

ACVR 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 <u>ACVR Residency Program Essential Training Standards and Requirements</u>(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 University of Pennsylvania

Residency Program Director Name Wilfried MAI

Residency Program Director Email wmai@vet.upenn.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?

Tuesday, July 13, 2021

Objectives

Succinctly state the objectives of the training program.

1. To provide basic science and clinical training in small and large animal imaging modalities of radiology, ultrasound, nuclear medicine, computed tomography and magnetic resonance imaging.

2. To fulfill the residency training requirements of the American College of Veterinary Radiology so that the resident is eligible to become ACVR certified as a clinical specialist (veterinary radiologist) and can practice successfully in either an academic or specialty practice.

Training Period

What is the total length of the training 49 program?

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

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



30

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

Time off-clinics is used for ACVR Board preparation, clinical research project if applicable, optional external rotations and vacation.

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 <u>ACVR Residency Program Essential Training Standards and Requirements</u> (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?



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

60

How many weeks per year will the Residency Director be on clinical service and teaching residents at the primary training institution? 28

ACVR Residency Training Program Application

Additional Training Diplomates

Please review the definitions and responsibilities of <u>Supervising Diplomate and Supporting</u>
<u>Diplomate</u> 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 section at the end of this application).

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: Jennifer REETZ Hours/Year: 1128

Specific Areas and/or Limitations of Instructional Responsibility: Small Animal Imaging

Name: Yael PORAT-MOSENCO

Hours/Year: 744

Specific Areas and/or Limitations of Instructional Responsibility: Small Animal Imaging

Name: Adam SCHLAX Hours/Year: 880

Specific Areas and/or Limitations of Instructional Responsibility: Small Animal Imaging

Name: Timothy MANZI Hours/Year: 880

Specific Areas and/or Limitations of Instructional Responsibility: Small and Large Animal Imaging

Name: Kate WULSTER Hours/Year: 880

Specific Areas and/or Limitations of Instructional

Responsibility: Large Animal Imaging

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

ACVIM Member Name Beth CALLAN

ACVIM Member Institution University of Pennsylvania

ACVIM Member Email callan@vet.upenn.edu

ACVS Member Name David HOLT

ACVS Member Institution University of Pennsylvania

ACVS Member Email dholt@vet.upenn.edu

ACVP Member Name Charles BRADLEY

ACVP Member InstitutionUniversity of Pennsylvania

ACVP Member Email cbradle2@vet.upenn.edu

ACVR Residency Training Program Application

Resident: Supervising Diplomate Ratio

The number of residents in the program cannot exceed twice the number of ACVR/ECVDI Supervising Diplomates on-site.

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

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 section at the end of this application.)

AT THE RYAN SMALL ANIMAL HOSPITAL:

- 1. Diagnostic Radiology (2 rooms):
- o Room #1: General Electric Proteus XR/a (65 kW, 800 mA, 150 kVp) high frequency generator withautomatic exposure control; MX100 X-ray tube with double focus (0.6/1.25 mm), anode angle 12.5 degrees; Proteus XR/a elevating, four-way float radiographic table; XR/a automatic collimator, color LCD Touch Screen operator console. Detector: Eklin DR System- Canon CXDI-50G sensor panel. o Room #2: Precision™ 600FP flat panel detectorbased fluoroscopic and radiographic system with AeroDR XE 17x17 cassette sized wireless digital flat panel detector, AeroDR Docking Station II, CS-7 Universal Control Station Hardware.
- 2. Radiology reading room:
- o Philips (Stentor) PACS system (iSite Enterprise, shared with New Bolton Center Large Animal Hospital)
- o Empiric RIS system
- o 4 workstations with dual medical grade Barco monitors
- o 3 workstations with Dell monitors for Ultrasound/CT/MRI
- o Wall-mounted large monitor for KCC rounds and presentations.
- 3. Computed Tomography:
- o GE BrightSpeed Elite Select 16 Slice CT Scanner
- o AW VolumeShare7 with 2 Monitors (Vessel IQ Express, AutoBone Express, VolumeViewer)
- o Floor mounted power injector (Nemoto Dual Shot CT injector)
- 4. Ultrasound:
- o 1 x General Electric Logiq S8 Ultrasound machine with spectral, color flow and power Doppler capability, B-flow, harmonic imaging. Transducers: C1- 5-D convex, 9L-D linear, L8-18i-D linear (hockey

stick), ML 6-15-D Matrix Array Linear, and 10C-D Microconvex.

