Tuesday, February 28, 2023

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	University of Florida
Residency Program Director Name	Federico Vilaplana Grosso
Residency Program Director Email	fvilaplanagrosso@ufl.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 17, 2023

Objectives

Succinctly state the objectives of the training program.

1. Training in the research investigative methodology by completing and presenting a prospective or retrospective diagnostic imaging project that either addresses a clinically relevant or basic science question related to the field of veterinary diagnostic imaging.
2. Training in scientific writing. The resident is expected to apply for ACVR resident research project funding for their project by the middle of their first clinical year.
3. Advanced training in diagnostic imaging.
a. Develop clinical skills in diagnostic radiology.
b. Develop clinical skills in special procedures including fistulography, fluoroscopic evaluation of dynamic processes (swallowing studies, tracheal evaluation) and routine special procedures (evaluation of the gastrointestinal and urogenital systems).
c. Develop interpretative skills in selective angiography and interventional radiography.

d. Develop clinical skills in small and large animal diagnostic ultrasound, computed tomography, magnetic resonance and nuclear imaging.
e. Receive instructional training in the physics of radiography, alternate imaging modalities (including ultrasound, computed tomography, magnetic resonance imaging, and nuclear medicine), radiobiology, radiation protection, and
radiation dosimetry and safety. Radiation safety, radiobiology and physics of diagnostic imaging are taught during the first year and will be taken with
the MD diagnostic imaging House Officers at the University of Florida, College of Medicine.
4. Training in critical current literature evaluation through the participation in weekly journal club and weekly book club.
5. Participate in the clinical training of veterinary students during their core radiology clerkship (VEM 5783), elective ultrasound clerkship (VEM5884), during clinics, and occasionally in didactic courses and elective courses.
6. Training in the presentation of current relevant research data through abstract submission and presentation at appropriate scientific presentations. This would include the presentation of a current research project at the Annual House
Officer's seminar as well as the submission of an abstract and presentation at the Annual ACVR meeting.
7. Preparation for qualifying and certifying examinations offered by the American College of Veterinary Radiology by three Mock written examinations during the first year, four Mock written examinations during the second year (in preparation for the certifying examination) and weekly Mock written examinations (Known Case Conference – in preparation for the certifying examination). In addition first and second year residents take all the mock exams offered by the ITEC committee. Third year residents have practical KCC mock exam sessions prior to the end of the residency program with several 180 minutes sessions of cases.
8. Develop appropriate communication skills with clinicians and referring veterinarians.
9. Become competent with digital imaging manipulation and the use of presentation software for the preparation and presentation of teaching and scientific related materials using digital images.

Training Period

What is the total length of the training program?	36
What is the anticipated length of supervised clinical training a resident will experience during this program?	30
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?

The non-clinical portion of the program will be used for ACVR board preparation, lecture preparation, completion of resident research project, attending clinical rounds, known case conference and vacation. Externships and attendance to courses and conferences is also considered during the nonclinical portion of the program.

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?	67
How many weeks per year will the Residency Director be on clinical service and teaching residents at the primary training institution?	35

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: Erin G. Porter

Hours/Year: 1170

Specific Areas and/or Limitations of Instructional Responsibility: Everything but more supervision on Equine imaging

Institution: University of Florida

Name: Aitor Gallastegui Menoyo

Hours/Year: 1530

Specific Areas and/or Limitations of Instructional Responsibility: Everything

Institution: University of Florida

Name: Elisa Spoldi

Hours/Year: 1530

Specific Areas and/or Limitations of Instructional Responsibility: Everything

Institution: University of Florida

Name: Hayley Paradise

Hours/Year: 1305

Specific Areas and/or Limitations of Instructional Responsibility: Everything

Institution: University of Florida

Name: Elodie Huguet

Hours/Year: 450

Specific Areas and/or Limitations of Instructional Responsibility: Everything

Institution: University of Florida

Name: Philip (PJ) Hamel

Hours/Year: 468

Specific Areas and/or Limitations of Instructional Responsibility: Everything except ultrasound

Institution: Locum for University of Florida

Please list all training diplomates who will act as Supporting Diplomates of this residency program. Indicate how many hours per year each Supporting Diplomate will be scheduled on clinical duty with primary support of residents and any specific areas of instructional responsibility and/or limitations in the scope of this support (e.g. only trains residents in ultrasound, does not participate in

Name: Matt Winter

Hours/Year: 90

Specific Areas of Instructional Responsibility: Everything

large animal training, does not finalize imaging reports, etc).

