

ACVR Diagnostic Imaging Residency Training Program Application

This application is required for institutions desiring ACVR accreditation of a new residency training program and for institutions requesting re-accreditation of an existing program.

Before beginning the application process, all applicants should review the most recent version of the [ACVR Residency Program Essential Training Standards and Requirements](#) (RPE) document (accessed from the Essentials Homepage) in detail. Use the RPE as a reference when completing the application form, as the contents you provide herein will be evaluated by the Residency Standards and Evaluation Committee (RSEC) against the published RPE standards. This application form follows the headings of the RPE. All terms used in this application have same definitions as those in the RPE, and no information provided in the application form itself will supersede that published in the RPE.

During the application review process, the Chair or Assistant Chair of the RSEC may contact the applicant for additional information or clarification.

**Note: If you wish to save your submission and complete it later, click the save button located at the bottom of the pages. You will be emailed a link to complete your form at a later date.*

ACVR Residency Training Program Application

Program Summary

The Residency Director of the program is expected to be the primary applicant and contact person for this application. The Residency Director must be located at the primary training institution.

Institution Name	Tufts University
Residency Program Director Name	Amy Sato
Residency Program Director Email	amy.sato@tufts.edu

Program Type

What type of residency program is being requested?	Traditional Residency Program
---	-------------------------------

If approved, what is the proposed start date of this residency program?	Monday, July 15, 2024
--	-----------------------

Objectives

Succinctly state the objectives of the training program.

GENERAL OBJECTIVES

- 1) To provide non-degree postgraduate clinical training in Diagnostic imaging. Graduates will be equipped to function either in an academic environment or in a private specialty practice.
- 2) The resident will be eligible to apply for the board examination of the American College of Veterinary Radiology (ACVR) upon satisfactory completion of this program.

Specific objectives of the program include (both small and large animal):

- a. Teaching fundamentals and clinical application of diagnostic radiology.
- b. Teaching fundamentals and clinical application of ultrasonography.
- c. Teaching fundamentals and clinical application of nuclear medicine.
- d. Teaching fundamentals and clinical application of CT.
- e. Teaching fundamentals and clinical application of MRI.
- d. Teaching fundamentals and clinical application of interventional techniques and fluoroscopy.
- e. Teaching fundamentals of radiobiology, physics, radiation protection, radiation dosimetry, and radiation safety.
- f. Providing experience in teaching Diagnostic Imaging to veterinary students.
- g. Providing guidance in designing, conducting, and preparing a publication of a clinically oriented research project.
- h. Providing experience with teleradiology.

Training Period

What is the total length of the training program? 38

What is the anticipated length of supervised clinical training a resident will experience during this program? 32

Will the resident(s) in this program be eligible to take the ACVR Preliminary Exam in September of their third year?

Yes

What are the responsibilities of the resident(s) during non-clinical portions of the program?

- a) Board exam preparation
- b) Design and complete a clinical research project
- c) Write and submit the results of research project to a peer-reviewed journal and prepare to present the results at the ACVR meeting
- d) Write or participate as an author on other projects or papers
- e) Prepare in house lectures, seminars, and participate in imaging labs
- f) Attend physics course, rounds, and lectures by faculty
- g) Optional externships (e.g., cardiology, interventional radiology, equine US)
- h) 10 days of vacation per year

ACVR Residency Training Program Application

Direction and Supervision

When calculating time commitment in this section, you may consider a 100% (full time) duty schedule to consist of 48 weeks per year with 8 hours per day or 40 hours per week.

Residency Director

Please review the Residency Director requirements and responsibilities in the [ACVR Residency Program Essential Training Standards and Requirements](#) (RPE) document. Note that the Residency Director will be required to provide at least 24 weeks of clinical duty per year in primary support of residents in this program and to meet all other qualifications of a Supervising Diplomate.

Is the applicant Residency Director for this program prepared to meet these requirements?

