

2006 ACVR Residency Training Program Application Form: Mississippi State University

II. Objectives:

The Mississippi State University radiology training program has the following objectives:

- To train residents in a satisfactory manner to a level of competence sufficient to achieve board certification by examination.
- To offer a program of study that covers all essential aspects of diagnostic medical imaging and allows in-depth study in one of more areas of personal interest.
- To provide experience in teaching, research, and service for residents.
- To encourage the pursuit of a graduate degree for residents interested in an academic career.
- To train residents in diagnostic imaging skills, medical logic, and professional team interaction.

III. Training period:

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

The clinical program is a minimum of 36 months. If an advanced degree is desired by a resident, an additional 12 months will be salary supported if research funding is also available and a thesis degree is the expected outcome.

What is the total duration of supervised clinical training in the program?

Supervised clinical training will continue for at least 30 months clinical service with a senior radiologist on duty with the resident. The additional six months of the program will include research, study, and vacation time. During the last half of the third year of residency, primary clinical duty with senior radiologist back-up may be offered to residents who demonstrate suitable diagnostic skills.

What are the responsibilities of the resident in the remaining non-clinical portion of the program?

Residents will prepare for and lead weekly board review rounds with the senior radiologists. They will present case-based topic rounds to 3rd and 4th year clinical students once per week. Residents are required to attend Gross pathology rounds given on Friday morning each week. Each resident will prepare and deliver two one-hour lectures each fall in the diagnostic imaging course provided to second year veterinary students.

During the 36 or 48 months of residency or residency plus graduate study, the residents must participate in a research project, and produce a manuscript suitable for publication in

a peer-reviewed journal, and present the results at an ACVR scientific meeting. Residents are encouraged to also submit case reports for publication.

IV. Direction and Supervision:

Program Director:

H. Dan Cantwell, DVM, MS, Dip. ACVR
80% clinical teaching and service

Faculty:

The following faculty members of the program accept PRIMARY responsibility for training in each of the following core areas:

Roentgen diagnosis:

H. Dan Cantwell, DVM, MS, Dip. ACVR
80% clinical service

Diagnostic ultrasound:

Catherine Banfield, DVM, Dip. ACVR
80% clinical service

Computed Tomography:

Catherine Banfield, DVM, Dip. ACVR
80% clinical service

Magnetic Resonance Imaging:

Catherine Banfield, DVM, Dip. ACVR
80% clinical service

Nuclear Medicine:

H. Dan Cantwell, DVM, MS, Dip. ACVR
80% clinical service

Following are Diplomates of the specialty colleges listed.

ACVIM

Sherrill A. Fleming, DVM, ACVIM, ABVP (Bovine)
Michael K. Brashier, DVM, MS, ACVIM (Equine)
Sharon Fooshee Grace, MS, MAg, DVM, ABVP, ACVIM (Small Animal)
Margaret R. Kern, DVM, ACVIM (Small Animal)
Andrew J. Mackin, BSc, BVMS, MVS, DVSc, MRCVS, ACVIM (Small Animal)
Andy Shores, DVM, MS, PhD, ACVIM (Neurology)

ACVP

William R. Maslin, DVM, PhD, ACVP (all species)
Robert W. Read, DVM, PhD, ACVP (all species)
Daniel W. Scruggs, DVM, ACVP (all species)

ACVS

Philip A. Bushby, DVM, MS, ACVS
Robert C. Cooper, DVM, MS, ACVS
Robert L. Linfood, DVM, PhD, ACVS (Equine)
Ronald McLaughlin, DVM, DVSc, ACVS (Small Animal)
William W. Miller, DVM, MS, ACVS, Adjunct, Ophthalmology
Ann Rashmir-Raven, DVM, MS, ACVS (Equine)
Brian Sidaway, DVM, MS, ACVS (Small Animal)

V. Affiliations:

Mississippi State University's Department of Cognitive Research is currently constructing a building to house a federal-grant-funded 3.0 Tesla MRI unit. It will be operational in the spring of 2006. The College of Veterinary Medicine will have access to the MRI equipment for diagnostic and research use. Animal preparation and housing space has been provided in the building being erected.

Nuclear medicine clinical training will be provided in year three of the residency experience by Auburn University's College of Veterinary Medicine. Letters of agreement will be submitted as soon as negotiations are complete.

