ACVR Residency Training Program Application Form:

Institution Name: **Kansas State University College of Veterinary Medicine**

This document is to act as a guide for institutions desiring ACVR accreditation of their residency training program. It should be used in concert with the requirements set out in the ACVR Essentials of Residency Training document and it follows the headings of that document. It is intended to streamline the application process and help define what information the RSEC needs to evaluate the program. All terms used in this application have same definitions as defined in the Essentials.

II. Objectives:

Succinctly state the objectives of the training program.

1. **Advanced training in diagnostic imaging**
   a. **Develop skills in diagnostic imaging to include: diagnostic and special radiographic procedures; ultrasound; CT; MRI; nuclear imaging.**
2. **To provide instruction in the basic principles of radiobiology, radiation physics, radiation protection, radiation dosimetry, radiation safety, radiological anatomy and physiology, and pathologic physiology.**
3. **Training in clinical investigation**
4. **Training in scientific writing and literature evaluation**
5. **Training in didactic teaching and scientific presentations**
6. **Preparation for certification examination by the American College of Veterinary Radiology**
7. **Develop skills for communication with clients and referring veterinarians**

III. Training period:

What is the total length of the training program in months? **36**
If this is a 4 year program, during what year will the resident be eligible to take the ACVR Preliminary Exam? If the resident is not eligible to take the exam during the beginning of the 3rd year (September), please state the reason.
What is the total duration of supervised clinical training in the program? **30 months**
What are the responsibilities of the resident in the remaining non-clinical portion of the program? **1)Vacation,** **2) Planning, completion and presentation of a research project.** **3) Preparation for boards** **4) Externships (ie. Cardiology, exotics)**

This is determined on an individual basis. Past has included opportunities for equine or seeing more MRI (neuro cases).

IV. Direction and Supervision:

Program Director:

Who is the Director of Residency training? **David S. Biller, DVM, DACVR**
What percentage of this individual's time is committed to clinical service and teaching of residents? **75%** **From May 2017 there will be a European Boarded Radiologist, A European board qualified radiologist (taking orals in February 2018. Presently interviewing for a 4th radiologist.**

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

Roentgen diagnosis:

Faculty: **David Biller**
Percentage clinical service: **75%**

Diagnostic ultrasound:

Faculty: **David Biller**
Percentage clinical service: **75%**

Computed Tomography

Faculty: **David Biller**
Percentage clinical service: **70%**

Magnetic Resonance Imaging:

Faculty: **Nicky Cassel**
Percentage clinical service: **70%**

Nuclear Medicine:

Faculty: **Nicky Cassel**
Percentage clinical service: **70%**

List the names and percentage clinical commitment of additional imaging faculty in the program, and their area(s) of instructional responsibility. For each imaging faculty in the program please provide a one page CV documenting their expertise in the area(s) of assigned responsibility.
Dr Carlo Anselmi will be joining us May 2017. Board eligible and taking boards in 2/2018. He will be a clinical track faculty with 75A% clinical duties.

For each of the specialty colleges listed below please list at least two Diplomates of these colleges who can be expected to regularly interact with radiology residents:

ACVIM

Ken Harkin
Tom Schermerhorn

ACVS

Jim Roush
Walter Renberg

ACVP

Kelly Almes
Brad Njaa

V. Affiliation agreement:

If all of the training will not be accomplished on-site, please attach a copy of the affiliations agreement(s). Include the scope of the training and amount of time the resident will be away from the home institution.

All training will be accomplished on site. Have previously had residents visit, Mississippi State, The Ohio State and Washington State.

VI. Facilities:

Briefly describe how the program meets the facility requirements.

The radiology facilities include a main reading area (2 diagnostic work stations) and an LCD projector utilized for rounds, another reading area with 4 triple view boxes and a diagnostic work station., and a separate reading area used almost exclusively for ultrasound interpretation. There is 1 small animal diagnostic radiology room with Agfa DR. There is a shared large and small animal diagnostic room with Agfa DR and Eklin DR portable xray unit and overhead X-ray tube. There is a small animal diagnostic room with a digital fluoroscopy unit that can also use the AGFA DR.

We have a second equine diagnostic imaging area in a separate building (Equine performance testing center) with an Eklin DR unit.

We have one room used for nuclear medicine. We have a Siemens gamma camera with NucLear Mac computer.