Institution: University of Florida

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	Andrew Specht
ACVIM Member Institution	Small Animal Internal Medicine
ACVIM Member Email	spechta@ufl.edu
ACVS Member Name	Stanley E Kim
ACVS Member Institution	Small Animal Surgery
ACVS Member Email	stankim@ufl.edu
ACVP Member Name	Ian K Hawkins
ACVP Member Institution	American College of Veterinary Pathologist
ACVP Member Email	iankhawkins@ufl.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)

Facilities include small (5 rooms) and large animal (2 rooms) diagnostic radiology, interventional suite with DR video fluoroscopy and digital subtraction, complete digital radiography system(6 DR Canon Plates), portable radiology units (2
equine and 1 DR plate portable unit for small animal surgery), three real-time B-mode ultrasoundwith pulsed wave Doppler, power and color Doppler and elastography,160 slice Toshiba Acquillon Prime helical multidetector-row
computed tomography and 1.5 T Toshiba magnetic resonance imaging is available. The CT and MR have both small and large animal capabilities. The imaging service remains paperless and film less department with 12 fully integrated diagnostic
imaging workstations (one of which has [4] 3MP monitors and eleven of which have [2] 3 MP monitors). The hospital uses PACS (Merge® PACS) and RIS (Empiric® Fuji) system for full integration of all imaging modalities and reporting. Direct dictation systems are used for each workstation based on a server driven Dragon
Medical Nuance software program.

Ultrasound
Samsung RS85 (C4-9 MHz, L3-12MHz, L3-10MHz,
L4-18 MHz).
Two Samsung RS80A with Prestige (C1-7 MHz, C3-10 MHz, C4-9
MHz, L3-12MHz, L3-10MHz,L4-18 MHz).
A portable Samsung ultrasound unit (C4-9 MHz, L4-18 MHz).
Philips iU22 with 4 transducers (C8-5 MHz, Lio12-
15 MHz, L8-15 MHz and C9-4 MHz probes).

Computed tomography
Toshiba Acquilion Prime®, 160 Multi-detector helical CT unit with CT fluoroscopy.

Small animal radiography

SA Radiography room one
Quantum Medical Imaging overhead tube, CPI generator (1000 mA ,150 kVp) with Control X floating bucky table and wall bucky. CanonDR 17” x 17” plate. Routine small animal radiography.

SA Radiography room two
Sedecal x-ray machine (800mA, 125 KVp) with floating table-top. Canon DR 17” x 17” plate. Routine small animal radiography.

SA Radiography room three
Sedecal x-ray machine (800mA, 125 KVp) with floating table-top. Canon DR 17” x 17” plate. Routine small animal radiography.

SA Radiography room four
Sedecal x-ray machine (800mA, 125 KVp) with floating table-top. Canon DR 17” x 17” plate. Routine

small animal radiography.

SA Radiography room five
Sedecal x-ray machine (400mA, 125 KVp) with floating table-top. Canon DR 17” x 17” plate.

Emergency/ICU small animal radiography. SA Post-operative surgery portable mobile x-ray unit
One Sedecal portable high frequency mobile x-ray unit with Canon DR 17” x 17” plate. Full Dicom integration with PACS and RIS.

SA Special procedures
Phillips radiographic/fluoroscopic system with overhead tube (1000 mA 125 kVp). Medrad Mark- IV® and Mark VII pressure/power injectors for CT angiography and interventional radiography. Routine small animal radiography and special
procedures.

Large animal radiography

LA Radiography room one
CPI Indico high frequency generator (1000 mA, 150kVp) all-purpose machine with a custom slaved cassette holder system. Routine large animal radiography and special procedures.

LA Radiography room two
Sedecal high frequency generator (800 mA, 150kVp) all-purpose machine with a custom slaved cassette holder system. Routine large animal radiography and special procedures with wall Bucky tray for horizontal beam thorax and other
radiographic procedures. Routine large animal radiography.

Two portable high frequency machines are available for stall side and intraoperative radiography.

Magnetic Resonance Imaging

Toshiba Titan 1.5 T, 16 channel, 33 mT/m gradient MRI unit. In addition, there are 3T, 4.7T, and 11T units available for small animal (rodent) imaging at the University of Florida McKnight Brain Institute.

Nuclear Medicine

MIE Scintron® VI with mobile stand for equine and small animal nuclear medicine. Large field of view gamma camera with dedicated computer system and software (Scintron®dedicated nuclear medicine acquisition and processing software).

Radiation Therapy
An isolation facility for the routine treatment (I-131) of hyperthyroid cats is available. External beam radiotherapy (Varian 2100 EX)including a full
CT guided radiosurgery treatment facility (6 MeV photon and variable energy electron beams) and stereotactic radiosurgery/multi-leaf collimated
therapy unit for IMRT.

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

At the beginning of the residency program, the residents will spend a 2-4 weeks learning radiographic positioning and participating in the making of small and large animal radiographs.

Residents will also spend weeks during the residency learning how to use the fluoroscopic equipment, the CT equipment and quality control it, and the MRI equipment and quality control it. This technical weeks are combined with clinical weeks and happen more frequently at the beginning of their rotations in those modalities.

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.	65000
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.	20500

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

Small animal radiology	36000
Large animal radiology	1800
Abdominal ultrasound	13950
Non-abdominal ultrasound	750
Computed tomography	1600
Magnetic Resonance Imaging	1950
Nuclear scintigraphy	120
Indicate the approximate species breakdown of the imaging caseload at the primary institution in the following categories:	Small animals (canine, feline): 65 Large animals (equine, bovine, porcine, etc.): 20 Avian, Exotic, and Wildlife animals: 15

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?	95
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?	100

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

Depends on the staffing and other college commitments but ranges between 24 and 120 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?	50

If < 75%, please explain.

It has been depending on the staffing and teaching or service responsibilities. For most of the year the reports are finalized within 48 hours. During specific times of the year where faculty need to do more teaching for the college or serve in committees or other service assignments, reports may take a little longer to be finalized, still within 120 hours.

Please describe how after-hours/weekend/holidaycases are handled at the primary institution. How does this affectresident-reported imaging caseload?

We are a busy institution regarding after-hours/weekend/holiday cases. We provide support for the small and large animal hospitals and the University of Florida College of Veterinary medicine and we provide support when requested, for the OCALA PETS emergency clinic and the small and large animal hospitals at the World Equestrian Center.

First year residents will start on call duties in September of the first year.

First year residents will always be backed up by a second- or third-year resident (for ultrasound and fluoroscopy), by an IDEXX radiologist for small animal radiographs and by UF faculty for exotic and

large animal radiographs, as well as for ultrasound and fluoroscopy.

Second and third year residents will be primarily assigned to cross sectional modalities (CT,MRI) and provide back up with other modalities managed by 1st year residents(radiographs, ultrasound and fluoroscopy). A UF faculty will always backup for the senior and junior residents.

All images generated at the small and large animal hospitals and the University of Florida College of Veterinary medicine during after-hours/weekend/holiday cases will have a report drafted by a resident and finalized by a faculty.

Studies requested to be read by the diagnostic imaging service but performed at the OCALA PETS emergency clinic and the small and large animal hospitals at the World Equestrian Center, will have a a report drafted by a resident and finalized by a faculty.

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	4000
Large animal radiology	200
Abdominal ultrasound	1555
Non-abdominal ultrasound	85
Computed tomography	180
Magnetic resonance Imaging	225
Nuclear scintigraphy	15
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.	1650
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	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.

Radiological Physics course, Taken at the UF College of Medicine (UF Shands) during the first year on Tuesdays and Thursdays at 7-8 am. This course includes all imaging modalities.

Instructors
Manuel Arreola, PhD Vice Chair and Assistant Professor, Physics
Izabella Barreto, PhD Assistant Professor, Physics
Justin Brown, PhD Resident, DIMPR
Stephanie Leon, PhD Assistant Professor, Physics
Alok Shankar, PhD Resident, DIMPR
Bryan Schwarz, PhD Assistant Professor, Physics
Lynn Rill, PhD Assistant Professor, Physics

Textbook Reference
Essential Physics of Medical Imaging; 3rd Edition; Bushberg, Seibert, Leidholdt Jr & Boone; Lippincot, Williams & Wilkins; Baltimore, MD; 2011

SNA/AAPM Physics Module

FUNDAMENTALS
1. Atoms, Radiation, and Radioactivity
a. Atomic Structure and Transitions
b. Nuclear Structure
2. Interactions of Radiation and Tissue
a. Photon Interactions
3. Radiation Measurements and Units
a. International System of Units
b. The Concept of Dose
c. ICRP Weighting factors
d. Units
e. Radiation Detectors
f. Lab