VI. Facilities:

Radiology suites:

- Summit InnoVet Select (300 mA, 125 kVp) routine small animal service room
- TREX-Camtronic Digital radiograph and fluoroscopic special procedure small animal suite.
- Siemens Vertex large animal suite
- A pair of portable x-ray units made by Bowie and Vet-Ray
- DICOM standard equipment is supported by a FUJI Smart CR unit and a FUJI Dry Pix 3000 thermal film printer
- Conventional x-ray imaging is supported by a Kodak Mark-V automatic processor
- Our Hologic Fluoroscanner portable c-arm unit is used primarily by our orthopedic surgeons.

Ultrasound Suite:

- Toshiba Power Vision 6000 unit with color flow Doppler.

Computed Tomography Suite:

A Universal Systems Picker PQ-5000 CT unit for small animals and large animal head, neck, and limb imaging.

VII. Clinical resources:

Approximate number of patients seen annually by MSU-CVM: 7,500 to 8,500.

Approximate annual imaging caseload: total 7,060 cases.

Small Animal Radiology	5,120
Large Animal Radiology	380
Abdominal ultrasound	1,200
Computed Tomography	300
Nuclear Medicine	outsourced
Magnetic Resonance Imaging	available on-site in 2006

Approximate species breakdown:

Small Animals (canine-Feline)	91%
Large Animals (equine & food Animal)	7%
Exotic Animals	2%

VIII. Training Content:

What percentage of imaging reports is typically available within 48 hours (typed or electronic)? 85%

Of the preliminary reports generated, what percentage is produced by the resident?

We have no residents in Diagnostic Imaging at the time of this application. We anticipate resident-produced reports beginning after the first three months of residency.

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

We plan to have 100% reviewed.

When preliminary reports are reviewed by the imaging faculty, what percentage of the time is two or more faculty present?

Due to time constraints of scheduled teaching and service, all reports will be reviewed by both imaging faculty separately with the residents.

In full time equivalent months, as specified in the Essentials, during the entire course of the program, what is the distribution of the Clinical experience the resident receives in the following?

Small Animal Radiology:	12 months	5120 cases
Large Animal Radiology:	6 months	190 cases
Abdominal ultrasound:	10 months	1000 cases+
Nuclear Medicine	1 month	unknown
Magnetic Resonance Imaging:	2 months	unknown
Echocardiography	1 month	est. 40 cases
Large Animal Ultrasound	1 month	est. 30 cases
 TOTAL	<hr/> 33 months	

If your program does not offer formal courses in these topics, please indicate how these educational objectives are met?

If the resident chooses to pursue a graduate degree, formal courses are available in the college and in other university departments.

Regardless of a resident being in a clinical or clinical plus graduate program, didactic areas specified in the ACVR board examination objectives are studied by the resident under the direction of a radiologist. Study methods include required reading assignments followed by resident presentation and discussion with the radiologists. The following schedule is proposed for resident training beginning in 2006:

Fall 2006	Physics of Diagnostic Radiology—Cantwell
	Physics of Ultrasound—Banfield
	Physics of Nuclear Medicine—Cantwell
	Physics of Computed Tomography—Banfield
Spring 2007	Gross Anatomy—the resident participates as a Teaching Assistant in Freshman anatomy laboratories.
Summer 2007	Special Procedures—Cantwell
Fall 2007	Pathophysiology—Cantwell
Spring 2008	Alternate Imaging—Ultrasound—Banfield
	Alternate Imaging—Nuclear Medicine—Cantwell
	Alternate Imaging—Magnetic Resonance—Banfield
	Alternate Imaging—Computed Tomography—Banfield
Summer 2008	Radiobiology—Cantwell
	Radiation Safety—Cantwell
	Radiation Therapy—Cantwell
	Radiation Physics—Banfield

Residents are tested by written examination following the completion of each topic section.

IX. Research Environment:

<p>On an annual basis 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? Number/year/faculty =</p> <p>2 to 3 per year per faculty (Publications obviously include more than one of the imaging faculty)</p>
<p>On an annual basis, how many scientific abstracts are presented at the annual ACVR meeting by faculty in the program?</p> <p>Zero</p>
<p>What is the number of publications/submissions expected of a resident completing the program?</p> <p>The resident is expected to submit and publish at least one paper, pertaining to a resident project, to a peer-reviewed journal. The resident is encouraged to submit one other publication, i.e. Case Report.</p>
<p>If this is an established program, what percentage of residents has made formal research presentations at the annual ACVR or equivalent national meeting?</p> <p>Not an established program.</p>
<p>Is an advanced degree a requirement of the training program?</p> <p>An advanced degree is not a requirement. However, we highly encourage those who are planning an academic career to pursue one.</p>

X. Educational Environment:

How many lectures or scientific presentations are expected of each resident during the course of their training?