We have one CT room with a GE 16 slice machine. We have one MR room with a Hitachi MRP-7000 (0.3T Permanent magnet). We are in the process of building a second MRI space for a 3T Toshiba unit. Once the new MRI is in and running we

intend to get rid of the 0.3 T magnet and make that room ultrasound with 2 units (second unit will be determined later). We have one ultrasound room with a Toshiba Aplio 500. **We have a AGFA PAC unit that connects to ultrasound, nuclear medicine, CT, MR, and all DR units.**

VII. Clinical resources:

Indicate the approximate number of patients seen annually by the home institution? 25,884 (includes field service 7.875)
What is the annual imaging caseload? 7094

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

Small animals (canine, feline)	15,007
Large animals (equine and food animals)	2,345
Exotic animals	363

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

Small Animal Radiology: **4521**
Large Animal Radiology: **355**
Abdominal Ultrasound: **1675**
Computed Tomography: **419**
Nuclear Medicine: **19**
Magnetic Resonance Imaging: **33**
Other (specify):

VIII. Training content:

What percentage of imaging reports are typically available within 48 hours after the examination is conducted in typewritten or electronic form? **100%**

If your answer is less than 75% please explain how reports are generated and how long it takes for the report to be available for review in typewritten form.
Of the preliminary reports generated from the imaging caseload what percentage are initially produced by the resident? **Depends on what year the residents are. During first year 10%, second year >50%, third year while on duty >90%**
What percentage of resident reports are reviewed by the imaging faculty prior to finalization of the report? **100%**
When preliminary resident reports are reviewed and edited by the imaging faculty responsible for training, what percentage of the time are two or more faculty present? **0%. This will change to 75% with the addition of the 2 new radiologists.**

Please complete the table below

	Approximate number of cases in the 30 months clinical experience
Small Animal Radiology:	**4200**
Large Animal Radiology:	**700**
Abdominal Ultrasound:	**1300**
Computed Tomography:	**350**
Nuclear Medicine:	**45**
Magnetic Resonance Imaging:	**40**
Elective (any of above)	
Required elective (specify):	
Total	**6,635**

Please indicate the course number and unit assignment residents are required to take to meet the educational objectives for formal instruction as outlined in the Essentials in the following:

Topic	**Course number**	**Units**
Radiobiology:		

The Physics of:

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

If your program does not offer formal courses in any or all of these topics please indicate how these educational objectives for each are met. Use attached sheets if necessary.
We do not have formal courses other than residents attending and participating in our didactic radiology course and anatomy courses (including a cross sectional anatomy course). We have both journal club and physics review for the residents.

IX. Research Environment:

Over the last 5 years, what is the average number of peer reviewed publications, on which the IMAGING faculty listed under Direction and Supervision in **IV** above, are included as authors? **5**

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

One case report, case series, or retrospective study as a first author or co-author. One manuscript originating from the resident's research project as a first author.

If this is an established program, what percentage of residents have made formal research presentations at the annual ACVR or equivalent national meeting? **25%**

Is an advanced degree a requirement of the training program? **No**

X. Educational Environment:

How many lectures or scientific presentations are expected of each resident during the course of their training? **Approximately 12. This includes, 4 lectures given in the first year anatomy course on normal anatomy, 1-2 lectures in the diadactic radiology course for second year veterinary students and 2 presentations to the House Officer's rounds per year of their residency.**

XI. Evaluation:

During the program how often is resident performance evaluated in writing? **6 (every 6 months)**

All faculty in the department are given an opportunity to evaluate House Officers ever 6 months.

XII. Teaching File:

What is the nature and scope of the teaching file available to residents? **The file consists of cases of all organ systems and species. They are available on the PACS. There is also the student teaching cases(4th and 2nd year teaching files) available. There is computer based teaching cases available through the second year class.**

How is it maintained/updated? **Cases are picked by radiologists and residents usually on a daily basis during rounds.**

XIII. Conferences:

On average how many Known Case Conferences are conducted annually? **45**

XIV. Literature resources:

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

XV. Appendix:

(a) Provide the pass rate for first time, second time, etc for both the preliminary and certifying exams for your residents for the past 5 years. For example, for all residents finishing your program 5 years ago (Year 5), check the appropriate box. Complete the table for residents finishing 4 years ago (Year 4), 3 years ago (Year 3), etc.

	Year 5	Year 4	Year 3	Year 2	Year 1
Passed preliminary exam 1st time	X	X	X	X	X
Passed prelim exam 2nd time					
Passed prelim after 2nd time					
Passed certifying exam 1st time	X	X	X	X	X
Passed					

certifying exam 2nd time					
Passed certifying exam after 2nd time					
Unsuccessful in all attempts					

(b) Provide a clinical schedule for your resident(s). This schedule should provide a weekly or monthly outline of the resident's clinical responsibilities. This may be in the form of a master schedule or duty roster for your entire radiology section if desired.