o 1 x Philips Epiq 5G Ultrasound machine with spectral, color flow and power Doppler capability, Contrast imaging, iScan, Autoscan, Vascular High-Q

Automatic Doppler, AutoDoppler flow optimization, Tissue Harmonics and Pulse Inversion Harmonic imaging. Transducers: L12-5, L18-5, C8-5 and C9-2.

- 5. Magnetic Resonance Imaging:
- o 1.5T GE SIGNA EXPLORER
- o GE Signa workstation, Software version 25.1
- 6. Radiation Oncology: Varian linear accelerator with IMRT capabilities.

AT THE NEW BOLTON CENTER LARGE ANIMAL HOSPITAL:

- 1. Diagnostic Radiology:
- o 2 x Sound NEXT wireless DR systems.
- o 2 x Vet Rocket X3 wireless DR systems.
- o 1 x Eklin EDR3 wired DR system.
- o 1 x Vet Rocket X1 wireless DR system.
- o 1 x Vet Rocket CX1 wireless DR system.
- o 1 x Sedecal HF 100 KW generator, Varex (Varian) RAD 92 x-ray tube.
- 2. Computed Tomography:
- o Robotic Cone Beam CT: 1 x Varex x-ray tube (G892 / B147 housing); 1 x Varian 4343CB detector running Varian Nexus DRF acquisition software; Orimtech CBCT AceClubs reconstruction software; 4 x Vicon Bonita 10 cameras using Nexus 2 software (for motion correction); 1 x CPI Indico 100 80KW generator; 2 x ABB IRB 6700 robots.
- o Conventional CT: Neurologica Ceretom CT using Neurologica acquisition software.
- 3. Nuclear Medicine: Rapid Scan gamma camera; Secondary in-floor Rapid Scan gamma camera; Oasis acquisition / image processing software.
- 4. Magnetic Resonance Imaging: Esaote O-scan (0.31T) using MRI EVOlution acquisition software
- 5. PET: LONGMILE MILE-PET standing PET scanner using proprietary acquisition / fusion software.

ACVR Residency Training Program Application

Clinical Resources

Review the clinical resource 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.

What is the average annual imaging 13900 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.

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

Small animal radiology 6265

Large animal radiology 2500

Abdominal ultrasound 3600

Non-abdominal ultrasound 65

Computed tomography 620

Magnetic Resonance Imaging 630

Nuclear scintigraphy 180

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.): 20%

Avian, Exotic, and Wildlife animals: 0%

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 Yes ultrasound (i.e. cervical, musculoskeletal)

Food/fiber animal imaging Yes

Exotics imaging No

Teleradiology/Referral imaging No

Explain how the resident(s) in this program will gain experience in any of the above types of imaging cases that are NOT available at the primary institution. Provide affiliation agreements,

if applicable. (see Affiliation Agreement section at the end of this application.)

We currently do not have a Special Species clinical service at PennVet therefore their direct exposure to these species is reduced. However we have a large bank of imaging cases (Radiographs, Ultrasound, CT) of special species (birds/small mammals/reptiles) that are available in our PACS system that they use for training and exposure.

There is no current exposure to teleradiology in our program. However several of our staff members have a regular activity in teleradiology and provide feedback during rounds on how to handle some aspects of reporting in the world of teleradiology. It is also planned that in the 4th year of the program (i.e. beyond the 30 months of direct supervised training), the senior residents will be having weekly teleradiology duties for exposure to that part of the job.

ACVR Residency Training Program Application

Training Content

Review the Training Content requirements listed in the RPE document.

What percentage of the total imaging caseload at the primary institution results in a report written by the resident(s) and/or training diplomates in this program?

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

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

No

80

What percentage of residentgenerated reports are reviewed by training diplomates prior to finalization of the report? 100

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

6 hours

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?