Each resident will present a topic round issue and lead the discussion with rotation students once per month. Each resident will prepare and deliver two didactic lectures to the sophomore class each spring semester of his or her residency.

XI. Evaluation:

During the program, how often is resident performance evaluated in writing?

The radiology faculty will provide a written evaluation of each resident's performance every six months. A compilation of these evaluations will be discussed by the program director with each

resident.

Two written examinations per semester will be based on the weekly ACVR board review rounds and objectives.

Near the end of the residency, mock oral exams will be administered.

XII. Teaching File:

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

An archive of approximately 2000 “known case” film packets is categorized and available at all times to residents and 4th year radiology students. These cases cover canine, feline, equine, and bovine species.

In addition, all digitized radiographic studies, fluoroscopies, and ultrasound examination images produced from 2004 forward are available for review through the hospital’s UVIS system utilizing a PACS dedicated server and E-film equipped hospital computers.

How is the teaching file updated?

Radiology faculty and house officers are obliged to duplicate or digitize interesting cases for retrieval.

XIII. Conferences:

Known case conferences are presented monthly by faculty and residents primarily in Diagnostic Imaging and Pathology. Occasionally we have participants from medicine and surgery admitting services.

XIV. Literature Sources:

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

The College of Veterinary Medicine has a medical library with extensive veterinary medical and medical journals, textbooks, and publications.

In addition, personal subscription journals are shared in the diagnostic imaging service and a rather large “accumulation” of textbooks is available to imaging faculty, residents, interns, and students.

XV. Attachments:

For established programs, list all residents for the last five years:

2 Abbreviated Curriculum Vitae attached.

Abbreviated Curriculum Vitae

I. Name: H. Dan Cantwell
Mississippi State University

II. Education:
DVM, 1971, Purdue University
Residency in Radiology, 1974-1977, Purdue University
MS degree, 1976, Purdue University
ACVR Diplomate, 1977

III. Veterinary Licenses: Indiana, Mississippi

IV. Honor Societies, Scholarly or Professional Recognition:

- Omicron Chapter of Phi Zeta National Veterinary Honor Society
- Gamma Sigma Delta National Agriculture Honorary
- Sigma Xi Scientific Research Society
- Student-selected outstanding clinician, Purdue University, 1977
- Weedon Award, Most beneficial faculty member voted by senior class, Purdue University, 1982
- Elected Delegate to the Association of American Veterinary Medical Colleges, 1980-1983
- ACVR Constitutional Review Committee
- Review Committee for Radiology Questions, National Veterinary Medical Board Examination, 1979-1981
- Examination Committee, ACVR, 1984-1987
- ACVR Executive Council, 1987-1991
- Resident Supervision:
 - Russ Stickle, 1978-1981, Purdue University
 - W. R. Widmer, 1984-1987, Purdue University
 - Merrilee Holland, 1989-1991, Mississippi State University

V. Publications relevant to Diagnostic Imaging:
40 articles in refereed journals such as JAAHA, JAVMA, Vet. Radiology, Vet. Surgery, Vet. Orthopedics, etc.

VI. Research projects relevant to Diagnostic Imaging:
34 projects completed from 1975 to 1992 in areas such as orthopedic implants, joint biomechanics, cartilage regeneration, nuclear imaging, etc.
Total funds awarded: \$550,000.

CATHERINE BANFIELD

Dr. Banfield received her Doctor of Veterinary Medicine degree from Michigan State University in 1980. She was then employed as a staff veterinarian at a small animal practice for one year. Next she received an appointment as State Veterinarian for the Michigan Office of the Racing Commissioner, where she was the first female official ever hired by the Detroit Racetracks. She examined racehorses, supervised blood and urine sample collection, testified at positive drug hearings, and treated all emergencies that occurred during racing.