Activity	% total	Year 1	Year 2	Year 3
Clinic *	**82%**	**47 weeks**	**38 weeks**	**44 weeks**
Out Rotation	**2%**	**0 weeks**	**0 weeks**	**4 weeks**
Research	**6%**	**3 weeks**	**4 weeks**	**1 week**
Vacation	**8%**	**2 weeks**	**2 weeks**	**2 weeks**
Board Study**	**2%**		**8 weeks**	

*Because of the centralized nature of the radiology department at KSU, clinical service involves all diagnostic modalities for all species. One radiologist is in support of the clinical radiology service each day. The first year resident is involved with only diagnostic radiology cases while the second year resident is involved with only ultrasound and diagnostic radiology for first 6 months of the second year and CT, MR, ultrasound and diagnostic radiology for the last year and a half

**The resident will be given eight weeks off of clinics to study for boards.

Schedule of Expectations and Objectives

Year One

1st Quarter (July – October)

- Assist technologists in positioning for and acquiring radiographic studies, troubleshooting equipment, and providing quality control for routine studies, perform all contrast studies
- Review teaching file cases
- Instruction of radiographic anatomy in first year anatomy course
- Interpretation: small animal abdomen and thorax

2nd quarter (October – December)

- Quality control for radiographic studies, contrast studies
- Come in for emergency with Faculty

3rd quarter (Jan – March)

- Quality control of radiographic studies, contrast studies
- Interpretation – take on more cases
- Attend second year radiology lectures and assist in lab
- Create a plan for research project and submit grant proposals
- Attend course on Cross sectional anatomy
- Attending ultrasound cases, initially to observe and then to perform partial studies under guidance

4th quarter (April – June)

- Continue 3rd quarter clinical duties
- Spend more time doing ultrasound studies under direct supervision

<u>Year Two</u>

1st & 2nd Quarters (July – December)

- Begin CT, MR, and NM acquisition with technologists, and interpretation
- Continue with past clinical duties as scheduled.
- Progress on research project

3rd – 4th Quarters (Jan – June)

- Continue clinical duties as scheduled
- Complete research project

<u>Year Three</u>

1st Quarter (July – Sept)

- Continue clinical duties as scheduled
- Get July and August off to study for written boards

2nd – 4th Quarters (October – June)

- Continue clinical duties as scheduled
- Submit research abstracts & prepare research manuscript
- Continue radiographic, US, and CT/MR interpretations

CURRICULUM VITAE

David S. Biller, DVM
Professor of Veterinary Medicine
Head of Radiology
Department of Clinical Sciences
College of Veterinary Medicine
Kansas State University

Education:

Date	Institution	Degree
1976-1980	Auburn University	DVM with Honor
1972-1976	North Carolina State University	BS in Poultry and Animal Science with Honor

CLINICAL SPECIALTY/BOARD CERTIFICATION:

1987 Diplomate, American College of Veterinary Radiology

Professional Experience:

Date	Position/Title	Institution
7/99-Present	Professor	Department of Clinical Sciences College of Veterinary Medicine Kansas State University

Refereed Publications: (Author, co-author, senior, title, year, volume, pages)
(most recent first)

Jason A Fuerst, Jean K Reichle, David Szabo, Eli B Cohen, **David S Biller**, Justin M Goggin, John F Griffin IV, Stacie Aarsvold, Susan E Emerson. Computed Tomographic Findings in 24 Dogs with Liposarcoma. Veterinary Radiology and Ultrasound Vol. 58, No. 1, 2017, 23-28.

Eric B. Garcia, David Eshar, Justin D. Thomason, Kenneth R. Harkin, **David Biller**. Cardiac Assessment Of Zoo-Kept Black-Tailed Prairie Dogs (Cynomys Ludovicianus) Anesthetized with Isoflurane.Journal of Zoo and Wildlife Medicine. 47(4): 955–962, 2016.

Aryal S, Nguyen TDT, Pitchaimani A, Shrestha TB, **Biler DS**, Troyer D. Membrane Fusion-Mediated Gold Nanoplating of Red Blood Cell: A Bioengineered CT-Contrast Agent. ACS Biomaterials Science & Engineering. Published December 2016 online, pubs.acs.org/journal/abseba

Gervais JA, Roush JK, Biller D. Evaluation of an overlapping pubic and ischiatic osteotomy for treatment of canine hip dysplasia Vet Comp Ortho Traumat, 2016;29:499-506.

Guess SC, Harkin KR, **Biller DS**. Anticteric gallbladder rupture in dogs:5 cases (2007-2013). JAVMA, December 15, 2015: 247(12): 1412-1414.

Evola MG, Edmondson EF, Reishle JK, **Biller DS**, Mitchell CW, Valdes-Martinez A. Radiographic and Histopathologic Characteristics of Pulmonary Fibrosis in Nine Cats. Journal of Veterinary Radiology and Ultrasound. Vol. 55, No. 2, 2014. 133-140.