Yes

What percentage of the Residency Director's time is committed to clinical service at the primary training institution? 75

How many weeks per year will the Residency Director be on clinical service and teaching residents at the primary training institution? 29

ACVR Residency Training Program Application

Additional Training Diplomates

Please review the definitions and responsibilities of [Supervising Diplomate and Supporting Diplomate](#) in the RPE document. Note that Supervising Diplomates will be required to provide at least 10 weeks of clinical duty in primary support of residents in this program, and are expected to participate in all facets of residency training. Supporting Diplomates aid in residency training, but provide support that is limited, as by modality (e.g. only works in ultrasound), time commitment (e.g. clinical duty < 10 weeks per year), or other constraints that prevent them from qualifying as a Supervising Diplomate.

Provide a copy of affiliation agreements with any diplomates that are located at an external institution (see Affiliation Agreement item at the end of this section).

Excluding the Residency Director, please list all training diplomates who will act as Supervising Diplomates of this residency program. Indicate the approximate number of hours per year each supervisor will be scheduled on clinical duty with primary support of residents and, if applicable, any specific areas of instructional responsibility (e.g. trains mostly in small animal, trains mostly in MRI, etc). If a 'Supervising Diplomate' position will be comprised of multiple radiologists, please list the cohort as a single entity or institution for this question (e.g. "teleradiologists" or private institution name)

Name: Mauricio Solano DACVR

Hours/Year: 960

Specific Areas and/or Limitations of Instructional Responsibility: All

Institution: Tufts University

Name: Dominique Penninck DACVR DECVDI

Hours/Year: 768

Specific Areas and/or Limitations of Instructional Responsibility: Small animal ultrasound and radiology

Institution: Tufts University

Name: Agustina Anson DECVDI

Hours/Year: 960

Specific Areas and/or Limitations of Instructional Responsibility: All

Institution: Tufts University

Name: Alice Levy DECVDI

Hours/Year: 1344

Specific Areas and/or Limitations of Instructional Responsibility: All

Institution: Tufts University

Name: Julia Graham DACVR, DACVR-EDI

Hours/Year: 768

Specific Areas and/or Limitations of Instructional Responsibility: All

Institution: Tufts University

Name: Leslie Schwarz

Hours/Year: 960

Specific Areas and/or Limitations of Instructional Responsibility: All

Institution: Tufts University

In addition to ACVR/ECVDI Diplomates, the program must arrange for the resident(s) to have direct access to specialists in other areas. Please identify one member in each of the specialty colleges listed below that has agreed to support this program through clinical activity that allows regular interactions between the specialist and the diagnostic imaging residents (e.g. discussion of diagnostic work up, imaging findings, or patient outcomes, and/or participation in interdisciplinary rounds, etc). Indicate whether the specialist is located on-site at the primary institution at an external institution. Provide a copy of affiliation agreements with any non-ACVR/ECVDI diplomates that are located at an external institution (see Affiliation Agreement section at the end of this application).

Upon completion of this application, the below individuals will receive an email requesting acknowledgement of their support of your residency program.

ACVIM Member Name

Mary Labato

ACVIM Member Institution

Tufts University

ACVIM Member Email	mary.labato@tufts.edu
ACVS Member Name	Raymond Kudej
ACVS Member Institution	Tufts University
ACVS Member Email	raymond.kudej@tufts.edu
ACVP Member Name	Leslie Sharkey
ACVP Member Institution	Tufts University
ACVP Member Email	leslie.sharkey@tufts.edu

ACVR Residency Training Program Application

Resident:Supervising Diplomate Ratio

The number of residents in the program cannot exceed twice the number of Supervising Diplomates **on-site**. Remote Supervising Diplomates will not count when calculating the maximum residents allowed in a given program.

What is the maximum number of imaging interns you will have enrolled in this training program at any given time?

9

ACVR Residency Training Program Application

Facilities

Review the Facility Requirements listed in the RPE document. Note also that residents should have opportunities to be involved with image acquisition and protocol set-up.

Does this residency training program provide on-site access to modern equipment for the following modalities?

Digital or Computed Radiography	Yes
Fluoroscopy	Yes
Ultrasound with Doppler Capability	Yes
MRI	Yes
Fan-beam CT	Yes
Nuclear scintigraphy	Yes

Briefly describe how this program meets the facility requirements, including the specific type of

CT and MRI units available. Explain how your program will train residents in modalities for which equipment is not located on site, providing affiliation agreements if applicable. (see Affiliation Agreement item at the end of this section)

Radiology:

Small animal DR suite: OTC 12 DELL CM80 EV800

Small animal DR suite: Del Medical FMT18M floor mounted

Large Animal DR suite Vet Ray OTC-180 overhead tube Cannon plate

Large animal Two Portable x-ray units (Minray and Omron)

Fluoroscopy:

DELL Apollo EZ DRF with digital subtraction

Additional Fuji ES DR system for tabletop applications

Ultrasound:

Two Philips Epiq TG

Toshiba Aplio

CT suite:

Toshiba Aquilon 16 slice Unit. Retrofitted with large animal table.

Will be replaced in April of 2024 with Canon Exceed LB 160 slice with Qalibra hydraulic system for standing equine CT.

MRI:

Phillips Ingenia 3.0 T. Retrofitted with large animal table

Nuclear scintigraphy

Mirage acquisition/processing Nuclear Medicine Station

57PMT IS2 digital rectangular nuclear medicine camera

Ultrascan lifting system

Please describe how residents will gain experience in image acquisition and protocol set-up for each of these modalities (excluding nuclear medicine).

Small and Large animal radiology: residents will shadow techs during their 10 week orientation period. Residents will perform quality control when on radiology floor.

Fluoroscopy: residents will perform special procedures (e.g., esophagography, cystography/urethrography).

US: residents will perform ultrasound studies of small animals when assigned to ultrasound.

CT: residents will oversee quality control and direct technicians on CT protocols.

MRI: residents will oversee quality control and direct technicians on MR sequences.

ACVR Residency Training Program Application

Clinical Resources and Training Content

Review the clinical resource and training content requirements listed in the RPE document

What is the average annual caseload at the primary institution over the past 3 years? This number will include all patient visits whether or not they contribute to the annual imaging caseload.

35000

What is the average annual imaging caseload at the primary institution over the past 3 years? Each body region imaged for a given patient (e.g. thorax, abdomen, spine, etc) will count as a single study.

17980

What is the average annual imaging caseload at the primary institution over the past 3 years in the following categories?

Small animal radiology

11064

Large animal radiology

1426

Abdominal ultrasound

3962

Non-abdominal ultrasound

119

Computed tomography

730

Magnetic Resonance Imaging

565

Nuclear scintigraphy

114

Indicate the approximate species breakdown of the imaging caseload at the primary institution in the following categories:

Small animals (canine, feline): 80%

Large animals (equine, bovine, porcine, etc.): 10%

Avian, Exotic, and Wildlife animals: 10%

Which of the following types of imaging cases will the resident(s) have direct, on-site exposure to at the primary institution during the residency program?

Echocardiography

Yes

Large animal ultrasound

Yes

Nonabdominal small animal ultrasound (i.e. cervical, musculoskeletal)

Yes

Food/fiber animal imaging

Yes

Exotics imaging

Yes

Teleradiology/Referral imaging

Yes

ACVR Residency Training Program Application

What percentage of the total imaging caseload at the primary institution results in a written imaging report being generated by either the residents or the training radiologist diplomates in this program?

100

What percentage of the preliminary reports generated from the imaging caseload are initially produced by the resident(s) in this program?

98

Does this institution concurrently support the training of diagnostic imaging interns?

No

What percentage of resident-generated reports are reviewed by training diplomates prior to finalization of the report?

90

What is the average turnaround time for resident-generated preliminary reports to be finalized by training diplomates?

Approximately one week. Residents show all cases they are unsure about to faculty the same day, but it may not be finalized at that time.

What percentage of all imaging reports (resident and diplomate generated) is finalized and available to requesting clinicians within 48 hours after the exam is submitted for radiologist consult?

50

If < 75%, please explain.

Faculty and residents work side by side on the clinic floor. Any cases the residents are unsure about are discussed immediately with faculty. The report is generated later and can be finalized the same day or after the 48 hour period.

If a report is not finalized and a clinician requests it, it is usually finalized within 24 hours.

Please describe how after-hours/weekend/holiday cases are handled at the primary institution. How does this affect resident-reported imaging caseload?

The residents interpret emergency studies (ultrasounds, rads, CT, MRI) after hours and on weekends/holidays. The studies are written within 24 hours. The residents can contact faculty 24/7 for back up. The cases are finalized during normal working hours the following week.