100

For each category below, calculate the approximate number of cases that a single resident will <u>interpret at the primary institution with radiologist feedback</u> 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	3200
Large animal radiology	300
Abdominal ultrasound	1200
Non-abdominal ultrasound	30
Computed tomography	300
Magnetic resonance Imaging	250
Nuclear scintigraphy	15
How many ultrasound exams will a single resident perform with radiologist feedback during the course of the entire program? Scans for which the resident writes a report but does not acquire images are excluded.	1200

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

Physics of Diagnostic Imaging	Yes
Radiobiology	Yes
Nuclear Medicine	Yes
Ultrasonography	Yes
Computed Tomography	Yes
Magnetic Resonance Imaging	Yes
Other	Yes

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.

At the Hospital of the University of Pennsylvania: Human radiology residents radiobiology course 6 hours Human radiology residents nuclear medicine course 20 hours Human radiology residents ultrasound physics course 10 hours Human radiology residents CT physics course 10 hours Human radiology residents MRI physics course 10 hours

Additional courses @PennVet include (1st year of training):

VCSN 649 - Large Animal Diagnostic Imaging

VCSN646 - Equine Lameness

VCSN647 - Equine Orthopedics

VANB601 - Veterinary Gross Anatomy

When offered, the residents also attend additional course such as the CT course, LA course in Texas, Brain camp, Nuc Med course, etc.

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)

How many peer-reviewed publications 0 are expected of a resident completing the program?

If this is an established program, what 60 percentage of residents have made formal research presentations at the annual ACVR or equivalent national meeting?

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.

A research project is not required in this program, but is encouraged. If a resident has interest in research he is supported in this endeavor by first identifying/tweaking an idea of her own, or is being offered suggestions for feasible projects. Then the resident is asked to produce a research outline that is discussed with the research mentor and to then proceed with data collection/interpretation and writing of the manuscript. Some residents are also involved in collaborative projects with investigators in other departments where they participate in data collection and generation.

Educational Environment

Review the Educational Environment expectations listed in the RPE document.

How many formal presentations (e.g. didactic lectures, departmental seminars, scientific presentations, Continuing Education conferences, etc) are expected of each resident during the course of their training? In general, informal topic rounds, journal club, small group teaching, student labs, and similar events should not be included.

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

- Didactic lectures to veterinary students (at least one).
- Teaching presentations on imaging topics to the radiology faculty and co-residents.
- Radiographic interpretation lecture to the house officers.
- Radiographic rounds to the senior veterinary students (weekly).
- Ultrasound labs to the senior veterinary students (every two months).

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

There is a large radiographic archive of proven cases and artifacts containing more than 2400 cases available to the residents using the American College of Radiology diagnostic code system. In addition, since 2002, many of the previous slides and hard copy images used for teaching have been digitized and are available on the department's radiology server (over 100 cases of small, large and exotic animal teaching cases). With the PACS system, images can be retrieved from the web-based image retrieval files. A teaching file is available on the PACS for large and small animal imaging, which is continuously expanded by the faculty. Currently it contains about 1200 small and large animal imaging cases. In addition, most of the known case conferences presented to or by the residents are done using Power Point Presentations that are then made available on a server for the residents to access.

How many Known Case Conferences 15 are conducted annually?

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?

All relevant veterinary journals are available online through the University of Pennsylvania library. Most reference books are available in radiology. Those that are not in the Radiology Section library can be found in the veterinary school library. A radiology library with virtually all current radiology textbooks across all species and modalities as well as the main physics books and reference internal medicine, cardiology and surgery textbooks is maintained by the Residency Director, and updated on a regular basis.

Both Philadelphia and New Bolton Center veterinary school campuses have libraries, plus the University of Pennsylvania Bio-Medical School library is within

two blocks of the Veterinary School - Philadelphia campus. All faculty and residents have electronic access to the entire University of Pennsylvania Library System; access is also available remotely (e.g. from home) through the connectivity to the library online journal resources through google scholar.