PROJECTION X-RAY IMAGING

1. X-Ray Tubes and Spectra
a. Properties of X-Rays
b. X-Ray Tube
c. Generator Effects on X-Ray Spectrum
d. Beam Filtration Effects on X-Ray Spectrum
2. Basic Concepts in Radiography

a. Geometric Considerations
b. Image Formation
c. Scattered Radiation
3. Digital Imaging and Radiographic Image Receptors
a. Principles of Digital Imaging
b. Types of Image Receptors
4. Image Quality in Radiography
a. Spatial Resolution
7 Schwarz Thursday, October 7
b. Contrast
c. Noise
d. Radiography Lab 7,4 Schwarz Thursday, October 14
5. Mammography Image Quality and Dose
a. Imaging Aims
b. Equipment Features and Effects
c. Operational Aspects and Effects
d. Image Processing
e. Artifacts
f. Regulations
g. Magnification
h. Stereotactic Breast Biopsy
i. Tomosynthesis
j. Synthetic Mammography

FLUOROSCOPY

1. Fluoroscopy Systems
a. Types and Components of Fluoroscopy Systems
b. Design and Operation of Fluoroscopic Image Receptors
c. Why Use Fluoroscopy?
d. Factors to Consider
e. Scattered Radiation and Image Quality Considerations
2. Radiation Dose and Safety in Interventional Radiology
a. Typical Interventional Suite Configuration
b. Factors Affecting Patient Dose
c. Patient Dose: Primary Beam Absorption by the Patient
d. Steps to Reduce Staff Exposures
e. Radiation Pattern Near a Fluoroscopy Unit
f. Monitoring Interventional Procedure Doses

COMPUTED TOMOGRAPHY

The basics of CT Systems
a. Introduction
b. Main components of CT systems & system geometry
c. Relationship between physical attenuation and CT number
d. Multi-slice CT systems
e. The effect of slice thickness on dose and image quality
2. Image reconstruction & Image Quality
a. Principles of Tomographic Image Reconstruction
b. Iterative reconstruction
c. Image quality in CT
d. The effect of parameters on image quality
e. General Artifacts
f. Cone-Beam CT Artifacts
3. CT acquisition & Clinical Applications
a. Modes of acquisition: scanogram, axial, helical, cone beam
b. Tube current modulation
c. Cardiac CT
d. CTA, Perfusion, and Fluoroscopy CT
e. Dual energy CT
f. Dental CBCT

4. Radiation Dose in CT
a. Concepts in CT dosimetry: CTDI, DLP, and Effective Dose
b. Concepts in CT dosimetry: SSDE
c. Shielding in CT
5. Protocol Optimization
a. Growth of CT imaging utilization
b. Pediatric CT imaging & Image Gently
c. Protocol optimization for adult and pediatric exams

NUCLEAR MEDICINE

Radioactive Decay
a. Types of Decay
b. Half-Life
2. Fundamentals of Nuclear Medicine / Gamma Cameras
a. What is the Purpose of Nuclear Medicine?
b. Non-Imaging Detectors
c. The Gamma Camera
d. The Gamma camera (continued) 18 Shankar Thursday, January 13
3. SPECT/SPECT-CT
a. SPECT Imaging
b. Combined Modalities – SPECT/CT
4. Quality Control
a. Gamma Cameras
b. SPECT Systems
5. PET/PET-CT/Image Quality
a. Principles of Positron Emission Tomography
b. Software and Hardware Approaches for Dual-Modality Imaging
c. Scanner Performance Data Acquisition Protocols and Image Reconstruction
d. Quantitative Imaging
a. Quality Control
6. Radio-pharmacy and Dosimetry
a. Choosing Radionuclides
b. Radionuclide Production
c. Radioactive Equilibrium
d. Internal Radiation Dosimetry
e. Therapeutic Uses of Radionuclides

MAGNETIC RESONANCE
1. Basic Principles of Nuclear Magnetic Resonance
a. Magnetism and Nuclear Magnetism
b. Gyromagnetic Ratio and Larmor Equation
c. Proton Precession and Energy States of Groups of Protons
d. Net Nuclear Magnetization and Measuring the Net Transverse Magnetization Vector, the MRI Signal
e. Tissue Characterization in a Magnetic Field and T2* relaxation
2. MRI: Pulse Sequences
a. MRI Pulse Sequence Families: Spin-Echo Imaging (SE)
b. MRI Pulse Sequence Families: Gradient Recalled Echo (GRE)
c. MRI Pulse Sequence Families: Inversion Recovery (IR) Spin-Echo
d. 2D and 3D MR and Acquisition Time
3. MRI: Image Formation
a. Basic Concepts
b. Exciting a Slice and Phase/Frequency Encoding
c. 3D Imaging vs. 2D Imaging Sequences
d. How Image Formation Leads to Particular Artifacts
4. MRI: Instrumentation
a. B0 System and Performance Characteristics of an MRI Magnet
b. Magnet Design, Geometry and MFG Subsystem
c. RF Transmitter (B1) Subsystem, Receiver Subsystem and Coils
d. Computer Subsystem, Archiving, Film Interfaces
5. MRI: Image Characteristics

a. Factors Affecting Spatial Resolution
b. Factors Affecting Signal-to-Noise Ratio (SNR)
c. Tradeoffs Among Spatial Resolution, SNR and Acquisition Time
d. Factors Affecting Image Contrast
6. MRI: Image Artifacts
a. Introduction to Artifacts
b. Review of “Artifact Bank”
c. Differentiation of Artifacts from Pathology
7. MRI: Special Acquisition Methods
a. Functional MRI
b. Diffusion Weighted Imaging (DWI)
c. Magnetic Resonance Angiography (MRA)
d. Magnetization Transfer (MT) Imaging
8. MRI: Tissue Properties, Contrast Agents and Reactions
a. Fundamental Tissue Properties
b. Clinical cases
9. MRI: Quality/Bioeffects/Safety
a. Image Quality
b. Bioeffects
c. Safety
10. MRI: Siting and Environmental Protection
a. MRI System Siting
b. Equipment Performance, Safety Issues and Environmental Interactions
c. Protective and Preventive Solutions
d. Waveguides

ULTRASOUND

1. Ultrasound - Concepts and Transducers
a. Impedance
b. Refraction
c. Attenuation
d. Why Study Ultrasound Transducers?
e. Resolution
2. Basic Ultrasound Imaging and Display
a. Modern Ultrasound Scanners
b. Pulse-Echo Imaging Principles
c. Image data Acquisition, Formation and Advances
d. Image Storage
e. Pulse-Echo Imaging System Performance
3. Interaction of Ultrasound Tissue and Doppler
a. Interactions of Ultrasound in Tissues
b. Bioeffects
c. Doppler Ultrasound
d. Doppler Artifacts
e. Doppler Optimization
4. Image Quality - Artifacts - Doppler – Safety
a. The Ultrasound System and Assessing Performance
b. Ultrasound Image Quality
c. Ultrasound Artifacts
d. Ultrasound Safety

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)

50

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?

20

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.

Residents are expected to complete and submit for publication, one clinical or research investigative project during the residency.
Residents will be expected to apply for internal and external funding (under mentor guidance) for funds for a residency project. The completion of a research project is not dependent upon awarding of these funds, but the process of applying for grants and grantsmanship will be encouraged.
Presentation of an abstract or poster at an internationally recognized meeting is highly recommended.
A yearly college wide seminar presentation is required (i.e. weekly hospital seminar).

All residents have a radiology faculty mentor that will mentor them for research and other aspects of the residency, but residents can do research with whichever faculty. Residents are encouraged by faculty to do research and are supported by them. At the UF the college offers every year a 2 week course for research writing which is available to one of our residents per year.

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.

A yearly college wide seminar presentation is required (i.e. weekly hospital seminar).

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

First year residents will teach the small and large animal radiographic anatomy lectures within the Anatomy courses (course directors: Dr. Sergey Tevosian and Dr. Rick Johson). Each resident will teach two to three 50-minute lectures.

All residents will teach one entire week of our core clinical clerkship (VEM5783) doing approx. 6 hours of radiographic cases lab reviews for 4 days in a week.

Additional resident teaching is elective and may be for teaching practical ultrasound labs, didactic ultrasound lectures, clinical skills lab or equine radiology elective courses if needed.

Residents are highly encouraged to provide lectures and hands-on ultrasound experience to the students of the Student Chapter of Veterinary Diagnostic Imaging (SCVDI) club.

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

The teaching file is prepared, reviewed and updated by faculty yearly.
Residents can review and update the teaching material that is then reviewed and approved by faculty

How many Known Case Conferences are conducted annually? 50

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.

There are 2 simultaneous didactic rounds happening every Tuesday (after journal club), Wednesday (after hospital seminar) and Thursday (after book club). One round is directed by the faculty on ultrasound, and the other round is directed by one of the other faculty working in the other modalities. During these rounds, residents will present interesting cases seen in the prior days, leading to discussion and review of the literature.

Monday:
o Residents catch up writing reports on cases imaged during the weekend. Every resident is assigned to a modality for a one-week rotation (see additional info below). Residents need to ensure cases pending imaging won't require any special procedure (e.g. stressed radiographic projections, cardiac gated CT studies… etc.). The resident is responsible for all communication (e.g. special considerations, quality control, preliminary findings). Quality control is only done on selective radiographic studies, such as LA studies, tube checks, post-op cystotomy, exotic cases… etc.
o 8.30-9.30 am: Equine diagnostic imaging rounds with Dr. Porter.
• Tuesday:
o 8-9 am Journal club: 3-4 journal articles are assigned to residents on clinics and not on call. Each resident provides a short review/critique of their assigned paper, which will then be discussed as a group in the presence of faculty. Residents also draft few quiz questions.
o 9-10:00 am: Morning didactic rounds with faculty.
• Wednesday:
o 8-9 am: Weekly hospital seminar.
o 8 or 9-10:00 am: Morning didactic rounds with faculty.
• Thursday:
o 8-9 am: Book club.
o 9-10:30 am: Morning didactic rounds with faculty.
• Friday:
o 8-9 am: Residents work on the KCC cases
o 9-10:00 am: Review KCC cases with faculty

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.

Medical library access, as well as access research tools and medical literature are provided by the University of Florida

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.

Seth Locker, sethlocker@ufl.edu, Start Date: July 2022, Anticipated Completion Date: July 2025

Mara Wanderer, m.wanderer@ufl.edu, Start Date: July 2022, Anticipated Completion Date: July 2025

Olivia Choe, ochoe@ufl.edu, Start Date: July 2022, Anticipated Completion Date: July 2025

Oscar Alas, oscar.alas@ufl.edu, Start Date: July 2021, Anticipated Completion Date: July 2024

Ria Watko, watko.m@ufl.edu, Start Date: July 2021, Anticipated Completion Date: July 2024

Tomer Shua Haim, tshuahaim@ufl.edu, Start Date: July 2021, Anticipated Completion Date: July 2024

Steven Robillard, steven.robillard@ufl.edu, Start Date: July 2020, Anticipated Completion Date: July 2023

Courtney Wait, courtney.wait@ufl.edu, Start Date: July 2020, Anticipated Completion Date: July 2023

Rachel Lee, rp.lee@ufl.edu, Start Date: July 2020, Anticipated Completion Date: July 2023

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

Yes

List the current members of the resident review committee.

Aitor Gallastegui DACVR,
Erin Porter DACVR, DACVR-EDI,
Matthew Winter DACVR,
Elisa Spoldi DACVR,
Elodie Huguet DACVR,
Hayley Paradise DACVR,
Katharine Peper &
Federico Vilaplana Grosso DECVDI, DACVR(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.

1. Direct communication between the resident and the individual
2. Intervention with the resident advisor between the resident and the individual with resident advisor as intermediary
3. Intervention with the residency program director between the resident and the individual with residency program director as intermediary
4. Intervention with the department chair if needed
5. Intervention with the resident/intern committee if needed
6. Intervention with human resources department within the college of veterinary medicine if needed

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: 2

Number of Residents That Passed After Multiple Attempts: 1

Number of Residents That Have Not Passed: 0

2019

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: 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: 2

Number of Residents That Passed After Multiple Attempts: 0

Number of Residents That Have Not Passed: 0

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: 0

Number of Residents That Have Not Passed: 0

2016

Number Of Prelim Board Eligible Residents: NA

Number of Residents That Took Prelim Exam: NA

Number of Residents That Passed On 1st Attempt: NA

Number of Residents That Passed After Multiple Attempts: NA

Number of Residents That Have Not Passed: NA

Certifying Board Exam Pass Rate

2020

Number of Certifying Board Eligible Residents: 3

Number of Residents That Took Certifying Exam: 3

Number of Residents That Passed On 1st Attempt: 2

Number of Residents That Passed After Multiple Attempts: 1

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: 2

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: 1

Number of Residents That Passed After Multiple Attempts: 0

Number of Residents That Have Not Passed: 0

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: 0

2016

Number of Certifying Board Eligible Residents: NA

Number of Residents That Took Certifying Exam: NA

Number of Residents That Passed On 1st Attempt: NA

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

resident schedule 2022-2023.xlsx

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.