She entered active duty in the US Army in 1985. Her first Army assignment was as Animal Medicine/Special Projects Officer, Academy of Health Sciences, Fort Sam Houston, Texas; where she was an instructor in Advanced Trauma and Life Support for human health care providers. She then served as Chief, Veterinary Services, White Sands Missile Range, New Mexico, where she provided complete veterinary care for private pets and approximately 600 wild horses. She next served as Chief, Veterinary Services, for Yokota, Misawa, and Iwakuni Air Bases and Sasebo Naval Base, in Japan where she worked with Army, Air Force, Navy and Marine personnel. After four years in Japan, Dr. Banfield was selected by an Army competitive board to attend Auburn University for a four year residency in Veterinary Radiology combined with a Masters Degree program. She received her Master's Degree in Radiological Physics from Auburn University in 1992. She became a Diplomate of the American College of Veterinary Radiology in July of 1994.

After completing her clinical residency training, Dr. Banfield moved to San Antonio, Texas, becoming Chief of Clinical Services and Radiology for the Department of Defense Military Working Dog Veterinary Services, Lackland Air Force Base. Her duties there included working with about 1000 total referral military dogs from all four Armed services, as well as the Federal Aviation Administration, US Customs, US Secret Service, and US Border Patrol. She personally developed techniques with the human hospital to perform magnetic resonance imaging and computed tomography on military dogs on a routine basis. She also upgraded the Radiology department to include special equipment capable of myelography, fluoroscopy, ultrasonography, and telerradiology. She provided complete procurement support for incoming dogs for the military, FAA, US Secret Service, and US Customs. Dr. Banfield published two papers on Hip Dysplasia in military dogs, which were critically important to working dog programs and veterinarians. She continued performing research in collaboration with other civilian radiologists on a number of diseases that affected working dogs, as well as becoming a regular film reader for the Orthopedic Foundation for Animals. Working with an Air Force bone radiologist, she developed a unique procedure for diagnosing stifle disease using magnetic resonance arthrography.

Dr. Banfield was then selected by an Army Competitive Command board to be the Commander of the 64th Medical Detachment in Kaiserslautern, Germany (the largest deployable veterinary unit in the world). During her tenure with the 64th Medical Detachment, she provided complete support to Task Force Falcon and Task Force Hawk in Albania and Kosovo. For two years, she was the Army's only clinical specialist in Europe and deployed herself numerous times to support military dogs and their units in Kosovo, Macedonia, Croatia, and Bosnia. Dr. Banfield was chosen to represent the Army Veterinary Corps at numerous scientific meetings, including the World Veterinary Congress in Lyon, France, and the Military Veterinary Symposium in Thessaloniki, Greece.

Dr. Banfield was then selected as the Commander of the National Capital District Veterinary Command, where she provided state-of-the-art clinical and radiological support to approximately 500 government-owned animals (US Secret Service, Federal Aviation Administration, US Customs, US Capital Police, the Army's Caisson unit, the 3rd US Infantry, as well as military dogs from all four services). She coordinated complete care to 376 horses and 70 dogs for the 43rd Presidential Inauguration, as well as caring for the President's personal pets.

Her last military assignment was as Deputy Director of the Walter Reed Army Institute of Research, Division of Veterinary Medicine (DVM). The DVM cares for more than 10,000 animals and supports many different types of research protocols. Dr. Banfield personally trained laboratory animal residents and clinical residents in preparation for their board certification examination, and all were successful who took here training.

Dr. Banfield spent ten years as the only board-certified Veterinary Radiologist in the entire Department of Defense and as the personal consultant to the Surgeon General on matters involving Veterinary Radiology. She is also the author of numerous scientific publications and presentations and is in demand worldwide as a lecturer. She is a recipient of the Phi Zeta Epsilon Chapter Award and the Michigan State Distinguished Alumnus Award in 2004. Her military awards include the Surgeon General's "A" Proficiency Designator Award, Order of Military Merit, the Defense Meritorious Service Medal, Meritorious Service Medal (two awards), the Army Commendation Medal, the Army Achievement Medal (two awards), and the Air Force Outstanding Unit Award.

Following her retirement from the US Army Veterinary Corps, Dr. Banfield accepted a position as an Associate Professor in Veterinary Radiology at the College of Veterinary Medicine at Mississippi State University. She is currently spending the majority of her time doing clinical radiology, but does continue to consult for the Orthopedic Foundation for Animals. She is also finishing a retrospective study on elbow dysplasia in working dogs.