Carlo Anselmi, DVM

Board eligible ECVDI (European College of Veterinary Diagnostic Imaging)

Education:

22th October 2010
Degree in Veterinary Medicine; Univeristy of Padua (Italy)
Final grade: 100/110.
Thesis to accomplish the degree: Accuracy and precision of computer-assisted analysis of bone density via conventional and digital radiography in relation to dual-energy x-ray absorptiometry

Residency:

2014-2017:
European Diagnostic Imaging Resident (ECVDI) at the Veterinary Clinical Hospital of the Autonomous University of Barcelona (Spain), department of small animal diagnostic imaging

Professional experience:

01-07-2014 to 30-09-2014: Sonographer locum at the Diagnostic Imaging Department Faculty of veterinary medicine, Utrecht University-Netherlands.

08-01-2013 to June 2014: Intern in diagnostic imaging at “Clinica Castellarano”, Castellarano (RE), Italy

Pubblications

“Ultrasonographic anatomy of the atlanto-occipital region and ultrasound-guided cerebrospinal fluid collection in rabbits (*Oryctolagus cuniculus*)”; Carlo Anselmi, Sara Dias, Jaume Martorell, Marc Navarro, Yvonne Espada, Rosa Novellas; Veterinary radiology and ultrasound, November 2017, DOI 10.1111/vru.1257

“Nephrectomy in a Case of Infectious Nephritis in a Mexican Kingsnake (Lampropeltis getula nigrita)”; Adrián Melero,**Carlo Anselmi**, Albert Canturri, Jaime Martorell. Journal of exotic pet medicine, Volume 26, Issue 4, October 2017, pp. 270–275

“Clinical and pathological findings in two rats (Rattus norvegicus) with dilated cardiomyopathy”; Sara C. Dias, **Carlo Anselmi**, Maria I. Casanova, Marta Planellas, Jaume M. Martorell. Journal of exotic pet medicine, Volume 26, Issue 3, July 2017, pp. 205-212

“Accuracy and precision of computer-assisted analysis of bone density via conventional and digital radiography in relation to dual-energy x-ray absorptiometry”; Calogero Vaccaro, Roberto Busetto, Daniele Bernardini, **Carlo Anselmi**, Alessandro Zotti. American Journal of Veterinary Research 2012, 73(3): pp 381-4.

Nicolette (Nicky) Cassel
Assistant professor (Radiology)
Department of Clinical Sciences
College of Veterinary Medicine
Kansas State University

Education:

Date	Institution	Degree
1999-2003	University of Pretoria	BVSc
2009-2012	University of Pretoria	MMedVet(Diagnostic Imaging)

Clinical speciality/Board certification:

2013 Diplomate, European College of Veterinary Diagnostic Imaging

Professional Experience:

Date	Position/Title held	Institution
2009-2011	Lecturer (diagnostic imaging)	University of Pretoria
2011-2013	Senior lecturer (diagnostic imaging)	University of Pretoria
2013-2017	Teleradiologist and mobile ultrasonographer	Vet Imaging Specialists

Refereed Publications: (Author, co-author, senior, title, year, volume, pages)
(most recent first)

- Le Roux C, Cassel N, Fosgate GT, Zwingenberger AL, Kirberger RM. Computed tomographic findings of pulmonary atelectasis in healthy anaesthetized beagles. American Journal of Veterinary Research. 2016;77:1082-1092
- Kirberger RM, Cassel N, Stander N, Dvir E. Triple phase dynamic computed tomographic perfusion characteristics of spirocercosis induced esophageal nodules in non-neoplastic versus neoplastic canine cases. Veterinary Radiology and Ultrasound 2014: 56(3)
- Cassel N, Carstens A, Becker P. The comparison of bolus tracking and test bolus techniques for computed tomography angiography in healthy beagles. JSAVA Vol 84, 1(2013). Doi 10.4102/jsava.v84i1.930
- Kirberger RM, Stander N, Cassel N, Pazzi P, Mukorera V, Christie J, Carstens A, Dvir E. Computed tomography and radiographic characteristics of Aortic lesions in 42 dogs with Spirocercosis. Veterinary Radiology and Ultrasound. 2013:54;212-222
- Tordiffe ASW, Cassel N, Lane EP, Reyers F. Multiple myeloma in a captive lion (Panther leo). JSAVA Vol 84, 1 (2013). Doi 10.4102/jsava.v84i1.949
- Kirberger RM, Cassel N, Carstens A, Goddard A. The effects of repeated intravenous Iohexol administration in renal function in healthy beagles – a preliminary report. Acta Veterinaria Scandinavica. 2012;54:47
- Lindsay N*, Kirberger RM, Williams M. Spinal cord chondrosarcoma associated with spirocercosis in a dog. Veterinary Radiology and Ultrasound. 51;6:614-616 (Contribution primary author)