For each category below, calculate the approximate number of cases that a single resident will interpret at the primary institution with radiologist feedback during the course of the entire residency program. These

numbers should be calculated using the annual imaging caseload adjusted to include only those with written reports generated by the residents. In general, this number should then be divided by the total number of residents in a program during a given year.

If external rotations for the resident(s) are employed to increase the resident caseload in any given category, please be sure to upload affiliate agreements that include the expected number of reports that residents can expect to generate (with radiologist feedback) for cases in those categories.

Small animal radiology 4647

Large animal radiology 203

Abdominal ultrasound 1552

Non-abdominal ultrasound 51

Computed tomography 306

Magnetic resonance Imaging 237

Nuclear scintigraphy 48

How many ultrasound exams will a single resident perform with radiologist supervision and feedback during the course of the entire program? Scans for which the resident writes a report but does not acquire images are excluded. 1552

Do residents in this program have ample hands-on training and practice opportunities to become proficient in the performance of ultrasound guided fine needle aspirates and biopsies?

Yes

Please indicate whether this training program includes formal courses in any of the following topics:

Physics of Diagnostic Imaging

No

Radiobiology

No

Nuclear Medicine

No

Ultrasonography

No

Computed Tomography

No

Magnetic Resonance Imaging

No

Other

No

Briefly describe the formal courses that are available for the resident(s) in this program by indicating the institution, course title, course number, and credit hours as well as any other relevant information. For any topics for which formal course work is not provided for the resident(s), please explain how educational objectives in these topics will be met.

Physics of diagnostic Imaging
Vetmeet introduction to physics course, online materials.

Radiation Biology mini course
Residents meet with diplomate supervisor and go over qualifying board objectives with homework, weekly quizzes, and a final exam. Non-credit course.

Nuclear medicine
ACVR sponsored NM course. Non-credit course.

MRI
ACVIM Brain camp conference. Online materials.

US, CT
Resident driven study time following qualifying exam board objectives. DI faculty point out knowledge base deficiencies when identified during clinics.

Do residents have access to a majority of the written pathology reports that are generated from patients included in this imaging caseload?

Yes

Will the resident(s) in this program attain an advanced degree (MS, PhD) at the conclusion of the program?

No

ACVR Residency Training Program Application

Research Environment

Review the Research Requirements listed in the RPE document.

Over the last five years, what is the average number of peer reviewed publications on which the training diplomates (Supervising and Supporting diplomates) of this program are included as authors? (total number of publications in last 5 years among all training diplomates divided by the number of training diplomates)

8

How many peer-reviewed publications are expected of a resident completing the program?

1

If this is an established program, what percentage of residents have made formal research presentations at the annual ACVR or equivalent national meeting? 75

Briefly describe if/how residents are encouraged to engage in investigative work and what mechanisms are in place for training diplomates to support this work.

Tufts University requires a research project and presentation.
All residents are encouraged to apply for internal grants.
Resident evaluations include performance items on "resident project."
A faculty mentor oversees each resident project.
Time off is given to focus on project planning and analysis of data.

The university holds meetings to teach residents and junior faculty how to write grants and execute research projects.
Residents must present their project at the hospital wide annual research day.

Educational Environment

Review the Educational Environment expectations listed in the RPE document.

Please list and enumerate the formal presentations that are expected of each resident during the course of their training. In general, didactic lectures, departmental seminars, scientific presentations, Continuing Education presentations, and similar are considered "formal". Informal topic rounds, journal club, small group teaching (like student rounds), student labs, and similar events should not be included.

The residents present three house officer talks to the hospital on topics of their choice -- usually at least one will be on their research topic.

The residents are expected to present their research findings at resident research day and at a national conference (e.g., ACVR, IVRA).

Interested residents may deliver a didactic lecture for students in the veterinary curriculum (ultrasound course).

Briefly describe the type and extent of teaching opportunities that are provided to the resident throughout the training program.

Residents are co-instructors in the ultrasound and radiology course laboratory sessions.

Residents lead rounds in the 4th year DI core clinical rotation (compulsory).
Interested residents may deliver a didactic lecture for students in the veterinary curriculum (ultrasound course).

Briefly describe the nature and scope of the teaching file available to the resident(s) in this program and how it is maintained/updated.

An EXCEL file, categorized by case number, owners name, species, modality, coded according to diagnosis/anatomical area. Currently the collection contains over 18,000 cases. Collection is maintained and updated daily by faculty and residents on clinics and backed up daily by IT department in public drive.

Ultrasound teaching video loops stored in AVI, WMV and quick time formats are available on a dedicated Mac platform connected directly to ultrasound machine for updating purposes. Collection is stored on a public network drive. Searchable through general excel teaching file. Collection is maintained by ultrasound technicians and updated by clinician on clinics.

The echocardiographic teaching file is administered by the cardiology section independently of the

imaging section.

How many Known Case Conferences are conducted annually? 30

Describe the nature and frequency of resident rounds ("other educational events") planned for this program. You may upload an example schedule with the general program schedule that is requested at the end of this application.

Known case conference occurs every week to every other week. The residents write a selection of known cases (3-6) in a timed fashion (usually 10 minutes are allotted per case) and then the cases are discussed with faculty.

Radiology journal club is held biweekly. The residents pull papers of interest and forward them to the section for pre-reading.

Equine imaging rounds with the equine ultrasonographer are held biweekly. A case that was imaged by both sections (e.g., MRI and US of a limb) is presented by the radiology resident to the equine surgery and ultrasound teams and a discussion of the disease process, treatment, and outcome is had.

MRI rounds are held with the neurology team once per month. The neurologist brings known cases for the imaging and neurology residents to interpret in a "hot seat" format and a discussion of the pathophysiology, treatment and outcome occurs.

A weeklong boards "boot camp" occurs the week before the qualifying examination. The residents taking the exam practice writing cases under conditions similar to the examination. One 17-18 case section is written each day on Monday, Tuesday and Wednesday. On Thursday and Friday two 17-18 case sessions occur each day to simulate a full "certifying exam experience." Case writeups are discussed with faculty and a score is assigned. Test taking strategies are discussed.

House officer seminars are held weekly covering resident research projects from all sections of the hospital and topics of interest.

Describe how the resident(s) in this program will attain direct and consistent medical library access and/or how they will access research tools and medical literature including the suggested references listed in the ACVR Preliminary Examination study guide.

Veterinary school campus library—walking distance. Used only as quiet study space. Residents have FULL access to standard science journals and Books online through the University accounts. Tufts community members can access these resources worldwide through VPN accounts. Tufts is also a member of the medical library consortium of New England which offers redundant access to science journals through the libraries of major universities in the state of Massachusetts. The section also pays for our residents to receive a personal e-copy of the Veterinary Radiology and Ultrasound journal.

Hard copies of many imaging textbooks (human and veterinary medicine) are on the premises and used as daily resources.

Each resident uses software (papers, etc) to upkeep their electronic library on their personal computers. All first-year residents inherit an extensive PDF library that contain the suggested resources listed by the ACVR which is updated yearly by the residents.

ACVR Residency Training Program Application

Evaluation and Protection of Residents

For existing programs, list the names, email contact information, and start/end dates of your current residents.

Thiago Muller thiago.muller@tufts.edu 3/14/2021-5/14/2024

Leah Pomerantz leah.pomerantz@tufts.edu 7/14/2021-9/14/2024

Megan Heil megan.heil@tufts.edu 7/14/2021-9/14/2024

Keaton Cortez keaton.cortez@tufts.edu 7/14/2022-9/14/2025
Alexandra MacLeod alex.macleod@tufts.edu 7/14/2022-9/14/2025
Kindele Lenoir kindele.lenoir@tufts.edu 7/17/2023-9/17/2026
Nathan Biedak nathan.biedak@tufts.edu 7/17/2023-9/17/2026

Did all of your current residents adequately complete the last 6 months of training?

Yes

List the current members of the resident review committee.

Dr. Amy Sato
Dr. Mauricio Solano
Dr. Dominique Penninck
Dr. Agustina Anson
Dr. Alice Levy
Dr. Julia Graham
Dr. Leslie Schwarz

Describe the internal mechanisms in place at your institution to protect the resident(s) if personal or organizational conflicts arise. Include the management hierarchy for residents and procedures by which residents would report workplace misconduct.

The residency director is viewed as the liaison between DI faculty and residents. If conflict arises, her job is to listen to both parties to get a global view of issues. There is an open-door environment for residents to reach out to the residency director. All issues related to residents are discussed with all faculty in the program. If disagreements arise between faculty (different points of view) the group of 7 faculty act as a system of check and balances. If the resident is uncomfortable with approaching the faculty or residency director, they can approach the Associate Chair of the clinical sciences department (Dr. Mary Labato, who acts as ombudsman for the house officers) or the Chair of the Clinical Sciences Department (Dr. Leslie Sharkey) on issues related to personal conflict. The Chair of the Department supervises the residency director. The resident can also approach the Dean of the school, Dr. Alastair Cribb. Residents are encouraged to reach out to this higher level of administrative personnel if the residency director does not address conflict. Human resources provides confidential 24/7 services in matters of sexual harassment, discrimination and hostile working environments. This group is independent of the organization of the clinical sciences department and answer directly to Dean and Provost.

ACVR Residency Training Program Application

Appendix

Please provide the following information regarding preliminary and certifying board exam pass rates for residents in your program over the past five years.

Preliminary Board Exam Pass Rate

2020

Number Of Prelim Board Eligible Residents: 3

Number of Residents That Took Prelim Exam: 3

Number of Residents That Passed On 1st Attempt: 3

Number of Residents That Passed After Multiple Attempts: n/a

Number of Residents That Have Not Passed: n/a

2019

Number Of Prelim Board Eligible Residents: 1

Number of Residents That Took Prelim Exam: 1

Number of Residents That Passed On 1st Attempt: 1

Number of Residents That Passed After Multiple Attempts: n/a

Number of Residents That Have Not Passed: n/a

2018

Number Of Prelim Board Eligible Residents: 2

Number of Residents That Took Prelim Exam: 2

Number of Residents That Passed On 1st Attempt: 2

Number of Residents That Passed After Multiple Attempts: n/a

Number of Residents That Have Not Passed: n/a

2017

Number Of Prelim Board Eligible Residents: 2

Number of Residents That Took Prelim Exam: 2

Number of Residents That Passed On 1st Attempt: 2

Number of Residents That Passed After Multiple Attempts: n/a

Number of Residents That Have Not Passed: n/a

2016

Number Of Prelim Board Eligible Residents: 2

Number of Residents That Took Prelim Exam: 2

Number of Residents That Passed On 1st Attempt: 2

Number of Residents That Passed After Multiple Attempts: n/a

Number of Residents That Have Not Passed: n/a

Certifying Board Exam Pass Rate

2020

Number of Certifying Board Eligible Residents: 1

Number of Residents That Took Certifying Exam: 1

Number of Residents That Passed On 1st Attempt: 1

Number of Residents That Passed After Multiple Attempts: n/a

Number of Residents That Have Not Passed: n/a

2019

Number of Certifying Board Eligible Residents: 2

Number of Residents That Took Certifying Exam: 2

Number of Residents That Passed On 1st Attempt: 2

Number of Residents That Passed After Multiple Attempts: n/a

Number of Residents That Have Not Passed: n/a

2018

Number of Certifying Board Eligible Residents: 2

Number of Residents That Took Certifying Exam: 2

Number of Residents That Passed On 1st Attempt: 2

Number of Residents That Passed After Multiple Attempts: n/a

Number of Residents That Have Not Passed: n/a

2017

Number of Certifying Board Eligible Residents: 2

Number of Residents That Took Certifying Exam: 2

Number of Residents That Passed On 1st Attempt: 1

Number of Residents That Passed After Multiple Attempts: 1

Number of Residents That Have Not Passed: n/a

2016

Number of Certifying Board Eligible Residents: 2

Number of Residents That Took Certifying Exam: 2

Number of Residents That Passed On 1st Attempt: 2

Number of Residents That Passed After Multiple Attempts: n/a

Number of Residents That Have Not Passed: n/a

Program Schedule

Upload a schedule for your residents that outlines their clinical and non-clinical work over the course of the residency program. This may be a master schedule or duty roster for your entire radiology section, if desired. If available, an example weekly or monthly rounds schedule can also be included.

Program Schedule



master schedule 9-20-21 toxlsx

Affiliation Agreements

Upload digital copies of any affiliation agreements that have not been included elsewhere in this document. Refer to the RPE document for an explanation of what information should be included in such agreements.