The Veterinary School Library, together with its branch, the Jean Austin duPont Library located at the New Bolton Center, supports all phases of veterinary medicine and surgery and also includes basic science works pertaining to mammals, general biomedical texts, and materials on the care of exotic and domestic animals. The collection includes 34,000 volumes and 475 current serials. All holdings are catalogued in Franklin, the Penn Library online catalogue.

The services and collections of the Biomedical Library (located at the School of Medicine) support research, education, and patient care for the University of Pennsylvania Health System, the School of Nursing, Biomedical Graduate Studies and graduate programs in the Biology Department. Emphasis is on the most current information available. The collection consists of more than 181,000 volumes and 2,900 current serials. The Biomedical Library houses over 60 public computers which connect to the Library Web via Netscape, allow you to access and search Penn's Digital Library, and use productivity software. The Biomedical Library Microcomputer Center (MCC) is located on the ground floor. The MCC has over 40 computers in either Windows or Macintosh platforms which can access various word-processing, presentation, communication, Internet/web, and medicine-specific applications.

ACVR Residency Training Program Application

Evaluation and Protection of Residents

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

Yes

List the current members of the resident review committee.

Drs Mai, Reetz, Manzi, Schlax, Mosenco, Wulster

Residents are formally evaluated by the faculty every 6 months. They receive feedback in the form of a summary of these evaluation and if areas of weaknesses are identified, plans are made to address these with the residency director.

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.

If there is a conflict between a resident and other staff or faculty member, the resident would be encouraged to seek advice and support from both Human Resources and the Department Chairman. Each graduating resident undergoes an exit interview with the hospital director and department chair, and provides feedback on quality of specialty training received as well as fills out an evaluation form of the radiology faculty. The Penn Vet administration retains record of these interviews and surveys. If problems are identified, the residency director will be asked to provide a report with explanations and propose solutions.

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

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Number Of Prelim Board Eligible Residents: 2

Number of Residents That Took Prelim Exam: 2

Number of Residents That Passed On 1st Attempt: 0

Number of Residents That Passed After Multiple Attempts: 0

Number of Residents That Have Not Passed: 2

2019

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: 0

Number of Residents That Have Not Passed: 0

2018	Number Of Prelim Board Eligible Residents: 2
	Number of Residents That Took Prelim Exam: 2
	Number of Residents That Passed On 1st Attempt:
	Number of Residents That Passed After Multiple Attempts: 1
	Number of Residents That Have Not Passed: 0
2017	Number Of Prelim Board Eligible Residents: 1
	Number of Residents That Took Prelim Exam: 1
	Number of Residents That Passed On 1st Attempt:
	Number of Residents That Passed After Multiple Attempts: 0
	Number of Residents That Have Not Passed: 0
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: 0

Number of Residents That Have Not Passed: 0

Certifying Board Exam Pass Rate

2020 Number of Certifying Board Eligible Residents: 2 Number of Residents That Took Certifying Exam: 2 Number of Residents That Passed On 1st Attempt: Number of Residents That Passed After Multiple Attempts: 0 Number of Residents That Have Not Passed: 0 2019 Number of Certifying Board Eligible Residents: 2 Number of Residents That Took Certifying Exam: 2 Number of Residents That Passed On 1st Attempt: Number of Residents That Passed After Multiple Attempts: 0 Number of Residents That Have Not Passed: 0 2018 Number of Certifying Board Eligible Residents: 1 Number of Residents That Took Certifying Exam: 1

Number of Residents That Passed On 1st Attempt:

Number of Residents That Passed After Multiple Attempts: 0

Number of Residents That Have Not Passed: 0

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: 0

Number of Residents That Have Not Passed: 0

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

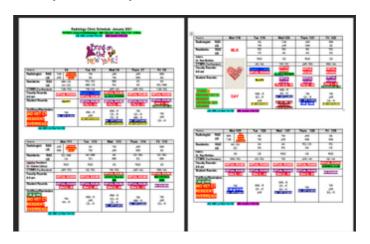
Number of Residents That Passed After Multiple Attempts: 0

Number of Residents That Have Not Passed: 0

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



VERSION Sept 15, 2020



Affiliation Agreements

Upload digital copies of any affiliation agreement(s) in place for the following: