one radiologist is present 20% of the time.

Please complete the table below

	Approximate number of cases in the 30 months clinical experience (per resident as primary reader)
Small Animal Radiology:	3,000
Large Animal Radiology:	1,000
Abdominal Ultrasound:	1,250
Computed Tomography:	250
Nuclear Medicine:	NA
Magnetic Resonance Imaging:	250
Elective (any of above)	
Total	5,750

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
Radiobiology:	NA	

The Physics of:

Diagnostic Radiology:	MEV 6681	
Nuclear Medicine:	MEV 6681	
Ultrasonography:	MEV 6681	
CT:	MEV 6681	
MRI:	MEV 6681	

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.

Journal clubs will take once a week, under the supervision of faculty radiologists, focusing on articles from Veterinary Radiology and Ultrasound (mostly), and imaging-related topics in JAVMA, JAAHA, JVIM, Veterinary Surgery and Equine Veterinary Journal, assigned to faculty and residents. Textbooks for review will be particularly Thrall, d'Anjou and Penninck, Nyland and Mattoon, Bushberg and Christensen, with special attention given to points relevant to the ACVR examination objectives. Credits will be given under the course numbers MEV 6681 and MEV 6680 A/B in order to fulfill the requirements of the DES program.

Mock examinations will be given in each of the six sections of the ACVR written examination. These examinations will be held every 4 months, such that all objectives have been covered by the end of the second year. Each test (1. Anatomy, 2. Physics, 3. Ultrasound, 4. Alternate Imaging, 5. Pathophysiology, and 6. Radiobiology) will be produced by the ACVR radiologists to simulate the ACVR written exam.

Courses in internal medicine are given once a week to all residents of the teaching hospital. Imaging residents can assist on a voluntary basis.

IX. Research Environment:

<p>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?</p> <p>12 per faculty</p>
<p>What is the number of publications/submissions expected of a resident completing the program?</p> <p>At least one original study is expected. In addition, case reports or review/tutorial articles will be encouraged.</p>
<p>If this is an established program, what percentage of residents have made formal research presentations at the annual ACVR or equivalent national meeting?</p> <p>The only resident so far presented his project at the 2007 annual ACVR meeting</p>
<p>Is an advanced degree a requirement of the training program? No</p>

X. Educational Environment:

<p>How many lectures or scientific presentations are expected of each resident during the course of their training?</p> <p>Each resident of the University of Montreal is expected to give two presentations during the course of their residency (equivalent to Grand Rounds or House Officer rounds). This is a requirement of the DES program (course MEV 6675Z). In addition, during their final year, the imaging resident will be expected to present the results of an original study at the annual ACVR or equivalent meeting.</p>

XI. Evaluation:

<p>During the program how often is resident performance evaluated in writing?</p> <p>Resident performance will be evaluated in writing by all radiology faculty every 6 months (at least 5 times during the program). When possible, all ACVR Diplomates will be present to review the evaluation with the resident. In addition, mock written and oral boards preparation will be used to evaluate progression of resident knowledge. Because the residency is considered part of the DES program of the University of Montreal, formal written evaluation of clinical blocks and grading of course performance will also occur. Failure in any aspect of the DES program will be dealt with using the University of Montreal Graduate Studies Faculty guidelines.</p>
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XII. Teaching File:

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

- 1. Approximately 500 cases (both small and large animals) on standard films or available on the PACS with detailed reports, including some contrast studies (50), and follow-up.**
- 2. A web-based electronic teaching file with nearly 700 cases in small and large animal radiology.**
- 3. All presentations (i.e. skull radiography) made by radiology faculty at continuing education conferences are also available on a computer in the radiology reading room.**
- 4. A logbook and accompanying CD of interesting alternate imaging cases (large and small animal CT and scintigraphy).**
- 5. Neurology file: log of MRI reports with pathology and surgical reports (500 cases).**

How is it maintained/updated?

These files are maintained and updated regularly by radiologists and technicians. Any cases presented during labs to practitioners are added upon completion of the lab. Interesting cases are sporadically added. All presentations are downloaded immediately following the conference.

XIII. Conferences:

On average how many Known Case Conferences are conducted annually?

KCCs are conducted (in English) every week during the fall and winter semesters (average of 30 times/year).

XIV. Literature resources:

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

The veterinary medical library is 100 feet away. The University of Montreal has a medical school and library on its main campus (approximately 35 miles from the veterinary school). A large number of electronic resources are available and articles and books can be directly ordered from the medical school library (approximately a 48 hour turnaround). Additionally, most electronic periodicals are now available online through the library web site.

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	100% (1/1)	100% (1/1)		100% (1/1)	
Passed certifying exam 1 st time	0% (0/1)			0% (0/1)	
Passed certifying exam 2 nd time			100% (1/1)		
Passed certifying exam after 2 nd time					

- (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.

The program is based on the presence of 2 residents at the same time:

First year resident:

- on diagnostic radiology: 2 weeks /3
- on small animal ultrasound: 1 week/3
- on-call 1 week/2 beginning after 3 months
- half-day off clinics every week beginning after 6 months

Second year resident:

- on diagnostic radiology, CT and MRI: 2 weeks /3
- on small animal ultrasound: 1 week/3
- on-call 1 week/2
- full-day off clinics every week

Third year resident:

- on diagnostic radiology, CT and MRI: 2 weeks /3
- on small animal ultrasound: 1 week/3
- on-call 1 week/2
- half-day off clinics every week during the first 6 months of the third year